California Environmental Quality Act (CEQA)

Notice of Intent to Adopt a Mitigated Negative Declaration

Pursuant to the requirements of the California Environmental Quality Act (CEQA), the City of Newman (City) will be **circulating an Initial Study** analyzing the impacts of implementing the Newman Community Conservation Area (NCCA) Master Plan, which envisions four separate but complementary projects intended for environmental and community benefit. **Based on analysis presented in the Initial Study, the City intends to adopt a Mitigated Negative Declaration (MND).**

The Initial Study review period begins on **March 18, 2021** and will conclude on **April 19, 2021.** Comments on the Initial Study may be provided via letter or email to the contact below. **The deadline for receipt of comments is 5:00 PM, April 19, 2021.**

As required by CEQA and the state's *CEQA Guidelines*, all comments received by the comment deadline will be considered by the City in making the decision about whether to adopt the proposed Mitigated Negative Declaration and proceed with the NCCA projects as proposed.

Project title:	Newman Community Conservation Area Master Plan
Project location:	The project site comprises two City-owned parcels (APNs 054-050-019, 054-050-020, and APN 054-05-010) immediately southeast of Canal School Road and Inyo Avenue. The site is zoned for agriculture and is currently in grazing use. It is not included on any of the lists cited in Section 65962.5 of the California Government Code for hazardous materials use, disposal, or contamination.
Project description:	The following projects are planned at the NCCA: (1) the Newman Environmental Wetland System (NEWS) project, an approximately 21-acre constructed stormwater treatment wetland that will treat the City's currently untreated stormwater prior to discharge into the Newman Wasteway for delivery to the San Joaquin River (2) a wetland restoration project for greenhouse gas (GHG) sequestration, funded by the California Department of Fish and Wildlife (3) the Miller Ditch Treatment Wetland (MDTW) project, planned in collaboration with UC Merced's Environmental Systems Graduate Group to treat agricultural supply and tailwater (4) the Newman Nature Park, which is being planned with community input and may include a wide range of facilities such as a community gathering plaza, outdoor classroom areas, a nature-themed play area, and native plant, rainwise garden, and low-impact development demonstration areas, as well as an unpaved trail network and interpretive signage to enable appropriate public recreational access and tie all of the projects together
Where to find the Initial Study:	The Initial Study can be accessed and downloaded online at the following address: http://www.cityofnewman.com/departments/public-works/e-docs.html. Hard copies are also available for review in the City Manager's office, the Public Works Department, and the Community Development Department at City Hall (938 Fresno Street, Newman CA 95360). To make an appointment for hard copy review, contact Kathryn Reyes, Director of Public Works (see below). For individuals with sensory disabilities, the Initial Study can be made available in alternate formats; please call or email Kathryn Reyes if you would like to request an alternate format.
Contact for comments:	**Kathryn Reyes, Director** **Department of Public Works** Mail: City of Newman, 938 Fresno Street, PO Box 787, Newman, CA 95360 Email: kreyes@cityofnewman.com
Attend the public meeting on the Initial Study/MND:	Adoption of the MND is expected to be on the agenda for the May 11, 2021 City Council meeting. During the COVID-19 pandemic, meetings are being conducted via video conferencing. All members of the public are invited to participate. Video conference and teleconference information will be provided at the top of the Council meeting agenda, available here: http://www.cityofnewman.com/news-and-information/agendas.html.

CITY OF Newman CALIFORNIA

Newman Community Conservation Area Master Plan

Initial Study and Proposed Mitigated Negative Declaration

March 2021

Redtail Consulting
Environment & Community

Cover photograph: courtesy of Vollmar Natural Lands Consulting

Newman Community Conservation Area

Initial Study and Proposed Mitigated Negative Declaration

March 2021

CITY OF
Newman
CALIFORNIA

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A. NCCA Master Plan

B. Biological Resource Evaluation

C. Air Quality & Greenhouse Gas Emissions Modeling Results

D. Cultural Resources Technical Report (HPSR/FOE)

E. NEWS Project Basis of Design Memorandum

F. MDTW Project Technical Memoranda

G. Proposed Mitigated Negative Declaration

1 Introduction

This document is an Initial Study analyzing the environmental impacts of implementing the City of Newman's (City's) Newman Community Conservation Area (NCCA) Master Plan (City of Newman 2021), consistent with the California Environmental Quality Act (CEQA) and the state's *CEQA Guidelines*. As the entity that will make the decision about whether or not to proceed with the projects, the City is serving as the lead agency under CEQA. As a state agency with jurisdiction over natural resources held "in trust" for the people of California and potentially affected, the California Department of Fish and Wildlife (DFW) is considered a trustee agency under CEQA. Three of the four projects envisioned in the Master Plan may require permits from the U.S. Army Corps of Engineers (Corps), DFW, and/or the Central Valley Regional Water Quality Control Board (RWQCB), and in this case DFW as well as the RWQCB would also be responsible agencies under CEQA. Extension of water service outside City limits to support limited uses at the NCCA would require authorization from the Stanislaus and/or Merced County Local Agency Formation Commissions (LAFCo). The authorizing LAFCo will be an additional responsible agency under CEQA.

The NCCA is planned to support three separate but related habitat restoration and creation projects, a multi-use trail system, and other amenities that will provide public access, recreation, nature viewing, and nature- and conservation-oriented education opportunities to the community. The Master Plan was developed to guide project implementation, operations, and maintenance. As such, the Master Plan

- lays out the City's vision for the NCCA
- describes the projects that will be undertaken to implement the NCCA vision (the NCCA projects)
- provides a framework for continued project planning, construction, operations, and maintenance
- discusses immediate and longer-term funding approaches for the NCCA projects
- includes measures to avoid and reduce impacts on existing resources at the NCCA site
- provides for long-term preservation and protection of habitat values at the NCCA

Because the purpose of the Master Plan is to define and describe the projects that will implement the Master Plan vision, analyzing the impacts of constructing, operating, and maintaining the NCCA projects analyzes the impacts of the Master Plan.

Based on the analysis presented in this Initial Study, the City anticipates adopting a Mitigated Negative Declaration for the NCCA projects. The Mitigated Negative Declaration signifies that although the NCCA projects would have the potential to result in some significant environmental impacts, the City has identified and

committed to implement measures to mitigate—that is, to avoid or reduce—those impacts, such that with the mitigation measures in place, no significant short- or long-term impacts are expected as a result of the NCCA projects.

Contents of this Initial Study

This Initial Study contains the following sections.

- **Section 1 – Introduction:** describes the scope and intent of this Initial Study, provides background information, discusses the need for the NCCA, identifies goals and objectives for the NCCA as a whole and for each of the NCCA projects, lists the permits and approvals that will be required to implement each project, briefly discusses consultation regarding Native American tribal cultural resources, and describes the process and timeline for public review and comment on this Initial Study
- **Section 2 – Project Information:** provides specifics regarding the NCCA projects, including the elements of each project, the construction activities that are anticipated, and ongoing operations and maintenance (O&M) of the NCCA facilities once construction is complete
- **Section 3 – Environmental Impacts:** analyzes the impacts of implementing the NCCA projects on the environment and describes the mitigation measures the City will implement to avoid or reduce potentially significant impacts
- **List of Acronyms and Abbreviations:** presented as an 11 x 17 foldout table following Section 3
- **Appendices**:
    - Appendix A: NCCA Master Plan[1]
    - Appendix B: Biological Resource Evaluation
    - Appendix C: Air Quality and Greenhouse Gas Emissions Modeling Results
    - Appendix D: Cultural Resources Technical Report
    - Appendix E: NEWS Project Basis of Design Memorandum and Final Stormwater Quality Benefit Analysis
    - Appendix F: Miller Ditch Treatment Wetland Project Water Budget, Water Quality, and Pollutant Removal Technical Memoranda
    - Appendix G: Proposed Mitigated Negative Declaration

Scope & Intent of this Initial Study

The NCCA is planned to occupy two parcels acquired by the City in 2014 for this specific purpose: a 78-acre parcel located at the southeast corner of Canal School Road and Inyo Avenue and a 24-acre parcel located

[1] The NCCA Master Plan presented in Appendix A is the Third Administrative (internal) Draft of this document. Once the CEQA review process is complete, the City intends to incorporate CEQA mitigation requirements into the Master Plan as adopted Avoidance and Minimization Measures (AMMs), finalizing the document. Regulatory permit terms and conditions will also be incorporated as AMMs in future updates to the Final NCCA Master Plan as individual projects are authorized. AMMs already incorporated into the Master Plan and therefore applicable to all of the NCCA projects are described in Section 2 of this Initial Study.

nearby, northeast of Brazo Road (Figure 1-1). A program of four separate but complementary projects is envisioned at the NCCA (Figure 1-2):

- in the northwest portion of the 78-acre parcel, the Newman Environmental Wetland System **(NEWS project)**, an approximately 21-acre constructed wetland complex that will treat stormwater and dry season runoff from the City and surrounding agricultural lands prior to discharge to the Newman Wasteway[2] and, ultimately, the San Joaquin River
- in the central and east portions of the 78-acre parcel, extending to the central and south portions of the 24-acre parcel, an approximately 11-acre seasonal wetland, riparian, and grassland restoration project **(wetland project)** emphasizing natural sequestration of greenhouse gases (GHGs)
- in the southwest portion of the 78-acre parcel, an additional approximately 16-acre constructed wetland project that is being planned in collaboration with the Environmental Systems Graduate Group at the University of California, Merced (UC Merced) Department of Civil and Environmental Engineering to treat water from the Miller Ditch[3], with a focus on removing agricultural pollutants **(Miller Ditch Treatment Wetland project)** (MDTW, MDTW project)[4]
- in the east and southeast portions of the 78-acre parcel, the **Newman Nature Park,** which is being planned with community input and may include a wide range of facilities such as a community gathering plaza, outdoor classroom areas, a nature-themed play area, and native plant, rainwise garden, and low-impact development demonstration areas, as well as an unpaved trail network and interpretive signage extending throughout the 78-acre parcel to enable appropriate public recreational access and, ultimately, tie all of the projects together

This Initial Study analyzes all four projects. The City's intent in bringing all four NCCA projects before the public and agencies at this time, in a single Initial Study, is to provide the most comprehensive possible picture of the NCCA projects, their impacts, and their benefits.

This Initial Study also analyzes the effects of extending City water service to the 78-acre parcel to serve limited uses at the NEWS project and Newman Nature Park. For CEQA purposes, because the extension of water service to each project would serve only that project and has no separate, independent utility, each water service extension is technically part of the project it would serve. However, the water service extension could involve a footprint outside the NCCA parcels, and would entail different construction activities. This Initial Study thus addresses the water service extension separately, to make sure all impacts are accounted for, even though construction of the water service extension would be coordinated with the NEWS and/or Newman Nature Park projects, and the City would not proceed with the extension unless the corresponding NCCA projects also move forward.

[2] The Newman Wasteway (Figure 1-1) was originally constructed as part of the federal Central Valley Project, to convey emergency releases from the Delta-Mendota Canal to the San Joaquin River (for more information, see U.S. Bureau of Reclamation and California Department of Water Resources 2010). Now, it also conveys agricultural tailwater from cultivated lands between the Canal and the River.

[3] The Miller Ditch (Figure 1-1) is an agricultural feature that conveys supply from the Central California Irrigation District's Main Canal to agricultural users south and east of the City. It also receives return flow from agricultural lands southeast of the City and conveys this tailwater to the Newman Wasteway.

[4] In previous City documents, the MDTW project was referred to as the UC Merced project.

Level of Analysis

As of the preparation of this Initial Study, the NEWS project and wetland project are the farthest along in the planning process; the wetland project has been funded by a DFW Wetlands Restoration for Greenhouse Gas Reduction Program grant awarded in 2019 and the NEWS project will be funded by a State Water Resources Control Board (SWRCB) Proposition 1 Storm Water Grant Program Round 2 Implementation Projects grant awarded in early 2021. The NEWS project is currently at the 60% level of design and the wetland project is approaching the 65% design milestone. These two projects are analyzed to the project level.

The City intends to apply for California Department of Parks and Recreation Proposition 68 Statewide Park Development and Community Revitalization Program Round Four funding for the Newman Nature Park in spring 2021. To the extent feasible with community dialogue still ongoing, the Newman Nature Park is also analyzed to the project level.

Project-level analysis is intended to enable prompt implementation, unless conditions, or the project themselves, change significantly. For instance, if elements not analyzed in this IS/MND are added to the Nature Park based on community input, additional CEQA review may be needed for the Nature Park project, but it should be facilitated and expedited by the analysis presented here.

The MDTW project is the farthest out on the planning horizon; it has been developed in concept, and baseline technical studies are in progress (e.g. Rodal Morales and Beutel 2020a, 2020b; Rodal Morales et al. 2020), but some details are not available at this time. The MDTW project is therefore analyzed to a more general, programmatic level, with as much information as possible provided. As planning proceeds and more detail on the MDTW project becomes available, the City will likely need to conduct a second round of project-level CEQA review for the MDTW project. This may take the form of an internal Addendum to this Initial Study, or a publicly circulated "tiered" document that incorporates and builds on the analysis in this Initial Study, or it may be a stand-alone document, depending on how much background conditions and the details of the project itself have evolved in the meantime.

Background & Need for NCCA

Parklands and open spaces are a critical aspect of community livability, and the ability to connect with nature is increasingly understood as vital to mental and physical health. The City's General Plan—its fundamental planning document—begins with a Vision Statement that includes the following language (City of Newman 2007).

> There will be a range of activities available in Newman for all residents, including youth and seniors. Parks scattered throughout the city will provide…facilities that promote community gatherings. A network of pedestrian trails and bike paths will connect residents to parks…

Reflecting this commitment, a number of community and neighborhood parks are already available throughout the City, providing various types of recreational and gathering facilities, including playgrounds, barbecue areas, dining areas, baseball and soccer fields, and basketball courts, as well as a community center, teen center, wading pool, and skateboard park. The City also has a number of mini-parks that serve their immediately surrounding neighborhoods with green space, picnic tables, and play structures.

However, city parks offer a different user experience and serve different functions than accessible areas of more natural open space. The closest parklands offering any type of natural open space experience range from about 4 to 17 miles away as the crow flies (farther by road), and none of them is specifically dedicated to nature-

Map Source: *modified from* City of Newman 2007

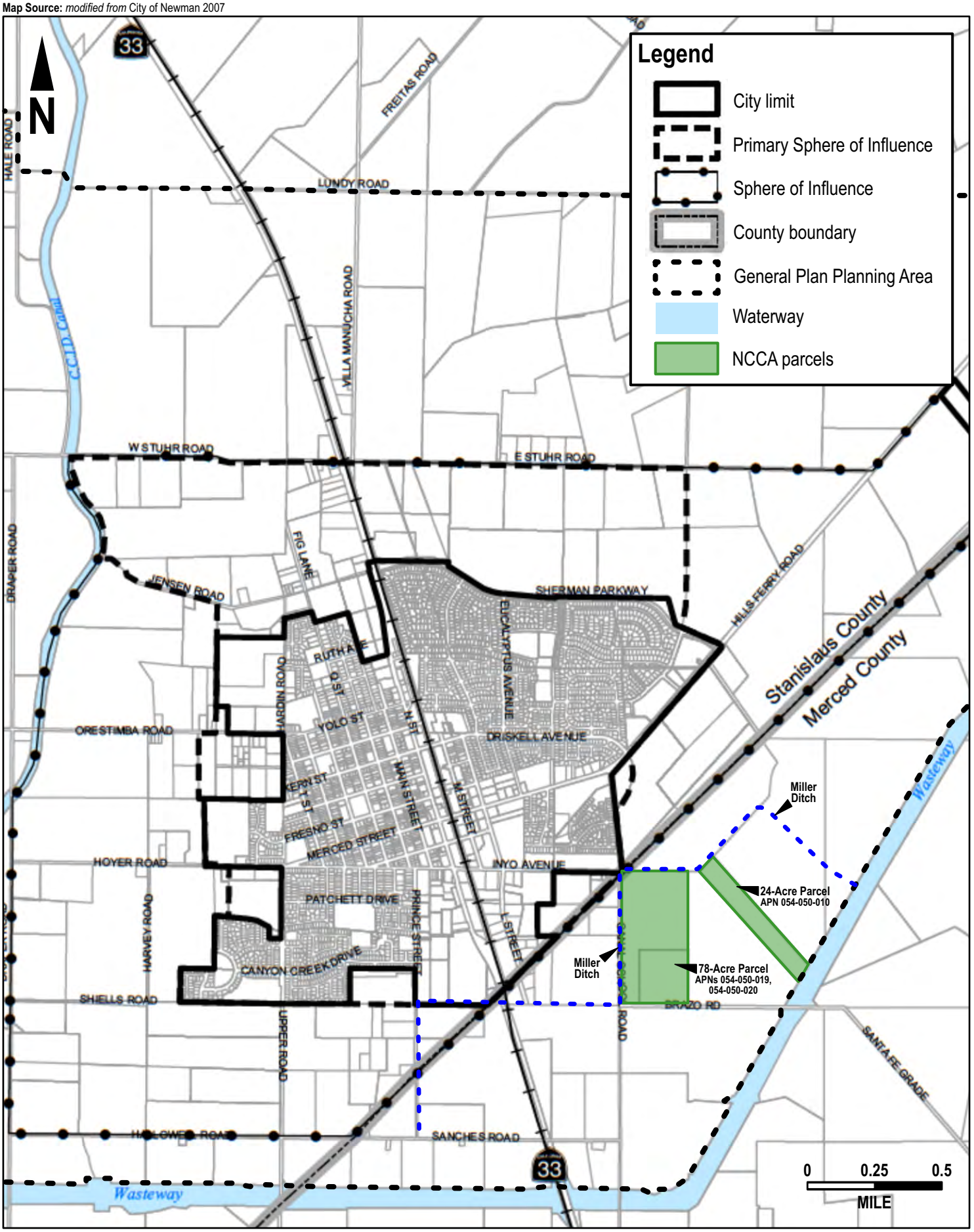

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Figure 1-1. NCCA Location and Extent
Newman Community Conservation Area Master Plan
City of Newman

Aerial Photograph Source: GoogleEarth (imagery date 07/18/2019, downloaded 03/16/2020)

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Figure 1-2. Conceptual NCCA Site Layout
Newman Community Conservation Area Master Plan
City of Newman

oriented recreation or education. In addition, although the City has adopted a Non-Motorized Transportation Plan (City of Newman 2013) and has been working to expand and improve bicycle and pedestrian facilities, the Newman area still lacks regional trail systems that offer extended walking and bicycling opportunities.

Additionally, with the use of natural processes for stormwater and wastewater treatment becoming increasingly visible in recent decades, City staff have long held the vision that such applications would one day serve the Newman community, which currently discharges its stormwater and agricultural tailwater untreated into the Newman Wasteway and ultimately the San Joaquin River.

In this context, the NCCA is intended to meet three needs:

- providing opportunities for nature-oriented open space recreation and nature education that are not currently available in the Newman area
- providing treatment for the City's previously untreated stormwater and agricultural tailwater runoff prior to discharge into the Newman Wasteway and San Joaquin River
- improving overall air, water, and habitat quality in the Newman area, as a benefit to the community, area wildlife, and the environment as a whole

Thus, in addition to providing long-term environmental benefit, the NCCA will fill an important gap in the recreational resources available to residents of the City and surrounding vicinity, along with opportunities for nature education that currently do not exist in the area. When completed, the NCCA will be a unique community and environmental resource, the first of its kind in the western San Joaquin Valley region.

Goals & Objectives

NCCA Program Goal & Objectives

The City's overarching goal for the NCCA is to create a community amenity that supports improved water and air quality, GHG sequestration, and habitat resources while offering site-appropriate recreational and educational opportunities as well as economic benefits for residents of the City and surrounding area.

The following sections identify goals and objectives for each of the projects under the NCCA program. Programmatic parcel-wide objectives comprise the objectives of the individual projects, all of which individually support the City's programmatic goal for the NCCA.

Goals & Objectives by Project

NEWS Project

The goal of the NEWS project is to construct, operate, and maintain a wetland system consistent with historic habitats in the surrounding area, in order to

- reduce the discharge of urban and agricultural storm and dry weather runoff pollutants to the Newman Wasteway and San Joaquin River via physical, biological, and biochemical marshland processes
- support the City's vision to manage stormwater as an ecological and water resource asset
- benefit the community of Newman and the surrounding area by providing appropriate public access to encourage natural environment experiences

- provide a "living lab" for K–12 and college/university students in the Newman area and beyond
- offer operational flexibility to support downstream objectives for stormwater and agricultural runoff management

Specific objectives are to

- develop an approximately 21-acre constructed wetland system comprising a trash rack, sediment settlement forebay, and vegetated clarification ponds, with unpaved access suitable for operations and maintenance as well as non-vehicular public use such as walking, jogging, bicycling, birding, and watershed education
- treat urban and agricultural stormwater and dry weather runoff from 2,241 acres in and around the City, diverted from the City storm drain system downstream of the pump station at Canal School Road and Inyo Avenue
- provide sufficient capacity to capture and treat the urban water quality design event that carries the greatest pollutant loading to the Newman Wasteway and San Joaquin River (the 85th percentile, 24-hour storm event)[5]
- plant at least 100 trees and shrubs of suitable native species on high ground bordering the ponds

Wetland Project

The goal of the wetland project is to restore a mosaic of wetland, riparian woodland, and native perennial grassland habitat, in order to

- sequester GHGs and other pollutants
- restore and preserve rare habitat types for the benefit of plants and wildlife
- contribute to public nature viewing and educational amenities for the City and surrounding area

Specific objectives are to

- reestablish, rehabilitate, or enhance at least 10 acres of wetland habitat
- plant and establish at least 50 trees of native species suitable to the site
- restore at least 1 acre of native perennial grassland habitat

MDTW Project

The goal of the MDTW project is to create and enhance wetland habitat using Central California Irrigation District (CCID) agricultural supply and agricultural tailwater, in order to

- treat flow from the Miller Ditch (including agricultural tailwater) in support of downstream reuse

[5] An area's 85th percentile storm event is the storm with precipitation equal to or greater than 85% of 24-hour storm events occurring in that area in a year. Storms up to and including the 85th percentile event deliver the majority of the precipitation the area receives annually and are thus responsible for the majority of the area's runoff (and resulting delivery of pollutants to downstream receiving waters). As a result, capture and treatment of runoff from storms up to and including the 85th percentile event is a widely used water quality design target.

- create hands-on learning opportunities in the planning, development, execution, and operation of constructed wetland water treatment projects for students in the Environmental Engineering program at UC Merced
- improve the ecological function and value of the 78-acre parcel
- contribute to public nature viewing and educational amenities for the City and surrounding area

Specific objectives include

- enhancing and creating up to about 16 acres of perennial or near-perennial freshwater surface-flow wetland in multiple cells designed to provide polishing treatment
- providing unpaved access suitable for operations and maintenance as well as non-vehicular public use such as walking, jogging, bicycling, birding, and watershed education

Newman Nature Park

The Newman Nature Park is planned to provide a local opportunity for open-space recreation offering multiple social, economic, and environmental benefits to residents of the City and surrounding area. It is envisioned as expanding and diversifying the non-vehicular recreational access offered by the NEWS and MDTW projects.

Goals of the Newman Nature Park include

- providing the community with opportunities to connect with nature through walking, bicycling, and other passive recreation accessible to a diverse range of visitors, including families, seniors, youth groups, and those with disabilities
- promoting mental and physical health through access to, and interaction with, the natural environment
- providing the City's disadvantaged youth with opportunities for outdoor experiences and a connection to nature
- fostering learning opportunities for K–12 and college/university students
- showcasing sustainable water and land resource management practices

Specific objectives—which were developed in consideration of preliminary community outreach and will be refined and finalized based on continuing dialogue with the community—include

- constructing a network of new accessible (ADA-compliant) trails suitable for non-vehicular passive recreation such as jogging, walking, biking, birding, and wildlife observation, potentially including a perimeter trail and/or main trail loop and connecting trails sited appropriately throughout the parcel
- providing seating and shade along the trails for rest, nature viewing, and contemplation areas; incorporating bilingual (English/Spanish) interpretive signs to enhance the trail and park experience for a variety of users, including children, those with disabilities, and seniors
- developing opportunities for nature-oriented public education, such as outdoor learning areas, and potentially including a community plaza gathering area
- showcasing the use of permeable surface media, runoff capture, bioswales, and other low-impact development (LID) measures as well as solar-powered lighting where appropriate

- providing restrooms, a handwashing station, and a hydration station, as well as storage for maintenance and educational materials
- providing ample off-street visitor parking, including ADA stalls and bicycle parking and potentially including a bus drop-off to facilitate group visits

The Newman Nature Park may also offer demonstration areas for native plant gardening, composting, rainwise and other sustainability techniques that can be incorporated at area homes and businesses.

Required Permits & Approvals

Because of existing environmental values at the NCCA site, a number of resource agency permit requirements may apply to the NCCA projects, summarized in Table 1-1. Water service extension may also require resource agency permits, depending on the alignment selected. Because construction of the water service extension would likely be coordinated with NEWS project and/or Newman Nature Park construction (discussed further in Section 2 of this Initial Study), the City expects to include appropriate portions of the water service extension in the resource agency permit application packages submitted for each of those projects.

Table 1-1. Resource Agency Permit Requirements Potentially Applicable to NCCA Projects

Regulation	Agency with Jurisdiction	Scope and Requirements	Projects Needing Permit*
Federal Clean Water Act, Section 404	Corps	Regulates the placement of "dredged and fill materials" into waters of the United States, including wetlands. In practice, because the terms *dredged and fill* are interpreted very broadly, requires Corps permit authorization for a wide range of activities entailing disturbance or permanent impact below the ordinary high water mark (OHWM) in fresh water and below the mean higher high tide (MHHT) line in tidally influenced waters	• NEWS project • wetland project • MDTW project
Federal Clean Water Act, Section 401	RWQCB	Requires projects that must obtain certain other federal permits, including Clean Water Act Section 404 authorization from the Corps, to obtain certification from the RWQCB that the proposed activities would not degrade the quality of receiving waters downstream of the project, or RWQCB concurrence that certification can be waived	• NEWS project • wetland project • MDTW project
Federal Clean Water Act, Section 402[a] (National Pollutant Discharge Elimination System)	RWQCB	Regulates discharge of stormwater and other runoff from construction sites and other localized ("point") sources. In California, requires construction projects with a disturbance footprint of 1 acre or more to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit), which entails preparation by qualified personnel of a Storm Water Pollution Prevention Plan (SWPPP)	• NEWS project • wetland project • MDTW project

Regulation	Agency with Jurisdiction	Scope and Requirements	Projects Needing Permit*
		reflective of site conditions and the sensitivity (risk level) of receiving waters	
California Fish and Game Code Sections 1600 *ff.*	DFW	Regulates activities affecting the geomorphology and function of California's rivers, streams, and lakes. Requires DFW approval for activities that would • divert or obstruct the natural flow of a river, stream, or lake • modify the bed, channel, or bank of a river, stream, or lake • use material from the bed, channel, or bank of a river, stream, or lake • place debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake	• NEWS project • wetland project • MDTW project
Federal Endangered Species Act	USFWS	Among other provisions, regulates activities affecting plant and wildlife species listed by the United States Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service as Threatened or Endangered, and their habitat. Requires USFWS or National Marine Fisheries Service authorization (Incidental Take Permit, or ITP) for activities affected listed species or their habitat	As discussed in more detail in Section 2 of this Initial Study, all of the NCCA projects would incorporate extensive Avoidance and Minimization Measures (AMMs) for the protection of special-status plants and wildlife during both construction and O&M, and the City hopes to be able to avoid the need for Incidental Take Permit (ITP) authorization under the federal and California Endangered Species Acts. If this is not possible, ITPs may also be required for some or all of the projects
California Endangered Species Act	DFW	Among other provisions, regulates activities affecting plant and wildlife species listed by the State of California as Threatened or Endangered, and their habitat. Requires California Department of Fish and Wildlife (DFW) authorization (Incidental Take Permit, or ITP) for activities affecting listed species or their habitat	

* The Newman Nature Park project may also require Corps and/or RWQCB authorization for minor impacts to wetlands. The City is working with agency staff to clarify the status of these wetlands and will apply for all permits identified as necessary by the resource agencies with jurisdiction.

In addition to the resource agency permits summarized above, water service extension would require authorization from the Stanislaus and/or Merced County LAFCo, since it would be located outside City limits in unincorporated Merced County. Driveway access to the NEWS project from Canal School Road, and to the MDTW project and Newman Nature Park from Brazo Road, would require County encroachment permits.

Native American Consultation

The state's *CEQA Guidelines* encourage early consultation with Native American tribes traditionally and culturally affiliated with the area where a proposed project will take place. Additionally, Section 21080.3.1 of the CEQA statute, signed into law in 2015 under AB52, requires lead agencies to consult with traditionally and culturally affiliated Native American tribes prior to the release of a CEQA document if (1) the tribe has

requested, in writing, to be formally notified of projects, and (2) the tribe responds, in writing, within 30 days of receiving notification.

As of the date of preparation of this Initial Study, no tribes have requested AB52 notification from the City. However, as part of the cultural resources study conducted for the NCCA projects (see Appendix D), the City team reached out to the Native American Heritage Commission to verify contacts for tribes traditionally and culturally affiliated with the NCCA vicinity, and has sent letters advising those contacts of the upcoming projects and soliciting early comments and input on concerns related to tribal cultural resources. A search of the Native American Heritage Commission's Sacred Lands database was also requested. Results are summarized in Section 3 of this Initial Study under the headings *Cultural Resources* and *Tribal Cultural Resources* and are discussed in detail in Appendix D.

Public Circulation & Comment

The fundamental purposes of CEQA include improving information sharing and enhancing public participation in the planning process. CEQA accordingly requires lead agencies to circulate draft environmental documents for review and comment by other agencies and the public at large. This Initial Study is now being circulated for public and agency review. The review period begins on March 18, 2021 and will conclude on April 19, 2021.

Contact for Comments on this Initial Study

Kathryn Reyes
Director of Public Works
Public Works Department | City of Newman
938 Fresno Street
Newman, CA 95360
kreyes@cityofnewman.com

Comments on this Initial Study may be provided via letter or email to the City's Director of Public Works at the contact above. **The deadline for receipt of comments is 5:00 PM, Monday, April 19, 2021.** As required by CEQA and the state's *CEQA Guidelines*, all comments received by the comment deadline will be considered by the City in making the decision about whether to adopt the proposed Mitigated Negative Declaration and proceed with the NCCA projects analyzed to the project level.

References Cited in this Section

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U.S. Bureau of Reclamation and California Department of Water Resources. 2010. Delta-Mendota Canal Recirculation Feasibility Study, Plan Formulation Report Volume 1: Executive Summary and Text. Available: https://cawaterlibrary.net/wp-content/uploads/2017/06/Final_DMC_PFR_Jan_2010_rev_Sept_2010.pdf. Downloaded: July 2020.

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2
Project Information

Project Overview

Project title:	Newman Community Conservation Area Master Plan
Lead agency name and address:	City of Newman Public Works Department 938 Fresno Street Newman, CA 95360
Project sponsor's name and address:	*Same as above*
Contact person and phone number:	Kathryn Reyes Director of Public Works 209.862.4448
Project location:	This IS/MND analyzes the effects of four separate but complementary projects under the NCCA Master Plan. All projects would be located on City-owned lands (APNs 054-050-019, 054-050-020, and 054-05-010) southeast of Canal School Road and Inyo Avenue, immediately outside City limits (Figures 1-1, 1-2)
General Plan land use designation:	City of Newman: *Agriculture* County of Merced: *Agriculture*
Zoning:	Because the NCCA parcels are outside City limits they are zoned only by the County of Merced. The County zoning is *A-1 General Agriculture*

Project Setting

The following discussion of existing conditions at the NCCA site was summarized from the NCCA Master Plan (City of Newman 2021). More detailed information is presented in the Master Plan (Appendix A to this Initial Study) and supporting technical reports, including the Biological Resource Evaluation prepared in support of the Master Plan and project CEQA review (Vollmar Natural Lands Consulting 2021a) (Appendix B to this Initial Study).

Overview

The NCCA site is located in an area with a long history of agricultural use and is currently surrounded by actively cultivated lands in various row and orchard crops. As shown in Figures 1-1 and 1-2, it occupies two

City-owned parcels: a 78-acre parcel at the southeast corner of Canal School Road and Inyo Avenue (APNs 054-050-019, 054-050-020) and a 24-acre parcel located nearby to the east, north of Brazo Road (APN 054-05-010).

Site topography and historic aerial photographs indicate that the 78-acre parcel was previously graded for flood irrigation supported by a system of ditches, and it has been cultivated for row crops in the past, but has been fallow since the 1990s. The 24-acre parcel does not appear to have been substantially graded or cultivated. In recent years, both of the NCCA parcels have primarily been used for grazing and are at least intermittently flood-irrigated during the dry season, using supply diverted from the adjacent Miller Ditch (City of Newman 2021).

The NCCA parcels lie at an elevation of approximately 75 – 80 feet above mean sea level and are gently rolling to nearly flat, with a maximum difference in elevation across each parcel of less than 10 feet. Both parcels were historically part of the large floodplain and tributary complex draining generally eastward to the San Joaquin River. Regionally and in the site vicinity, this system has been substantially disrupted and replaced by agricultural uses, and the NCCA parcels now occupy a complex surface water drainage context that includes a network of agricultural canals and ditches as well as the Newman Wasteway, which ultimately discharges to the San Joaquin River to the east (City of Newman 2021) (Figure 1-1).

Conspicuous on both parcels is a channel-like feature that appears to represent a substantially disturbed remnant tributary of the San Joaquin River, labeled as the *central swale* on Figure 1-2. This remnant channel no longer supports through-going flow; it is blocked by berms at both ends, has been extensively modified by shallow grading for agriculture, and is disconnected from the River by intervening cultivated lands. Berming along the banks has also reduced its original extent and further modified its hydrology although it is locally open to overland flow input on both the 78-acre and 24-acre parcels (Vollmar Natural Lands Consulting 2021a).

Site Hydrology

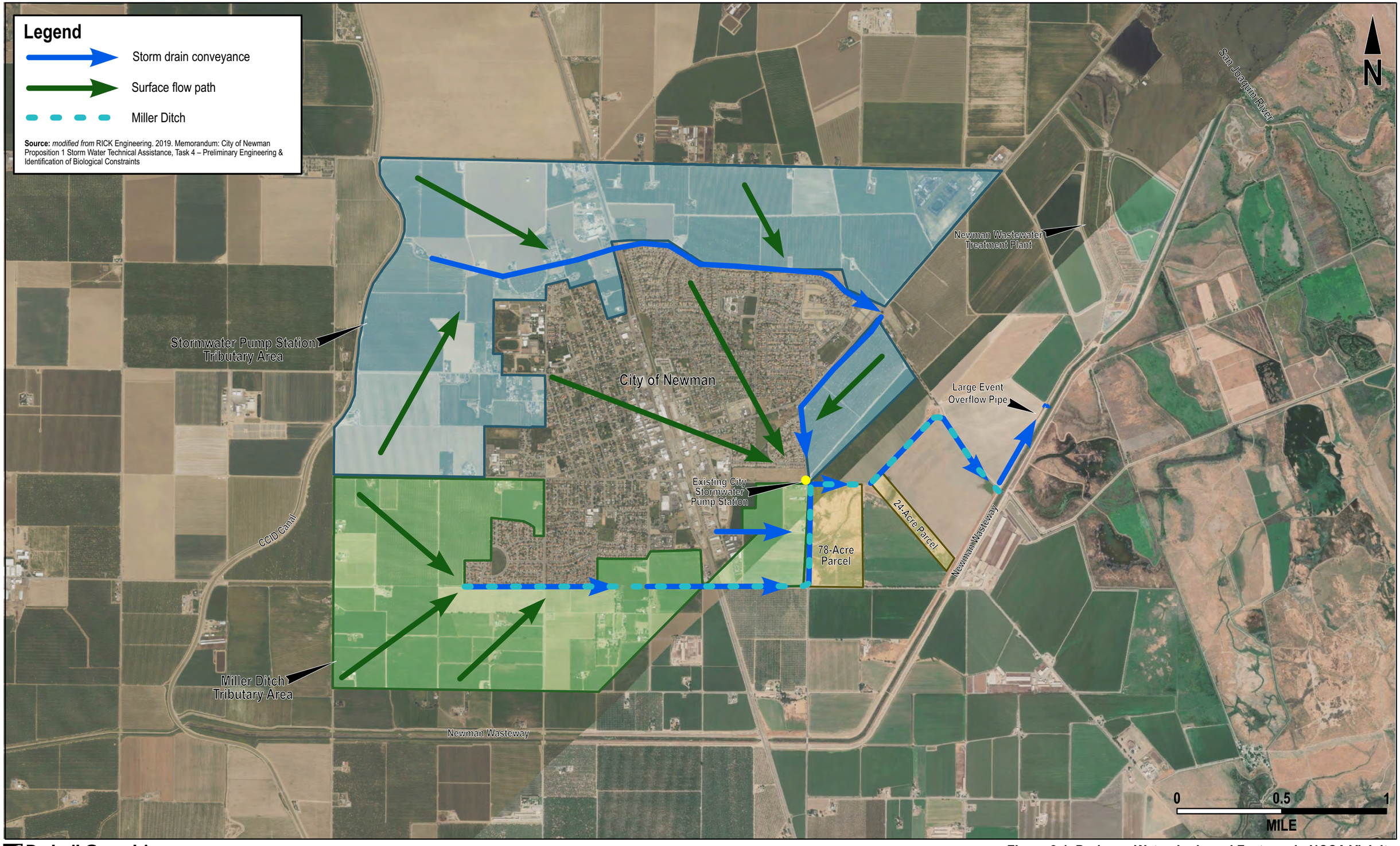
Surface Drainage

The NCCA site is located in the Bennett Valley – San Joaquin River watershed (City of Newman 2021). Three local sub-drainage watersheds have been defined in the vicinity of the NCCA parcels (Figure 2-1):

- the urban City area
- agricultural fields to the north
- agricultural fields to the south

The majority of the urban City area, and the agricultural fields to the north, drain to an existing City stormwater pump station at the northwest corner of Canal School Road and Inyo Avenue. The agricultural fields to the south drain to the Miller Ditch, which borders the parcels to the west and north and empties into the Newman Wasteway east of the 24-acre parcel, with excess flow from large storm events diverted via an overflow pipeline to a separate outfall to the north along the Wasteway. The Newman Wasteway in turn discharges to the San Joaquin River south of the City's Wastewater Treatment Plant (WWTP) and Hills Ferry Road (City of Newman 2021) (Figure 1-1, Figure 2-1).

The Miller Ditch is a constructed feature that conveys flows from several sources. During the spring and summer, supply from the CCID canal west of the City is diverted into the Miller Ditch for irrigation use; several agricultural users both up- and downstream of the NCCA parcels have established agreements with the CCID



Redtail Consulting
Environment & Community

Figure 2-1. Drainage Watersheds and Features in NCCA Vicinity
Newman Community Conservation Area Master Plan
City of Newman

for use of supply from the Miller Ditch. The Miller Ditch also receives agricultural tailwater and some overland runoff. As a result, flow in the Ditch is generally year-round, although flow volumes and water quality vary seasonally (City of Newman 2021).

Neither of the NCCA parcels appears to have been subject to the deep ripping typical of agricultural lands in the vicinity. As a result, they were initially expected to preserve intact Northern Claypan, an indurated subsurface clay layer that significantly reduces downward percolation of surface water and creates perched groundwater conditions in the shallow subsurface. More detailed soil studies performed in late summer and early fall 2020 with funding from the City's DFW grant for the wetland project has determined that clay layers are locally present in the subsurface but appear to have been disrupted by agricultural grading, particularly on the 78-acre parcel (Vollmar Natural Lands Consulting 2020).[1]

Shallow Groundwater

Based on test pit and piezometer data from spring 2019 and 2020, the early dry-season depth to shallow groundwater on the 78-acre parcel ranges from about 6.5 feet to about 10 feet, increasing toward the north end of the parcel (City of Newman 2021).

Double-ring infiltrometer testing conducted in May 2019 suggests that infiltration rates on the 78-acre parcel range from 3.8 gallons/square foot/day at the parcel's northeast corner to as much as 34.1 gallons/square foot/day in the central portion of the NEWS project footprint and 41.1 gallons/square foot/day near the NEWS project's southeast boundary. Similar testing in the central portion of the 24-acre parcel showed an infiltration rate of 1.1 gallons/square foot/day (Technicon 2019). Additional testing conducted in late summer 2020 using shallow infiltration basins excavated to depths of 1 – 2 feet below grade measured infiltration rates ranging from 1.1 gallons/square foot/day to 41.1 gallons/square foot/day, with the lowest rates measured along the central swale on the 78-acre parcel and in remnant wetlands on the 24-acre parcel, and the highest rates in leveled areas outside the central swale on the 78-acre parcel (Vollmar Natural Lands Consulting 2020). This is generally consistent with the results of the earlier Technicon (2019) infiltration tests.

An existing well is located near the northwest corner of the 78-acre parcel. Very little information is available on the well, but Department of Water Resources (DWR) records indicate that it was drilled in late 1992 or early 1993. It has a 6-inch casing diameter, was completed to a depth of 185 feet, and is screened from 150 to 170 feet below ground surface (Department of Water Resources n.d.), and thus is probably producing from the upper unconfined aquifer. In recent years, it has been used for cattle watering (Souza pers. comm.), and the City considers it a non-potable source. The City plans to close and abandon the well per Merced County well destruction requirements, and will not be using it in conjunction with the NCCA projects.

Habitat Conditions

The NCCA parcels currently support a mosaic of disturbed upland and wetland habitats, as well as remnant and currently functional agricultural ditches that also offer some wetland value. Wetlands on both parcels are partially supported by irrigation for grazing; as a result, the duration of ponding on the site is longer that it would historically have been. Additionally, although vernal pools occur in the region and were probably present at the site in the past, none of the wetlands on the NCCA parcels currently supports a majority of vernal pool indicator species (Vollmar Natural Lands Consulting 2021a, 2021b; Pinnell pers. comm.). This is likely due to the effects

[1] The design of the wetland project has been adjusted based on the results of recent soil studies, to take maximum advantage of soil conditions on the site while dovetailing with the other NCCA projects to maximize sitewide function and value; this is discussed further in *Project Elements* below.

of historic agricultural grading and present-day irrigation. The table below summarizes wetland acreages; their distribution is shown on Figures 2-2 and 2-3.

Table 2-1. Potential Jurisdictional Habitat on NCCA Parcels

Habitat Type	Total Extent	Presumed Jurisdiction		
		Corps	DFW	RWQCB
Emergent wetland	0.142	—	—	0.142
Seasonal wetland, central swale	1.396	0.064	0.064	1.396
Other seasonal wetland	7.979	2.155	0.886	7.979
Ditch	3.704	3.704	3.704	3.704
Total extent of wetland habitat:	*13.221*	*5.923*	*4.654*	*13.221*

Source: Poisson pers. comm.

Seasonal wetlands on the NCCA parcels support a mixture of native and non-native species, including native Mexican rush (*Juncus mexicanus*) and non-native Mediterranean barley (*Hordeum marinum*), Italian rye grass (*Festuca perennis*), rabbit's foot grass (*Polypogon monspeliensis*), curly dock (*Rumex crispus*), and annual blue grass (*Poa annua*). Emergent wetlands support native common tule (*Schoenoplectus acutus occidentalis*), broad-leaved cattail (*Typha latifolia*), water-pepper (*Persicaria hydropiper*), and knotgrass (*Paspalum distichum*), interspersed with the same native and non-native species found in the seasonal wetlands (Vollmar Natural Lands Consulting 2021a). Based on their distribution and geometry, and the parcels' history of agricultural use, wetlands at the site are thought to represent a combination of heavily disturbed remnant natural features and anthropogenic features created by agricultural grading (Vollmar Natural Lands Consulting 2021b).

Upland habitat on the NCCA parcels consists primarily of grasslands dominated by non-native species typical of ruderal uplands in the region, although a few small, localized stands of native grassland are present. Non-native grasses found on the parcels include ripgut brome (*Bromus diandrus*), soft chess (*B. hordeaceus*), slender wild oat (*Avena barbata*), foxtail barley (*H. murinum*), and Bermuda grass (*Cynodon dactylon*). Associated non-native forbs include white clover (*Trifolium repens*), bur-clover (*Medicago polymorpha*), bindweed (*Convolvulus arvensis*), summer mustard (*Hirschfeldia incana*), English plantain (*Plantago lanceolata*), white horehound (*Marrubium vulgare*), milk thistle (*Silybum marianum*), black mustard (*Brassica nigra*), and wild geranium (*Geranium dissectum*). Native grassland areas support beardless wild rye (*Elymus triticoides*) and meadow barley (*H. brachyantherum* ssp. *brachyantherum*). Mexican rush also occurs sporadically in upland habitats across both parcels (Vollmar Natural Lands Consulting 2021a).

A number of large mature willows (*Salix* spp.), Mexican fan palms (*Washingtonia robusta*), a mid-sized walnut tree (*Juglans* sp.), and smaller cultivated fruit trees are present immediately outside the east boundary of the 78-acre parcel, visible in Figure 1-2 (Vollmar Natural Lands Consulting 2021a).

Additionally, both parcels exhibit numerous large and small mammal burrows, likely created by California ground squirrel (*Otospermophilus beecheyi*) and pocket gopher (*Thomomys bottae*). Upland habitat on the 78-acre parcel supports several large California ground squirrel burrow complexes, and numerous additional ground squirrel burrows are present within berms and levees. Smaller gopher burrows are concentrated in wetland and grassland habitats. Several California ground squirrel individuals were observed during site visits conducted in March 2020 (Vollmar Natural Lands Consulting 2021a).

N

0 200 400
FEET

Legend

Symbols

- Miller Ditch (approximate; not surveyed)
- Miller Ditch culvert (approximate; not surveyed)

Potential Jurisdictional Features (Federal and State)

- Ditch
- Seasonal wetland swale
- Seasonal wetland

Potential Jurisdictional Features (State)

- Ditch
- Seasonal wetland swale
- Seasonal wetland
- Emergent wetland

Vollmar NATURAL LANDS CONSULTING

Source: *modified from* Vollmar Natural Lands Consulting 2020b

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Environment & Community

Figure 2-2. Potential Jurisdictional Waters, 78-Acre Parcel
Newman Community Conservation Area Master Plan
City of Newman

Redtail Consulting
Environment & Community

Figure 2-3. Potential Jurisdictional Waters, 24-Acre Parcel
Newman Community Conservation Area Master Plan
City of Newman

Special-Status Species on NCCA Parcels

A number of special-status species have the potential to be present on the NCCA site, including plants as well as wildlife. The site is not located within designated critical habitat for any listed species (Vollmar Natural Lands Consulting 2021a).

Table 2-2 lists the special-status plants with potential to occur on the NCCA parcels. None of the species considered potentially present is state- or federally listed; they qualify for special status due to their inclusion in the California Native Plant Society's rare plant inventory, which assigns California Rare Plant Rank (CRPR) status based on distribution and threat level. Additional special-status plants are known from the region, but are believed to be absent from the parcels due to unsuitability of habitat and/or distance from the species' primary range.

Protocol-level surveys of the NCCA parcels for special-status plants were conducted in spring – summer 2020. Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) (CRPR 4.2 "watch list") was observed on both the 78-acre parcel and the 24-acre parcel. None of the other species listed in Table 2-2 was found to be present. However, presence and local distribution can vary from year to year, and the potential for presence of the other five species in future years probably cannot be entirely ruled out.

Table 2-2. Special-Status Plants Potentially Present at NCCA Site

Species	Rank*	Habitat	Potential to Occur in Plan Area
Heartscale *Atriplex cordulata* var. *cordulata* (Annual herb)	1B.2	Saline or alkaline chenopod scrub, meadows and seeps, valley and foothill grasslands, on sandy substrates, at elevations up to 70 meters above sea level	Wetlands at NCCA site offer suitable habitat. Closest documented occurrence is 5 miles away
Crownscale *Atriplex coronata* var. *coronata* (Annual herb)	4.2	Alkaline chenopod scrub, valley and foothill grasslands, vernal pools, commonly on clay substrates, at elevations up to 200 meters above sea level	Wetlands at NCCA site offer suitable habitat
Lesser saltscale *Atriplex minuscula* (Annual herb)	1B.1	Alkaline chenopod scrub, playas, valley and foothill grasslands with sandy substrates, at elevations of 15 – 45 meters above sea level	Wetland and mesic uplands at NCCA site offer suitable habitat
Vernal pool smallscale *Atriplex persistens* (Annual herb)	1B.2	Alkaline vernal pools, at elevations less 115 meters above sea level	Wetlands at NCCA site offer suitable habitat. Closest documented occurrence is 3.3 miles away
Parry's rough tarplant *Centromadia parryi* ssp. *rudis* (Annual herb)	4.2	Alkaline, vernally mesic seeps, roadsides, valley and foothill grasslands, vernal pools, at elevations up to 100 meters above sea level	Wetland and mesic uplands at NCCA site offer suitable habitat; species was observed on both parcels during protocol surveys conducted in 2020
San Joaquin spearscale *Extriplex joaquiniana* (Annual herb)	1B.2	Alkaline chenopod scrub, meadows and seeps, playas, valley and foothill grasslands, at elevations up to 350 meters above sea level	NCCA site offers suitable habitat. Closest documented occurrence is 4 miles away

* Refers to California Native Plant Society's California Rare Plant Ranks and California threat level codes

Key to California Rare Plant Ranks
CRPR 1A = Plants presumed extirpated in California and either rare or extinct elsewhere
CRPR 1B = Plants rare, threatened, or endangered in California and elsewhere
CRPR 2B = Plants rare, threatened, or endangered in California but more common elsewhere

Species	Rank*	Habitat	Potential to Occur in Plan Area
CRPR 3 = More information is needed about plant CRPR 4 = Plants of limited distribution ("watch list") **Key to California Threat Level Codes** 1 = seriously threatened in California 2 = fairly threatened in California 3 = not very threatened in California			

Source: Vollmar Natural Lands Consulting 2021a

Special-status wildlife species that may occur at the NCCA site are identified in Table 2-3. Numerous additional special-status species—including Valley elberberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB), several amphibians, and a number of special-status bird, bat, and other small mammal species—are known from the region but are not expected to use the NCCA parcels, due to unsuitability of habitat and/or distance from the locations of documented occurrences (Vollmar Natural Lands Consulting 2021a).

Protocol-level surveys for large branchiopods—Conservancy fairy shrimp (*Branchinecta conservatio*), longhorn fairy shrimp (*B. longiantenna*), vernal pool fairy shrimp (*B. lynchi*), and vernal pool tadpole shrimp (*Lepidurus packardi*)—were conducted during winter 2019 – 2020. All four of these species were found to be absent from the NCCA site (Vollmar Natural Lands Consulting 2021a).

California tiger salamander (*Ambystoma californiense*) (CTS) (state and federally listed as Threatened) is also expected to be absent from the NCCA site. Although the uplands at the site offer potential refugial habitat for the species, the site does not offer suitable breeding habitat, is more than 3.6 miles (the maximum distance CTS have been documented as traveling overland) away from the closest known CTS occurrence, and is surrounded by an extensive buffer of unsuitable agricultural lands (Vollmar Natural Lands Consulting 2021a).

Table 2-3. Special-Status Wildlife Potentially Present at NCCA Site

Species	Status	Habitat Requirements	Potential to Occur in Plan Area
Amphibians and Reptiles			
Northwestern pond turtle *Actinemys marmorata*	SSC	Permanent and intermittent waters of rivers, creeks, small lakes and ponds, marshes, unlined irrigation canals, and reservoirs	**Low potential.** Irrigation ditches at NCCA site provide marginal habitat, and closest documented occurrence is 2 miles away, but species is highly mobile and could use NCCA parcels for dispersal when moving between areas of better habitat
Western spadefoot *Spea hammondii*	SSC	Grasslands with shallow temporary pools offer optimal breeding habitat. Adults remain in underground burrows during most of the year	**Low potential.** Seasonal wetlands at NCCA site provide marginal breeding habitat due to very shallow water and fairly short ponding duration. Adjacent annual grassland uplands could provide suitable refugia during dry season, but closest documented occurrence is 6.7 miles away. Species is unlikely to be present but cannot be conclusively ruled out
Giant garter snake *Thamnophis gigas*	FT/ST/SSC	Primarily observed in marshes, sloughs, drainage canals, and irrigation ditches, especially around rice fields; occasionally found in slow-moving creeks. Prefers locations with vegetation close to the water for basking	**Low potential.** Species has been thoroughly studied and there is only one known breeding population in the San Joaquin Valley. Ditches at the NCCA site that offer aquatic habitat connecting to Newman Wasteway and ultimately the San Joaquin River provide potentially suitable habitat. Closest documented occurrence is 2 miles away, is from 1976, and is imprecisely

Species	Status	Habitat Requirements	Potential to Occur in Plan Area
			located, but species' presence cannot be conclusively ruled out
Birds			
Tricolored Blackbird *Agelaius tricolor*	SC/SSC (nesting)	Forages in pastures, agricultural fields, rice fields, and feedlots; nests in freshwater marshes with tules or cattails, or in dense thickets of willow, thistle, wild rose, or blackberry in close proximity to open water	**Low potential.** Species occurs year-round in area; closest documented occurrence is 0.6 mile away. Suitable foraging habitat is present in and around the NCCA site but the site does not provide nesting habitat; the perennial marsh in the central swale is too small and degraded and lacks the density the species requires
Burrowing Owl *Athene cunicularia*	SSC	Found in open, treeless areas with low, sparse vegetation, such as grasslands, deserts, pastures, agricultural fields, and levee embankments. Nests in small mammal burrows	**Potential.** NCCA site provides grassland habitat with small mammal burrows and offers suitable breeding, foraging, and refuge habitat. Closest documented occurrence is 11.7 miles away but species is mobile and may use the site
Swainson's Hawk *Buteo swainsoni*	ST (nesting)	Forages in open grasslands, prairies, and agricultural fields; nests adjacent to riparian habitat	**Potential.** Large trees suitable for nesting are present adjacent to boundaries of NCCA site and suitable foraging habitat is available in and around the site. Species is known to nest in the region during spring and summer and has been observed foraging onsite
Northern Harrier *Circus hudsonius*	SSC (nesting)	Frequents meadows, grasslands, open rangelands, desert sinks, and fresh- and saltwater emergent wetlands; seldom found in wooded areas. Typically found in flat or hummocky open areas with tall, dense grasses, shrubs, and sedges for nesting, cover, and feeding	**Low potential.** NCCA site provides suitable nesting and foraging habitat in freshwater emergent wetlands and dense grasslands. Closest documented occurrence is 13.5 miles away, but species is mobile and may be present
Loggerhead Shrike *Lanius ludovicianus*	SSC (nesting)	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Nests in thorny vegetation, trees, shrubs, brush piles, or tumbleweeds	**Potential.** NCCA site's open habitat and fencing provide suitable foraging and resting habitat and species has been observed onsite
Yellow-billed Magpie *Pica nuttalli*	BCC (nesting)	Prefers open oak and riparian woodland or farm and ranchland with tall trees in the vicinity of grassland, pasture, and cropland	**Potential.** Grassland at the NCCA site and adjacent trees provide suitable habitat
Mammals			
American badger *Taxidea taxus*	SSC	Prefers open areas and may also frequent brushlands with little groundcover. When inactive, dens underground	**Very low potential; likely absent.** Habitat at the NCCA site is marginal for species and no dens or other signs of the species were observed during the 2019 – 2020 biological surveys. Closest documented occurrence is 6.8 miles away. Species is not expected to be present
San Joaquin kit fox *Vulpes macrotis mutica*	FE/ST	Annual grassland, scrub, subshrub land. Dens in friable soils or enlarges smaller holes created by other animals	**Low potential.** Suitable grassland habitat is available throughout the NCCA site and the species' prey base of small mammals is present, but habitat at the site is largely disconnected from other suitable habitat in the area, no dens

Species	Status	Habitat Requirements	Potential to Occur in Plan Area
			were observed at the site during the 2019 – 2020 biological surveys, and closest documented occurrence is 3.6 miles away. Species is unlikely to use the NCCA site for breeding but may pass through or hunt on the site

Key to Status Abbreviations:
FT = federally listed as Threatened
FE = federally listed as Endangered
BCC = USFWS Bird of Conservation Concern
ST = state-listed as Threatened
SC = candidate for state listing
SSC = state Species of Special Concern

Source: Vollmar Natural Lands Consulting 2021a

In addition to the special-status species listed in Table 2-3, birds protected by the federal Migratory Bird Treaty Act may nest in the trees along the east boundary of the 78-acre parcel (Vollmar Natural Lands Consulting 2021a).

Project Elements

Initial conceptual designs for the four NCCA projects were developed independently by consultant teams retained by the City. In late summer and early fall 2020, the City hosted a series of contactless virtual charrette sessions to enable interaction between the four design teams. The goal of these sessions was to "dovetail" the footprints and features of the four projects to maximize long-term benefits to habitat function and value across the NCCA site, while taking advantage of new soil and hydrologic information collected by the wetland project team with funding from the City's Wetlands Restoration for Greenhouse Gas Reduction Program grant from DFW, which came under contract in summer 2020. This process resulted in modifications to the wetland and MDTW projects. The following descriptions of the NCCA projects reflect outcomes of the 2020 NCCA-wide charrette sessions.

NEWS Project

The NEWS project is planned to occupy approximately the northwest quadrant of the 78-acre parcel (Figure 1-2). As shown in Figure 2-4, it would include a 2.5-acre sediment settling forebay, about 8 acres of constructed wetland habitat for stormwater treatment (5.6 acres of low marsh habitat plus an additional 2.5 acres of high marsh habitat), and a 2.2-acre "micropool" with emergent wetland habitat for final polishing treatment. It is being designed to capture and treat both dry weather flows and storm runoff from a Drainage Management Area of 2,241 acres, which includes the urbanized City and surrounding agricultural lands, in events up to and including the 85th percentile, 24-hour storm event. Treatment in the NEWS wetlands would rely entirely on natural processes, including settlement, filtering, adsorption, degradation, plant uptake, and oxidation and reduction processes that are a function of soil condition, vegetation, residence time, and a combination of aerobic and anaerobic conditions.

Flows from the Miller Ditch would enter the NEWS facility via a passive diversion structure located at the northwest corner of the 78-acre parcel. The diversion structure would be equipped with a trash capture device to prevent rubbish and debris from entering the treatment wetlands. This is expected to be a debris separating baffle box or a similar structure, and is being designed to meet full trash capture (FTC) standards (i.e., ability to

Source: *modified from* RICK Engineering. 2020. Wetland System Routing Schematic, Newman Environmental Wetland System, City of Newman, CA (03/16/2020), scale: 1:1,800

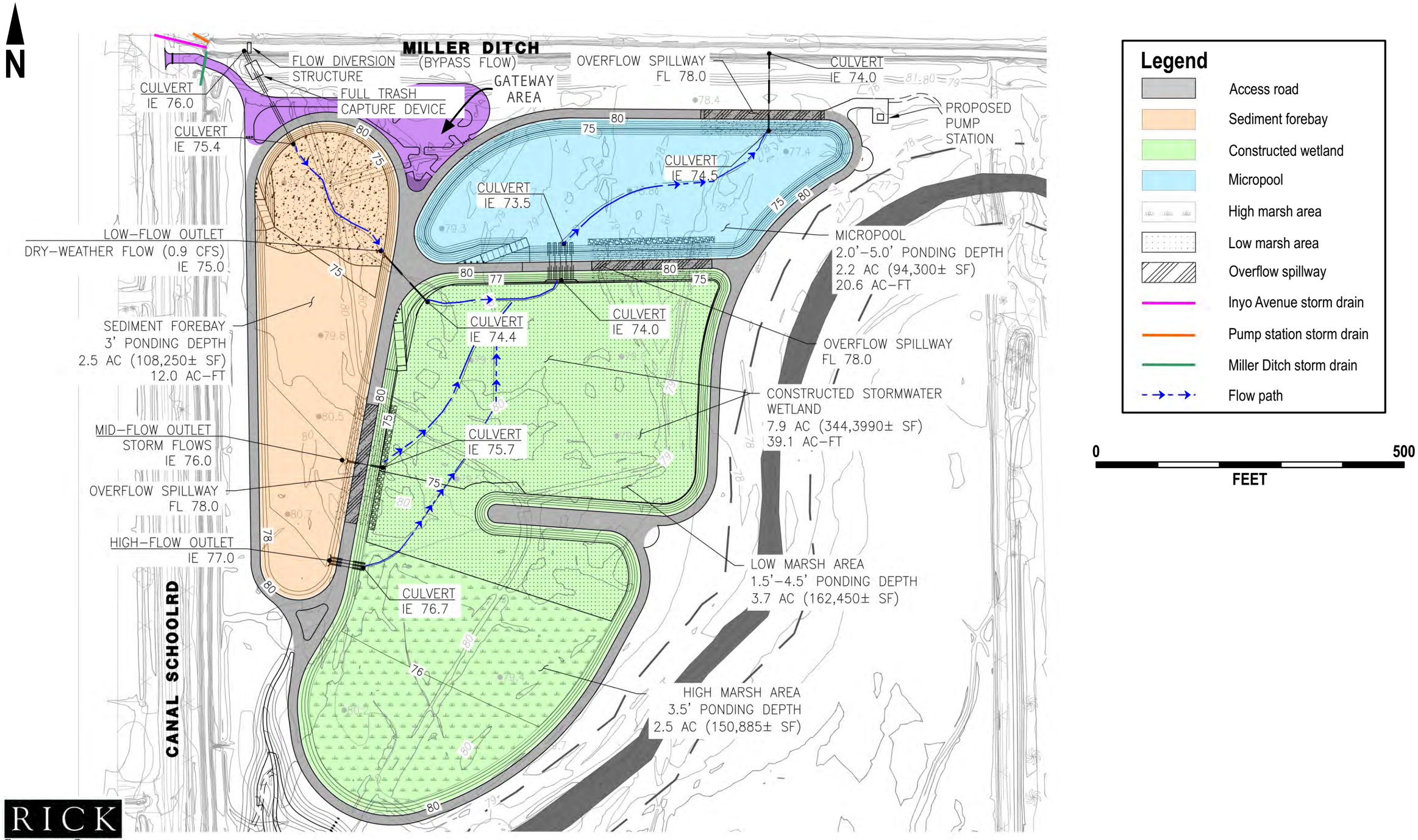

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Figure 2-4. NEWS Project Concept
Newman Community Conservation Area Master Plan
City of Newman

capture all particles with a diameter of 5 millimeters or greater for the 1-year, 1-hour storm event for priority land use areas).

The diversion structure would deliver flows to the forebay, which would provide a ponding duration sufficient to allow sediment to settle out prior to flows entering the treatment wetlands. The proximal portion of the forebay immediately downstream of the inlet (approximately 0.79 acre in extent) would be equipped with a hardscape liner to enable periodic removal of accumulated sediment, as discussed in more detail in *Project Operations & Maintenance* below. The downstream portion of the forebay would be unlined. The forebay would also be equipped with permanent steel markers to measure sediment accumulation and alert O&M staff to the need for sediment removal (also discussed further in *Project Operations & Maintenance*).

Maximum ponding depth in the forebay would be on the order of 3 feet. From the forebay, three culverts at different elevations would deliver flows to the wetland area. Dry weather flows would enter the wetland via a low-level culvert and would remain in the low marsh area before moving on via passive flow into the micropool. The majority of flow from smaller storm events would also enter the wetland area via the low-level culvert, although events as small as the 1-year storm are expected to activate the mid- and higher-level culverts at peak flow. In larger storm events, the mid- and higher-level culverts would convey a larger percentage of flow, and the low and high marsh areas would be more extensively and deeply inundated. Hydraulic gradients are being designed so that the wetland area would empty completely into the micropool between storm events, mimicking natural seasonal wetland hydrology. Like the downstream portion of the forebay, the wetland area would be unlined, enabling some infiltration of treated water into the subsurface as in a natural wetland.

The micropool would remain permanently inundated except in the driest years, consistent with natural emergent wetland habitat. The micropool would be equipped with a liner to prevent infiltration, since the separation between the micropool invert and shallow groundwater in this portion of the 78-acre parcel may not meet the RWQCB's 3-foot standard, particularly in wet years. Treated water from the micropool would be discharged by passive flow back into the Miller Ditch.

A small pump station may also be included to enable drawdown of the micropool for periodic inspection and maintenance of the liner. The pump station was not included in the budget requested under Proposition 1 grant funding from the SWRCB, but may be added at a later time, funded by the City. If constructed it would have a footprint on the order of 10 feet by 10 feet and a height of no more than about 10 feet. The pump station would discharge from the micropool into the adjacent Miller Ditch.

Table 2-4 summarizes the NEWS project's design capture and treatment capabilities.

Table 2-4. NEWS Project Stormwater Capture, Infiltration, and Treatment Overview

Metric	Volume
Drainage Management Area 85th percentile, 24-hr runoff volume	31.9 acre-feet
NEWS project runoff capture (storage) capacity	42.1 acre-feet
Percent of 85th percentile, 24-hour storm event captured	100%
Average annual volume captured and treated	1,156 acre-feet
Average annual volume infiltrated into groundwater	45 acre-feet
Average annual return to Miller Ditch	1,111 acre-feet

Source: RICK Engineering 2020

The NEWS project would also include unpaved roads/trails to enable O&M access. These would be opened to the public for walking, bicycling, jogging, and other non-motorized recreational use, with split-rail fencing around the forebay, wetland areas, and micropool providing for safety and discouraging entry into sensitive habitat.

Accessed via a driveway from Canal School Road, a gateway area at the northwest corner of the facility would offer an O&M staging area, bilingual English/Spanish interpretive signage, and native tree and shrub landscaping, providing a functional and welcoming entry into the facility. Parking for 8 – 10 vehicles would be provided, and there would also be an area suitable for use as a bus drop-off. The gateway would be hardscaped with permeable pavers, and ADA parking stalls consistent with applicable standards would be included in the parking area. Night lighting is not planned at this time, although the City may add limited solar-powered lighting in the future if it proves to be needed.

The simplest route to access the NEWS project from Canal School Road would be to expand and improve the existing access immediately south of the intersection with Inyo Avenue; this is the alignment shown on Figure 2-4. However, the County may require a greater separation from the intersection; in this case, access to the gateway would be shifted farther south along Canal School Road and the City would provide a bridge and/or culvert to maintain Miller Ditch flows unimpeded. Alternately, the access shown on Figure 2-4 could be reconfigured slightly to align more directly with Inyo Avenue. It is the City's intent to work with the County as design proceeds, to ensure that all applicable County roadway and safety standards are met.

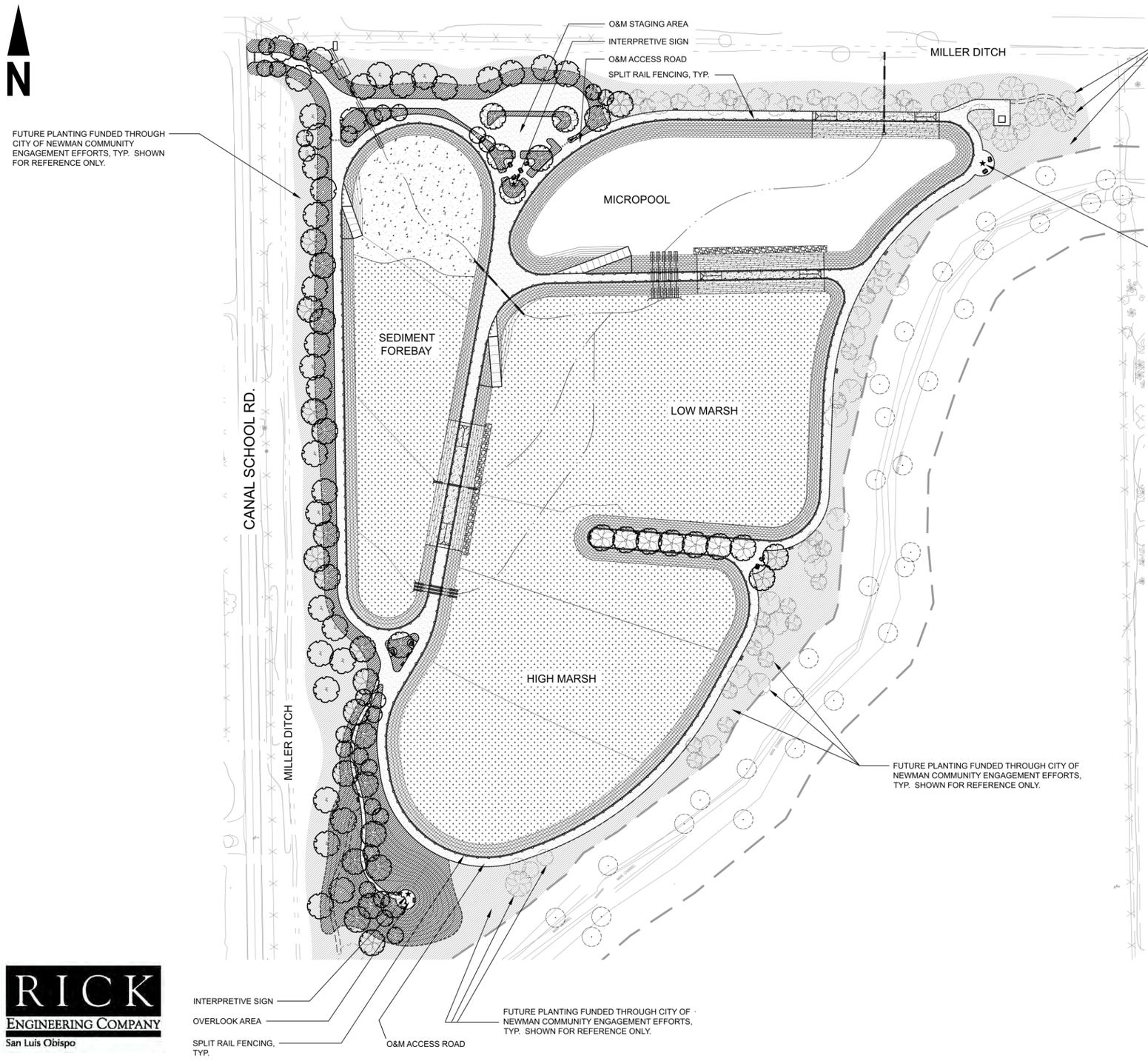
Additional native trees and shrubs would be planted along the access roads/trails at the west side of the forebay, and bordering the wetland area and micropool, for a total of approximately 110 trees and 5,300 shrubs in addition to the 520,000 square feet of wetland vegetation planted in the treatment ponds (Figure 2-5, which also shows the locations of additional interpretive signage along the O&M access/trails). Non-woody native understory species would be included with the tree and shrub plantings where appropriate. Table 2-5 shows the proposed plant palette by planting zone; as indicated on Figure 2-5, plantings would include a combination of container stock of various sizes and hydroseeding. Further tree plantings, also shown on Figure 2-5, may be added by future City projects in collaboration with the community.

During the vegetation establishment period immediately following planting, temporary irrigation would be provided along Canal School Road and for the basin slope and gateway planting areas. Long-term irrigation would be provided for the gateway area but is not expected to be necessary in other portions of the NEWS project footprint. Irrigation would be water-efficient drip or rotor/rotator overhead spray type. Extension of City water service to support gateway irrigation is discussed further in *Water Service Extension* below.

Table 2-5. NEWS Project Plant Palette

Location	Species
Uplands, including gateway area	**Trees:** western redbud (*Cercis occidentalis*) black walnut (*Juglans hindsii*) California sycamore (*Platanus racemosa*) Valley oak (*Quercus lobata*) blue elderberry (*Sambucus nigra*) **Shrubs:** marsh baccharis (*Baccharis douglasii*) golden bush (*Isocoma menziesii*) California rose (*Rosa californica*) **Non-woody species:** common yarrow (*Achillea millifolium*)

Source: *modified from* RICK Engineering. 2020. Improvements Plans for Newman Environmental Wetland System, Newman, CA, 30% Construction Documents (04/10/2020), Sheet 11: Overall Site Plan, scale: 1:960



Legend

TREES SUCH AS:

SYMBOL	BOTANICAL NAME / COMMON NAME	SIZE
QL	Quercus lobata / Valley Oak	24" Box / 36" Box
JH	Juglans hindsii / Black Walnut	36" Box
PR	Platanus racemosa / California Sycamore	24" Box
CO	Cercis occidentalis / Western Redbud	15 Gal. /
SN	Sambucus nigra / Blue Elderberry	15 Gal. /
·	Riparian tree species (By others)	N/A

SHRUBS
AT SEDIMENT FOREBAY, HIGH/LOW MARSH & MICROPOOL (BASIN SIDE-SLOPES) SUCH AS:

SYMBOL	BOTANICAL NAME / COMMON NAME	SIZE
	Anemopsis californica / Yerba mansa	4" Pot
	Baccharis douglasii / Marsh Baccharis	4" Pot
	Distichlis spicata / Saltgrass	4" Pot
	Leymus triticoides / Beardless Wild Rye	4" Pot

SHRUBS
AT UPLAND AREAS SUCH AS:

SYMBOL	BOTANICAL NAME / COMMON NAME	SIZE
	Rosa californica / California Rose	5 Gal
	Baccharis douglasii / Marsh Baccharis	1 Gal
	Isocoma menziesii / Golden Bush	5 Gal

HYDROSEED MIX
AT UPLAND AREAS SUCH AS:

SYMBOL	BOTANICAL NAME / COMMON NAME
	Achillea millifolium / Common Yarrow
	Festuca californica / California Fescue
	Eschscholzia californica / California Poppy
	Hordeum brachyantherum / California Meadow Barley
	Sysrinchium bellum / Blue-Eyed Grass
	Artemisia doulasiana / Douglas Mugwort

HYDROSEED MIX
AT SEDIMENT FOREBAY & HIGH/LOW MARSH (BASIN BOTTOM) SUCH AS:

SYMBOL	BOTANICAL NAME / COMMON NAME
	Schoenoplectus acutus / Common Tule
	Typha latifolia / Bulrush

0 80 160 240
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Figure 2-5. NEWS Project Overview Planting Plan
Newman Community Conservation Area Master Plan
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Location	Species
	Douglas mugwort (*Artemisia douglasiana*) California fescue (*Festuca californica*) California poppy (*Eschscholzia californica*) California meadow barley (*Hordeum brachyantherum*) blue-eyed grass (*Sisyrhinchium bellum*)
Basin side slopes (forebay, wetland area, micropool)	**Shrubs:** marsh baccharis (*Baccharis douglasii*) **Non-woody species:** yerba mansa (*Anemopsis californica*) saltgrass (*Distichlis spicata*) beardless wild rye (*Leymus triticoides*)
Forebay, high and low marsh basin bottom areas	**Wetland species:** common tule (*Schoenoplectus acutus*) bulrush (*Typha latifolia*)

Wetland Project

The wetland project would occupy the majority of the central swale on the 78-acre parcel and extend to the 24-acre parcel (Figure 1-2), recreating a connected mosaic of wetland and perennial grassland habitat resembling historic conditions on the NCCA site as inferred based on historic aerial photographs, historic topographic maps, and intact natural reference sites in the vicinity. As shown on Figure 2-6, this would include:

- enhancement of 1.4 acres of existing marsh habitat in the central swale (0.78 acre on the 78-acre parcel and 0.626 acre on the 24-acre parcel)
- reestablishment of another 6 acres of marsh within the central swale (4.55 acres on the 78-acre parcel and 1.49 acres on the 24-acre parcel)
- reestablishment of 0.14 acre of seasonal wetlands adjacent to the central swale in the northeast corner of the 78-acre parcel
- planting of at least 50 riparian trees along the south edge of the central swale on the 78-acre parcel
- reestablishment of native perennial grasslands in disturbed upland areas south of the central swale on the 78-acre parcel
- enhancement of existing ephemeral wetlands on the 24-acre parcel
- discontinuation of the current practice of flood irrigation that introduces unseasonable water flows to the NCCA parcels
- modifications to the grazing regime on the 78-acre parcel, under a new Grazing Management Plan tailored to supporting wetland function and value

Table 2-6 shows the anticipated plant palette for the wetland project. Trees planted along the central swale would either be appropriate nursery stock or cut stakes from a donor site that offers appropriate species. Plantings in marsh and seasonal wetland areas would likely rely primarily on division and replanting of common tule and broadleaf cattail already present on the site, although collected donor material and/or nursery stock may also be used, depending on availability and cost. Perennial grassland areas would be planted from commercial seed. Other upland areas disturbed during construction would also be planted with a commercial

seed mix, using species appropriate to the site. Inoculum[2] used to propagate suitable species in ephemeral wetland areas would be collected from suitable donor sites in the project region.

The City team has contacted land managers at Great Valley Grasslands State Park, San Luis National Wildlife Refuge, and a private landowner in the vicinity of the community of Ingomar. At present, the team is in the process of discussing and negotiating possible inoculum collection with all three of these entities. Meetings and site access agreements have been complicated by restrictions placed in response to the COVID-19 pandemic, so formal access authorizations have not been finalized at this time. The final location of inoculum collection is therefore undetermined as of the preparation of this Initial Study, but would be within the western San Joaquin Valley region as close to the NCCA site as possible, and would likely be one of these three potential sources.

Table 2-6. Wetland Project Plant Palette

Location	Species
Marsh and seasonal wetlands in central swale	common tule (*Schoenoplectus acutus*) broadleaf cattail (*Typha latifolia*) Mexican rush (*Juncus mexicanus*)
Central swale riparian areas	valley oak (*Quercus lobata*) black walnut (*Juglans hindsii*) California sycamore (*Platanus racemosa*) western redbud (*Cercis occidentalis*) blue elderberry (*Sambucus nigra*)
Perennial grasslands	beardless wild rye (*Leymus triticoides*) meadow barley (*Hordeum brachyantherum*)
Ephemeral wetlands	suitable inoculum from donor sites in project region
Disturbed upland areas	soft brome (*Bromus hordeaceus*) Mediterranean barley (*Hordeum marinum*)

Source: Vollmar Natural Lands Consulting 2020

Excess materials excavated during habitat enhancement and restoration would be placed within the Newman Nature Park footprint, where they would be contoured to integrate them into the landscape and revegetated with a native seed mix for stabilization and aesthetic appearance. The City intends to continue the collaborative charrette process to ensure that placement of excess materials is supportive of both projects, and that future development of Nature Park trails and other amenities is not impeded.

More detail on key aspects of the wetland project is provided in the paragraphs that follow. The location and extent of habitat features is shown in Figure 2-6, based on the 30% design for the wetland project. The new Grazing Management Plan is discussed further under *Project Operations & Maintenance* below.

Marsh Enhancement

The central swale currently supports approximately 1.76 acres of wetland, about 1.13 acres on the 78-acre parcel and about 0.63 acre on the 24-acre parcel. Except for a small patch of common tule and broad-leaved cattail at the east edge of the 78-acre parcel, these features generally lack marsh vegetation, instead supporting a mixture of seasonal wetland vegetation, including alkali-adapted species on the 24-acre parcel.

[2] *Inoculum* refers to an unsorted mixture of vegetation and soil containing appropriate seed bank that is collected from natural "donor" sites analogous to the habitat being restored. It is spread or placed in the restoration area to enhance colonization by vegetation suitable to the restored habitat. This is a standard practice in vernal pool/ephemeral wetland restoration.

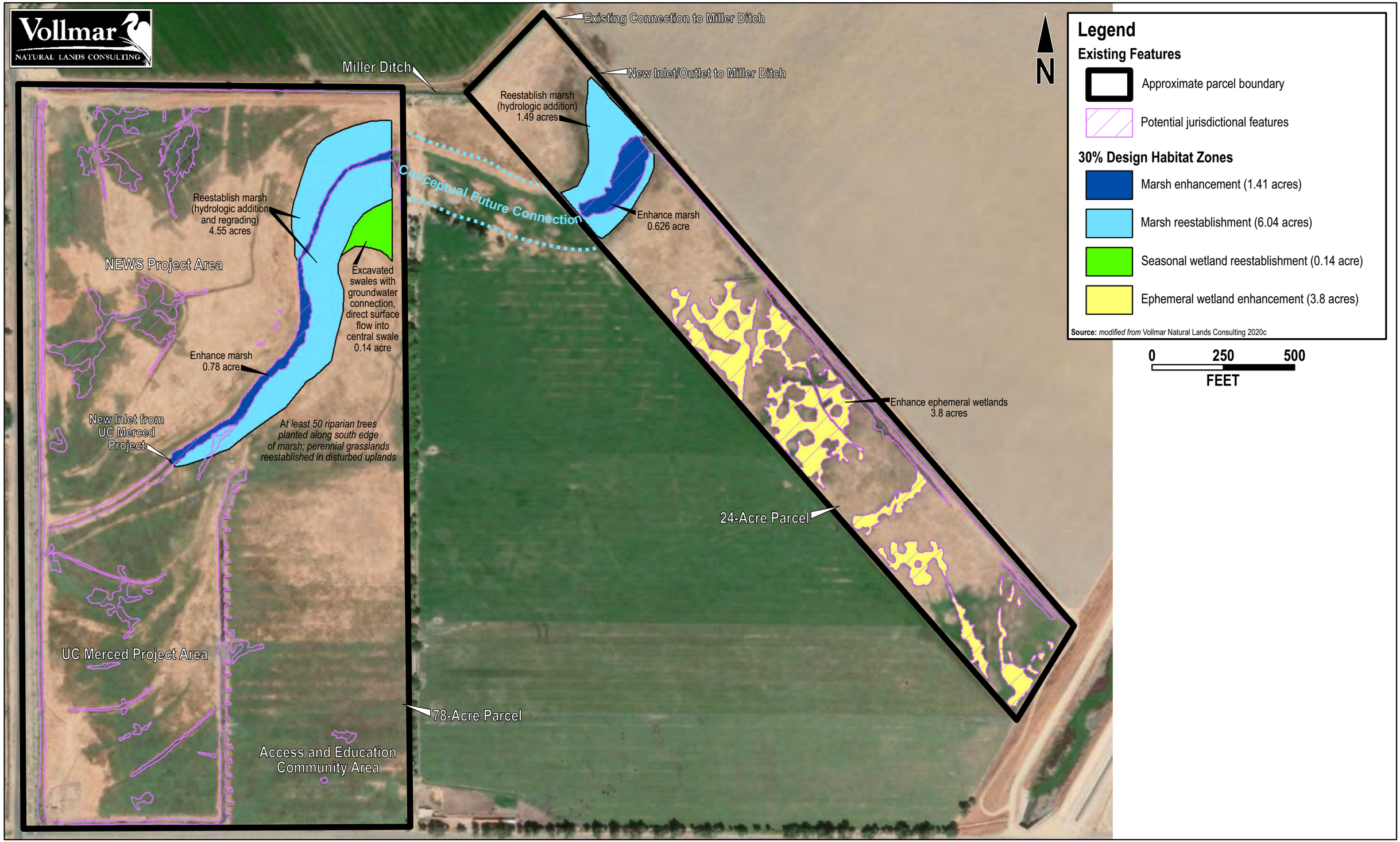

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Figure 2-6. Wetland Project 30% Design
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Little or no topographic modification would be needed for the portions of the swale that are already wetlands. In these areas, enhancement would rely primarily on addition of water from the Miller Ditch. On the 78-acre parcel, water would be added from the west end of the central swale. In the next few years, water would be diverted directly into the central swale from the Miller Ditch, but when the MDTW project is completed, its outflow (treated Miller Ditch water) would be directed into the west end of the central swale as a long-term source to support improved marsh quality. On the 24-acre parcel, Miller Ditch water would be added to the central swale from the east end, out of the Miller Ditch via an existing ditch and weir.

Over the long term, the City hopes to reconnect the central swale between the 78-acre and 24-acre parcels, enabling throughgoing west-to-east flow similar to the historic condition of this disconnected tributary channel. Water would be diverted from the Miller Ditch at the south end of the 78-acre parcel, move through the MDTW treatment wetlands, enter the west end of the central swale, and flow across both parcels, returning to the Miller Ditch at the north end of the 24-acre parcel, via the existing ditch and weir system. This is outside the scope of the projects analyzed in this Initial Study and is not possible at the present time as the intervening parcel is privately owned and is currently under cultivation. However, the City has discussed the potential to purchase all or part of this parcel with the owner at some point in the future and will continue to explore a possible reconnection of the central swale (which would be analyzed in a separate future CEQA document) if a purchase becomes feasible.

Marsh Reestablishment

On both parcels, the central swale includes additional low areas that do not presently support wetlands. On the 78-acre parcel, topographically lower portions of these areas support ruderal grasslands and higher portions support non-native annual grasslands. On the 24-acre parcel, they support ruderal alkali habitat. These areas would be converted to marsh habitat through a combination of the addition of Miller Ditch water and grading to broaden the low areas of the swale. This would result in the reestablishment of up to 6 acres of marsh habitat.

A total of about 550 cubic yards of soil would be removed for marsh reestablishment. The maximum cut depth to would be approximately 2 feet, with an average cut depth across the reestablishment area of < 0.5 foot. Finished side slopes following restoration would be within the existing slope range for the central swale (0% – 6.5%).

Riparian Plantings

At least 50 riparian trees from the project planting list (Table 2-6) would be planted in suitable locations along the south side of the central swale, both inside and outside the wetland area. The intent is to create broad a broad vegetated marsh lined with riparian trees in a quasi-riparian corridor.

Perennial Grassland Reestablishment

Native perennial grasslands would be reestablished in disturbed upland areas surrounding the reestablished wetlands on the 78-acre parcel. Placement of fill soils excavated during wetland establishment would create unvegetated areas. Selected portions of these disturbed areas totaling at least 1 acre would be broadcast-seeded with a native grass seed mix composed primarily of beardless wild rye and meadow barley, as identified in Table 2-6.

Ephemeral Wetland Enhancement

The 24-acre parcel currently supports approximately 3.8 acres of former ephemeral wetland habitat that has been degraded by the addition of unseasonable summer irrigation water to improve grazing. Historically, these areas would have been subject only to winter inundation from direct precipitation, overland runoff, and sub-

surface flow from their immediate surroundings. They would historically have supported a mix of native annual and perennial herbs and cool-season grasses. At present, due to summer irrigation, they are dominated by perennial non-native warm-season grasses such as bermuda grass (*Cynodon dactylon*).

At least 2.5 acres and as much as all 3.8 acres of these degraded areas would be restored to their historical function. Restoration would consist primarily of discontinuing unseasonable irrigation by repairing the berms between this parcel and neighboring irrigated fields. Additional minor earth-moving may be conducted to open breaks in berms that have been constructed across the 24-acre parcel. Additionally, to speed up recolonization by native species, portions of the pools would be scraped to remove competing non-native vegetation, and seeded with inoculum collected from extant ephemeral wetlands in the region. Grading in this area would be limited; no more than about 50 cubic yards of soil would be removed, and side slopes and pool depths would remain at their current elevations. No on- or off-site water flow is expected in this area; all precipitation onto this area should remain in place and infiltrate or evaporate over the course of weeks to months, as in natural ephemeral wetland systems.

Inoculum volumes for vernal pool restoration projects range from about 1 cubic yard per acre up to hundreds of cubic yards per acre. Typically, the high end of this range is used only when the donor pools are being destroyed by a project, and the material is being donated to created mitigation pools. Because of constraints on transportation between donor and project sites, 5 – 10 cubic yards of inoculum are expected to be used for the wetland project. To minimize disturbance to the donor wetlands, inoculum would likely be harvested by mowing and vacuuming of donor wetlands, rather than using a bulldozer or other heavy equipment to scrape the soil surface. Inoculum would be spread in the restored pools at the beginning of the wet season, ideally just before a heavy rain, which would help to prevent inoculum blowing away before germination. As mentioned above, the City's consultant team is in the process of identifying a location or locations where suitable inoculum can be harvested for ephemeral wetland restoration. Possibilities include Great Valley Grasslands State Park, San Luis National Wildlife Refuge, and privately owned lands in the vicinity of Ingomar.

Newman Nature Park

The Newman Nature Park would be located within the 78-acre parcel. As shown on Figure 2-7, the heart of the project would be a new community area located at the southeast corner of the parcel. Various facilities are possible in this area, potentially including a central plaza, an outdoor classroom area, wildlife and native plant demonstration gardens, a rainwater harvesting and reuse demonstration area, composting and greywater demonstration areas, a nature-themed play area, an open-air shade structure, and a picnic area. Larger demonstration gardens are tentatively envisioned as at-grade areas defined by appropriate edging materials, but some of the smaller gardens could be placed in raised beds to increase their visibility and facilitate accessibility to visitors of all ages and abilities.

In addition to the facilities selected with community input, the community area would also offer restrooms, a hydration station, and wildlife-proof trash and recycling receptacles as well as an O&M storage building. The restrooms would be equipped with composting toilets. Handwashing sinks located outside the restrooms are planned to drain to a vegetated planter and French drain system intended to demonstrate infiltration of greywater, following applicable County standards. The outdoor classroom area would also include an outdoor sink draining to the same type of greywater demonstration planter/French drain. All facilities would meet ADA accessibility standards.

A 10-foot-wide "main trail" would extend from the community facilities area. As shown on Figure 2-7, two alignments are under consideration. Ultimately, the City hopes to construct a perimeter trail circling the 78-acre

Aerial Photograph Source: GoogleEarth (imagery date 07/18/2019, downloaded 02/09/2021)

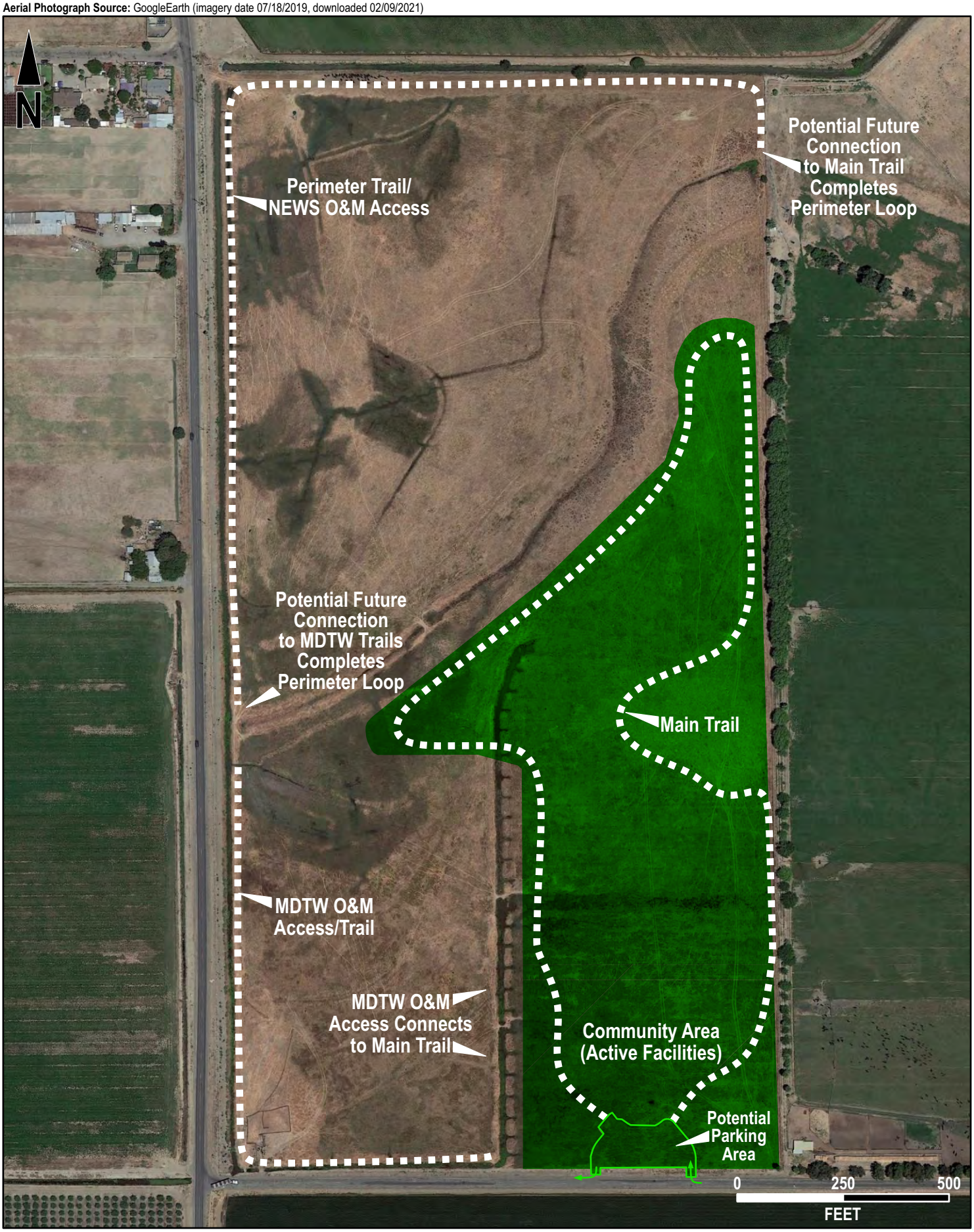

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Figure 2-7. Newman Nature Park Concept
Newman Community Conservation Area Master Plan
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parcel, connecting the community area with the NEWS and MDTW project trails and enabling visitors to view the restored wetlands and the NEWS and MDTW project facilities. In the interim, however, depending on funding availability, the City may construct a shorter trail loop focused in the eastern portion of the 78-acre parcel and offering views of the restored wetlands. The perimeter trail could then be completed over the longer term by connecting the shorter loop with O&M access/trails constructed as part of the NEWS and MDTW projects. This is shown very conceptually on Figure 2-7; internal O&M access/trail configurations within the NEWS and MDTW projects may evolve, and there would be multiple options to connect the perimeter trail with the Nature Park main trail.

The City is also considering creating a network of 6-foot-wide trails that branch from the main Nature Park trail in the east-central portion of the 78-acre parcel (Figure 2-7), but their configuration has not been laid out in detail at this time and may depend on community input.

As Figures 1-2 and 2-7 show, Nature Park trails would be constructed in close proximity to habitat restored—and protected over the long term—under the wetland project. As mentioned in *Wetland Project* above, the City intends to continue the collaborative charrette process to ensure that the Nature Park trails are configured in a way that respects the long-term commitment to preservation of enhanced and restored wetland, riparian, and native grassland habitat while enabling the community to view and enjoy these resources.

All of the Nature Park trail(s) would be suitable for pedestrian, bicycle, and other non-motorized use and would meet ADA accessibility standards. For much of their length, they would be surfaced with decomposed granite (DG) but elevated boardwalks could be used for segments where a trail is adjacent to or crosses through sensitive restored habitat. Rustic split-rail or other suitable fencing would be used along key sections to discourage access into sensitive areas.

At strategic locations along the main trail, "trail nodes" would provide shade, seating, and interpretive signage with information on site habitats and wildlife as well as the Newman area's Native American heritage. Signage would be bilingual in Spanish and English. Signage addressing Native American heritage will be co-developed with local tribal parties to ensure accuracy and sensitivity. Trail nodes would also offer wildlife-proof trash and recycling receptacles to discourage littering. Nature-themed play equipment and additional outdoor learning areas could also be provided at trail nodes, depending on the community's preferences.

Vehicle parking would be located adjacent to Brazo Road, with driveway access from the road clearly marked, potentially by an entry monument sign. For purposes of this analysis, a total of 35 parking stalls, including 5 ADA stalls, is assumed, although this may be adjusted going forward. With the exception of the ADA parking stalls, which would be concrete or asphalt, the parking area would be DG-surfaced for a more natural appearance and improved permeability. A site entry adjacent to the parking area would provide wayfinding signage; depending on the final trail configuration, an additional site entry with similar signage may be included to welcome visitors accessing the community area via trails from the north side of the parcel. Pending further community input, it is also anticipated that bicycle parking would be provided in the community area, with a bus drop-off at the front of the community area complex to convenient access for larger groups, including school groups and seniors. If outdoor classroom areas are provided at trail nodes, they would also provide bicycle parking to accommodate bicycle access to the outlying classroom areas. Solar-powered nighttime security lighting would be provided where appropriate.

Newman Nature Park facilities would be designed in a regional vernacular style, focused on agricultural forms, functionality, longevity, and access to local materials. Landscaping in the parking area—and elsewhere, if provided—would use site-appropriate California native species.

Use of hardscape would be minimized to the extent feasible at the Newman Nature Park. Where hardscape is necessary, it would be graded to drain to adjacent planted areas (gardens or landscaping) to maximize rain capture. Drainage would be via sheet flow, with cobbled inlets where needed.

MDTW Project

The MDTW project is being designed to focus on removal or nitrate and phosphorus, key contaminants in agricultural tailwater. It would occupy about 16 acres in the southwest quadrant of the 78-acre parcel. This project is still in preliminary planning stages, but Figure 2-8 illustrates the conceptual design and general location of project features.

Flow from the Miller Ditch would be routed to the project forebay via the existing un-named ditch that parallels the south boundary of the 78-acre parcel along Brazo Road, entering the project at its southeast corner. As at the NEWS project, the forebay would serve to capture sediment load and prevent siltation of the treatment wetlands, and the proximal portion of the forebay would be hardscaped to facilitate periodic sediment removal. Hardscape is expected to have an extent on the order of 0.5 acre.

From the forebay, water spreaders would distribute flows into a sinous series of vegetated wetland cells for treatment by natural wetland processes of settlement, uptake, adsorption, degradation, oxidation, and reduction. Unlike the NEWS project, wetland cells at the MDTW project are intended to retain some water throughout the year, since flow in the Miller Ditch is year-round. Because recent soil studies suggest that soils are fairly permeable in the project footprint (Vollmar Natural Lands Consulting 2020), the wetland cells are expected to be lined by installing a lift of low-permeability clay or an approved artificial liner in the shallow subsurface.

Table 2-7 summarizes estimated normal-year input, ouflow, and retention times at the MDTW project. Total input to the MDTW would include diversions from the Miller Ditch, plus a minor contribution from direct rainfall received by the wetlands. Flow in the Miller Ditch in turn reflects two sources: diversions from the CCID's main canal to the west, and return flow of agricultural tailwater from surrounding cultivated lands. Figures in Table 2-7 reflect results of preliminary flow monitoring in the Miller Ditch (Rodal Morales et al. 2020) and modeled values for agricultural runoff and wetland evapotranspiration. As shown in the table, Miller Ditch inflow to the MDTW is expected to average about 3,723 cubic meters per day (m^3/day) or 1.52 cfs, total input would average about 3,759 m^3/day (1.54 cfs), and outflow would average about 3,321 m^3/day (1.36 cfs).

Table 2-7. MDTW Project Monthly Inflow, Outflow, and Retention

Month	Miller Ditch Inflow (m^3/day)*	Total Input* (m^3/day)**	Wetland Evapotranspiration (m^3/day)	Outflow (m^3/day)	Retention Time (days)
January	6,808	6,920	83	6837	4
February	5,356	5,444	158	5286	5
March	3,268	3,322	286	3035	9
April	2,900	2,939	507	2432	10
May	644	647	745	0	—
June	500	500	900	0	—
July	2,419	2,419	938	1481	14
August	6,774	6,774	821	5953	4
September	7,000	7,000	645	6355	4

Source: *modified from* Rodal Morales pers. comm. **Aerial Photograph Source:** GoogleEarth (imagery date 07/18/2019, downloaded 03/16/2020)

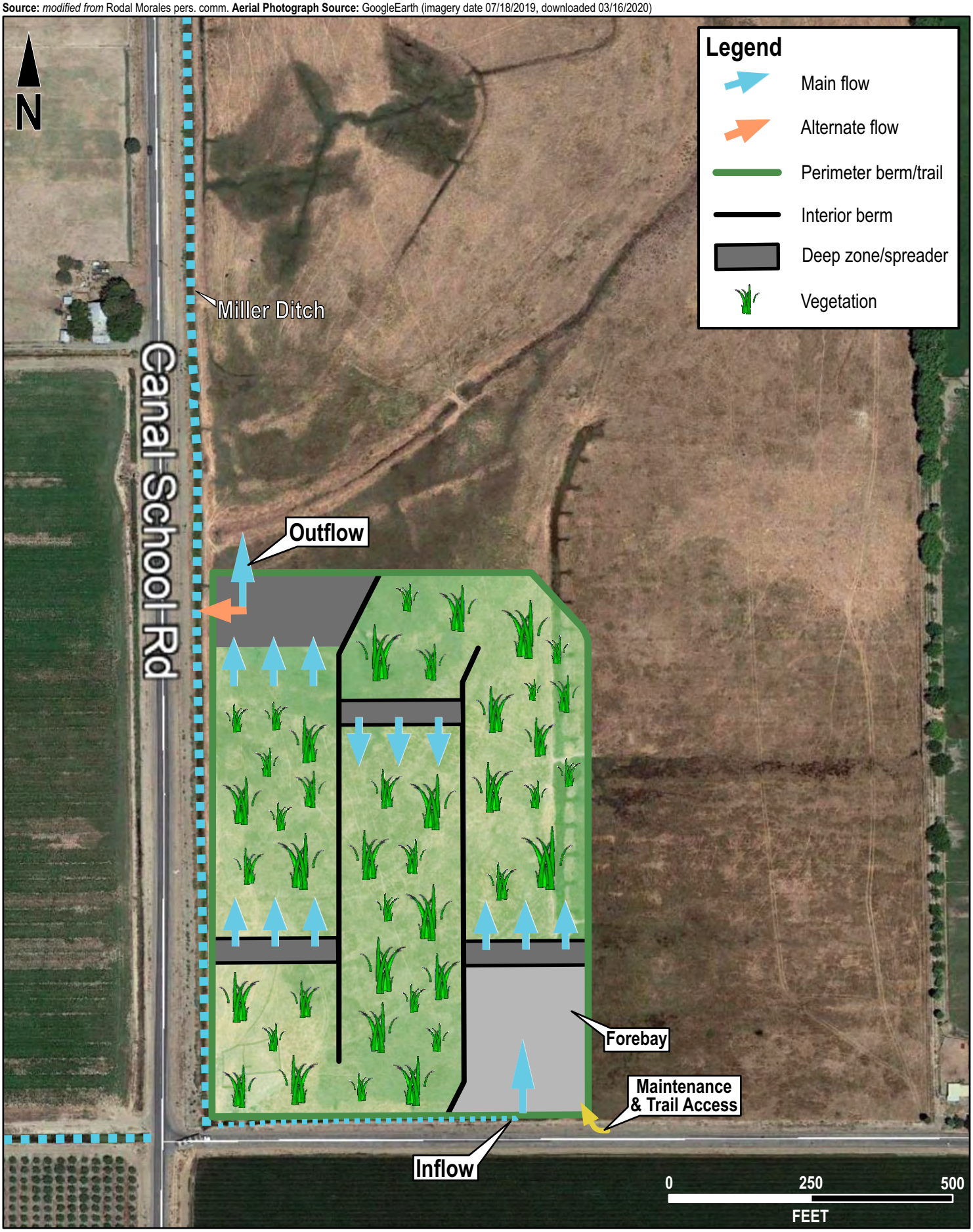

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Figure 2-8. MDTW Project Concept
Newman Community Conservation Area Master Plan
City of Newman

Month	Miller Ditch Inflow (m^3/day)*	Total Input* (m^3/day)**	Wetland Evapotranspiration (m^3/day)	Outflow (m^3/day)	Retention Time (days)
October	1,397	1,412	394	1018	23
November	3,443	3,499	181	3318	8
December	4,165	4,233	96	4137	6
Annual average:	***3,723***	***3,759***	***479***	***3,321***	***9***

*m3/day = cubic meters per day
**total input = Miller Ditch inflow + anticipated precipitation into wetlands

Source: Rodal Morales and Beutel 2021

Treated flow would exit the MDTW at its northwest corner and would primarily be directed into the central swale to replace Miller Ditch diversions in supporting the riparian habitat created by the wetland project. An alternate outflow returning flows to the Miller Ditch would also be provided to enable operational flexibility in wet years and high-flow periods.

O&M and non-motorized recreational access would be provided by unpaved trails on the tops of the berms separating the wetland cells, with driveway ingress from Brazo Road. Split-rail or similar fencing would be installed where needed to provide for public safety and protect the function of the treatment wetland. The MDTW project is also expected to include bilingual (English/Spanish) informational signage, similar to the NEWS project.

Water Service Extension

The NEWS project and Newman Nature Park are expected to be served by City water. At the NEWS project, this would support water-efficient irrigation in the gateway area, and at the Nature Park, it would be used for irrigation in the demonstration gardens and parking area landscaping, and for the hydration station, learning area sink, and handwashing facilities.

Water service would be extended from the City's existing 8-inch-diameter water pipeline at the corner of Canal School Road and Inyo Avenue. The new extension is expected to be 4-inch- or 6-inch-diameter. It would be equipped with a backflow preventer and valves housed in small at- or above-grade valve boxes. Meters would also be provided where service extends to the two projects.

Service could be extended directly from the pipeline to the NEWS project at the northwest corner of the 78-acre parcel (Figure 2-9). There are two possible alignments to serve the Newman Nature Park. Option 1 (Figure 2-9) would involve installing new pipeline south along Canal School Road and then east on Brazo Road, entering the 78-acre parcel via the future location of the Nature Park driveway. Option 2 would extend along the north edge of the 78-acre parcel, paralleling and just south of the Miller Ditch, and then south along the east property boundary to reach the community area. Since both Options for water service extension to the Nature Park remain under evaluation, they are both are considered in this Initial Study.

Project Construction

Based on the current availability of funding, the City anticipates the following overall construction schedule for the NCCA projects.

- Wetland project: 2021 – 2022

- NEWS project: 2021 – 2023
- Newman Nature Park: potentially as early as 2023 – 2024
- MDTW project: beginning in 2024 or later

Like all City Public Works undertakings, construction of the NCCA projects will be required to conform with applicable portions of the City's current *Improvement Standards and Standard Details* and with the City's adopted building code, which is the 2019 version of the California Building Standards Code (California Code of Regulations, Title 24).

Among their provisions, the *Improvement Standards* require traffic control and safety measures during construction, as follows.

- Public rights-of-way must be maintained such that public use is not unreasonably hindered or made inconvenient
- Roadway closures are generally prohibited; whenever possible, at least 1 lane for each travel direction must remain open, unless flaggers are onsite to direct traffic
- Barriers and signage may be required to provide for safe vehicle passage and protect people and animals using public rights-of-way; where these are used, they must meet California Department of Transportation (Caltrans) standards
- Safe access to private property must be maintained

In general, construction in the City is limited by General Plan Policy HS-6.9 to the hours between 7 AM and 7 PM on weekdays and 8 AM to 7 PM on Saturdays (City of Newman 2007). Work is typically confined to the daylight hours. This gives a slightly longer workday during the spring and summer dry season when the majority of construction work for the NCCA projects is expected to occur. Night and weekend work is not anticipated for the NCCA projects, but if it becomes necessary, the City expects to provide advance written notice to neighboring landowners and residents, and additional traffic control provisions from the *Improvement Standards* will be in effect for roadway safety where appropriate.

Contractor activities, including access and staging, will also be required to conform to a number of measures adopted by the City specifically for the NCCA projects, to protect existing environmental values on and around the NCCA parcels. These are laid out in the NCCA Master Plan (Appendix A to this Initial Study) and are also detailed in *Avoidance and Minimization Measures* at the end of this Section.

The following sections provide more detail on construction of each of the NCCA projects.

NEWS Project

Construction Process

Table 2-8 provides an overview of construction process, equipment, and staffing for the NEWS project. In addition to the contractor staff listed in Table 2-8, additional personnel making daily visits to the site would include 1 – 2 biologists inspecting special-status species protection measures, a SWPPP[3] inspector verifying

[3] *SWPPP* stands for Stormwater Pollution Prevention Plan, a requirement of the State Water Resources Control Board to protect nearby water bodies from construction site runoff. This is discussed in more detail in the *Geology & Soils* and *Hydrology & Water Quality* portions of the Section 3 Initial Study checklist.

Aerial Photograph Source: GoogleEarth (imagery date 07/18/2019, downloaded 03/16/2020)
For illustration only; locations not field-verified

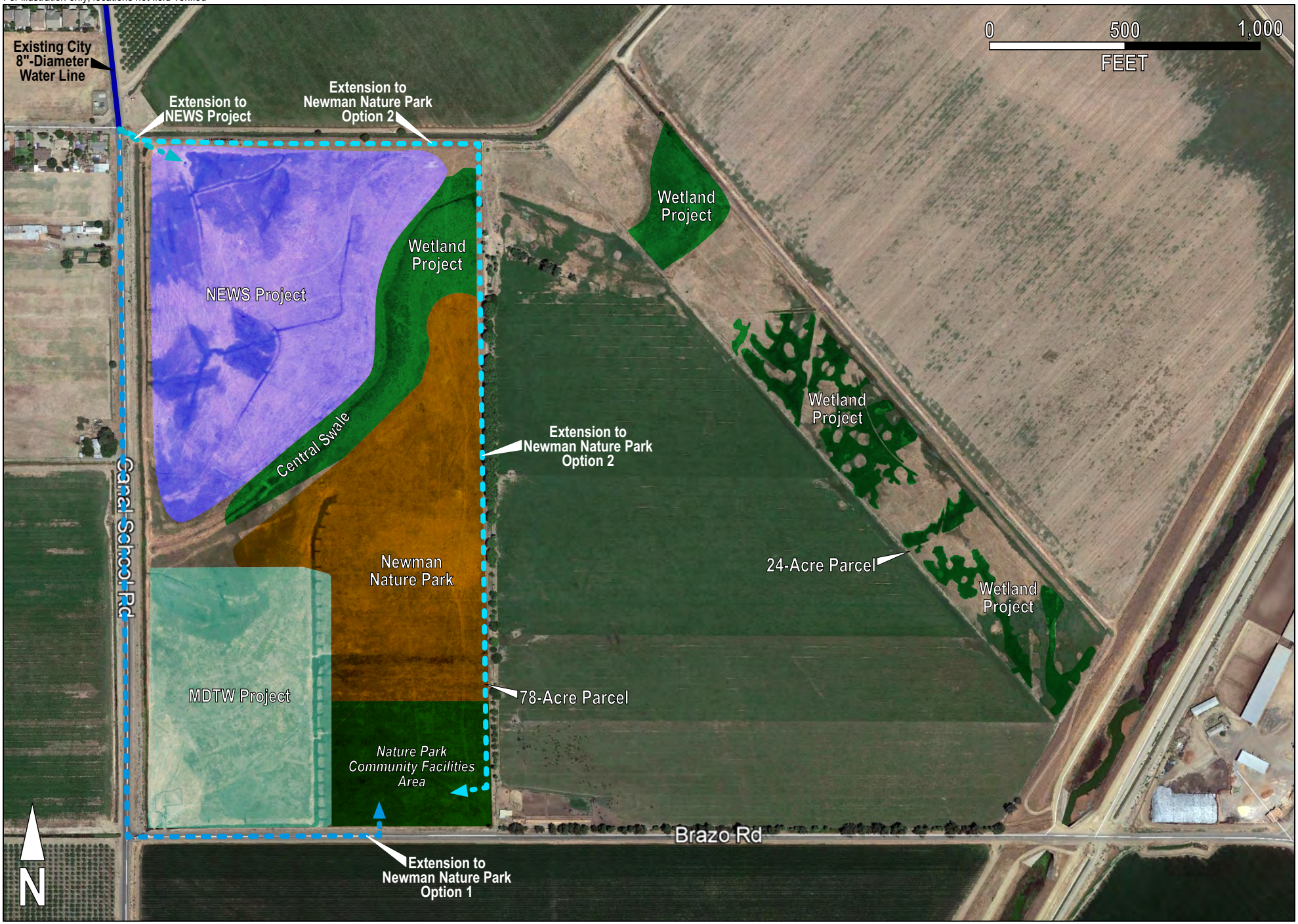

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Figure 2-9. Options for Water Service Extension to NEWS and Newman Nature Park Projects
Newman Community Conservation Area Master Plan
City of Newman

that erosion control and runoff protection measures are in place and functioning properly, and 1 – 2 City construction management and inspection staff.

Table 2-8. NEWS Project Construction

Construction Phase	Equipment	Staffing
Clearing and grubbing	1 – 2 tractors with mower/disk attachment (Tiger TM72) 2 – 4 excavators (Cat 326) 2 – 4 skid steers (Cat 262D3)	Construction staff, including equipment operators: 6 – 12
Grading		
Berm construction	2 – 4 medium dozers (Cat D6) 1 – 2 medium loaders (Cat 966) 1 – 2 compactors (Cat CP563) Water truck(s)	Construction staff, including equipment operators: 6 – 12 SWPPP inspector: 1 City construction manager/inspector: 1
Pond and berm finishing	2 – 4 medium dozers (Cat D6) 1 – 2 medium loaders (Cat 966) 1 – 2 motor graders (Cat 24) Water truck(s)	
Access/trail finishing*	2 – 4 motor graders (Cat 24) 1 – 2 rollers (Cat CS563) Water truck(s)	Construction staff, including equipment operators: 6 – 12
Construction of concrete pad in forebay	Concrete trucks (Kenworth W900)	Construction staff: 8
Culvert installation	1 – 2 small loaders (Cat 930) 1 – 2 medium excavators (Cat 326)	Equipment operators: 2 – 4 Laborers/carpenters: 4 – 6
Finishing/stabilization**	Water truck(s) 1 – 2 hydroseeders (Finn T60) 1 – 2 excavators (Cat 326)	Equipment operators: 2 – 4 Laborers: 4 – 6

* Aggregate base placed on berm tops and compacted for stability
** Planting installation and hydroseeding, fence construction, signage installation

Source: Whitaker Construction 2020, Martin pers. comm.

Haulage requirements for NEWS project construction are estimated as follows (Whitaker Construction Group 2020).

- **Removal of excavated materials from site.** Offhaul is estimated at between 100,693 cubic yards (CY) and 107,789 CY, depending on shrinkage and subsidence factors. Assuming transfer or bottom dump trucks typical for an operation of this size, this translates to about 120 truckloads per day over a period of 53 days
- **Aggregate base delivery.** Approximately 3,800 tons of aggregate would be required to surface the access roads/trails on top of the berms containing the forebay, wetland areas, and micropool. This is expected to represent about 158 truck trips, again assuming typical large transfer or bottom dump trucks
- **Concrete delivery.** About 1,200 CY or 120 truckloads of concrete would be required to construct the pad in the forebay, assuming typical equipment

A small number of additional truck trips would be required to deliver materials to construct inlet, outlet, and connecting culverts, fencing, and signage as well as plant stock, seed mix, and other materials for landscaping and planting

Contractor Staging

The final selection of the staging area would likely depend on input from the contractor selected for construction, but staging is expected to occur within the footprint of the future gateway/O&M parking area at the northwest corner of the 78-acre parcel. This would provide convenient access to the work area and avoid impacts on adjacent areas outside the NEWS project footprint.

Construction Schedule

NEWS project construction is anticipated to take about 12 months in total. Table 2-9 lays out the anticipated durations of each construction phase.

Table 2-9. Anticipated NEWS Project Construction Schedule

Construction Phase	Timing
Clearing and grubbing	5 – 10 days
Grading	20 – 40 days total
Berm construction	*5 – 10 days*
Pond and berm finishing	*15 – 30 days*
Access/trail finishing	5 – 10 days
Construction of concrete pad in forebay	40 – 60 days
Culvert installation	20 – 30 days
Finishing/stabilization	15 – 20 days

Source: Whitaker Construction 2020, Martin pers. comm.

Wetland Project

Construction Process

Table 2-10 provides an overview of construction process, equipment, and staffing for the wetland project.

Table 2-10. Wetland Project Construction

Construction Phase	Equipment	Staffing
1: Grading Recontour central swale to broaden low areas Excavate seasonal wetland area to create wetland swales Scrape ephemeral wetland area to remove invasive nonnative vegetation and seed bank	3 – 5 pieces of heavy equipment anticipated onsite: • Self-loading scraper(s) • Dozer(s) (small, likely Caterpillar D6 – D8 or equivalent) • Small excavator or backhoe Water truck Survey gear (traditional ground-based and drone)	• Contractor staff (equipment operators, laborers): 3 – 8 • Qualified biologists, design staff: 1 – 2 • Construction management staff: 1 – 2, intermittent
2: Civil Construction On 78-acre parcel, construct new weir and diversion from Miller Ditch to west end of central swale	1 – 2 small loaders (Cat 930) 1 – 2 medium excavators (Cat 326)	Equipment operators: 2 – 4 Laborers/carpenters: 4 – 6

Construction Phase	Equipment	Staffing
On 24-acre parcel, construct new inlet/outlet weir connecting east end of central swale to existing Miller Ditch connection		
3: Live Plant Material Collection If possible, collect up to 100 propagules (stakes) from locally native live plant materials at nearby donor site; if donor site is not feasible or cannot supply adequate materials, obtain container-grown nursery stock	Hand tools Pickup truck Trailer	Qualified biologists: 2 – 4
4: Planting Install cuttings and/or container stock onsite per project plans; revegetate upland areas via seeding	Pickup truck Skid-steer Skid-steer mounted trencher ATV-mounted rakes and seeders Hand tools	Contractor staff (laborers): 1 – 3 Qualified biologists: 1 – 4
5: Inoculum Collection Collect vernal pool inoculum (soil containing seed bank and vernal pool branchiopod cysts) from donor site by surface vacuuming	Ride-on vacuum Tractor with mower attachment Pickup truck Trailer	Qualified biologist permitted to handle special-status fairy shrimp: 1 Laborers: 1 – 2
6: Inoculum Spreading Spread inoculum in vernal pool areas	Pickup truck Hand tools	Qualified biologists: 1 – 2 Laborers: 1 – 2

Contractor Staging

Staging for wetland project construction activities on the 78-acre parcel is expected to occur in the southeast corner of the parcel (future footprint of the Newman Nature Park community center and/or parking area), since this would minimize the potential for impacts on existing wetland habitat. Access would be from Brazo Road. Limited staging for work on the 24-acre parcel could also occur on the north portion of the parcel (north of the central swale), or in the south portion of the parcel, although in both of these locations, it would be important to avoid existing wetlands and distributions of Parry's rough tarplant, discussed in *Project Setting* above. Depending on the location(s) selected for staging, access would be from the north along the Miller Ditch levee and/or from the south along the Newman Wasteway service road.

Construction Schedule

Table 2-11 lays out the anticipated schedule for wetland project construction by phase.

Table 2-11. Anticipated Wetland Project Construction Schedule

Construction Phase	Timing
1: Grading	September 1 – 30, 2021
2: Civil Construction	October 1 – October 31, 2021
3: Live Plant Material Collection	October 1 – December 31, 2021
4: Planting	Planting will be timed to coincide with forecast of upcoming rainy weather, and will take place following plant material collection, between October 15 and December 31, 2021. Duration of planting activities is expected to be 3 – 10 days
5: Inoculum Collection	During dry season following planting (March 15 – October 15, 2022). Duration of collection activities is expected to be 1 – 3 days

Construction Phase	Timing
6: Inoculum Spreading	Following inoculum collection, during dry season 2022; duration of inoculum spreading activities is expected to be 1 – 2 days

Newman Nature Park

Construction Process

Table 2-12 provides an overview of construction process, equipment, and staffing for the Newman Nature Park.

Table 2-12. Newman Nature Park Construction

Construction Phase	Equipment	Staffing
Clearing and grubbing	1 tractor with mower/disk attachment 1 excavator 1 – 2 dump trucks 1 – 2 skid-steers	Construction staff, including equipment operators: 8 – 10 SWPPP inspector: 1 City construction manager/inspector: 1
Grading	1 excavator 1 – 2 scrapers 1 – 2 grading blades 1 – 2 sheepsfoot rollers 1 – 2 smooth drum rollers 1 – 2 dump trucks 1 water truck	Construction staff, including equipment operators: 12 – 16 SWPPP inspector: 1 City construction manager/inspector: 1
Access/circulation and utilities	1 excavator 1 – 2 skid-steers 1 – 2 grading blades 1 sheepsfoot roller 1 smooth drum roller 1 backhoe 1 trencher 1 concrete truck (1 dump truck 1 water truck	Construction staff, including equipment operators: 14 – 16 SWPPP inspector: 1 City construction manager/inspector: 1
Site improvements and furnishings*	2 – 4 flatbed trucks 1 crane 1 – 2 forklifts 1 backhoe 1 trencher 1 front-end loader 1 – 2 skid-steers	Construction staff, including equipment operators: 12 – 16 SWPPP inspector: 1
Planting	2 – 4 pickup trucks 1 – 2 skid-steers 1 – 2 seeders Hand tools	Construction staff, including equipment operators: 8 – 10 SWPPP inspector: 1 City construction manager/inspector: 1

* *Site furnishings* refers to benches, trash receptacles, and other prefabricated items that are delivered "ready to go" and installed at the site.

Contractor Staging

Staging for construction of the Newman Nature Park is expected to occur at the southeast corner of the 78-acre parcel, in the approximately 0.5-acre area designated for the future parking area (see Figures 1-2 and 2-7). This would reduce the potential for compaction of the site by heavy equipment. Construction access would be from Brazo Road. Additional staging for construction related to the trail network could occur at the northwest corner of the 78-acre parcel with access from Canal School Road. Depending on whether the NEWS or Newman Nature Park is constructed first, this would either be within the NEWS project gateway area, or within the larger NEWS footprint outside of, and buffered from, existing wetland areas.

Construction Schedule

Table 2-13 lays out the anticipated schedule for Newman Nature Park construction by phase.

Table 2-13. Anticipated Newman Nature Park Construction Schedule

Construction Phase	Timing
Clearing and grubbing	45 days
Grading	90 days
Access/circulation and utilities	60 days
Site improvements and furnishings	120 days
Planting	60 days *Planting of irrigated areas or areas where temporary establishment irrigation is provided would occur following completion of site improvements and installation of furnishings. Planting of areas without irrigation may be timed to coincide with the rainy season*

MDTW Project

Construction Process

Detailed construction information for the MDTW project is not available at this time, since the project is still in the preliminary stages of planning. However, because of the project's general similarity to the NEWS project—both are constructed water treatment wetlands that will require grading to create wetland cells, embankments or berms that contain the cells, unpaved maintenance access/trails, informational signage, and safety fencing—the overall construction process, construction phasing, equipment use, and contractor staffing are expected to be similar to what is described for the NEWS project above. Construction duration would likely be similar to or slightly shorter than that for the NEWS project, since the MDTW project is about the same size (about 16 acres in extent vs. 21 acres for the NEWS project) and would involve similar recountouring to create wetland cells and intervening berms with top-of-bank O&M access roads/trails.

Contractor Staging

The MDTW project is the farthest out on the implementation horizon, and likely would not be constructed until the NEWS project, wetland project, and Newman Nature Park are already complete. As a result, staging within the boundaries of the 78-acre parcel is not expected to be available for the MDTW project. Staging on the 24-acre parcel is also considered unlikely since habitat on the parcel would be enhanced under the wetland project and it will be important to avoid unnecessary disturbance in the vicinity of this sensitive habitat. As a result, the City anticipates approaching neighboring agricultural landowners to negotiate an agreement for temporary use of private property for MDTW project construction staging. The City would work only with willing landowner(s), and would negotiate a staging agreement well in advance of beginning construction.

Construction Schedule

The MDTW project would not be constructed until funding becomes available. The City is currently exploring possibilities for grant funding to implement the project, but the construction schedule is not reasonably foreseeable at this time. However, it would likely be similar to that laid out for the NEWS project (see Table 2-9), based on the similar size and nature of the two projects.

Water Service Extension

Construction Process

Water service extension is expected to rely on conventional "open cut" or "cut and cover" installation. In this method, a trench is first opened, a layer of appropriate bedding material is laid, the new pipe is placed on the bedding material, and the trench is backfilled. Within roadways, roadway paving and striping are then restored. For safety, and to reduce traffic disruption and other disturbance, trenching and pipeline installation—especially within active roadways—typically proceed in sections about 100 feet long, with each section backfilled or covered with driveable trench plates by the end of the work day. With a 4-inch-diameter to 6-inch-diameter extension planned, the trench would be about 2 feet wide and 30 inches deep.

Table 2-14 provides an overview of construction process, equipment, and staffing for extension of water service to the NEWS project and Newman Nature Park.

Table 2-14. Water Service Extension Construction

Construction Phase	Equipment	Staffing
Excavation, pipe laying, trench backfill	1 – 2 excavators 2 – 4 "10-wheelers" (10–cubic yard dump trucks) 2 walk-behind compactors 1 generator 1 air compressor 1 loader and/or 1 skid steer 1 water truck 1 street sweeper 1 – 2 crew trucks (F-150, F-450 or similar)	1 foreman 1 equipment operator 3 – 7 laborers
Paving	1 concrete truck 1 "10-wheeler" 1 rolling compactor 1 sawcutter 1 oil barrel 1 water truck	1 foreman 1 – 2 equipment operators 4 – 6 laborers

Water service extension would be timed for greatest efficiency and minimum disturbance and would be coordinated with NEWS project and/or Newman Nature Park construction. Service could be extended to each project at the time it is constructed, although if the City elects to use Option 2 (see Figure 2-9), and the NEWs project is funded before the Nature Park, it would make sense to install the extension along the north property boundary at the time the NEWS project is constructed, completing the southward extension along the east property boundary when funding becomes available for the Newman Nature Park. Alternately, depending on the exact alignment, it may also be preferable to construct the extension as soon as possible, potentially in conjunction with the NEWS project. This is because the Option 2 alignment would parallel the east boundary of

the 78-acre parcel in close proximity to the wetland project footprint, and one of the City's commitments under the DFW grant funding the wetland project is that all habitat restored and created by the project will be protected in perpetuity.

Contractor Staging

Staging for water service extension would depend in part on the relative timing for the NEWS project and Newman Nature Park—on what portions of the NCCA site have been developed by the time each extension occurs. Staging for the extension to the NEWS project, and possibly also the extension along the northern boundary of the 78-acre parcel (Option 2 on Figure 2-9), if this is constructed in conjunction with the NEWS project, would likely occur along with NEWS project staging in the NEWS project gateway area. Staging for the extension to the Nature Park could occur in the future parking area. As an alternative, if additional space for laydown is needed, the City may negotiate an agreement with a neighboring agricultural landowner for temporary use of private property. As discussed above for the MDTW project, it is the City's policy to work only with willing landowner(s), and to negotiate offsite staging agreements well in advance of the anticipated construction start date.

Construction Schedule

The timing of water service extension would depend on the timing of NEWS project and Newman Nature Park construction. Assuming the NEWS project is constructed before the Newman Nature Park—which seems likely, as the NEWS project has been funded and the Nature Park is still seeking funding—the short extension serving the NEWS project is expected to be constructed along with the NEWS project. If Option 2 (see Figure 9) is selected for extension of service to the Nature Park, it could also be constructed in conjunction with the NEWS project to reduce the potential for disturbance to the wetland project. If the in-roadway alignment (Option 1 on Figure 2-9) is selected, it would presumably be added when the Nature Park is constructed.

The specific schedule for water service extension would depend on the alignment selected, on the timing of installation and on coordination with the NEWS and/or access education project(s). If Option 2 is selected, and is installed in phases, this would also affect schedule details. Overall, however, Option 1 is about 3,515 feet long, and Option 2 is about 3,856 feet long. Assuming a typical installation rate of about 100 linear feet per day, the total duration of installation would be on the order of 35 days for Option 1 and 39 days for Option 2.

Project Operations & Maintenance

The following paragraphs describe the O&M activities anticipated for each of the NCCA projects. To protect the sensitive habitat that would be restored and created at the NCCA, all O&M would be subject to the same AMMs required for construction, described in *Avoidance and Minimization Measures* at the end of this Section.

NEWS Project

Because the NEWS project would rely on natural wetland processes for water treatment, O&M would focus not only on the physical integrity of the facility but also on maintaining habitat function and value in the created wetlands.

The following activities are anticipated. O&M visits would typically involve no more than 1 – 2 vehicles and 1 – 4 staff, and would be combined for efficiency where possible.

- **Weekly,** conduct visual inspections and remove windblown and roadside trash and debris

- **Monthly** in dry season, inspect gateway area landscape irrigation for integrity and function[4]
- **As needed,** conduct minor vegetation maintenance such as pruning or localized clearing to prevent clogging of inlet/outlet culverts, and replanting or reseeding with appropriate stock if plantings are not thriving. This work is expected to use hand tools for the most part but could occasionally require small equipment such as a skid-steer or tractor
- **Before the start of each year's rainy season** (around October 15), **following storm events,** and **following the end of the rainy season** (around April 15), check diversion structure and trash capture device. Remove trash/debris and perform any routine maintenance required by manufacturer O&M indicators. Removal of trash from the trash capture device would require a vacuum truck with a pressure washer attachment
- **Annually and following each major storm event,** conduct visual inspections to verify site condition and proper function of diversion structure, trash capture device, and culverts
- **Every 2 – 4 years,** conduct operational evaluation to assess the time required to drain the maximum design storm (85th percentile, 24-hour event) runoff and return the various wetland pools to their design water levels. If drain time has changed, evaluate inlet and outlet structures and take appropriate measures to reestablish proper function, such as localized vegetation trimming/removal, sediment removal, or removal and replacement of culvert to adjust invert elevation. A variety of types of equipment could be required for corrective measures, ranging from hand tools for vegetation trimming and removal to heavy equipment if culverts must be replaced or reset
- **When sediment in forebay reaches 50% of forebay capacity** as indicated by the permanent sediment accumulation markers, conduct sediment removal to restore capacity. This is expected to occur every 5 – 10 years on average, and would require heavy equipment entry into the forebay area

Wetland Project

Over the long term, grazing or other vegetation management is expected to be important for the health of the restored vernal pools and ephemeral wetlands, as discussed in more detail below. In the short and mid-term immediately following restoration, grazing animals would need to be excluded from portions of the restoration area to protect the perennial grasslands and tree plantings as they become established. Depending on the final project design, either barbed-wire fencing or movable electric fencing may be installed to protect these habitats during establishment.

Once the wetland project has become fully established, it is expected to require very little O&M activity since it is being designed to restore functional habitat appropriate to the site's regional and local watershed context as well as soil and hydrologic conditions onsite. However, because of the project's proximity to roadways, and (over the longer term) recreational uses, routine trash removal would probably be required. This is expected to be carried out by City staff in conjunction with NEWS project and/or Newman Nature Park inspections and trash removal, and could occur as often as daily, depending on need. Each visit would involve a maximum of 2 – 3 staff and 1 – 2 vehicles.

Additionally, at least until the MDTW becomes operational, the ditches and weirs enabling diversion of Miller Ditch flows into the central swale would need to be inspected, operated, and maintained. Inspections and

[4] During the vegetation establishment period, inspections of temporary irrigation on the basin side slopes would also be required, but these would no longer be necessary when irrigation is discontinued in these areas.

operational visits would occur seasonally, and would typically involve 1 – 2 City vehicles and a maximum of 2 – 3 staff. Maintenance would be more infrequent. All visits could be combined with other O&M activity at the site for greater efficiency. Once the MDTW project comes online, the diversion from the MDTW to the central swale would require similar O&M. The Miller Ditch diversion may be removed at this time, but would likely remain in service to provide operational flexibility.

Over the long term, grazing is expected to continue within at least parts of the wetland project footprint, although it would likely be discontinued on the remainder of the NCCA site. As mentioned above, the City is in the process of developing a Grazing Management Plan in collaboration with DFW, as part of its responsibilities under the grant that will fund the wetland project. A key goal of the Grazing Management Plan is to limit grazing use to a level that can be sustained without irrigation and to avoid overgrazing while still providing for invasive species control and fuel load reduction to reduce fire risk.

At present, as discussed above, the 78-acre parcel is grazed year-round, which is possible in part due to summer flood irrigation of the site. The overall duration and extent of grazing would both be reduced following restoration (and the discontinuation of summer irrigation), although the number of animals per unit area may be increased at times. Grazing would be excluded from the tree planting areas until the newly planted trees are sufficiently established to withstand grazing, with most foliage above browse height and trunks strong enough to withstand animal rubbing. Grazing may be completely excluded from the perennial grassland area, or may be allowed under a schedule that maximizes the competitiveness of the native perennial grasses. Grazing of the restored vernal pools, epehemeral wetlands, and surrounding uplands would likely be limited to winter months when cool-season grasses are actively growing under the site's natural rainfall regime. Summer grazing would likely be discontinued as the lack of forage on unirrigated grassland could drive animals to damage restoration plantings and infrastructure. The Grazing Management Plan will provide for ongoing monitoring and adaptive management to maximize the efficacy of the new regime.

Corrals for grazing animals may be provided in the vicinity of the Newman Nature Park parking area, with an access route into the wetland project defined by fencing or another appropriate medium. This and other details to facilitate appropriate grazing at the wetland project without impeding the achievement of the other projects' goals are being finalized as part of the charrette process for the four NCCA projects.

Additionally, as discussed above, irrigation would largely be discontinued on the NCCA parcels, with the exception of landscape irrigation in the NEWS project gateway area and in the Newman Nature Park community area, and temporary irrigation of restoration plantings to ensure establishment. With wetland hydrology restored to a more natural condition and the marsh area fed by Miller Ditch/MDTW project flows as well as rainfall and direct inflow, irrigation should not be necessary in the restored wetlands over the long term.

Newman Nature Park

O&M at the Newman Nature Park facilities is expected to include the following activities.

- **Regular inspections.** City staff are expected to visit the Newman Nature Park facilities daily for a quick visual check of their condition. This would likely involve no more than 1 – 2 staff and 1 vehicle and would include restocking restroom supplies and restroom cleaning as needed
- **Routine removal of trash and recycling.** Trash and recycling removal is expected to occur 1 – 3 times per week based on experience with other City facilities. Trash and recycling removal visits would be combined with trash removal at the other NCCA projects for efficiency, and would likely involve 2 – 3

City staff and 1 – 2 vehicles. Additional visits for trash/recycling removal could be required following educational events and gatherings at the community plaza

- **Periodic upkeep** of the composting toilets in the restrooms, including removal of composted waste for offsite disposal or reuse
- **Maintenance of the demonstration gardens,** such as weeding, harvesting, and replanting. This would occur weekly or monthly and would also probably involve no more than 2 – 3 staff and 1- 2 vehicles
- **Routine inspections** of fencing and boardwalks to ensure integrity; minor repairs and replacements when needed. Inspections would likely be combined with other O&M visits for efficiency, and staffing would be similar to routine trash removal and demonstration garden maintenance. Repairs or replacements would use hand tools and small equipment to reduce impacts; heavy equipment is unlikely to be needed. Staffing would be similar to demonstration garden maintenance
- **Upkeep** of facilities, including sweeping or blowing to maintain a neat and welcoming appearance, trimming and other maintenance of landscaping in the parking area, and painting and minor repairs to structures, signage, and lighting. Staffing would be similar to demonstration garden maintenance

MDTW Project

As discussed above for construction, the MDTW project is in the preliminary planning stages at this time, and detailed information on O&M needs is not available. However, the general nature and frequency of O&M activities at the MDTW is expected to be similar to O&M for the NEWS project because of the general similarities between the two projects.

Water Service Extension

Once installed, the new water service to the NCCA site would be operated and maintained as part of the larger City water distribution system. Operations would be controlled through the City's centralized SCADA (supervisory control and data acquisition) system, which is used to operate all City water infrastructure. Meters would be read monthly, the backflow preventer would be tested annually, and the line would be periodically inspected for leaks. Future repairs or maintenance to the extended water service, if needed, would occur as part of the City Public Works Department's routine O&M program for City water infrastructure.

Preservation of Restored & Created Habitat at the NCCA

The City is committed to long-term preservation of the habitat restored and created at the NCCA, although the terms of such preservation are still being defined, and will almost certainly differ from project to project.

The conditions of the DFW grant that is funding the wetland project require that enhanced and created habitat be protected for a minimum of 50 years. Similar multi-decade terms are envisioned as a minimum for the other projects, and if self-mitigating status[5] is sought for the NEWS and/or MDTW projects, in-perpetuity preservation of at least some of the created and restored habitat will be required. For the NEWS and MDTW projects, habitat

[5] Projects that impact state- or federally jurisdictional wetlands and other waters are typically required to provide or preserve other similar habitat to compensate for habitat loss or disturbance within the project footprint. The resource agencies may agree to consider a project "self-mitigating" if it would create or restore sufficient habitat to adequately compensate for the loss or disturbance it results in. The City is exploring this possibility for the NEWS project, and may also explore it for the MDTW project as planning moves ahead.

preservation will also need to be balanced against the demand for routine O&M to ensure that the treatment wetlands continue to function as designed, providing the target level of water quality benefit.

Avoidance & Minimization Measures

Table 2-15 presents a suite of AMMs—originally laid out in the NCCA Master Plan (City of Newman 2021, Appendix A to this Initial Study)—that will be implemented to reduce the potential for adverse effects on sensitive habitats, water bodies, and the special-status plants and wildlife that may be present on the NCCA parcels. The AMMs will apply to initial construction of the NCCA projects and will be incorporated into the construction documents for each of the NCCA projects to ensure that requirements and limitations are clear and binding for contractor staff. The AMMs will also apply to installation of the water service extension to serve the NEWS project and Newman Nature Park. All AMMs will also apply to implementation of mitigation measures identified in this Initial Study and if mitigation requires the preparation of construction documents will be incorporated into those documents.

Additionally, the AMMs will continue to be in effect for future maintenance or repair activities that have the potential to disturb habitat or otherwise affect special-status species, and as individual O&M plans are developed for the each of the NCCA projects, they will incorporate the AMMs, with additional detail as appropriate to facilitate straightforward and effective implementation on a project-specific basis. New AMMs may also need to be developed as the details of project O&M are further developed.

The AMMs presented below are based on current (2020) habitat conditions on the NCCA parcels. The NEWS, wetland, and MDTW projects would modify habitat on the parcels substantially, and conditions may continue to evolve as the projects become increasingly established over time. In addition, O&M activities and the introduction of recreational and educational access would increase human presence and activity at the NCCA site over the long term. As a result, there may be changes in the types of AMMs that are needed—some AMMs may become less relevant, some may need to be amplified, and new measures may become appropriate. With this in mind, AMM-1 provides for routine re-evaluation to verify site conditions and support review and—if needed—updates to the AMMs to enable adaptive management throughout the lifespan of the NCCA projects.

Additionally, it should be noted that the AMMs are intended to dovetail with the requirements of resource agency permits authorizing the NCCA projects. In particular, in the years immediately following completion of each project, permit terms and conditions may require more frequent and intensive monitoring of restored and created habitat. In that case, the permit terms and conditions for each project will temporarily supersede the NCCA-wide AMMs within that project's footprint; elsewhere at the NCCA, the AMMs will continue to apply in their most current form.

Table 2-15. AMMs for NCCA Project Construction, Operations, and Maintenance

Measure	Requirements
AMM-1. Routine Reassessment & AMM Updates	At the completion of each NCCA project, GIS-based habitat mapping for the Plan Area parcels[6] will be updated to document changes in habitat distribution as a result of the project. Over the long term, the Plan Area parcels will be reevaluated for habitat conditions and potential special-status species use every other year. Reevaluation will also include updating maps delineating populations of rare plant species (i.e., plants assigned a California Rare Plant Rank by the California Native Plant Society and plants state- or federally listed as Threatened or Endangered). The evaluation will be conducted by a qualified biologist/ecologist who has experience with wetland and upland habitats

[6] Throughout Table 2-15, *Plan Area parcels* refers to the 78-acre and 24-acre parcels that together make up the NCCA site

Measure	Requirements
	in the west-central San Joaquin Valley, will cover both Plan Area parcels in their entirety, and will include, at a minimum, the following activities. • Assessment of habitat distribution to determine whether the most recent habitat and rare plant mapping is still accurately representative of conditions on the Plan Area parcels • California Rapid Assessment Method (CRAM) assessment of wetland health and performance Results will be documented in an NCCA Habitat Assessment Report for City records. The Habitat Assessment Report will also identify the date of the next routine re-survey, enabling survey frequency to be adjusted (increased or decreased) if appropriate based on the rate and nature of change in conditions on the Plan Area parcels. In addition, depending on the extent and nature of changes in Plan Area conditions and the City's planned activities during the next few years, the Survey Report may recommend more detailed reassessment, potentially including re-mapping of habitat, updated delineation of state and federally jurisdictional habitat (wetlands and waters of the United States and State of California), and/or focused surveys for special-status plant and/or wildlife species. In addition to documenting current Plan Area Conditions, the Habitat Assessment Report will include an evaluation of the AMMs in place at the time of the reassessment, and will identify any needed changes to the AMMs, potentially including modification or discontinuation of existing AMMs and/or establishment of new AMMs. Changes to AMMs will only be instituted in the interests of better preserving and protecting habitat values on the Plan Area parcels, in balance with appropriate O&M and recreational/educational access. If adverse changes in habitat conditions or the status of rare plant populations are identified, the Habitat Assessment Report will also include recommendations for corrective action(s). The City will maintain Habitat Assessment Reports and other relevant documentation such as habitat and jurisdictional delineation mapping and special-status species sighting reports (see AMM-6) on file for ongoing reference in managing the NCCA. If corrective actions are identified as necessary, the City will be responsible for ensuring that they are promptly implemented by qualified personnel.
AMM-2. Appropriate Long-Term Public Access	All public access, including access roadways opened for public trail use, will incorporate appropriate measures to prevent accidental incursions—and discourage intentional access—into sensitive habitat. Measures will be designed for aesthetic consistency with their natural surroundings, such that they foster a positive and welcoming user experience while protecting sensitive resources to the extent possible. Measures may include carefully selected trail routing as well as split-rail or other suitable fencing, strategically located plantings, and the use of elevated boardwalks. Signage will also be used to inform the public of sensitive resources and foster appreciation for the need to protect them. All signage will be bilingual in English and Spanish to reflect the City's diverse population. Wildlife-proof trash and recycling receptacles will be provided at regular intervals along all trails to discourage littering.
AMM-3. Worker Awareness Training	All construction personnel will be required to attend environmental awareness training before beginning work. All O&M staff and any future interns, student employees, and volunteers will also receive environmental awareness training as part of their routine City training. Training will be provided bilingually in English and Spanish if appropriate. Training will be delivered by a qualified biologist/ecologist and will provide information on the sensitive habitats within the Plan Area (based on the most recent surveys of the Plan Area per AMM-1), the special-status species that are known or potentially present, and measures required to protect water quality and sensitive habitats under AMM-4. For each special-status species, training will include information on listing status, habitat preferences, distinguishing physical characteristics, causes of decline, and measures required to protect the species within the Plan Area. Training will include a hard copy handout that summarizes information presented in the training and includes photographs of habitat resources and species to facilitate identification in the field by construction and O&M personnel.
AMM-4. Wetland & Water Quality Protection	Best management practices will be implemented for all ground-disturbing activities to prevent siltation and contaminated runoff to wetlands and water bodies within and adjacent to the Plan Area. During construction, this may take the form of a SWPPP prepared and implemented by appropriately qualified/certified personnel. For O&M activities that involve ground disturbance, similar measures will be implemented by City staff. BMPs will also be implemented for all O&M activities that require handling of

Measure	Requirements
	fuels, lubricants, paints, solvents, and other substances with the potential to degrade water quality. BMPs will include, but will not necessarily be limited to, the following. • Before work begins, a qualified biologist/ecologist will delineate sensitive areas to be avoided, using pin flags, temporary construction fencing, or another appropriate low-impact medium. No entry (personnel, equipment, or materials) will be permitted into delineated avoidance areas • If excavation or ground disturbance is necessary, runoff control measures such as straw wattles, filter rolls, filter fences, or silt fences will be installed to contain disturbed soil materials. Runoff control will be in place prior to groundbreaking. If straw wattles are used, they will consist of certified sterile, weed-free rice straw or similar, suitable for use in sensitive habitat. If filter fences or mesh are used, they will consist of materials, and employ a design, approved by DFW and USFWS as safe for amphibians and reptiles • If ground disturbance occurs in a vegetated area, the disturbed area will be reseeded immediately following the completion of repairs, using a certified weed-free native species seed mix appropriate to the location and approved by a qualified biologist/ecologist • Excavated materials will be stockpiled away from sensitive habitat, in areas that are relatively level, and relatively free of vegetation. Stockpiles will be located as far as reasonably feasible from the limits of sensitive habitat, and runoff control measures as described above will be used to prevent delivery of sediment to wetlands and ditches. If wattles are used, they will consist of certified sterile, weed-free materials, as identified above. Any excavated materials not reused on site will be promptly removed to appropriate permanent disposal locations following the completion of work • All diesel- and gasoline-powered construction equipment and tools, including generator units, will be inspected for leaks and damage prior to mobilization • Fueling, lubrication, and maintenance of vehicles and equipment will be conducted as far as reasonably feasible from wetlands and waterbodies, and will take place offsite if possible. Equipment staging will also be located as far as reasonably feasible from wetlands and water bodies. If onsite fueling, maintenance, or repairs are required, containment measures such as drip pans will be required • To the maximum extent possible, materials staging will also be restricted to paved, surfaced, or upland areas away from wetlands and watercourses • During all work, appropriate types and quantities of materials will be maintained onsite to contain any spills or releases of materials and prevent them from entering sensitive habitat and jurisdictional waters • In the event of a spill, appropriate spill response procedures will be initiated as soon as the incident is discovered. If contractor staff are involved, the contractor will be required to notify City staff as soon as feasible, and in no case more than 24 hours after the occurrence; a designated City contact will be specified in the project construction documents for this purpose. If there is any potential for the spill to enter jurisdictional waters, the City will notify the RWQCB • Food waste will be appropriately contained and disposed, and trash generated during construction and O&M activities will be promptly and properly removed from the site
AMM-5. Special-Status Plant Protection	Before any work begins at the NCCA site, existing occurrences of rare plant taxa (as defined in AMM-1) will be delineated on GIS-based maps for future reference, based on the results of protocol-level peak blooming period surveys.[7] Mapping will be regularly updated as part of the routine re-surveys required under AMM-1. Work will be planned to avoid delineated rare plant occurrences to the extent feasible. Prior to the start of construction and O&M work in the vicinity of delineated occurrences of rare plants, a qualified biologist/ecologist will define the current extent of the occurrence in the field using pin flags, temporary construction fencing, or another appropriate low-impact medium. The delineated avoidance area will

[7] Initial mapping was completed in 2020.

Measure	Requirements
	include a setback buffer appropriate to the species involved and the nature of the work planned. No entry, staging, or other activity within delineated avoidance areas will be permitted. If an occurrence of rare plants cannot be entirely avoided, the following additional measures will apply. (1) Plants that can be avoided will be demarcated by an exclusion area as described above (2) If possible, work will be scheduled for timeframes when the special-status taxa occurring in the work area are senescent and/or after seed has set (3) If an individual or group of individuals must be removed, one of two options may be employed, followed by monitoring, and, if needed, further corrective action to ensure that over the long term no net loss of the species occurs i. Seeds from the affected species may be collected from existing onsite populations or from another population within the Bennett Valley – San Joaquin River watershed and distributed in the work area following completion of work, or, if the work area cannot be reseeded, in another appropriate location within the Plan Area. Appropriate locations will be identified based on currently prevailing soil characteristics, site hydrology, and overall habitat conditions at the time of the restoration ii. A nursery with experience growing special-status plants of the western San Joaquin Valley region may be contracted to grow seedlings of the species from locally native seeds (collected from the work area or from another population in the Bennett Valley – San Joaquin River watershed). Seedlings may be planted in the work area following completion of work, or, if this is not possible, may be planted in another appropriate location within the Plan Area. As identified in (i) above, appropriate locations will be identified based on currently prevailing soil characteristics, site hydrology, and overall habitat conditions at the time of the restoration Note that seeds derived from plants in the Bennett Valley – San Joaquin River watershed may be available from local nurseries, and local nurseries may also be able to propagate seeds from adults grown from locally native collected seeds. In this case, seeds do not need to be collected from the work area. Prior to impacts and reseeding or replanting, a qualified biologist/ecologist will develop a monitoring and corrective action plan for the revegetated area. The plan will include at least the following components. • Interim and final success criteria for the revegetated area. The goal will be to match or exceed pre-disturbance population levels in the Plan Area over the long term. Due to normal variations in population from year to year, average population data for annual taxa can be calculated from several years of data collected • Procedures for annual monitoring for a minimum of 3 years or until final success criteria are met • Low-disturbance methods for as-needed invasive species control within the replanted area, suitable to site conditions and the rare plant species involved • Corrective actions (additional seeding or planting) in the event interim success criteria are not met The City will be responsible for ensuring that the monitoring plan is implemented by qualified personnel, and that any corrective action identified as necessary is properly carried out.
AMM-6. Special-Status Wildlife Protection (General)	In the event of a known or potential sighting of special-status wildlife in or near any construction or O&M work area, the following requirements will apply. • Personnel will avoid the animal and will immediately notify designated City staff and the City's on-call biologist, who will advise them on how to proceed; if warranted (depending on the species involved), the biologist will consult with resource agency (DFW and/or USFWS) staff for guidance • The biologist will respond onsite to relocate the animal or assist in implementing other protective measures, guided by agency input

Measure	Requirements
	• If the sighting is confirmed by the biologist, the species and location will be reported to DFW for inclusion in the California Natural Diversity Database (CNDDB). The biologist will be responsible for making the report The biologist will also provide a brief memorandum documenting the sighting and any follow-up actions, including CNDDB documentation, for City records.
AMM-7. Western Spadefoot Protection	To the extent feasible, construction and O&M activities will be conducted during the dry season (May – October), or will avoid entry into and disturbance of ponded features. If work within or in proximity to ponded features occurs during the rainy season, a qualified biologist will delineate areas to be avoided to prevent impacts on breeding special-status amphibians, using pin flags, temporary construction fencing, or another appropriate low-impact medium. No entry (personnel, equipment, or materials) will be permitted into delineated avoidance areas. If work would impact areas with burrows, a qualified biologist will evaluate the burrows to determine whether they are suitable for use by western spadefoot, and will scope any suitable burrows. If any western spadefoot individuals are found within burrows to be impacted, they will be safely excavated from the burrow by hand or small excavator, either by the biologist or under biologist oversight, and will be relocated to a suitable burrow location outside the disturbance area and far enough away that they would not be expected to return.
AMM-8. Giant Garter Snake Protection	To the extent feasible, all construction and O&M activities will avoid impacting or working within 200 feet of the drainage ditches in the Study Area. Once the NEWS and MDTW projects become operational, the same precautions will apply to created water bodies. Appropriate silt fencing, flagging, and/or other measures will be employed to protect the drainage ditches and other aquatic habitat from direct and indirect impacts, as described in AMM-4. If work within 200 feet of suitable habitat for giant garter snake is necessary (e.g., for NEWS and MDTW project O&M), the following additional measures will be required. (1) If possible, work within 200 feet of suitable habitat will be conducted between May 1 and October 1, when the species is more active and mortality is less likely (2) At all times of year, prior to work within 200 feet of suitable habitat, before work begins, a qualified biologist will conduct a pre-construction survey of the work area (including access and staging) for giant garter snake. If the species is present, the biologist will notify the City and work will be delayed until the biologist can consult USFWS regarding next steps. Work will not proceed until USFWS has recommended appropriate next steps and these have been implemented. Once work has begun, if activity is suspended for 2 weeks or more, the survey—and, if needed, follow-up—will be repeated
AMM-9. Northwestern Pond Turtle Protection	Prior to the start of construction or O&M activities, a qualified biologist will conduct a pedestrian preconstruction survey for northwestern pond turtle. The survey will be conducted no more than 24 hours prior to start of work, and will include walking the work area limits and interior and investigating all areas that could be used by the species. If northwestern pond turtle individuals are found, the biologist will relocate them to suitable habitat outside the disturbance area and far enough away that they would not be expected to return.
AMM-10. Nesting Bird Protection	To the extent feasible, construction will be scheduled outside the February 1 – September 15 nesting season. O&M activities reasonably expected to generate substantial sustained disturbance above Plan Area baseline levels and O&M activities that would involve ground disturbance or vegetation removal or trimming will also be scheduled outside the nesting period if possible. If the types of activities identified above would commence during the nesting season, a qualified biologist will conduct a preconstruction survey for nesting birds. The survey will be conducted within 2 weeks of the start of work, and will cover the entire work footprint, including access and staging, plus a 500-foot-wide buffer. If active nests are found within the survey area, a no-disturbance zone will be established around the nest for the duration of the nesting season, or until the biologist determines that the young have fledged and left the nest, or that the nest has been abandoned. No entry into the no-disturbance zone will be permitted. The no-disturbance zone will be delineated in the field by or under the supervision

Measure	Requirements
	of the biologist, using temporary construction fencing or another suitable low-impact medium. The width of the no-disturbance zone will be determined by the biologist, based on • the location of the nest and the amount of vegetative and other screening between the nest and areas where work will take place • noise and human disturbance levels at the site at the time of the survey and the noise and disturbance expected during the work • the sensitivity of the species involved and behaviors of the nesting birds, and, if appropriate, • other site- or species-specific factors If special-status species are involved, the biologist will consult with the appropriate resource agency(ies) (DFW and/or USFWS) in determining the width of the no-disturbance zone. If work during the nesting season is suspended for more than 1 week and then recommences, an additional survey will be conducted before work is reinitiated, and the same no-disturbance zone requirements will apply in the event active nests are found.
AMM-11. Western Burrowing Owl Protection	If construction will take place during the western burrowing owl breeding season (February 1 – August 31), protocol-level preconstruction surveys will be conducted for this species. O&M activities reasonably expected to generate substantial sustained disturbance above Plan Area baseline levels and O&M activities that would involve ground disturbance will also be subject to this requirement. Surveys will be conducted by a qualified biologist and will follow the methodology described in DFW's current Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game 2012, or future reports that supersede the 2012 version). Four surveys will be conducted within 2 hours of sunrise or sunset, with the final survey occurring 24 hours prior to the start of construction activities. If active nest burrows are found, the no-disturbance zone requirements described in AMM-10 will apply. If work during the burrowing owl nesting season is suspended for more than 1 week and then recommences, an additional survey will be conducted before work is reinitiated, and the same no-disturbance zone requirements will apply in the event active nests are found.

Source: City of Newman 2021

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3

Environmental Impacts

Introduction

This section analyzes the anticipated environmental impacts of the NCCA projects and describes the measures the City will implement to avoid or reduce impacts identified as potentially significant.

On the next page is an overview of *Environmental Factors Potentially Affected*. This is followed by a series of checklist matrices itemizing the proposed project's environmental impacts by resource topic. The checklist matrices are based on the sample initial study checklist provided in Appendix G of the state's *CEQA Guidelines* and incorporate changes to the *CEQA Guidelines* adopted in December 2018. Text after each matrix discusses the findings presented in the matrix. Unless otherwise noted, boxes checked in the matrices refer to all four of the NCCA projects; where findings are different for one or more of the projects, more than one box is checked and notes are included to identify the project(s) to which each finding applies.

The following terminology is used to assess impact severity.

- **Potentially Significant Impact** – It is reasonably foreseeable (that is, substantial evidence suggests) that the proposed project would alter conditions from the existing pre-project baseline condition, and the change would be substantial or important enough to exceed a threshold of significance representing the level at which an impact becomes a concern
- **Less than Significant with Mitigation Incorporated** – The proposed project's impact would be significant, but mitigation measures will be adopted to lessen the effect, reducing it below the threshold of significance, and therefore below the level of concern. Where this finding is made, the specific mitigation measures are identified, including the timing of implementation, the entity or entities responsible for implementation and any required follow-up activities, and applicable performance standards
- **Less than Significant Impact** – It is reasonably foreseeable that the proposed project would alter conditions from the pre-project baseline condition, but the change would be small enough to fall below the threshold of significance
- **No Impact** – The proposed project would not materially change conditions from the existing pre-project baseline condition
- **Beneficial Impact or Benefit** – The proposed project would improve conditions by comparison with the pre-project baseline

In the explanatory text that follows each checklist matrix (*Discussion of Checklist Responses*), impacts of the

four NCCA projects are discussed together where their impacts would be similar enough to result in the same assessment of impact severity, and separately where their impacts or the assessment of impact severity differs. As noted in Section 1, community outreach for the Newman Nature Park is ongoing as of February 2021, and the City intends to finalize the configuration of the Nature Park to reflect community priorities; to support a comprehensive analysis, however, the Nature Park was assumed to include all of the potential features and facilities discussed in the *Project Elements* portion of Section 2. If the project changes significantly, the City will conduct additional CEQA review consistent with requirements of the CEQA statute and the state's *CEQA Guidelines*.

Impacts of extending water service to the 78-acre parcel (see Section 2) were considered as part of the NEWS and Newman Nature Park projects, as appropriate, but are discussed separately where the nature or degree of impacts warrants more detailed examination. As discussed in Section 2, once the extended water service to the 78-acre parcel is installed, it would be operated and maintained as part of the larger City water distribution system. Operational activities, inspections, and testing can be predicted at this time, since they are part of routine water system operations; they are included in the analysis presented below. However, future maintenance and repair needs are not reasonably foreseeable at this time. If needs arise, future maintenance/repairs would occur as part of the City Public Works Department's routine upkeep of City water infrastructure and would constitute separate projects subject to future CEQA analysis. As a result, water service maintenance and repairs are not discussed further in this document.

Analysis presented in this section was conducted consistent with the requirements of CEQA, the state's *CEQA Guidelines*, and prevailing standards of practice for each resource topic. Analysis and findings represent the City's independent judgment as lead agency under CEQA.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by at least one of the proposed projects, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

■ Aesthetics	☐ Agriculture & Forestry Resources	☐ Air Quality
■ Biological Resources	■ Cultural Resources	☐ Energy
■ Geology & Soils	☐ Greenhouse Gas Emissions	■ Hazards & Hazardous Materials
☐ Hydrology & Water Quality	☐ Land Use & Planning	☐ Mineral Resources
■ Noise	☐ Population & Housing	☐ Public Services
☐ Recreation	■ Transportation	☐ Tribal Cultural Resources
☐ Utilities & Service Systems	☐ Wildfire	■ Mandatory Findings of Significance

DETERMINATION:

On the basis of this initial evaluation:

☐ I find that the proposed project could not have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

■ I find that although the project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project may have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project may have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Kathryn Reyes
Director of Public Works

Date

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Environmental Checklist

I. AESTHETICS *Except as provided in Public Resources Code Section 21099[a], would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(a) Have a substantial adverse effect on a scenic vista?	☐	■ (construction, all projects)	■ (visual recovery period, all projects except water service Option 1; long term, all NCCA projects; potential Benefit, all projects)	■ (visual recovery period, water service Option 1; long term, water service) (potential Benefit)
(b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	■
(c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views[b] of the site and its surroundings? If the project is in an urbanized area, would the project conflict with applicable zoning or other regulations governing scenic quality?	☐	■ (construction, all projects)	■ (visual recovery period and long term, alll projects; potential Benefit)	■ (visual recovery period, water service Option 1; long term both water service options)
(d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	■ (glare from built features, long-term, all but wetland project; light, long-term, NEWS project and Newman Nature Park)	■ (glare, construction, all projects; glare from water surface, long term, NEWS, wetland, and MDTW projects; light and glare, water service)	■ (light, construction, all projects)

[a] Under Public Resources Code Section 21099 (Section 21099 of the CEQA statute), the aesthetic impacts of certain projects in transit priority areas are not considered significant impacts on the environment.

[b] *Public views* refers to views that are experienced from a publicly accessible vantage point.

Discussion of Checklist Responses

Evaluating the aesthetic quality of existing views and determining the importance of changes in those views can be challenging because aesthetics are highly subjective, can be culturally specific, and may involve a highly personal, sometimes emotional, component. To address this, portions of the analysis discussed below relied on a slightly modified version of the Federal Highway Administration (FHWA) methodology (Federal Highway Administration 1981), which was originally developed for use in analyzing the visual outcomes of major transportation projects, but is now used for a wide variety undertakings at all scales. The FHWA methodology offers the advantage of a systematic and reasonably objective way to approach an inherently subjective topic.

Under the FHWA methodology, the significance of a visual change is evaluated in consideration of three factors: the inherent visual character and quality of the view, who the viewers ("viewer groups") are, and how sensitive each viewer group is expected to be to changes in the view. In essence, the FHWA methodology seeks answers to two questions:

- How, and to what extent, would the proposed undertaking change the way the project area looks?
- Would viewers experience those changes as positive or negative?

Overall viewer exposure—the number and location of viewers affected by visual changes and the duration of their views—may also be a factor in determining the significance of visual effects (Federal Highway Administration 1981).

Visual character and quality are evaluated in terms of three characteristics: *vividness*, *intactness*, and *unity*. *Vividness* describes the "memorability" of a view based on the distinctive and striking visual pattern of its contrasting elements. *Intactness* assesses the visual order of a view's natural and built components, and the extent to which the view is free of encroachment. *Unity* describes the degree to which the different elements within a view combine to form a compatible visual pattern with compositional harmony (Federal Highway Administration 1981). All three of these concepts can be applied to natural landscapes, rural settings, and developed areas; impacts on visual resources are identified by comparing pre- and post-project vividness, intactness, and unity of views in the project area.

Evaluating whether project-related visual changes would be viewed as positive or negative depends on an assessment of the anticipated viewer experience. How viewers experience changes in their visual environment ("viewer response" in the FHWA's terminology) depends on the duration and nature of their exposure combined with their level of sensitivity. Viewer sensitivity in turn is influenced by the context of viewing (when and how views are seen): recreational viewers, for instance, are often highly sensitive to visual character and quality, particularly if they are engaged in activities where aesthetics are integral to the quality of the recreational experience, such as nature viewing, camping, hiking, and bird watching. Residential viewers are also typically considered highly sensitive to their visual surroundings, since their views are prolonged and daily, and because aesthetics may also relate indirectly to economics through the nexus with property value. Commuters who are focused on reaching the workplace may be less sensitive to aesthetics since their views are generally more fleeting, and, because they must focus on traffic conditions, external views are peripheral to their immediate driving activity. The sensitivity of other drivers may vary depending on the purpose of the drive and whether it is a repeated, routine, or infrequent activity.

Consistent with prevailing CEQA practice, the NCCA projects' potential to affect officially designated scenic resources, conflict with regulations governing scenic quality, and result in new sources of light or glare, was assessed independent of anticipated viewer response.

Potential for Adverse Effects on a Scenic Vista

Neither the City nor the County of Merced has officially designated scenic vistas, although the County General Plan (County of Merced 2013) recognizes the importance of scenic resources and includes a goal and policies for their protection, as summarized in Table 3-1.

Table 3-1. County General Plan Protection for Scenic Resources

Goal	Policy
Goal NR-4: Protect Scenic Resources	**Policy NR-4.1: Scenic Resource Preservation** Promote the preservation of agricultural land, ranch land, and other open space areas as a means of protecting the County's scenic resources
	Policy NR-4.2: Special Review Process for Structures Adjacent to Scenic Highways Coordinate with Caltrans, during the review of proposed structures and activities located adjacent to [s]tate-designated scenic highways, to ensure that scenic vistas and local scenic values are not significantly degraded
	Policy NR-4.3: Building Design Require that siting and design of buildings protect, improve, and enhance the scenic quality of the built and natural environments and take full advantage of scenic resources through site orientation, building setbacks, preservation of viewsheds, height limits, and the use of appropriate construction materials and exterior modulation
	Policy NR-4.5: Light Pollution Reduction The County shall develop and implement a lighting ordinance to require good lighting practices, such as the use of specific light fixtures that reduce light pollution, minimize light impacts, and preserve views of the night sky. The ordinance shall contain standards to avoid light trespass, particularly from developed uses, to sensitive wildlife corridors and refuges

Source: County of Merced 2013

As described in Section 2 of this Initial Study, the NCCA site is currently undeveloped. Both parcels support a mixture of primarily non-native grasslands and disturbed wetlands that are seasonally irrigated to improve grazing. The site is surrounded on all sides by extensive agricultural lands cultivated for row and orchard crops. Several semi-rural residences and appurtenant structures as well as the existing City stormwater pump station are adjacent to the northwest corner of the 78-acre parcel, across the Miller Ditch and Canal School Road, with the south edge of the urbanized City just beyond. The channelized Newman Wasteway borders the south edge of the 24-acre parcel with additional agricultural structures present to the south on the far side of the Wasteway. Beyond the immediate site vicinity, the Coast Range foothills provide a backdrop to the west, and on a clear day, the Sierra Nevada may be visible to the east.

Because of their open, agricultural character, lands at and surrounding the NCCA site are considered among the scenic resources protected under County General Plan Policy NR-4.1 (Table 3-1). Views in the project vicinity are expansive and attractive but are evaluated as moderately rather than highly vivid since they are typical of areas in the western San Joaquin Valley where agricultural uses meet the edge of development. Visual intactness is considered moderate due to the encroachment of developed elements on the agricultural and open space features of the viewshed. Visual unity ranges from moderate to high, depending on the direction of view: higher as viewed to the south and east, where developed uses are less intrusive on open agricultural space, and slightly lower—at least for some viewers—as viewed to the north and west, where built elements are more evident.

Primary viewer groups include the following.

- Nearby residents
- Agricultural employees
- Drivers along adjacent arterial routes (Canal School Road, Inyo Avenue, and Brazo Road)

Residential viewers are expected to be highly sensitive to visual changes, as discussed above. The sensitivity of agricultural viewers and drivers on adjacent roadways is harder to gauge, but for purposes of this analysis, they are also treated as potentially highly sensitive to visual changes based on the assumption that they have chosen to live and/or work in the Newman area and value its resources, including visual character. Many drivers on adjacent roadways are expected to be area residents and/or agricultural workers, with commensurate sensitivity. Other drivers are generally expected to be less sensitive to changes in the viewshed.

Construction Period Impacts on Scenic Vistas

The NCCA projects are expected to be implemented incrementally, one at a time, as funding becomes available. Construction for each of the NCCA projects would temporarily disrupt visual intactness and unity due to the disturbance associated with vegetation removal and grading, along with the presence and activity of heavy equipment and construction crews and the need for materials and equipment staging. Disruption would be broadly similar to, but much more intensive than, the disruption caused by routine agricultural grading, and would be perceptually exacerbated by being "out of place" in the visual landscape, unlike agricultural grading and cultivation activities. At worst, impacts could be Significant, at least for some viewers. To address this, the City will require implementation of the following mitigation measures. With Measure AES-1 and AES-2 incorporated, the visual impacts of construction would be reduced to the extent feasible, and in light of their temporary duration, are considered Less than Significant. No additional mitigation is required.

Mitigation Measure AES-1. Construction Site Housekeeping and Visual Screening

In order to reduce adverse aesthetic effects related to vegetation removal, earthwork, civil construction, construction staging, and other project-related activities, all NCCA project construction documents will require "good construction site housekeeping" measures such that visual disruption is minimized and the appearance of the active work site is as orderly as possible. At a minimum, this will include the following requirements.

- Work and staging areas will be maintained in a clean, orderly condition at all times
- When not in use, equipment and materials will be stored in construction staging areas
- To the extent feasible, staging areas will be located away from public view; visual/aesthetic factors will be considered in locating staging areas
- Staging areas will be visually screened, using 8-foot-high chainlink fencing covered with a fabric or other non-reflective material of a neutral color
- Debris such as excavation spoils and vegetation slash not slated for onsite reuse will be removed promptly at regular intervals and properly disposed of

Mitigation Measure AES-2. Visual Disturbance Coordinator

During construction of each of the NCCA projects, informational signage posted at the work site will include the name and contact information for a City staff person to serve as the designated Visual Disturbance Coordinator. The Visual Disturbance Coordinator will be available during regular business hours to monitor concerns and will be responsible for responding to public complaints regarding construction visual disturbance. In the event a visual disturbance complaint is received, they will be responsible for determining the cause of the complaint and ensuring that reasonable measures are implemented to correct the problem.

Visual disruption associated with water service extension would be similar to that from the NCCA projects if Option 2 (Figure 2-9) along the north and east boundaries of the 78-acre parcel is selected, and arguably somewhat less if Option 1 is selected, since work would be almost entirely confined within existing roadways and green space would only be impacted where the new service enters the 78-acre parcel. To reduce impacts under both scenarios, the City will require Mitigation Measures AES-1 and AES-2 for water service extension. With these measures in place, similar to the NCCA projects, construction visual impacts would be reduced to the extent feasible, and in light of their temporary duration, are considered Less than Significant.

Post-Construction Visual Recovery Period

The three habitat-related projects (NEWS project, wetland project, and MDTW project) would each involve plantings that would require months to years to become fully established and achieve their long-term appearance. As a result, for each of these projects, there would be a visual recovery period representing an aesthetic transition from the level of disturbance associated with construction to the finished, mature site appearance discussed in *Long-Term Impacts on Scenic Vistas* below. During this period, visual disturbance would be substantially reduced from that experienced during construction, since earthwork would be complete, heavy equipment would no longer be present on the site, and materials staging would no longer be needed. The appearance of the completed project sites would be neat and orderly, would be generally consistent with the cultivated character of surrounding agricultural lands, and is not expected to substantially affect the visual intactness or unity of views in the vicinity of the site. Some viewers may also experience the addition of water features associated with the NEWS and MDTW projects and the tree plantings associated with the NEWS and wetland projects as Benefits to the vividness of area views. Additionally, the City would be monitoring and maintaining the new plantings to ensure their success, as discussed in Section 2 of this Initial Study. As a result, the appearance of each of the completed projects would improve progressively during the transition period, becoming increasingly consistent with the green character of surrounding agricultural lands, and progressively increasing any Benefits derived from the addition of water features and additional green elements.

The NCCA projects' impacts on scenic vistas during the visual recovery period are accordingly evaluated as Less than Significant. No mitigation is required.

If Option 2 (Figure 2-9) is selected, visual impacts of water service extension would be the same as those described for the NCCA projects since the installation alignment would undergo the same visual recovery as the associated project footprint. Impacts would be Less than Significant, and no mitigation is required. If Option 1 is selected, there would be no visual recovery period since the new extension would be entirely underground except for minor at-or above-grade appurtenances such as valve boxes, and roadway paving and striping would be restored to its pre-project condition immediately following installation. There would thus be No Impact on scenic resources during the visual recovery period under Option 1.

Long-Term Impacts on Scenic Vistas

As identifed above, the NCCA projects are expected to be implemented one at a time, as funding becomes available. Once each project has attained its mature appearance with all plantings fully established, the NEWS project, wetland project, and MDTW projects would add green elements to the viewshed, all of which would be generally consistent with the character of surrounding agricultural lands and—as discussed above for the transition period—are not expected to substantially affect the visual intactness or unity of views in the vicinity of the site. As discussed above, some viewers may also experience the addition of water features associated with the NEWS and MDTW projects and the tree plantings associated with the NEWS and wetland projects as Benefits to the vividness of area views.

In addition to plantings in the demonstration garden areas, the Newman Nature Park would add built features to the local viewshed, potentially including a community plaza/outdoor learning area complex, picnic area, shade structure, and parking area as well as additional trails. The architectural site improvements (outdoor learning areas, shade structures, restroom structure, storage, and signage) would be designed in a regional vernacular style, focused on agricultural forms, functionality, longevity, and access to local materials. As a result, the new facilities would be suitable to their natural and agricultural setting and would not appear out of place in their visual context at the interface between extensive working agricultural lands and the developed portion of the City. They are therefore not expected to materially degrade either the intactness or the unity of views in the project area, and may be experienced by some viewers as a Benefit to the memorability of views.

Accordingly, the NCCA projects' long-term impacts on scenic resources are considered Less than Significant, and no additional mitigation is required.

As identified above, the new water service extension would be entirely underground with the exception of small at- or above-grade features such as valve boxes and meters. These minor appurtenances would be inconspicuous in the larger landscape and would not be out of character with similar facilities already in place for existing agricultural and residential uses in the vicinity. The water service is therefore expected to have No Impact on scenic resources over the long term. No mitigation is required.

Potential for Damage to State Scenic Highway Resources

The State of California designates and protects certain state highways under the Scenic Highway Program, overseen by Caltrans. State scenic highways in the NCCA vicinity include Interstate (I) 5 from the Stanislaus County/Merced County line north to I 580 and State Route (SR) 140 from SR 152 north through Merced County. At their closest approach, these routes are several miles from the NCCA site; when it is visible at all, the NCCA site appears as a small part of the larger mosaic of middle-ground or background views to drivers along these routes. Moreover, both during and after construction, the NCCA projects would be generally consistent with the visual character and quality of surrounding agricultural lands and would not result in long-term degradation of visual character or quality. Consequently, there would be No Impact on scenic resources associated with state scenic highways as a result of any of the NCCA projects or the planned water service extension, and no mitigation is required.

Potential to Degrade Visual Character or Quality

As described in Section 2 of this Initial Study, the NCCA site is located in an agricultural and largely non-urbanized area. It is outside Newman city limits and as such is not subject to zoning by the City. It is zoned A-1 (General Agriculture) by the County, which protects scenic resources through its General Plan (County of Merced 2013) (see Table 3-1). Impacts on County-protected scenic resources are discussed in *Potential for Adverse Effects on a Scenic Vista* above. As discussed under that item, there would be some potential for degradation of public views during construction of each of the NCCA projects and the planned water service extension. The City will address this by implementing Mitigation Measure AES-1 (*Construction Site Housekeeping and Visual Screening*) and Mitigation Measure AES-2 (*Visual Disturbance Coordinator*). With these measures in place, the visual impacts of construction would be reduced to the extent feasible, and in light of their temporary duration, are considered Less than Significant. Construction-period impacts related to degradation of the character or quality of public views are also considered Less than Significant with Mitigation Measures AES-1 and AES-2 incorporated; no additional mitigation is required.

As further discussed in *Potential for Adverse Effects on a Scenic Vista* above, impacts during the visual recovery period as vegetation is becoming established at each of the projects, and over the long term once the

projects reach maturity, are also evaluated as Less than Significant, with no further mitigation required. As discussed above, under Option 1, the planned water service extension would have No Impact during the visual recovery period, and both Option 1 and Option 2 would have No Impact over the long term.

In this context, the NCCA projects and water service extension are considered consistent with County policies protecting scenic quality; there would be No Impact related to a conflict with these policies, and no additional mitigation is required.

Potential to Create New Sources of Light or Glare

Construction Period

During construction of each of the NCCA projects and the water service extension, there would be some potential for new or increased glare, primarily associated with reflections from the glass and painted metal surfaces of construction equipment. However, construction would be temporary and comparatively short-term, as discussed in Section 2 of this Initial Study, and would be visible to a limited number of viewers: nearby residents and agricultural workers, as well as drivers on adjacent roadways, who would experience only fleeting views. Because of the short duration and limited visibility of construction-related glare, potential construction-period impacts related to new sources of glare are considered Less than Significant. No mitigation is required.

Night work is not expected to be necessary for the NCCA projects or for the water service extension, so construction would not introduce new sources of lighting to the viewshed. There would be No Impact associated with new construction-period light sources. No mitigation is required.

Long Term

Once construction is complete, the NEWS and MDTW projects would have the potential to introduce limited new sources of long-term glare, including

- reflection from the water surface during periods of ponding in inundated areas
- glare from access road and O&M staging area surfaces

The wetland project may also slightly increase glare generation due to the increased extent and duration of ponding in enhanced and restored wetland areas.

Periodic ponding currently occurs on the NCCA site during the winter rainy season and also in the summer when the parcel is irrigated. With the completion of the NEWS, MDTW, and wetland projects, glare may increase slightly since the total ponded area at the site would likely increase and the water surface would be smoother due to increased ponding depth in some areas. The nature of glare generation would be similar, however, and many viewers would likely also view the water features as a positive addition to the viewshed, potentially offsetting reactions to the slight increase in glare. Potential impacts associated with increased water-surface glare are therefore considered Less than Significant. No mitigation is required.

Glare generated by the DG surfaces of the new access roads and parking areas would be limited and would be similar to that associated with existing unsurfaced agricultural roads in the NCCA vicinity. However, the Newman Nature Park would introduce a number of new structures to the southeast portion of the 78-acre parcel, with the potential for increased glare generated by (permeable) hardscape and painted wood and metal surfaces. At worst, impacts related to increased glare associated with new built elements could be experienced as Significant, at least by some viewers. To address this, the City will implement Mitigation Measure AES-3.

With this measure incorporated, impacts related to long-term increases in glare are considered Less than Significant, and no additional mitigation is required.

Mitigation Measure AES-3. Use of Non-Glare Finishes

In order to minimize glare generated by new built elements at the NCCA site, all NCCA project construction documents will stipulate the use of low-sheen, non-glare, and non-reflective surface materials. Unpainted metal surfaces will not be permitted unless they have been treated for a low-glare weathered or rusted appearance, and gloss paints will not be used. Wall surfaces and hardscape will be matte and roughened; smooth trowelled surfaces will not be permitted.

The operations and maintenance plan for each of the NCCA projects will also be written to require periodic assessments of the appearance of hard surfaces, with touch-up or replacement of the finish when necessary. The City will be responsible for long-term assessment and maintenance to ensure that the new built elements at the NCCA do not generate excess glare.

Nighttime security lighting would likely be provided for the parking area at the Nature Park community complex. The NEWS project gateway area is not currently planned to include nighttime lighting, but the City may add limited solar-powered lighting in the future. In both locations, with nighttime lighting in place, there would be some potential for light spill to become a nuisance to project neighbors and/or for disturbance of wildlife. At worst, impacts could be Significant. To address this, the City will implement Mitigation Measure AES-4. With this measure incorporated, impacts related to new sources of nighttime lighting would be reduced consistent with current best practices and are considered Less than Significant. No additional mitigation is required.

Mitigation Measure AES-4. Standards for Nighttime Security Lighting

To minimize effects of nighttime security lighting on the community and on wildlife, all NCCA project construction documents will require that any exterior lighting installed at the NCCA meet the following standards.

- Use of nighttime lighting limited to the minimum needed to provide for public and facility safety
- Lighting equipped with photosensor or timer switches, such that lighting is on only when needed (dark hours)
- Full cut-off, shielded luminaires to reduce light spill
- Downward-directing lighting only; no use of uplights
- Lighting sources restricted to those that provide good color rendering such as light-emitting diodes (LEDs) and metal halide lamps; no use of high- or low- pressure sodium lamps or mercury vapor lamps

The planned water service extension would involve only minor at- or above-grade facilities such as valve boxes and meters. It therefore would have extremely limited potential to result in new sources of light and glare. Impacts, if any, would be Less than Significant, and no mitigation is required.

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II. AGRICULTURE & FORESTRY RESOURCES *Would the project:*	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	■
(b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	■
(c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g])?	☐	☐	☐	■
(d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	■
(e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	■

Discussion of Checklist Responses

Potential for Conversion of Farmland to Non-Agricultural Use

The Land Resource Protection Division (LRPD) of the state's Department of Conservation is charged with protecting California agricultural lands as well as open space resources. To that end, the LRPD's Farmland Mapping and Monitoring Program (FMMP) evaluates and rates agricultural lands based on factors such as soil quality and irrigation status. The highest-quality lands are designated Prime Farmland. Other important agricultural lands are designated Farmland of Statewide Importance (similar to Prime Farmland but with minor shortcomings) or Unique Farmland (farmland that has lower quality soils but is important for production of the state's leading agricultural crops). Additional designations include Farmland of Local Importance (lands used for production of crops important to the local agricultural economy) and Grazing Land. Collectively, these agricultural lands warranting protection are often referred to as Farmland. Every 2 years, the FMMP produces updated GIS-based maps showing the location and extent of California's Farmland (California Department of Conservation 2017a, 2017b).

Figure 3-1 shows state-designated Farmland in the vicinity of the City and NCCA. Extensive tracts of Prime Farmland surround the City to the north, west, and south, with a mosaic of Prime Farmland and Unique Farmland, and small areas of Farmland of Local Importance to the northeast, east, and southeast. Farther east are extensive areas of Grazing Land.

At the NCCA site, the 78-acre parcel is designated as Farmland of Local Importance and the 24-acre parcel as "nonagricultural or natural vegetation" by the FMMP (California Department of Conservation 2016) (Figure 3-1). Consequently, none of the NCCA projects would result in direct conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.

Approval of the NCCA projects would not alter agricultural zoning on surrounding parcels, nor would it extend urban development or reduce the importance of agriculture to the local or regional economy. As a result, the NCCA projects would not create pressure that could indirectly result in conversion of Farmland to non-agricultural use over the long term.

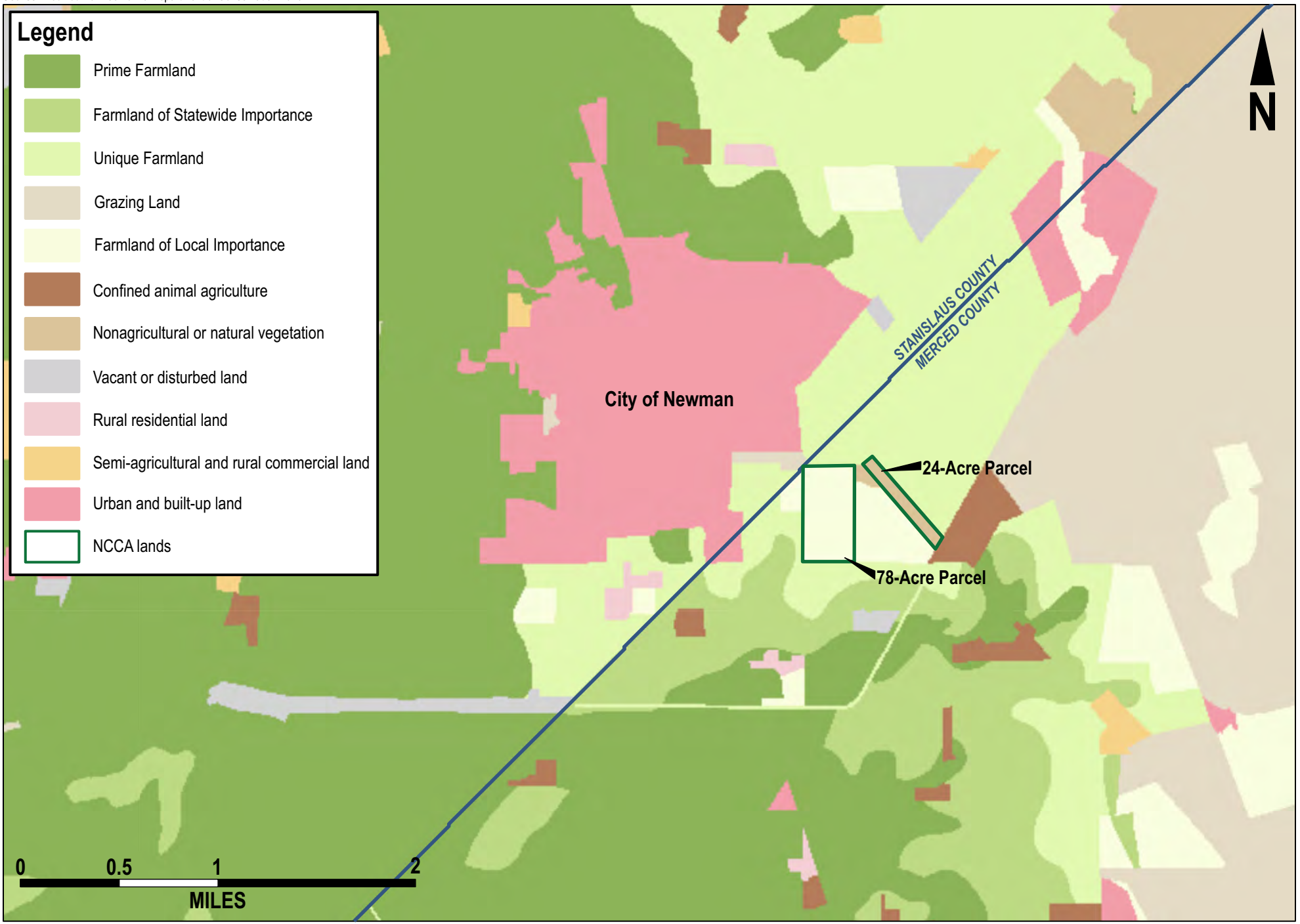
There would be No Impact related to direct conversion of Farmland or pressures indirectly resulting in or fostering Farmland conversion, and no mitigation is required.

Potential to Conflict with Existing Agricultural Zoning or Williamson Act Contract

As identified in Section 2, the NCCA site is outside City limits and is not subject to City zoning. It is zoned A-1 (General Agriculture) by the County. Permissible uses on A-1 zoned lands include public parks and recreation areas and wildlife management areas; the wetland project and the Newman Nature Park are therefore considered consistent with existing zoning. Constructed water treatment wetlands are not mentioned in the County zoning code, although the City has reached out informally to the County and the County has indicated that they are generally supportive of the NCCA concept and projects. The City will work closely with the County to ensure that any concerns are addressed such that the County can approve the NEWS and MDTW projects. In this context, No Impact related to conflict with existing agricultural zoning is anticipated, and no mitigation is required.

Under the California Land Conservation Act of 1965 (Williamson Act), local governments may establish contracts with local landowners to restrict specific parcels to agricultural or open space use (see California Department of Conservation 2017). The NCCA parcels are not under Williamson Act contracts (City of Newman

Source: *modified from* California Department of Conservation 2016



Redtail Consulting
Environment & Community

Figure 3-1. Farmlands in NCCA Vicinity
Newman Community Conservation Area Master Plan
City of Newman

2021). There would be No Impact related to conflict with existing Williamson Act contracts, and no mitigation is required.

Potential to Conflict with Existing Forest or Timberland Zoning

Section 12220[g] of the California Public Resources Code defines *forest land* as land that can support 10% native tree cover under natural conditions, and "that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." Public Resources Code Section 4526 defines *timberland* as non–federally owned land that is available for, and capable of, growing commercial tree crops used to produce lumber and other forest products. There are no lands of either type at or in the immediate vicinity of the NCCA site.

Under Section 51104 of the California Government Code, a timberland production zone is an area that is "devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses" and is under zoning established through a specific process stipulated by law. There are no timberland production–zoned lands at or in the immediate vicinity of the NCCA site.

With no forest or timberland zoning in the vicinity of the NCCA site, there is no potential to conflict with such zoning. There would be No Impact, and no mitigation is required.

Potential to Result in Loss or Conversion of Forest Land

As identified in the previous item, there is no forest land in proximity to the NCCA site. The NCCA projects would therefore have no potential to result in the direct loss or conversion of forest land. The NCCA projects also would not alter land use designations or zoning or affect planned levels of development in the City, its Sphere of Influence, or surrounding portions of the County. As a result, the NCCA projects would have no potential to create indirect pressures contributing to loss or conversion of forest lands in the vicinity of the site or elsewhere in the region. There would be No Impact related to loss of forest land or conversion of forest land to non-forest use, and no mitigation is required.

Potential for Other Changes

As discussed in the previous item, the NCCA projects would not alter land use designations or the planned level and extent development in and around the City. The NCCA parcels do not qualify as Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or forest land, and there are no forest lands or timberland production–zoned lands in the vicinity of the site. The projects would therefore have no potential to directly result in or indirectly contribute to conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use or conversion of forest land to non-forest use. There would be No Impact related to such conversion, and no mitigation is required.

References Cited in this Section

California Department of Conservation. 2016. California Important Farmland Finder. Available: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed: August 2020.

California Department of Conservation. 2017a. Farmland Mapping and Monitoring Program. Available: http://www.conservation.ca.gov/dlrp/fmmp. Accessed: November 2020.

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California Department of Conservation. 2016c. Williamson Act/Land Conservation Act. Available: http://www.conservation.ca.gov/dlrp/lca. Accessed: July 2018.

City of Newman. 2021. Newman Community Conservation Area Master Plan. (Third Administrative Draft.) (February.) Prepared for City of Newman by Redtail Consulting, Fremont, CA. Appendix A to this Initial Study.

III. AIR QUALITY *Would the project:*	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	■
(b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard?	☐	☐	■	☐
(c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	■	☐
(d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number people?	☐	☐	■	☐

Discussion of Checklist Responses

Background

Air quality is evaluated with respect to different types of pollutants. For one set of pollutants, the federal Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for their concentrations, based on health-based criteria and factoring in an adequate margin of safety (42 USC 7409 Section 109[b][1]). Attainment of these standards—and analogous California Ambient Air Quality Standards (CAAQS) set by the state—is typically assessed at the level of regional air quality basins. The six "criteria pollutants" covered in the NAAQS and CAAQS are:

- ozone
- particulate matter smaller than 10 micrometers (μm) in diameter (PM10) and particulate matter smaller than 2.5 μm in diameter (PM2.5)
- carbon monoxide
- nitrogen dioxide
- sulfur dioxide
- lead (particulate)

The City is located in the San Joaquin Valley (SJV) Air Basin. NAAQS and CAAQS attainment status for the SJV Air Basin is summarized in Table 3-2.

Table 3-2. Attainment Status for Criteria Air Pollutants, San Joaquin Valley Air Basin

Pollutant	NAAQS	CAAQS
Ozone, 1-hour average	N/A (no NAAQS)	**Nonattainment (Severe)**
Ozone, 8-hour average	**Nonattainment (Extreme)**	**Nonattainment**
PM10	Attainment	**Nonattainment**
PM2.5	**Nonattainment**	**Nonattainment**
Carbon monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen dioxide	Attainment/Unclassified	Attainment
Sulfur dioxide	Attainment/Unclassified	Attainment
Lead	No Designation/Classification	Attainment

Note:
CAAQS are also established for certain non-criteria pollutants (hydrogen sulfide, sulfates, visibility reducing particles, and vinyl chloride); however, the only portion of the state still identified as in Nonattainment for any of these non-criteria CAAQS is the Searles Valley portion of the Mojave Desert.

Source: San Joaquin Valley Air Pollution Control District 2020a

While the SJV Air Basin has not attained the current federal or state standards for ozone and PM, Figures 3-2 and 3-3 show that there has been improvement over time.

In addition to the criteria air pollutants, other air pollutants are classified as *toxics* because they are known (or reasonably anticipated) to be carcinogenic, mutagenic, teratogenic, or neurotoxic, to cause reproductive dysfunction, and/or to cause acute or chronic toxicity. Almost all of the toxics are also classified as reactive organic gases (ROG) or PM. The EPA maintains a list of hazardous air pollutants (HAP), and California has a list of toxic air contaminants (TAC) that largely incorporate the HAP as well as several additional toxics. Not all of the toxics are carcinogenic, but when screening risks, lifetime cancer risk (i.e., the odds of contracting cancer at some point within a person's lifetime) is often identified as the most important metric with regard to toxics. The lifetime cancer risk for the population as a whole—caused by any and all factors—is approximately 400,000 in a million (40%) (American Cancer Society, 2020). In communities that the California Air Resources Board (CARB) has designated as having some of the highest cumulative exposure burdens, the lifetime cancer risk associated with the TACs has been estimated to be potentially in excess of 1,000 to 2,000 in a million, most of which is attributed to PM emitted from diesel engines (California Air Resources Board 2020b).[1,2] Several of those communities are estimated to be in the top 10% in the state with regard to diesel PM exposures; however,

[1] All health risk estimates identified for California air planning are "potential" risks that "should not be interpreted as the expected rates of disease in the exposed population but rather as estimates of potential for disease, based on current knowledge and a number of assumptions"; the assumptions are not averages or "best estimates" of actual risk, but rather "are designed to err on the side of health protection in order to avoid underestimation of risk to the public" (Office of Environmental Health Hazard Assessment, 2015, pages 1-5 and 1-6).

[2] For example, in West Oakland, the Bay Area Air Quality Management District projected that in 2015, estimated potential lifetime cancer risk from TACs was in excess of 1,200 in a million using pre-2015 health risk assessment techniques, and identified that the estimated potential risk using the 2015 Office of Environmental Health Hazard Assessment methodology should be 70% higher than that; across the study area, they estimated that diesel PM accounted for approximately 70% of the total potential risk (Bay Area Air Quality Management District 2014). In West Long Beach and other areas, the South Coast Air Quality Management District modeled potential lifetime cancer risks from TACs as also being in excess of 1,200 in a million (using 2015 Office of Environmental Health Hazard Assessment methodology), and estimated that across the basin, diesel PM accounted for approximately 68% of the total potential risk (South Coast Air Quality Management District 2015).

estimated diesel PM exposures in the City are lower, ranking in the 30th – 40th percentile statewide (Office of Environmental Health Hazard Assessment 2020).

Projects can impact air quality by emitting air pollutants directly, or emitting precursors to those pollutants that subsequently react to form the pollutant in the ambient air. For example, the majority of the ozone in the ambient air is not emitted directly but is instead formed by sunlight-catalyzed chemical reactions between oxygen in the air and ozone precursors: i.e., ROG and oxides of nitrogen (NO_x, including both nitrogen monoxide and the criteria pollutant nitrogen dioxide). Accordingly, while ROG and NO_x are not truly criteria pollutants (because EPA does not establish NAAQS criteria for them), they are referred to as criteria pollutants for purposes of emissions inventories and air quality planning.

ROG are emitted from a variety of sources, including but not limited to evaporation of hydrocarbons (such as fuels, paints, cleaning solvents, and consumer/personal products) and fuel combustion sources (vehicles, other engines, boilers, etc.). NO_x emissions are predominantly produced from fuel combustion sources. Particulate matter (PM) can be either emitted directly or produced in the air by chemical reactions in the atmosphere between PM precursor gases, which include ROG, NO_x, sulfur dioxide, and ammonia.

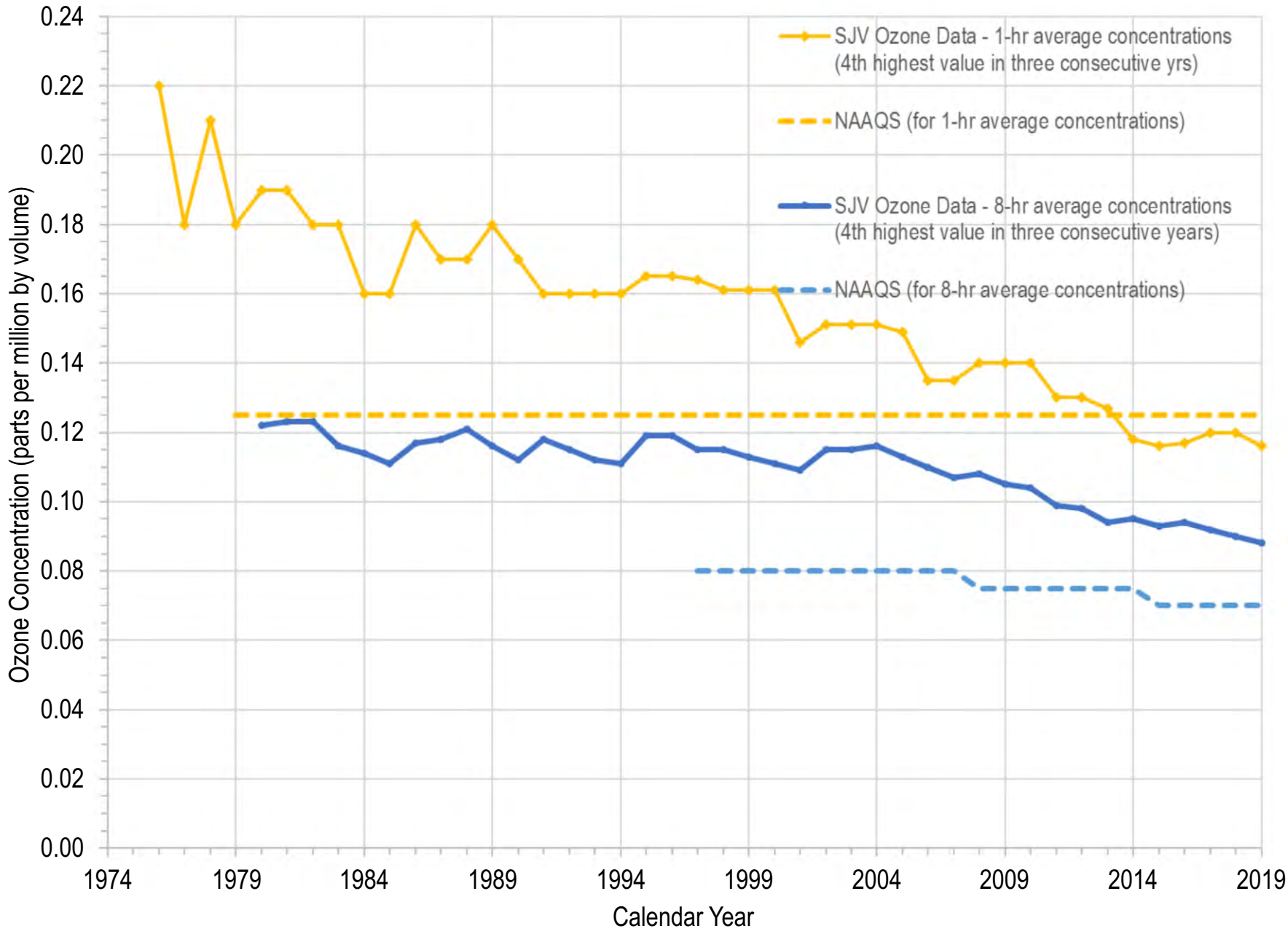
Federal laws and regulations require areas to submit State Implementation Plans (SIPs) that identify how their regulations will result in attainment of the NAAQS, or maintain attainment of them. For example, since areas in the SJV Air Basin were previously classified as "Nonattainment" with regard to CO, it is considered a CO "maintenance" area. California also requires that air districts submit plans showing how they will attain the CAAQS and which additional measures it may consider for regulation. The SJV Air Pollution Control District (SJV APCD) has developed plans for ozone, PM, and CO (SJV APCD 2020b). HAP and TAC are regulated separately at the statewide level (for example, via CARB's Diesel Risk Reduction Plan), but there typically is no separate local plan for these; one exception is the AB 617 Community Air Protection Program for communities that CARB has designated as having some of the highest cumulative exposure burdens, but as identified above, the City is not one of these communities.

Potential to Conflict with or Obstruct Air Quality Plan Implementation

The SJV APCD considers "projects with emissions below the thresholds of significance for criteria pollutants "not [to] conflict [with] or obstruct implementation of the District's air quality plan" (San Joaquin Valley Air Pollution Control District 2015). In general, because the applicable plans consist of enforceable regulations, compliance with these regulations ensures that a project is not conflicting with or obstructing plan implementation. One potential exception to this pertains to projects that are projected to have relatively high criteria pollutant emissions and that are not subject to stationary source permitting for onsite sources of emissions; if emissions are sufficiently high, and the project would be located in an area classified as a Nonattainment or Maintenance area, such projects can be required to demonstrate conformity with the SIP (referred to as General Conformity) before they can receive any federal approvals.

In November 2020, the SJV APCD issued Small Project Analysis Level (SPAL) guidance which identifies that city parks 256 acres in size or smaller that generate no more than 1,100 average daily one-way trips (for non heavy-heavy duty trucks) and no more than 20 one-way trips (for heavy-heavy duty trucks) are not required to quantify criteria pollutant emissions for CEQA purposes (San Joaquin Valley Air Pollution Control District 2020c). However, to confirm General Conformity, and since the NCCA would host more than "just" park-related activities, these emissions were calculated using the current version of the California Air Pollution Control Officers Association's (CAPCOA's) CalEEMod model. Results are presented in detail in Appendix C to this Initial Study and compared to General Conformity and the SJV APCD's CEQA significance thresholds in Tables 3-3 and 3-4. Although construction emissions would be spread across multiple years (see the anticipated

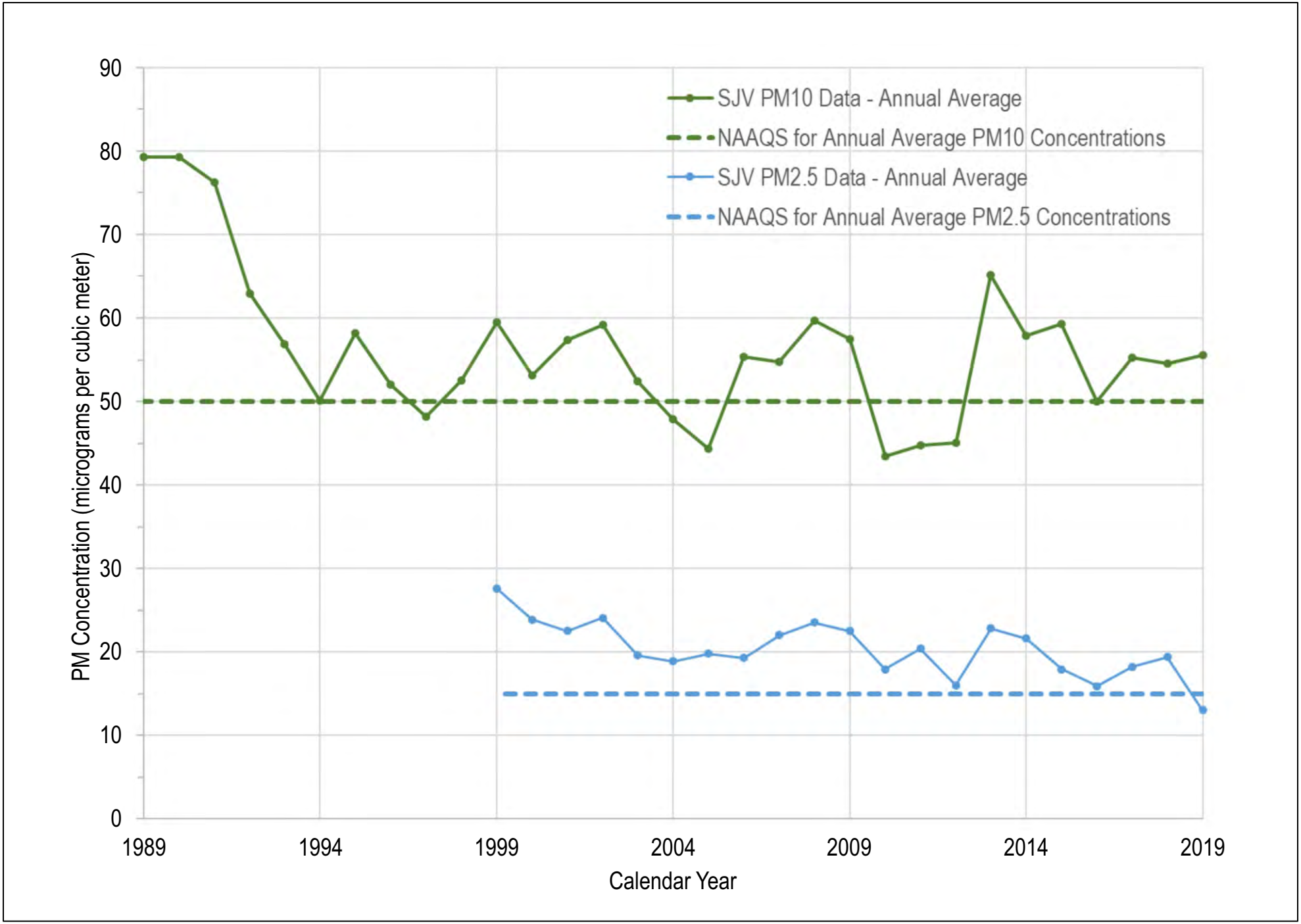
Source: California Air Resources Board 2020a



Redtail Consulting
Environment & Community

Figure 3-2. Improvement in Ozone Concentrations Over Time
Newman Community Conservation Area Master Plan
City of Newman

Source: California Air Resources Board 2020a



Redtail Consulting
Environment & Community

Figure 3-3. Improvement in Pm10 and PM2.5 Concentrations Over Time
Newman Community Conservation Area Master Plan
City of Newman

construction schedules in Section 2), in total they would be well below both the *annual* thresholds for General Conformity and CEQA Significance, so for simplicity they have been totalled in Table 3-3 to illustrate this.

Table 3-3. Construction Emissions Compared to Thresholds

Pollutant	Total NCCA Construction Emissions (tons)	General Conformity Threshold (tons/year)	SJV APCD Significance Threshold (tons/year)	Impact
ROG	0.72	10	10	Conforms/Less than Significant
NO_x	7.7	10	10	Conforms/Less than Significant
PM10	0.63	100	15	Conforms/Less than Significant
PM2.5	0.33	100*	15	Conforms/Less than Significant
Sulfur dioxide	0.02	100	27	Conforms/Less than Significant
Carbon monoxide	5.0	100	100	Conforms/Less than Significant

Note:
The General Conformity Threshold for PM2.5 applies to total emissions of PM2.5 and PM2.5 precursors (sulfur dioxide, NO_x, volatile organic chemicals—essentially synonymous with ROG—and ammonia); the NCCA projects would not emit ammonia.

Sources: 40 CFR 93.153[b] thresholds, Tamura Environmental 2020 (Appendix C to this Initial Study)

Table 3-4. Operational Emissions Compared to Thresholds

Pollutant	Total NCCA Operational Emissions (tons/year)	General Conformity Threshold (tons/year)	SJV APCD Significance Threshold (tons/year)	Impact
ROG	0.76	10	10	Conforms/Less than Significant
NO_x	1.58	10	10	Conforms/Less than Significant
PM10	0.48	100	15	Conforms/Less than Significant
PM2.5	0.14	100*	15	Conforms/Less than Significant
Sulfur dioxide	0.01	100	27	Conforms/Less than Significant
Carbon monoxide	5.72	100	100	Conforms/Less than Significant

Notes:
1. As indicated in the note to Table 3-3, the General Conformity Threshold for PM2.5 applies to total emissions of PM2.5 and PM2.5 precursors (sulfur dioxide, NO_x, volatile organic chemicals—essentially synonymous with ROG—and ammonia); the NCCA projects would not emit ammonia.
2. Mitigation Measure HAZ-1 (see *Hazards & Hazardous Materials* section of this checklist) requires disposal of forebay sediment in a Class I landfill if testing shows that it qualifies as hazardous under State of California standards. Mitigation Measure HAZ-2 could also entail haulage and disposal at a Class I landfill. The closest such facilities (the Kettleman Hills and Buttonwillow landfills) are 150 – 200 miles from the NCCA site. Such conditional emissions are not included above. However, the pollutants emitted in the greatest quantities from haul truck trips would be NO_x (0.003 tons per trip) and CO (0.0006 tons per trip) and emission volumes would be insignificant compared to the emissions identified above.

Sources: 40 CFR 93.153[b] thresholds, San Joaquin Valley Air Pollution Control District 2015, Tamura Environmental 2021 (Appendix C to this Initial Study)

The principal SJV APCD regulations applicable to undertakings such as the NCCA projects are the Regulation VIII rules (8011-8071) that limit fugitive dust (including dust generated by construction) and the Indirect Source Rule (Rule 9510), which requires restrictions on construction equipment emissions from certain discretionary

projects before they can be approved. Per standard City policy, all NCCA projects will comply with applicable SJV APCD rules, which include the following.

- Develop, submit, and obtain SJV APCD approval for a Dust Control Plan in accordance with Rule 8021 (*Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities*) to keep visible dust emissions to less than 20% opacity
- Control emissions from any bulk material handling, storage, or transport in accordance with Rule 8031 (*Bulk Materials*)
- Minimize emissions from vehicle carryout/trackout in accordance with Rule 8041 (*Carryout and Trackout*)
- Control emissions from any open area with 3.0 acres or more of disturbed surface area that has remained undeveloped, unoccupied, unused, or vacant for more than seven days, per Rule 8051 (*Open Areas*)
- Limit fugitive dust from unpaved vehicle/equipment traffic areas per Rule 8071 (*Unpaved Vehicle/Equipment Traffic Areas*), and optionally develop and implement a Fugitive PM10 Management Plan per Rule 8011 Section 7.0
- Implement any applicable NO_x/PM control measures required under Rule 9510 Section 6

In addition to the District Rules, CARB's diesel fuel regulations (California Code of Regulations, Title 13, Section 2281) limit the allowable sulfur content of diesel fuel to 15 parts per million by weight, and CARB vehicle regulations require fleets of both heavy-duty on-road diesel vehicles and of off-road diesel vehicles such as construction equipment to meet increasingly stringent emissions standards, submit compliance information to CARB, and comply with anti-idling provisions (California Code of Regulations, Title 13, Sections 2025, 2449, and 2485). The contractor(s) selected to carry out the proposed work will be required to meet these standards. With all of these provisions in place, there would be No Impact related to conflict with or obstruction of any of the applicable air quality plans, and no mitigation is required.

Potential for Cumulatively Considerable Increase in Criteria Pollutant(s) in Nonattainment

The SJV APCD (2015) notes that "[i]f a project is significant based on the thresholds of significance for criteria pollutants, then it is also cumulatively significant." The SJV APCD also recognizes that even if a project's impacts are found to be Less than Significant at the project-specific level "[t]his does not imply that … it cannot be cumulatively significant" (San Joaquin Valley Air Pollution Control District 2017). A specific hypothetical example that the District provides is one in which simultaneous proposals for two sources are each below the significance threshold, but an air quality analysis of the combined impact shows an exceedance of an air quality standard.

As shown in Table 3-2, the SJV Air Basin is currently in Nonattainment for state ozone (1-hour and 8-hour), PM10, and PM2.5 standards, and for federal ozone (8-hour) and PM2.5 standards. Analysis of the NCCA projects' individual and collective contributions to these cumulative air quality impacts focused on the ozone precursor NO_x and particulate matter. Project-specific impacts were considered in the context of the SJV APCD's project-specific thresholds of significance, since these also function as a first-level test to identify the level at which emissions become Cumulatively Considerable.

Construction Period

As shown above, *total* construction emissions from all four NCCA projects and the accompanying water service extension would be well below the SJV APCD's adopted *annual* significance thresholds for construction emissions (Table 3-3): total emissions of 1.58 tons for NO_x, versus a threshold of 10 tons/year, and total emissions of 0.49 tons and 0.14 tons for PM10 and PM2.5 respectively, versus thresholds of 15 tons/year. Maximum *annual* emissions would be even lower by comparison since construction of each project would take 2 – 3 years (see *Project Construction* in Section 2). Each project's contribution would represent a percentage of the annual emissions budget. With both total and annual construction emissions 1 – 2 orders of magnitude below the level of project-specific significance under the worst-case construction scenario, the individual and collective (cumulative) contributions of the NCCA projects to cumulative nonattainment of ozone, PM10, and PM2.5 standards are evaluated as Less than Cumulatively Considerable. No mitigation is required.

Operations

Onsite emissions from routine O&M would be substantially lower than those generated by construction, since activities would be short-term and intermittent, would use less heavy equipment, and would involve less ground disturbance. The majority of the emissions totals shown in Table 3-3 would be from regional visitor trips to the site. As shown in Table 3-4, even at buildout, with all four NCCA projects in operation, these figures are also 1 – 2 orders of magnitude below the SJV APCD's significance thresholds. They are therefore considered Less than Cumulatively Considerable based on the same reasoning laid out for construction emissions. No mitigation is required.

Potential to Expose Sensitive Receptors to Pollutants

The key concern with regard to exposure of sensitive receptors to pollutants focuses on nearby residences and potential exposure to diesel exhaust. The closest sensitive receptors are residences along Canal School Road, Inyo Avenue, and slightly farther away at the south edge of the City proper. Other sensitive receptors such as schools, care facilities, and hospitals are more than 0.5 mile away to the north and west from the nearest corner of the site.

Health concerns associated with the toxic impacts of diesel exhaust are associated with chronic, long-term exposure rather than temporary or short-term exposure. Overall emission levels for construction of the NCCA projects would be low—well below applicable standards, as discussed above, even with more than one project potentially under construction at the same time. Additionally, for each of the NCCA projects, construction activity would take place across a relatively large area; much of the work would be at a substantial distance from any sensitive receptors, and work in proximity to the closest residences would be very short-term and temporary. O&M activities involving diesel heavy equipment would be even more limited in duration, and would use fewer pieces of equipment, reducing emission levels. As a result, both construction and operational impacts related to potential exposure of sensitive receptors to air pollutants are therefore considered Less than Significant, and no mitigation is required.

Potential for Other Emissions

"Other emissions" include emissions from particularly odorous sources that may not impact attainment of air quality standards or pose risks due to toxicity, but which can nonetheless be a nuisance and a concern for the community. Potential odor sources identified by the SJV APCD include facilities such as wastewater treatment facilities, landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical or fiberglass manufadturing, painting/coating operations such as auto body shops, food processing facilities, feed lots, dairies, and rendering plants. The NCCA would not involve any such sources. Any odors related to construction or operations, such as diesel exhaust, which may be intermittently perceptible at the nearest

residences, would be temporary, intermittent, and short term. Consequently, the potential for the NCCA projects to create objectionable odors is evaluated as Less than Significant. No mitigation is required.

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IV. BIOLOGICAL RESOURCES *Would the project:*	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?[3]				
(i) Special-status plants	☐	■ (Parry's rough tarplant, construction period, NEWS and wetland projects)	■ (other species, construction; all species, long term) (potential long-term Benefit)	☐
(ii) Northwestern pond turtle	☐	☐	■ (long-term Benefit)	☐
(iii) Western spadefoot	☐	☐	■ (long-term Benefit)	☐
(iv) Giant garter snake	☐	☐	■ (long-term Benefit)	☐
(v) Burrowing Owl	☐	☐	■	☐
(vi) Tricolored Blackbird	☐	☐	■ (adult impacts, construction and O&M; change in habitat over time) (long-term Benefit to breeding)	■ (nesting, short-term)
(vii) Swainson's Hawk	☐	☐	■ (long-term Benefit to breeding)	☐

[3] The potential for special-status species presence at the NCCA site is discussed in Section 2 of this Initial Study, and in more detail in Appendix B. This checklist matrix lists only the special-status species identified as having potential to be present on the site.

IV. BIOLOGICAL RESOURCES *Would the project:*	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(viii) Northern Harrier	☐	☐	■ (long-term Benefit to breeding)	☐
(ix) Loggerhead Shrike	☐	☐	■ (adult impacts, construction and O&M; change in habitat over time) (long-term Benefit)	■ (nesting, short-term)
(x) Yellow-billed Magpie	☐	☐	■ (overall long-term Benefit)	■
(xi) Non-listed MBTA[a]-protected species	☐	☐	■ (long-term Benefit)	☐
(xii) American badger	☐	☐	■	☐
(xiii) San Joaquin kit fox	☐	☐	■	☐
(b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	■ (potential for damage as a result of human incursions)	■ (all projects, construction, O&M) (long-term Benefit)	☐
(c) Have a substantial adverse effect on state- or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	■ (long-term Benefit)	☐
(d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	■	☐
(e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	■

IV. BIOLOGICAL RESOURCES *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	■

[a]Federal Migratory Bird Treaty Act

Discussion of Checklist Responses

Potential for Adverse Effects on Special-Status Species

Under CEQA, *special-status species* is understood to refer to plants and wildlife considered at risk and protected under a variety of federal, state, and local regulations, including:

- wildlife species that are listed, proposed, or candidates for listing as Threatened or Endangered under the federal or state Endangered Species Act
- wildlife designated as Species of Special Concern by DFW and/or Species of Concern by USFWS
- wildlife identified as Fully Protected under the California Fish and Game Code
- additional wildlife species included on DFW's Special Animals List[4]
- birds identified as federal Birds of Conservation Concern
- birds protected under the federal Migratory Bird Treaty Act and their active nests
- plants that are state- or federally listed as Rare, Threatened or Endangered, are candidates for state or federal listing, are proposed for state or federal listing, or are identified by the California Native Plant Society's *Inventory of Rare and Endangered Plants of California* as Rank 1, 2, 3, or 4 species

The special-status plant and wildlife species with potential to occur at the NCCA site are discussed in more detail in Section 2 of this Initial Study, including Tables 2-2 and 2-3, and in the Biological Resources Evaluation prepared for the NCCA projects (Appendix B to this Initial Study). The NCCA projects' potential to affect special-status species is discussed in the following paragraphs.

For special-status plants, analysis considered effects during the construction period for each of the NCCA projects, effects during ongoing O&M at the site, and effects as a result of long-term change in the habitat mosaic on the NCCA parcels. For special-status birds, analysis considered construction- and O&M-related impacts on adults of each species, near-term effects on species breeding, and longer-term effects on the species as a result of the changing habitat mosaic over time at the NCCA site, including longer-term effects on breeding. For other special-status wildlife, analysis considered construction- and O&M-related impacts and impacts related to long-term changes in habitat at the site.

[4] *Special Animals* is DFW's term for all species tracked in the California Natural Diversity Database, regardless of legal or protection status. The Special Animals List identifies the species DFW considers to be in greatest need of conservation.

Special-Status Plants

Construction Period. As discussed in more detail in Section 2 and Table 2-3, Parry's rough tarplant is known to occur on both of the NCCA parcels (see Appendix B, Figure 3). The majority of the Parry's tarplant occurrences documented in the 2020 protocol surveys are located on the 24-acre parcel, with larger concentrations (more than 100 square feet in extent) in the north and central portions of the parcel, and more restricted occurrences to the south. Several smaller concentrations are located within the NEWS project footprint on the 78-acre parcel (Vollmar Natural Lands Consulting 2021a). Several other special-status plant species also have some potential to be present, including heartscale, crownscale, lesser saltscale, vernal pool smallscale, and San Joaquin spearscale. None of these species is state- or federally listed; all qualify for special status because the California Native Plant Society considers them Rare. Parry's rough tarplant and crownscale are CRPR 4.2 "watch list" species. The other species are all CRPR 1B.1 or 1B.2 species, reflecting a higher degree of rarity and threat (see Table 2-3).

Although Parry's rough tarplant is the only species known to be present on the NCCA site, the potential for presence of heartscale, crownscale, lesser saltscale, vernal pool smallscale, and San Joaquin spearscale cannot be entirely ruled out, since suitable habitat is present, the site is within the documented range of all species, and presence and local distribution can vary from year to year. Construction of the NCCA projects is therefore considered to have the potential to affect all of these species, as follows.

- As identified above, one of the distributions of Parry's rough tarplant documented in the spring – summer 2020 protocol surveys for special-status plants is located in the northwest quadrant of the 78-acre parcel, and would likely be removed by construction of the NEWS project
- Additional distributions of Parry's rough tarplant are located within and adjacent to the wetland project footprint on the 24-acre parcel, with a larger concentration near the northern end of the parcel, where limited construction staging for the wetland project could be located. Some or all of these occurrences could be disturbed or removed by wetland project construction and/or staging
- Wetlands on both parcels offer suitable habitat for heartscale, crownscale, and vernal pool smallscale; wetlands and mesic uplands offer suitable habitat for lesser saltscale and San Joaquin spearscale. None of these species were observed during the 2020 protocol surveys, but if they are present in future years, they could potentially be affected by construction of any of the NCCA projects, depending on their location and distribution

Parry's rough tarplant is widely distributed in the northern San Joaquin Valley, and numerous occurrences are known, including populations in northern and central San Joaquin County, southern Stanislaus County, and central Merced County (e.g., CalFlora 2021). Nonetheless, substantial reduction of this localized population in northern Merced County could rise to the level of a Significant impact. To address this, the City will implement the following mitigation measure. With Mitigation Measure BIO-1 incorporated, impacts on Parry's rough tarplant would be reduced to the extent feasible, and residual impacts, if any, are evaluated as Less than Significant, particularly as this is considered a watch list species that is only moderately threatened in California.

Mitigation Measure BIO-1. Protection and Recovery of Parry's Rough Tarplant at NCCA Site

Design of the wetland project will be configured to avoid removal of existing Parry's tarplant populations to the extent feasible while still accomplishing the project's habitat objectives, based on the mapping developed during the 2020 protocol-level surveys, or the most current updated mapping.

Prior to construction of the NEWS and wetland projects, the City will retain a qualified biologist, botanist, or ecologist with experience in western San Joaquin Valley special-status plants to demarcate

avoidance zones around the existing populations of Parry's tarplant that are planned to remain in place, using temporary construction fencing or another appropriate low-impact medium. The avoidance zone around each occurrence will include a 20-foot-wide buffer to reduce the potential for inadvertent and indirect impacts. Entry into Parry's rough tarplant avoidance zones will be prohibited and all construction and staging activity will be excluded.

Additionally, prior to construction of the NEWS project, which is expected to remove occurrences of Parry's rough tarplant, seed will be collected from existing onsite populations of the species and will be included in the seed mix used for the wetland project's native grassland restoration. This requirement will also apply if the wetland project would remove Parry's rough tarplant occurrences. Monitoring protocols and interim and final success criteria for recovery of Parry's rough tarplant in the wetland project native grassland area will be included in the Monitoring Plan developed for the wetland project and will thus be subject to DFW review and approval and to ongoing DFW oversight as monitoring proceeds. Corrective actions in the event Parry's rough tarplant within the native grassland area fails to meet interim success criteria will also be stipulated in the Monitoring Plan, potentially including, but not necessarily restricted to, reseeding in place with seed from onsite sources, and reseeding with onsite seed in other portions of the NCCA site that offer suitable habitat and can be protected over the long term. If corrective action includes reseeding outside the wetland project footprint, the additional reseeded area will be added to the area protected under the wetland project grant contract with DFW and will be monitored and maintained under the wetland project Monitoring Plan.

The City will be responsible for ensuring proper implementation of avoidance, protection, and recovery measures for Parry's rough tarplant.

Disturbance or removal of heartscale, crownscale, lesser saltscale, vernal pool smallscale, and/or San Joaquin spearscale, in the event they are present at the site in the future, could also rise to the level of a Significant impact. However, as discussed in Section 2 of this Initial Study, the City has committed to an AMM for the protection of special-status plants (AMM-5, Table 2-15). This measure requires that the City document and avoid existing populations of rare plants via GIS-based mapping. Under AMM-5, if a known population of rare plants cannot be avoided, seeds from the existing population—or, if this is not feasible, from another population within the Bennett Valley – San Joaquin watershed—must be collected for use in reseeding to restore the population. Reseeding will occur within the affected area if possible; if the affected area cannot be reseeded, reseeding will take place in another suitable location at the NCCA site, identified based on soil characteristics and currently prevailing site hydrology. Alternately, seed may be collected in advance and used to grow seedlings for replanting. Before construction begins, a qualified biologist or ecologist will be contracted to develop a monitoring and corrective action plan for the revegetated area. The plan will provide interim and final success criteria and will provide for corrective action and extended monitoring in the event interim success criteria are not met. The City will be responsible for contracting qualified personnel to implement monitoring and any needed corrective action, and for ensuring proper implementation of monitoring plan requirements.

In addition, recognizing that the NEWS, wetland, and MDTW projects would alter habitat conditions at the NCCA site, AMM-1 (see Table 2-15) provides for routine resurvey of the site to ensure that documentation of sensitive resources—including rare plant populations—is kept up to date as the site evolves. AMM-1 also provides for updates and modification of the other adopted AMMs, and for addition of new AMMs if warranted, as conditions at the site change, and for development of corrective action if detrimental conditions are identified. Thus, if site conditions change sufficiently that other special-status plants (in addition to the species discussed above) are identified as having the potential to occur on the site before all of the NCCA projects have been implemented, AMM-5 will be updated to include protection for these additional species.

With AMM-5 and AMM-1 in place, construction-period impacts on known and potential populations of special-status plants at the NCCA site would be reduced to a Less than Significant level. No mitigation is required.

Operations & Maintenance. For all of the NCCA projects,O&M activities that require ground disturbance, vegetation removal, or vegetation trimming would have the potential to disturb or remove special-status plants that may occur at the site, with the potential for impacts rising to a level considered Significant under CEQA. To provide for long-term protection of resources at the NCCA site, however, O&M will be required to incorporate the same AMMs required for construction (see *Avoidance & Minimization Measures* in Section 2). AMM-5 and AMM-1, discussed above, would afford long-term protection to Parry's rough tarplant outside the wetland project footprint as well as other special-status plant species that may be present in the future. The Grazing Management Plan currently being developed to meet the City's commitments under its contract for the DFW grant funding the wetland project will also include considerations for best management practices for special-status plants documented on the NCCA site, specific to potential impacts due to grazing. With AMM-5, AMM-1, and the Grazing Management Plan (which will be subject to DFW review and approval before implementation) in place, O&M-related impacts on special-status plants would be reduced to a Less than Significant level. No mitigation is required.

Habitat Change over Time. As discussed above, habitat distribution and quality on the NCCA site would change over time; in particular, the extent, quality, and diversity of wetland habitat is expected to increase substantially as a result of the NEWS project, wetland project, and MDTW project, the extent of native grasslands would increase as a result of the wetland project, and the wetland project would also add quasi-riparian habitat to the site. However, the site is expected to continue to offer habitat suitable for Parry's rough tarplant and the other five special-status plants that currently have the potential to be present: wetland habitat would be expanded and improved, vernal pool habitat would be restored, and mesic upland habitat would continue to be available on both the 78- and 24-acre parcels. No Impact on special-status plants is expected as a result of long-term habitat change on the NCCA site, and there is potential for a Benefit to these and other rare plant species with implementation of AMM-1 and AMM-5, overall improvement in habitat function and value, and long-term preservation of habitat at the site. No mitigation is required.

Special-Status Wildlife

Special-Status Amphibians and Reptiles. Several special-status amphibians and reptiles have at least some potential to be present at the NCCA site: northwestern pond turtle (state Species of Special Concern), western spadefoot (state Species of Special Concern), and giant garter snake (state- and federally listed as Threatened, state Species of Special Concern). Impacts by species are discussed below.

- The closest documented occurrence of **northwestern pond turtle** is 2 miles from the NCCA, and the Miller Ditch adjacent to the site offers only marginal habitat, but the species is highly mobile and there is some potential that it could pass through or use the site during movement between areas of better habitat. In the near term, construction activities affecting the Miller Ditch for the NEWS and MDTW projects could result in injury or mortality of northwestern pond turtles if any individuals are present. Construction and O&M activities in adjacent uplands and wetlands would also have the potent to injure or kill individuals dispersing through the site. To address this, the City has committed to implement an AMM for northwestern pond turtle protection (AMM-9, Table 2-15), which requires preconstruction surveys and relocation of any individuals found to suitable habitat at a distance from the work area, to be performed by qualified personnel. With AMM-9 in place, construction and O&M-related impacts on northwestern pond turtle would be Less than Significant, and no mitigation is required.

Over the longer term, the NCCA projects are expected to improve habitat for northwestern pond turtle: the NEWS and MDTW projects in particular would increase the extent and quality of ponded marsh habitat on the site, likely offering better opportunities for the species. Additionally, bank areas adjacent to the NEWS project wetlands could also offer sites for egg-laying, if the substrate is sufficiently sandy, and the species would continue to be protected from O&M disturbance by the life-cycle requirement for implementation of AMMs. Long-term impacts on northwestern pond turtle are therefore considered Less than Significant on balance, with a potential for long-term Benefit. No mitigation is required.

- **Western spadefoot** is considered unlikely to be present on the NCCA site; burrows in uplands on the site offer suitable dry-season refugia but breeding habitat is marginal due to the shallow depth and short ponding duration of seasonal wetlands in a typical year, and the closest documented occurrence of the species is almost 7 miles away. However, the species' presence cannot be conclusively ruled out. If western spadefoot individuals are present, they could be adversely affected by construction and O&M activities in both wetland and upland areas. To address this, the City has committed to an AMM for western spadefoot protection (AMM-7, Table 2-15). AMM-7 requires that construction and O&M be conducted during the dry season if possible and that work conducted during the wet season avoid entry into sensitive areas identified by a qualified biologist. During all seasons, AMM-7 also requires preconstruction "scoping" surveys by a qualified biologist for work that would affect potential refugial burrows in upland areas, followed by relocation outside the disturbance area if any individuals are found. With AMM-7 in place, construction- and O&M-related impacts on western spadefoot are expected to be Less than Significant, and no mitigation is required.

  Over the long term, the NEWS, wetland, and MDTW projects would all reduce the overall extent of upland habitat for western spadefoot at the NCCA site. However, some upland habitat would remain, and the wetland project in particular would increase the extent and quality of potentially suitable native grassland habitat. Additionally, all of these projects, and especially the wetland project, would increase the extent of potentially suitable breeding habitat in ephemeral wetland areas. On balance, impacts of long-term habitat change on western spadefoot are considered Less than Significant, with a potential for long-term Benefit to the species' breeding opportunities. No mitigation is required.

- **Giant garter snake** populations in the western San Joaquin Valley are well documented. There is only one known breeding population, located at the Volta Wildlife Area about 12 miles south-southeast of the NCCA site, and the species is not known to occur in close proximity to the site; the closest known occurrence is 2 miles away. Nonetheless, ditches at the site, which connect to the Newman Wasteway and ultimately the San Joaquin River, provide potentially suitable habitat. As a result, although the species is considered very unlikely to use the NCCA site, its presence cannot be conclusively ruled out. Construction and O&M activities are thus considered to have some potential to result in direct take of giant garter snake. Any such take would constitute a Significant impact. To address the potential for impacts on giant garter snake, the City has committed to implement an AMM for its protection (AMM-8, Table 2-15). To the extent feasible, AMM-8 requires construction and O&M to avoid impacting or working within 200 feet of drainage ditches and constructed water bodies at the NCCA site. Additionally, for all construction and O&M activities that must occur within 200 feet of habitat suitable for giant garter snake, AMM-8 imposes a seasonal restriction where feasible and requires a preconstruction survey by qualified personnel, followed by consultation with USFWS if the species is present, and implementation of additional measures if/as directed by USFWS. With AMM-8 in place, impacts on giant garter snake would be addressed consistent with regulatory agency guidance, and are thus considered Less than Significant. No mitigation is required.

Over the longer term, the increase in extent and quality of emergent marsh habitat at the NCCA as a result of the wetland and NEWS projects is expected to improve the quality of habitat for giant garter snake, with areas of emergent vegetation providing cover for foraging, and banks and adjacent uplands offering basking opportunities. If the species becomes more likely to use the NCCA as habitat conditions improve, there would be increased potential for exposure to risk from future construction and O&M, but ongoing implementation of AMM-8 during the lifespan of the NCCA would continue to protect the species. As a result, long-term impacts on giant garter snake are expected to be Less than Significant, with potential for a long-term Benefit to the availability of suitable habitat for the species. No mitigation is required.

Special-Status Birds. Two special-status bird species have been observed on the NCCA site: Swainson's Hawk (state-listed as Threatened) and Loggerhead Shrike (not listed, but a state Species of Special Concern), and several others have the potential to be present, including Tricolored Blackbird (federal Species of Concern, state Species of Special Concern), Burrowing Owl (state Species of Special Concern), Northern Harrier (state Species of Special Concern), and Yellow-billed Magpie (federal Bird of Conservation Concern). Additionally, mature trees just offsite along the east boundary of the 78-acre parcel may provide nesting habitat for numerous species that do not otherwise qualify for special status but are protected under the federal Migratory Bird Treaty Act. The potential for impacts by species is itemized below, beginning with the species known to be at least intermittently present at the NCCA site.

- **Swainson's Hawk** has been observed foraging at the NCCA site. Injury or mortality of Swainson's Hawk during construction or O&M for any of the NCCA projects would constitute take of a state-listed species, representing a Significant impact under CEQA. However, adults of the species, typical of raptors, are mobile and wary and are expected to be able to avoid active work areas, particularly as large tracts of suitable foraging habitat, as well as roosting opportunities, are available on nearby agricultural lands. Direct take of adult Swainson's Hawk as a result of construction or O&M at the NCCA site is not anticipated; construction- and O&M-related impacts on adult Swainson's Hawk, if any, are thus expected to be Less than Significant, and no mitigation is required.

  Swainson's Hawk is not expected to nest on either of the NCCA parcels, which do not offer suitable large trees, but may use trees adjacent to the east boundary of the 78-acre parcel for this purpose. Disruption of Swainson's Hawk nesting would also represent a Significant impact, but would be effectively avoided during both construction and O&M by implementation of AMM-10 for the protection of nesting birds (see Table 2-15), which requires pre-activity surveys for nesting birds before work begins, consultation with resource agencies if nesting protected species are observed, and establishment of a protected no-activity buffer zone around any occupied nests for the duration of nesting activity. With AMM-10 incorporated, impacts on Swainson's Hawk nesting are expected to be Less than Significant, and no mitigation is required.

  The NCCA parcels also currently provide open upland habitat suitable for Swainson's Hawk foraging. Uplands at the site would be reduced over the longer term as the NCCA projects are implemented and the extent of wetland habitats increases. This has the potential to reduce Swainson's Hawk foraging opportunities at the NCCA. However, this species forages widely in agricultural fields, and extensive agricultural lands would continue to be available adjacent to and surrounding the NCCA, while some improved foraging would remain available onsite in the wetland project native grasslands and adjacent upland areas. In this context, impacts related to localized decrease in the availability of Swainson's Hawk foraging opportunities are considered Less than Significant. Additionally, by creating a quasi-riparian corridor along the central swale, the wetland project may improve Swainson's Hawk nesting opportunities at the site, since the species prefers to nest in large trees in proximity to riparian areas;

large trees adjacent to the 78-acre parcel are generally suitable for Swainson's Hawk nesting but do not currently offer adjacent riparian habitat. There is thus the potential for a long-term Benefit to Swainson's Hawk breeding as habitat conditions at the NCCA evolve over the longer term. No mitigation is required.

- Currently, **Loggerhead Shrike** is thought to use the NCCA site's open uplands for foraging, while fencing at the site provides opportunities for roosting and resting. The species has been observed on the 78-acre parcel. Because the species is highly mobile, and other suitable habitat in the vicinity offers a retreat in the event of disturbance, impacts, if any on adult Loggerhead Shrikes during construction and O&M at the NCCA site are expected to be Less than Significant. No mitigation is required.

  Loggerhead Shrike is not expected to nest on or immediately adjacent to either of the NCCA parcels since suitable vegetation is not currently available. No Impact on nesting Loggerhead Shrikes is anticipated in the immediate term, and no mitigation is required.

  Over the long term, the availability of shrubby vegetation at the NCCA would increase slightly, due to plantings for the NEWS project (Table 2-5, Figure 2-5), and open areas would continue to be available in the wetland project footprint and portions of the NEWS and MDTW projects. This could be favorable for Loggerhead Shrike; in particular, as shrubby plantings become increasingly established over the longer term, the site could offer suitable nesting habitat—not currently available—as well as foraging and roosting opportunities. This would represent a Benefit. However, it would also create a potential for disturbance and disruption of Loggerhead Shrike nesting that does not currently exist at the site. Nesting disruption could occur as a result of O&M over the longer term, and could also result from construction of later-phase projects (NEWS project, Newman Nature Park, and MDTW project), depending on the lag between wetland project implementation and the construction of subsequent projects. This could rise to the level of a Significant impact but would be avoided by implementation of AMM-10 (Table 2-15). With AMM-10 in place, impacts on Loggerhead Shrike breeding would be Less than Significant, and would likely represent an overall Benefit. No mitigation is required.[5]

- **Burrowing Owl** has not been observed on either of the NCCA parcels, but suitable habitat, including abundant small mammal burrows, is present, and the parcels' generally open character with extensive ruderal uplands (particularly the 78-acre parcel) is generally hospitable to the species. Their presence therefore cannot be ruled out. Outside of the breeding season, construction- and O&M-related impacts on adult Burrowing Owls are expected to be Less than Significant, since adults of the species are both highly mobile and fairly disturbance-tolerant, and abundant suitable habitat is available in the near vicinity to which individuals disturbed by activity at the NCCA could retreat. No mitigation is required.

  During the breeding season, Burrowing Owls are considerably less mobile. Either construction or ground-disturbing O&M activity could result in injury or mortality of adults rearing their young in burrow nesting sites as well as destruction of nests and mortality of young. This could rise to the level of a Significant impact. However, the City has committed to implement an AMM for protection of breeding Burrowing Owls (AMM-11, Table 2-15), requiring preconstruction surveys for construction activities during the breeding season as well as for O&M activities that would involve ground disturbance or

[5] The same would be true for all bird species whose nesting opportunities are improved by habitat changes at the NCCA site: improving breeding habitat could be considered to create an "attractive nuisance" since breeding for these species is not currently occurring onsite, but habitat changes would make breeding possible, and could place nests at risk from future construction and O&M activities. However, AMM-10 for the protection of nesting birds of all species would continue to be required for the lifespan of the NCCA, and would reduce impacts to a level considered Less than Significant, with no mitigation required. For this reason, improved breeding opportunities for special-status birds of all species are considered a Benefit on balance. To avoid repetition, this aspect of the impacts of long-term habitat change at the NCCA is not addressed further.

would generate substantial sustained disturbance, followed by consultation with DFW and establishment of a no-activity buffer zone around any active nest locations for the duration of nesting activity. With AMM-11 in place, construction and O&M-related impacts on Burrowing Owl nesting would be reduced consistent with regulatory agency guidance and are considered Less than Significant. No mitigation is required.

Over the long term, Burrowing Owl opportunities at the NCCA may decrease somewhat as the extent of wetlands at the site increases and the extent of uplands decreases. However, some opportunities for both foraging and breeding would remain, in the levees along the Miller Ditch and in the wetland project grasslands. In addition, abundant suitable habitat would remain available in the vicinity, along the margins of agricultural lands and the levees of agricultural ditches and the Newman Wasteway. As a result, impacts on Burrowing Owl due to long-term change in the habitat mosaic on the NCCA parcels are evaluated as Less than Significant. No mitigation is required.

- **Tricolored Blackbird** has been documented less than 1 mile away from the NCCA site and may forage there, but is not expected to breed onsite; perennial marshland in the central swale is too small and degraded, and does not offer sufficiently dense vegetation growth to support Tricolored Blackbird nesting. Construction and O&M activities at the NCCA would have the potential to disturb Tricolored Blackbird foraging, but abundant suitable foraging habitat is available on nearby agricultural lands, and individuals would be expected to relocate if disturbance levels become excessive. Construction- and O&M-related impacts on Tricolored Blackbird are therefore expected to be Less than Significant. No mitigation is required.

  At present, the NCCA site does not offer suitable nesting habitat for Tricolored Blackbird. In the near term, No Impact on Tricolored Blackbird breeding is anticipated, and no mitigation is required.

  Over the longer term, habitat for Tricolored Blackbird at the NCCA site is expected to improve. The wetland project would expand and improve the quality of perennial emergent marsh in the central swale. The NEWS project would plant native shrubs on the edges of the wetland area, and would provide additional perennial or near-perennial emergent marsh habitat in the micropool. The MDTW project would also remain ponded year-round or nearly year-round. The added extent of open water, emergent vegetation, and shrubby growth could provide nesting opportunities that are not currently available at the site, while foraging opportunities would continue to be available in the wetland project grassland area and in nearby agricultural fields. Impacts on Tricolored Blackbird as a result of long-term habitat change at the NCCA are therefore considered Less than Significant, with potential for a Benefit to breeding. No mitigation is required.

- The closest documented occurrence of **Northern Harrier** is more than 13 miles away, but freshwater emergent wetland and grassland habitat at the NCCA site offer suitable foraging habitat and the species is sufficiently mobile that its presence cannot be ruled out. Similar to Swainson's Hawk, however, construction- and O&M-related impacts on foraging Northern Harrier adults are expected to be Less than Significant since there are abundant opportunities in the vicinity for individuals to relocate away from disturbance. No mitigation is required.

  Dense grassy upland habitat at the NCCA site, and emergent vegetation in adjacent ditches, may provide suitable nesting habitat for Northern Harrier. Both construction and O&M would thus have some potential to disrupt Northern Harrier nesting. However, as discussed for other species above, implementation of AMM-10, which would be required for construction and also for O&M throughout the lifespan of the NCCA projects, is expected to effectively address this potential. Impacts on nesting Northern Harrier are therefore considered Less than Significant, and no mitigation is required.

Northern Harrier is rarely observed in wooded areas. Thus, over the long term, as the quasi-riparian corridor created by the wetland project and the tree and shrub plantings at the NEWS project become increasingly established, opportunities for Northern Harrier at the NCCA site could be viewed as somewhat decreased. At the same time however, the increase in shrubby growth and the expanded extent and quality of emergent marshland habitat at the site (again, due to the NEWS and wetland projects, and likely also the MDTW project) are expected to improve nesting opportunities for the species, and potential foraging habitat would remain available in nearby areas. As a result, impacts on Northern Harrier as a result of long-term habitat change at the NCCA are considered Less than Significant, with a potential for Benefit to Northern Harrier breeding. No mitigation is required.

- Suitable habitat for **Yellow-billed Magpie** is offered by the NCCA grasslands and large trees along the east margin of the 78-acre parcel; the species may forage on the site and roost in adjacent trees. Like the other species discussed above, impacts on Yellow-billed Magpie adults during construction and O&M at the site are expected to be Less than Significant, since the suitable roosting trees are offsite and would not be directly affected by construction or O&M, and individuals disturbed by human and equipment activity could continue to forage in adjacent open croplands and could roost in large trees elsewhere in the vicinity (for instance, to the south along Brazo Road). No mitigation is required.

  Yellow-billed Magpie is not expected to breed on the NCCA site at present, since it requires large trees for nesting and none are present. It may, however, nest in the trees adjacent to the 78-acre parcels. Disturbance of Yellow-billed Magpie nesting as a result of construction or O&M could rise to a level considered Significant, but would be effectively avoided by implementation of AMM-10, as discussed for other special-status birds above. With AMM-10 in place, impacts on Yellow-billed Magpie breeding are expected to be Less than Significant. No mitigation is required.

  Over the longer term, establishment of the wetland project quasi-riparian corridor and the native tree plantings around the NEWS project would likely improve opportunities for Yellow-billed Magpie at the NCCA, since the species typically prefers open riparian and oak woodland settings in the vicinity of open grasslands, pasture, and croplands. This would include opportunities for nesting as the tree plantings become increasingly mature. Impacts on Yellow-billed Magpie as a result of long-term habitat change at the NCCA are accordingly considered Less than Significant, with a potential for overall Benefit to the species. No mitigation is required.

- As identified above, **other species protected by the Migratory Bird Treaty Act** may nest in mature trees adjacent to the east boundary of the 78-acre parcel. Construction and O&M activities in proximity to these trees would thus have the potential to disturb and disrupt protected bird breeding; impacts of interrupting nesting would have the potential to rise to a level considered Significant. However, AMM-10 would effectively address impacts on other protected birds not addressed above. With AMM-10 in place, impacts on nesting by Migratory Bird Treaty Act–protected species would be Less than Significant, and no mitigation is required. Over the longer term, as trees planted by the NEWS and wetland projects mature, new nesting opportunities are expected to become available on the NCCA site, representing a Benefit to nesting by Migratory Bird Treaty Act–protected species.

Special-Status Mammals. Two special status mammal species have the potential to occur at the NCCA site: American badger (state Species of Special Concern) and San Joaquin kit fox (state-listed as Threatened, federally listed as Endangered). Impacts by species are discussed below.

- The closest documented occurrence of **American badger** is almost 7 miles away from the NCCA site. Habitat at the site is marginal for this species, and no dens or other signs of its presence were

observed during the 2019 – 2020 biological surveys conducted for the NCCA projects. American badger is thus considered very unlikely to use the site; at most, it would be an infrequent and casual visitor. Although individuals could be disturbed by construction or O&M activities if present, they would be expected to relocate to better habitat if this occurs. As a result, impacts on American badger are expected to be Less than Significant, and no mitigation is required.

American badger prefers open areas and brushlands. Over the longer term, tree and shrub plantings at the wetland and NEWS projects would reduce the extent of open habitat, but would not create brushlands. As a result, the NCCA site is expected to become even less appealing to American badger as the NCCA projects become increasingly established; the potential for impacts on individuals or local populations of the species is expected to remain Less than Significant over the longer term, and would likely decrease with time. The decrease in habitat suitability at the site is also considered a Less than Significant impact, because the site does not offer important habitat resources for the species at present and is not thought to be used by the species currently. No mitigation is required.

- **San Joaquin kit fox** prefers annual grassland, scrub, and subshrub habitats. Grasslands at the NCCA site are suitable for the species, and its prey base of small mammals is present, but the NCCA site is largely disconnected from other suitable habitat in the region, the closest documented occurrence is almost 4 miles away, and no dens or other signs of its presence were observed during the 2019 – 2020 biological surveys conducted at the site. As a result, the species is considered unlikely to be present; at most, it may hunt there occasionally or pass through the site on its way to better-suited habitat. As with American badger, although San Joaquin kit fox individuals could be disturbed by construction or O&M activities if present, they would be expected to relocate to better habitat if this occurs. As a result, impacts on San Joaquin kit fox are expected to be Less than Significant, and no mitigation is required.

  Over the longer term, although the NCCA site may become somewhat less suitable for sustained usage by San Joaquin kit fox due to the increased extent of wetland and riparian habitat, opportunities for passage and hunting would remain available. The potential for impacts on individuals or local populations of the species is expected to remain Less than Significant over the longer term, potentially undergoing a slight decrease with time. Since the site does not currently offer important habitat resources and is not thought to be extensively used by San Joaquin kit fox at present, the slight long-term decrease in habitat suitability at the site is also considered a Less than Significant impact. No mitigation is required.

Potential for Adverse Effects on Sensitive Natural Communities

The following discussion focuses on sensitive natural communities; impacts on wetlands and other jurisdictional waters are addressed in the next item.

Construction Period

NCCA Site. As discussed in Section 2, the NCCA site supports a total of just over 13 acres of jurisdictional wetlands and waters, inclusive of the sections of the Miller Ditch that border the parcels. Of this, 0.142 acre consists of Coastal and Valley Freshwater Marsh, which is considered a sensitive natural community by DFW (Vollmar Natural Lands Consulting 2021a, 2021b). The site does not support any other sensitive natural communities.

The existing 0.142-acre extent of Coastal and Valley Freshwater Marsh is located in the northeast corner of the 78-acre parcel, where the berm blocking the “downstream” (east) end of the central swale (Figure 1-2) creates conditions of perennial or near-perennial ponding. It is within the footprint of the wetland project.

The wetland project is being designed to avoid impacts on existing wetlands to the extent this is feasible while still accomplishing the project's habitat enhancement and creation objectives; that is, the wetland project—like all of the NCCA projects—would avoid gratuitous impacts on existing habitat. There would nonetheless be some potential for direct impacts on this small area of Coastal and Valley Freshwater Marsh as a result of recontouring for habitat enhancement and reestablishment. There would also be potential for indirect impacts on the quality of this habitat as a result of soil disturbance, construction runoff, and siltation. Construction of the NEWS project adjacent to the east end of the central swale would also have the potential for indirect impacts on this small area of Coastal and Valley Freshwater Marsh.

However, the City has committed to an AMM with extensive provisions to protect wetland habitat and water quality during construction (AMM-4, Table 2-15). This would be required for construction of both the wetland project and the NEWS project. Additionally, because of the acreage involved, the wetland project will be subject to SWPPP requirements under the Construction General Permit and is expected to require permit authorization from DFW; the NEWS project would require permits from the Corps, DFW, and the RWQCB in addition to needing to meet SWPPP requirements. If the resource agencies view additional protection as necessary for either project, permit terms and conditions will include further requirements, potentially including a requirement for compensatory habitat mitigation, either in the form of habitat set-aside or purchase of mitigation credits from a bank in the area.

Neither of the other NCCA projects has the potential for direct impacts on existing Coastal and Valley Freshwater Marsh on the 78-acre parcel, because of the locations of their disturbance footprints in relation to this habitat, although there would be some potential for indirect impacts as a result of construction runoff during construction of the MDTW project and Newman Nature Park. However, both of these projects would also be required to incorporate AMM-4 and adhere to the terms and conditions of project-specific SWPPPs and applicable resource agency permits.

If the City elects to extend water service to the Newman Nature Park using Option 2 along the north and east margins of the 78-acre parcel (see Figure 2-9), there would be some potential for both direct and indirect impacts on Coastal and Valley Freshwater Marsh at the east end of the central swale. If the extension is installed after the wetland project is completed, direct impacts would be avoided since the terms of the City's grant contract with DFW require preservation of habitat enhanced and restored under the wetland project; however, indirect impacts could greater, since the wetland project would expand and improve Coastal and Valley Freshwater Marsh in this area. However, extension along the east margin of the parcel in conjunction with the Nature Park would need to be covered under the project SWPPP, would also be subject to AMM-4, and would be included in and subject to the conditions of regulatory permits authorizing the project.

With AMM-4 incorporated, implementation of project-specific SWPPPs, and adherence to the terms and conditions of regulatory permits, construction period impacts, if any, on Coastal and Valley Freshwater Marsh habitat on the 78-acre parcel would be reduced to a Less than Significant level. No mitigation is required.

Inoculum Donor Sites. As discussed in Section 2, the wetland project would use inoculum to foster growth of suitable vegetation within the ephemeral wetlands planned for enhancement on the 24-acre parcel. Inoculum would be collected from suitable donor sites in the western San Joaquin Valley region. Propagules such as cuttings and stakes may also be collected for plant propagation in other habitats enhanced or created by the wetland project. Like inoculum, propagules would be collected from local donor sites.

Improperly designed or carried out, collection of inoculum and propagules would have the potential to result in adverse effects on habitat at the donor sites, and some of these habitats may quality as sensitive natural

communities under DFW criteria. However, the wetland project design, including plans and specifications for inoculum and propagule collection, will need to be reviewed and approved by DFW under the terms of the DFW grant that is funding the wetland project. Additionally, planning for collection of these planting materials will incorporate measures to reduce impacts on the donor sites, which are expected to include inoculum collection by mowing and vacuuming rather than scraping (limiting the volume/amount of planting material collected at any one site and reducing the disturbance associated with collection), as well as methods for collecting cuttings, stakes, and other propagules. These measures will be developed with input and guidance from DFW. With DFW oversight of inoculum and propagule collection, including approval of impact-reduction measures, impacts of collecting inoculum and propagules on donor sites are expected to be Less than Significant. No mitigation is required.

Operations & Maintenance

As Section 2 discusses, once the wetland project becomes established, it is not expected to require operational intervention or maintenance other than periodic trash removal, and—in the near term, until the MDTW project comes on line—inspection, operation, and maintenance of the Miller Ditch weir and diversion supplying the central swale. Over the longer term, the outfall from the MDTW project to the central swale may require similar inspection, operation, and maintenance. All of this work is expected to be accomplished on foot, by hand or using hand tools, by City staff who have received worker awareness regarding sensitive habitats per the City's adopted AMM-3 (see Table 2-15). The Grazing Management Plan currently in development will also include best practices for the continued protection of sensitive habitats. As a result, O&M at the wetland project is not expected to result in substantial direct or indirect disturbance or damage to Coastal and Valley Freshwater Marsh within the central swale. Impacts would be Less than Significant, and no mitigation is required.

Ground-disturbing O&M at the other three NCCA projects, like construction, would have the potential to result in runoff that could deliver sediment or other pollutants to central swale marshland. However, like construction, ground-disturbing O&M activities would be required to implement the extensive water quality and habitat protection requirements of AMM-4 (see Table 2-15). With these precautions in place, impacts, if any, on Coastal and Valley Freshwater Marsh as a result of O&M at the NEWS, MDTW, and Newman Nature Parks are expected to be Less than Significant. No mitigation is required.

Opening the trails associated with the NEWS, MDTW, and Newman Nature Park projects would progressively increase public presence at the NCCA, with the potential for incursions into Coastal and Valley Freshwater Marsh within the central swale, including both accidental incursions and deliberate trespass or vandalism. Trail design and informational signage would be used to discourage accidental incursions, as discussed in Section 2. Deliberate trespass likely cannot be prevented without draconian measures that are considered counter to the spirit of the NCCA, which is intended to be a welcoming and inclusive community amenity, and could also discourage or prevent wildlife access to marshlands. Thus, although Significant impacts are not anticipated, they are a possibility. To address this, the City will implement Mitigation Measure BIO-2. With this measure incorporated, impacts on Coastal and Valley Freshwater Marsh would be Less than Significant. No additional mitigation is required.

Mitigation Measure BIO-2. Long-Term Protection and Restoration of Coastal and Valley Freshwater Marsh and Other Sensitive Habitats

If areas of Coastal and Valley Freshwater Marsh or another sensitive habitat at the NCCA site are disturbed or damaged by human incursion or other causes, the City will contract with a qualified biologist or ecologist to develop and implement a restoration plan appropriate to the extent and nature of the damage. Restoration measures may include, but will not necessarily be limited to, trash and

debris removal, reseeding, replanting from onsite or container stock, and if appropriate, localized recontouring. Exclusion fencing and/or hand watering may also be included, if the biologist/ecologist considers it appropriate to support vegetation reestablishment.

If the damage involves habitat recognized as a sensitive natural community by DFW, the restoration plan will be developed in consultation with DFW and will be required to meet with DFW approval. For all habitats, the restoration plan will be consistent with current best practices for restoration ecology, and will include provisions for follow-up monitoring, interim and final success criteria, and corrective actions such as additional replanting to ensure that damage is successfully restored and habitat function and value are maintained over the long term. The City will be responsible for proper development and implementation of the restoration plan and any follow-up monitoring and corrective action(s) it requires.

Potential for Long-Term Benefit

As described in Section 2 of this IS/MND, one of the wetland project's aims is to enhance the extent and quality of marsh habitat within the central swale. As a result, the wetland project is expected to result in a substantial long-term Benefit to the extent and quality of Coastal and Valley Freshwater Marsh at the NCCA site. No mitigation is required.

Potential for Adverse Effects on Protected Wetlands

Construction Period

Direct Impacts at NCCA Site. Figures 2-2 and 2-3 show the distribution of presumed state- and federally jurisdictional wetlands and waters at the NCCA site, and Figure 1-2 shows the approximate footprints of the four NCCA projects, subject to slight adjustment as design proceeds. As mentioned above, it is the City's intent to avoid unnecessary disturbance and loss of jurisdictional habitat; wetlands and other jurisdictional waters would only be affected where it is necessary to accomplish project objectives. Nonetheless, as the figures show, all four of the NCCA projects would directly affect existing protected wetlands and waters. The NEWS, wetland, and MDTW projects would also create and enhance habitat, resulting in a net increase in the extent and quality of jurisdictional wetlands and other waters at the site. Table 3-5 summarizes approximate temporary construction disturbance, permanent losses, and habitat creation by project and type of aquatic habitat.

Table 3-5. Construction-Period Impacts on Jurisdictional Wetlands and Waters, by Project

Project	Acres Impacted		Acres Restored/Created
	Temporary Impact	Permanent Impact	
NEWS project	Seasonal wetland: 0 Emergent wetland: 0 Ditch: 0.028	Seasonal wetland: 1.909* Emergent wetland: 0 Ditch: 0.002	Seasonal wetland (created): ~8 Emergent wetland (created): 2.2 Ditch: 0 *(Acreage does not include forebay, which would be routinely disturbed for sediment removal)*
Wetland project	Seasonal wetland: 5.169 Emergent wetland: 0.072 Ditch: 0	Seasonal wetland: 0.047 Emergent wetland: 0 Ditch: 0	Seasonal wetland (created): 0.14 Ephemeral wetland (restored): 3.8 Emergent wetland (created): 6.04 Emergent wetland (enhanced): 1.406 Native perennial bunchgrass habitat (created): 1+ Riparian (created): acreage depends on final design; at least 50 trees of suitable native species to be planted

Project	Acres Impacted		Acres Restored/Created
	Temporary Impact	Permanent Impact	
Newman Nature Park	Seasonal wetland: 0 Emergent wetland: 0 Ditch: 0	Seasonal wetland: 0.098 Emergent wetland: 0 Ditch: 0	—
MDTW project	Seasonal wetland: 0 Emergent wetland: 0 Ditch: ~0.038	Seasonal wetland: 0.899 Emergent wetland: 0 Ditch: 0.492	Seasonal wetland (created): ~15.8 *(Acreage does not include forebay, which would be routinely disturbed for sediment removal)*
Water service extension	Minor temporary disturbance of ditch for installation of extension to NEWS project No disturbance or loss of jurisdictional habitat under Newman Nature Park Option 1 (Figure 2-9) Potential for minor temporary impact to emergent wetland under Newman Nature Park Option 2 Potential for minor temporary impact to seasonal wetland under Newman Nature Park Option 2, if Option 2 is implemented after wetland project is complete		N/A

Sources: Poisson pers. comm., Vollmar Natural Lands Consulting 2020, Rodal Morales pers. comm.

The NEWS, wetland, and MDTW projects would all have the potential for Significant impacts related to disturbance of wetlands and other jurisdictional waters. However, all three of these projects are expected to require resource agency permit authorization, including Corps permitting under Clean Water Act Section 404, RWQCB water quality certification under Clean Water Act Section 401, and potentially also entry into California Streambed Alteration Agreements with DFW.

Because the projects would create more habitat than they would displace, it may be possible to qualify them for self-mitigating status, assuming an agreement can be reached to protect the habitat created in perpetuity under a conservation easement. If this is approved by the resource agencies (Corps, DFW, and RWQCB), provision of additional habitat as compensatory mitigation would not be required. If, however, the agencies determine that any of the projects would not result in sufficient extent or quality of new or enhanced habitat to compensate for disturbance and losses, permit terms and conditions will require the City to provide additional habitat as compensation. This could take the form of habitat set-asides, additional habitat restoration or enhancement, or purchase of mitigation credits from a mitigation bank in the region. The City would not be able to proceed with each project until the resource agencies with jurisdiction are satisfied that adequate compensation for disturbance and loss of jurisdictional habitat is being provided. With this protection in place, impacts on jurisdictional habitat would be addressed consistent with regulatory requirements. Impacts on jurisdictional habitat are therefore considered Less than Significant, and no additional mitigation is required under CEQA.

Extension of water service to the NEWS project is expected to require permits from the Corps (Clean Water Act Section 404), RWQCB (Clean Water Act Section 401), and DFW (Streambed Alteration Agreement) because of the need to cross the Miller Ditch. Water service extension to the NEWS project is expected to be included with the rest of the NEWS project in the the same permit application package and would be subject to the same conditions. Impacts on jurisdictional habitat associated with extension of water service to the NEWS project are therefore also considered Less than Significant, for the same reasons discussed above. No mitigation is required.

Option 1 for extension of water service to the Newman Nature Park would not require resource agency permitting, since it would be almost entirely within existing paved roadways and is not expected to affect jurisdictional wetlands or waters where it enters the 78-acre parcel (see Figure 2-9). However, if Option 2 is

selected for extension of water service to the Nature Park, it would also require resource agency permits due to potential impacts on jurisdictional habitat along the east side of the 78-acre parcel. Because water service extension would almost certainly be coordinated with NEWS project and/or Newman Nature Park construction, it would probably be included in the permit application for those projects and would be factored into the permit conditions and compensatory habitat mitigation requirements stipulated for those projects. If it proceeds as a separate undertaking, separate permitting would be required. In either case, as discussed above, the City would not be able to proceed with the installation until the resource agencies with jurisdiction are satisfied that disturbance and loss of jurisdictional habitat would be appropriately compensated for, either through the provision of compensatory habitat or through payment to a mitigation bank. With this protection in place, impacts on jurisdictional habitat due to water service extension would be addressed consistent with regulatory requirements and are considered Less than Significant. No mitigation is required.

Indirect Impacts at NCCA Site. In addition to the potential for direct disturbance and loss of jurisdictional wetlands and other waters, there would be potential for indirect construction-period impacts on jurisdictional habitat due to construction runoff delivering sediment and pollutants. However, as identified in prior checklist items, the City has committed to an AMM with extensive provisions to protect wetland habitat and water quality during construction (AMM-4, Table 2-15); this would be required for all four NCCA projects and for water service extension. Because of the acreage involved, all of four NCCA projects would also be required to develop and implement project-specific SWPPPs to obtain authorization under the Construction General Permit. Additionally, as identified in *Direct Impacts* above, the NEWS project, wetland project, MDTW project, and Option 2 water service extension are all expected to require resource agency (Corps, DFW, and/or RWQCB) permit authorization. The Newman Nature Park would likely also also require permit authorization.

If the resource agencies view additional protection for jurisdictional wetlands and waters as necessary for any of the permits, permit terms and conditions will include further requirements for water quality protection, which the City will be responsible for implementing. With AMM-4 in place, project-specific SWPPPs developed and implemented, and any additional resource agency permit terms and conditions incorporated, indirect construction-period impacts on jurisdictional wetlands and waters would be addressed consistent with regulatory requirements and are considered Less than Significant. No mitigation is required.

Impacts at Inoculum and Propagule Donor Sites. As discussed in *Potential for Adverse Effects on Sensitive Natural Communities* above, the wetland project would use inoculum to foster growth of suitable vegetation within the ephemeral wetlands planned for enhancement on the 24-acre parcel, and propagules such as cuttings and stakes may be used for plant propagation in other habitats enhanced or created by the wetland project. Both inoculum and propagules would be collected from suitable local donor sites in the western San Joaquin Valley region, some of which may qualify as state- and/or federally protected wetlands.

Improperly designed or carried out, inoculum and propagule collection could result in adverse effects on the donor sites. However, as discussed above, planning for inoculum and propagule collection is incorporating measures to protect donor habitats, and the wetland project design (including plans and specifications for inoculum and propagule collection) will need to be reviewed and approved by DFW under the terms of the grant that is funding the wetland project. Additionally, if inoculum or propagule collection would occur within jurisdictional habitat, these habitats will be included in the permit applications submitted to the appropriate resource agencies (potentially including DFW, the Corps, and the RWQCB) as part of the project disturbance footprint. Inoculum and propagule collection would then be subject to permit conditions to limit and offset adverse effects of collection, potentially including compensatory habitat mitigation for the short-term ("temporal") effects of disturbance due to collection. With DFW oversight and additional protection through the conditions of regulatory permits, impacts—if any—of inoculum and propagule collection on state- and/or federally

jurisdictional habitat would be reduced consistent with regulatory standards and are considered Less than Significant. No mitigation is required.

Long Term

The potential for both direct and indirect impacts as a result of ground-disturbing O&M activities would be similar to, although more areally restricted than, impacts during the construction period; at worst, impacts could be Significant. However, the City will continue to require adherence to AMM-4 for wetland habitat and water quality protection for all O&M activities. Moreover, any O&M work within jurisdictional limits would also require resource agency authorization, as described for the construction period, and would be subject to the same regulatory requirements to compensate for disturbance or loss of jurisdictional habitat. This may be addressed through separate future permitting for these types of O&M activities, or may be included in the original permit packages authorizing the projects, depending on resource agency guidance and preferences. With these protections in place, long-term impacts on jurisdictional habitat as a result of O&M would be Less than Significant. No mitigation is required.

Additionally, over the long term, as summarized in Table 3-5 and described above, the NEWS, wetland, and MDTW projects would increase the extent and quality of jurisdictional habitat on the NCCA site. As a result, these three projects are expected to result in a long-term Benefit to wetlands and other jurisdictional waters.

Potential to Interfere with Wildlife Movement or Nursery Sites

The NCCA site is surrounded by actively cultivated agricultural lands, with developed areas present immediately adjacent to the northwest. It has not been identified as hosting a wildlife nursery site and is not considered a wildlife movement corridor (Vollmar Natural Lands Consulting 2021a). A number of protected bird species may breed on or adjacent to the site, however (see Table 2-3), and as discussed above, the City has adopted an AMM to protect nesting birds, their nests, eggs, and young (AMM-10, Table 2-15). This measure will apply during the construction period and also during O&M for the lifespan of the NCCA projects. With AMM-10 in place, impacts on protected bird nesting activities would be Less than Significant. No mitigation is required.

In addition, although it is largely disconnected from other suitable habitat nearby, the NCCA site offers habitat appropriate for San Joaquin kit fox and the species' prey base is known to be present; the species is not thought to den or breed on the site but may use it for passage and hunting. American badger may also pass through the site casually. Construction for each of the projects would be temporary and fairly short-term, as detailed in Section 2, and because the species is mobile and highly alert, San Joaquin kit fox is expected to be able to avoid active work areas and hunt in adjacent areas where small mammal prey is also abundant. The same would be true for American badger. During construction and O&M, passage through the site would also remain available outside active work areas, particularly during nighttime hours when the kit fox is most active. Impacts on San Joaquin kit fox and American badger mobility are therefore also expected to be Less than Significant. No mitigation is required.

Potential to Conflict with Local Policies/Ordinances Protecting Biological Resources

The NCCA projects would be subject to both City and County policies and ordinances protecting biological resources. City policies and ordinances apply because the NCCA projects would be City undertakings; County policies and ordinances are relevant because the site is outside City limits, in the unincorporated County.

City Policies and Ordinances. The City's General Plan (City of Newman 2007) explicitly recognizes the importance of protecting the Newman area's natural resources, including conservation of habitat and special-status species. General Plan Goal NR-3 requires the City to "[p]rotect sensitive native vegetation and wildlife

communities and habitat." Policies under Goal NR-3 provide more specific direction. City goals and policies are itemized, and NCCA project consistency is evaluated, in Table 3-6.

Table 3-6. Consistency with City General Plan Policies Protecting Biological Resources

Policy	NCCA Project Consistency
Policy NR-3.1: New development shall meet all federal, [s]tate and regional regulations for habitat and species protection	**Consistent.** The City has been in dialogue with resource agency staff about the NCCA projects since fall 2019, with the goal of sharing information and obtaining agency input and guidance. Outreach has included a pre-application meeting with Corps and RWQCB staff, informal phone and email discussions of the potential for the NEWS project to achieve self-mitigating status, and a presentation to the Corps Sacramento District's Interagency Task Force with subsequent discussion. The City will continue the dialogue and will submit permit applications as required by applicable regulations as each project is ready
Policy NR-3.2: The City shall require site-specific surveys to identify significant wildlife habitat and vegetation resources for development projects located in or near sensitive habitat areas	**Consistent.** Biological surveys of the NCCA parcels were conducted at a reconnaissance level in early 2019 and in more detail in fall 2019 – summer 2020, including protocol-level surveys for large branchiopods conducted in winter 2019 – 2020 and protocol-level peak blooming period surveys for special-status plants completed in summer 2020 (Kevin Merk Associates 2019, Vollmar Natural Lands Consulting 2021a). A preliminary delineation of jurisdictional habitat on the NCCA parcels was submitted to the Corps for verification in late spring 2020. It has been revised in response to Corps comments (Vollmar Natural Lands Consulting 2021b) and will be resubmitted in early 2021
Policy NR-3.3: The City shall support and participate in local and regional attempts to restore and maintain viable habitat for endangered plant and animal species, and wetlands…	**Consistent.** As described in Section 1 of this Initial Study, the City's overarching aims for the NCCA include improving habitat resources on the NCCA parcels; project-specific goals for the NEWS, wetland, and MDTW projects also include a focus on habitat values. The Newman Nature Park would also indirectly support maintenance of viable habitat in the Newman area by raising public awareness of the area's natural resources and systems
Policy NR-3.4: The City shall require mitigation of potential impacts on special-status plant and animal species based on a policy of no-net-loss of habitat value…	**Consistent.** For each of the NCCA projects, the City will be applying for the appropriate permit authorizations from the Corps, RWQCB, and/or DFW, as discussed in previous checklist items. If the projects do not qualify for self-mitigating status, permit terms and conditions will stipulate compensatory mitigation meeting applicable regulatory standards, which emphasize no net loss of habitat value. The City will be responsible for meeting the mitigation requirement(s) established by permitting for each of the NCCA projects
Policy NR-3.5: The City should use native plants for landscaping of public projects including parks and community facilities	**Consistent.** Plantings associated with the NEWS, wetland, and MDTW projects would emphasize the use of native species (see Tables 2-5 and 2-6 for NEWS and wetland project planting palettes; the MDTW project planting palette has not been developed in detail at this time). All plantings associated with the Newman Nature Park—including those in the parking area landscaping, as well as those in demonstration gardens, the rainwater harvesting/reuse, and the greywater demonstration gardens—would also be California native species appropriate to the area and site
Policy NR-3.6: The City shall encourage new development to use native vegetation, in landscape plans, where appropriate, instead of invasive, non-native plant species	**Consistent.** *See previous Policy*

Policy	NCCA Project Consistency
Policy NR-3.7: Parks, drainage detention areas and other open space uses shall incorporate, where feasible, areas of native vegetation and wildlife habitat	**Consistent.** The NEWS, wetland, and MDTW projects would construct and restore wetlands analogous to historic habitats on the NCCA site and in the region. The Newman Nature Park would also emphasize the use of native vegetation, including native-plant landscaping and native plant demonstration gardens
Policy NR-3.8: New development shall ensure that suitable habitat for Valley Elderberry Longhorn Beetle is adequately avoided, any elderberry shrubs are identified on project sites, and adequate mitigation is provided where development is proposed within 100 feet of elderberry shrubs	**Not applicable/Consistent.** The NCCA parcels do not currently support native California elderberry (*Sambucus* spp.) shrubs, and no habitat for VELB is present at the NCCA site (Vollmar Natural Lands Consulting 2021a). *Sambucus nigra* is included in the NEWS and wetland project plant palettes (see Tables 2-5 and 2-6), so the site may become more hospitable to VELB over time, but the City's adopted AMMs include a requirement for periodic re-survey and addition of new AMMs if a need is identified (AMM-1, Table2-14). This would provide for long-term avoidance and protection of VELB and its habitat at the NCCA if warranted in the future
Policy NR-3.9: New development shall ensure that active nests for special-status bird species shall be avoided during construction through pre-construction surveys, and if active nests are encountered, through restrictions on construction activities until any young have fledged. This shall include both ground nesting burrowing owl and tree nesting special-status birds	**Consistent.** As discussed in previous items, all of the NCCA projects would incorporate an AMM to protect nesting birds at the site (AMM-10, Table 2-15). This AMM would be in force during the construction period for each of the NCCA projects, and would also apply to all O&M activities that involve ground disturbance or vegetation removal or trimming, throughout the lifespan of the NCCA projects. The NCCA projects would also incorporate an AMM specific to protection of nesting Burrowing Owls (AMM-11, Table 2-15) during construction as well as O&M activities that would generate substantial sustained disturbance or involve ground disturbance
Policy NR-3.10: New developments shall preserve, protect and incorporate established native trees into the site design…	**Not applicable.** No trees of native species are currently present on the NCCA site
Policy NR-3.11: New development shall ensure that any jurisdictional waters are avoided to the maximum extent practicable, any required authorization is obtained from jurisdictional agencies, and adequate mitigation is provided for unavoidable impacts	**Consistent.** As discussed in previous items, the NCCA projects are being designed to avoid gratuitous impacts on jurisdictional waters, and (see Policy NR-3.1 above) the City has been in dialogue with jurisdictional agency staff about the projects since fall 2019 and will submit the appropriate permit applications as each of the NCCA projects becomes ready

As itemized in Table 3-6, all of the NCCA projects are deemed consistent with all applicable City policies protecting biological resources. There would be No Impact related to a conflict with such policies, and no mitigation is required.

The City's also has a tree ordinance (City Code Chapter 11.04), but it applies only to street trees, which are defined as "trees planted or growing within the public rights-of-way, public access easements, streets, parking strips, alleys, roads and ways" within City limits. As such, it does not apply to the NCCA. There would be No Impact related to conflict with the City's tree ordinance, and no mitigation is required.

County Policies and Ordinances. Like the City, the County explicitly recognizes the value of natural resources and protects them through goals and policies in its General Plan (County of Merced 2013). County General Plan Goal NR-1 requires the County to "[p]reserve and protect, through coordination with the public and private sectors, the biological resources of [Merced] County." Numerous policies under Goal NR-3 provide more specific direction; relevant policies are itemized, and NCCA project consistency is evaluated, in Table 3-7. The County does not have ordinances protecting trees or biological resources.

Table 3-7. Consistency with County General Plan Policies Protecting Biological Resources

Policy	NCCA Project Consistency
Policy NR-1.2: Protected Natural Lands Identify and support methods to increase the acreage of protected natural lands and special habitats, including[,] but not limited to, wetlands, grasslands, vernal pools, and wildlife movement and migration corridors, potentially through the use of conservation easements	**Consistent.** As discussed above and in previous checklist items, the NCCA projects would increase the extent and quality of wetland (including ephemeral wetland/vernal pool) and native grassland habitat on the NCCA parcels. The projects would not hinder wildlife movement or migration and may provide a slight Benefit to waterfowl migration due to the increased extent of wetland habitat on the parcels. Additionally, the City is currently exploring the potential for the NEWS project to qualify for self-mitigating status, which would require establishment of a conservation easement over any portions of the NEWS project "counted" toward mitigation credit, and intends to do the same with the MDTW project
Policy NR-1.8: Use of Native Plant Species for Landscaping Encourage the use of native plant species in landscaping, and, where the County has discretion, require the use of native plant species for landscaping	**Consistent.** As discussed above for City General Plan Policy NR-3.5, plantings at the NEWS, wetland, and MDTW projects would emphasize the use of native species, and the Newman Nature Park may include native plant demonstration gardens intended to encourage use of native plants in residential and commercial landscaping in the Newman area. Any additional landscaping at the Newman Nature Park would also rely on native rather than introduced species, as required by City Policy NR-3.5
Policy NR-1.11: On-Going Habitat Protection and Monitoring Cooperate with local, [s]tate, and [f]ederal agencies to ensure that adequate on-going protection and monitoring occurs adjacent to rare and endangered species habitats or within identified significant wetlands	**Consistent.** As discussed under several City Policies in Table 3-6, the City has been in ongoing dialogue with resource agency staff about the NCCA projects, will continue to engage with the agencies, and will be responsible for implementing the terms and conditions of resource agency permits needed to authorize the NCCA projects. These are expected to include a requirement for monitoring and corrective action to ensure proper establishment of restored and created habitat at the NCCA Additionally, as itemized in Table 2-15, the City has committed to implementing a suite of AMMs to protect habitat values at the NCCA both during construction and over the long term, for the lifespan of the NCCA projects. The AMMs include a requirement for routine re-survey, re-evaluation, and modifications to the AMM suite to ensure that it remains adequately protective as conditions at the NCCA evolve over time (AMM-1, Table 2-15)

As itemized in Table 3-7, all of the NCCA projects are deemed consistent with relevant County policies protecting biological resources. There would be No Impact related to a conflict with such policies, and no mitigation is required.

Potential to Conflict with an Adopted Conservation Plan

The NCCA site is not within an area coverd by an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. As a result, there would be no potential for conflict with such a plan as a result of implementing the NCCA projects. There would be No Impact, and no mitigation is required.

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V. CULTURAL RESOURCES *Would the project:*	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a) Cause a substantial adverse change in the significance of a historical resource pursuant to *CEQA Guidelines* Section 15064.5?	☐	■ (Santa Fe Grade, integrity)	■ (Newman Wasteway; Santa Fe Grade, context) (potential Benefit to Santa Fe Grade context)	■ (Newman Wasteway, integrity)
(b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to *CEQA Guidelines* Section 15064.5?	☐	■	☐	☐
(c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	■	☐	☐

Discussion of Checklist Responses

Background

CEQA protects historical resources in general, and also extends specific guidance for the treatment of artifacts, objects, and sites that qualify as unique archaeological resources.

As defined under CEQA, *historical resources* encompass the span of the state's prehistoric and historic heritage. They include sites, buildings, structures, areas, objects, and documents that are historically or archaeologically significant, or significant in the "architectural, engineering, scientific, economic, educational, social, political, or cultural annals of California," and meet one or more of the following criteria (*CEQA Guidelines* 15064.5[a][3]).

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage

(2) Is associated with the lives of persons important in our past

(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values

(4) Has yielded, or may be likely to yield, information important in prehistory or history

Resources included on the California Register of Historical Resources (CRHR), or on a local register, typically meet these requirements and are considered historical resources for CEQA purposes (*CEQA Guidelines* 15064.5[a][1–2]. Additionally, lead agencies may determine that a resource that does not qualify for CRHR or local register listing is nonetheless significant and may treat it as a historical resource meriting protection under CEQA (*CEQA Guidelines* 15064.5[a][4]).

Unique archaeological resources are resources with particularly important informational or heritage value. They are defined in the CEQA statute as including artifacts, objects, and sites that meet any of the following criteria (California Public Resources Code 21083.2[g]).

- Contains information needed to answer important scientific research questions and in which there is a demonstrable public interest
- Has a special and particular quality such as being the oldest of its type or the best available example of its type
- Is directly associated with a scientifically recognized important prehistoric or historic event or person

The CEQA statute and *CEQA Guidelines* require lead agencies to evaluate the potential for projects they undertake, permit, or fund to affect historical resources, including both non-unique and unique archaeological resources (California Public Resources Code 21083.2, *CEQA Guidelines* 15064.5). Project outcomes that would materially affect the significance of a historical resource are considered significant impacts under CEQA. Such outcomes include physical demolition, destruction, relocation, and alteration of the resource or its immediate surroundings (its context) (*CEQA Guidelines* 15064.5[b][2]). CEQA also identifies means to evaluate and mitigate impacts on historical resources (California Public Resources Code 21083.2).

Historical Resources Evaluation for NCCA Projects

The historical resources evaluation conducted for the NCCA projects is described in detail in the Historic Property Survey Report/Finding of Effect presented as Appendix D to this Initial Study (Basin Research

Associates 2020). Because of the anticipated need for Corps permit authorization for at least two of the NCCA projects (NEWS project and MDTW project; see Table 1-2), this evaluation was conducted consistent with Section 106 of the National Historic Preservation Act and Corps requirements as well as the requirements of CEQA and the state's *CEQA Guidelines*.

The historical resources evaluation included the following activities.

- A search of records on file with the California Historical Resources Information System's Central California Information Center (CHRIS/CCIC), located at California State University, Stanislaus, for information on prior studies and known historical resources within the 78-acre and 24-acre parcels and a 0.25-mile-side surrounding buffer (CHRIS/CCIC File No. 11485IN, dated August 26, 2020)
- Review of relevant materials on file inhouse
- Outreach to the state's Native American Heritage Commission (NAHC) for information in their Sacred Lands File
- Outreach to local Native American individuals and groups identified by the NAHC as potentially able to provide additional information, including the Amah Mutsun Tribal Band, North Valley Yokuts Tribe, and Southern Sierra Miwok Nation
- Archaeological field inventory (pedestrian survey) of both parcels, conducted September 30 – October 1, 2020 by RPA (Registered Professional Archaeologist) staff meeting the Secretary of the Interior's qualification standards

Following is a brief summary of the results of the historical resources evaluation; complete information is provided in Appendix D.

- No prehistoric, combined prehistoric/historic, or historic era archaeological sites have been recorded or reported on or within 0.25 mile of either of the NCCA parcels, and the field inventory of the parcels did not identify evidence for the presence of prehistoric, combined prehistoric/historic, or historic era archaeological sites or isolate[6] finds
- No known prehistoric, ethnographic, or contemporary Native American resources, including sacred places and traditional use areas, have been identified in, adjacent to, or near either of the parcels
- No historic era or architecturally significant sites, structures, landmarks, or points of interest were identified within the NCCA parcels, either by the records search or during the field inventory
- No national or State of California historical landmarks or points of interest are located in or adjacent to either parcel

Based on the lack of recorded sites, the negative results of the field inventory, the NCCA site's location within a historic floodplain/tributary complex, and the degree of disturbance due to agricultural activities, the NCCA parcels are evaluated as having low archaeological sensitivity (Basin Research Associates 2020).

[6] Several finds in association with one another are required to identify a site. An *isolate* is a single, isolated find not associated with other artifacts.

Two previously recorded historical resources are present in the NCCA vicinity: a segment of the Santa Fe Grade immediately adjacent to the east boundary of the 24-acre parcel, and the Newman Wasteway, located south of the NCCA site (Basin Research Associates 2020).

The Santa Fe Grade was originally constructed in the last decade of the 19th century with the intention that it would enable a 100-mile-long extension of the Santa Fe Railroad across seasonal wetlands along the western edge of the San Joaquin Valley. The opening of the competing Southern Pacific Railroad line farther west in the Valley forced its abandonment, and in the late 19th century – early 20th century it was converted to a roadway facilitating access to ranch lands owned by the Miller and Lux cattle company, which had its headquarters in Los Banos. The segment of the Grade at the boundary of the 24-acre parcel remains a one-lane unpaved road (Basin Research Associates 2020, University of California Davis Library 2020). The Santa Fe Grade was evaluated in 2017 and found eligible for listing in the National Register of Historic Places and the California Register of Historic Resources (Basin Research Associates 2020). The determination has not yet been reviewed, but the Grade is presumed to qualify as a historical resource for CEQA purposes in the analysis that follows.

The Newman Wasteway was constructed circa 1950 as part of the federal Central Valley Project, and was designed to convey excess flows from the Delta-Mendota Canal for discharge to the San Joaquin River. The Central Valley Project has been found eligible for NRHP listing based on its association with the history of irrigation and agricultural development in California, with the Newman Wasteway identified as a contributing element (Basin Research Associates 2020). The Newman Wasteway is therefore also treated as a historical resource for CEQA purposes in the analysis below.

Based on review of historic topographic maps, the portion of the Miller Ditch that runs adjacent to NCCA site appears to have been constructed in the early 1950s. Because of its age, it was evaluated for factors that would qualify it as a historical resource under CEQA, and it does not appear to qualify for NRHP or CRHR listing, or as a historical resource for CEQA purposes, for the following reasons (Basin Research Associates 2020).

- There is no evidence that the Miller Ditch is associated with any important events in Merced and/or Stanislaus County history or with the development of irrigated farming in the Newman area or western San Joaquin Valley. By the time it was constructed, the agricultural ditch system, and irrigated farming in general, was already well established in the region
- No evidence was found to associate the Miller Ditch with important persons or notable engineers in area, regional, or state history, or in the history of California water development
- The Miller Ditch does not exhibit important engineering or design values; it is a standard, earthen “v” or trapezoidal irrigation feature typical of a large number of similar ditches in the general area, and is part of the larger water conveyance and drainage system of the CCID but is not a distinguishable entity of the system

The Miller Ditch is therefore considered a standard agricultural water service structure that is not likely to provide information important in history (Basin Research Associates 2020), and is not treated as a historical resource for purposes of the analysis below.

Potential for Adverse Change in Significance of Historical Resources

As discussed above, two listed historical resources are present in the immediate project vicinity: the Newman Wasteway and the Santa Fe Grade.

Newman Wasteway

None of the NCCA projects would have a direct physical impact on the Newman Wasteway, which is located to the south of the NCCA site. The NEWS project would improve the quality of water discharged from the NCCA site to the Miller Ditch and from the Ditch to the Wasteway, but would not modify the use or operation of the Wasteway, which would continue to receive return water from the Miller Ditch per the current (and long-term) operational regime. Treated water from the MDTW project would primarily be diverted to the central swale to support marsh and riparian habitat enhanced and created by the wetland project, although an alternate diversion enabling return flow to the Miller Ditch would also be provided. However, Miller Ditch water is currently used for irrigation on the 78-acre parcel; use of treated Miller Ditch water for a similar purpose on the parcel would not materially alter the operation of the system tributary to the Newman Wasteway. There would thus be No Impact on the integrity of the Newman Wasteway, and no mitigation is required.

All of the NCCA projects would modify physical conditions on the NCCA parcels, as summarized below and described in detail in Section 2.

- NEWS project: addition of constructed wetlands for stormwater and dry weather runoff treatment on the 78-acre parcel
- Wetland project: increase in extent and quality of wetlands on both parcels
- MDTW project: addition of constructed wetlands for treatment of Miller Ditch water on 78-acre parcel
- Newman Nature Park: addition of community facilities, demonstration gardens, parking area, and trails to 78-acre parcel

All of these changes could be construed as modifications to the context of the Newman Wasteway. However, as discussed in more detail in the *Aesthetics* section of this checklist, the "green" character of the NCCA site with all projects implemented would remain generally consistent with cultivated parcels and scattered structures in the area around the site. The new facilities and improvements at the NCCA would not directly alter the surrounding area's prevailing agricultural character, nor would the NCCA projects indirectly foster a reduction in the local or regional importance of agriculture. They would therefore not detract from or impinge on the Newman Wasteway's setting in a dominantly agricultural area. Additionally, the 78-acre parcel, where visual changes would be greatest, is about 1,800 feet (just over 0.3 mile) from the Wasteway at its closest point; changes on the 78-acre parcel thus would not affect the immediate context of the Wasteway. As a result, impacts, if any, on the context of the Newman Wasteway are considered Less than Significant. No mitigation is required.

Santa Fe Grade

The Santa Fe Grade runs adjacent to and just outside the east boundary of the 24-acre parcel, in close proximity to the areas where the wetland project would restore and enhance marsh habitat in the central swale, and ephemeral wetland habitat in the southeast portion of the parcel. Since the grade is outside the boundaries of City property, there should be no encroachment whatsoever on the Grade. However, if work in these areas were to extend to the Grade, there would be a potential for Significant impacts on the integrity of this feature. To address this, the City will implement the following mitigation measure. With Mitigation Measure CUL-1 in place, impacts would be avoided and are considered Less than Significant.

Mitigation Measure CUL-1. Protection of Old Santa Fe Grade

The footprint of the wetland project will be developed to ensure that all physical impacts on the historic Santa Fe Grade are avoided. The project construction documents will define the extent of the Santa Fe Grade in the vicinity of the wetland project and will show the footprint of the Grade as a "No

Disturbance" exclusion area where earthwork and equipment staging will be prohibited. The City's construction management staff will be responsible for enforcing this measure during construction. Similar avoidance will be required during O&M activities, and will be enforced by Public Works staff overseeing O&M at the NCCA site.

As discussed above for the Newman Wasteway, the NCCA projects would modify physical conditions on both the 78-acre and 24-acre parcels. Enhancement of wetland conditions on the 24-acre parcel would not adversely affect the context of the the Santa Fe Grade. On the contrary, this could represent a Benefit to context, since the Grade was originally constructed to enable rail transport through wetlands historically present in the western San Joaquin Valley. Changes on the 78-acre parcel, as discussed above, would not materially alter the surrounding area's agricultural character, and are thus considered Less than Significant effects on the context of the Santa Fe Grade. No additional mitigation is required.

Potential for Adverse Change in Significance of Archaeological Resources

No known archaeological resources are located on or within close proximity to the NCCA parcels, and the site is considered to have low sensitivity for archaeological resources, based on records search results, site setting and history of use, and the results of the field survey conducted in early fall 2020 (Basin Research Associates 2020; see Appendix D). Nonetheless, as in any area with a long history of human habitation, there may be some potential for unanticipated discovery of resources buried in the subsurface, either during construction earthwork, or during ground-disturbing O&M activities. This could include prehistoric Native American resources and/or historic-period resources, potentially including resources associated with construction of the Santa Fe Grade. At worst, impacts could rise to a level considered Significant under CEQA. To address this, the City will implement the following mitigation measures. With Mitigation Measures CUL-2, CUL-3 and CUL-4 in place, impacts would be reduced to a Less than Significant level.

Mitigation Measure CUL-2. Retention of On-Call Archaeologist

Prior to construction of each of the NCCA projects, the City will retain a qualified professional archaeologist (City's Archaeologist) who meets Secretary of the Interior standards and has experience in San Joaquin Valley archaeology on an on-call basis for the duration of all ground-disturbing activities. The City's Archaeologist will be responsible for reviewing, identifying, and evaluating cultural resources (if any) exposed during construction, for determining whether they qualify as *historic resource(s)* and/or *unique archaeological resource(s)* under CEQA, and, if needed, recommending and implementing appropriate follow-up treatment.

Mitigation Measure CUL-3. Worker Awareness Training for Cultural Resources

Prior to groundbreaking for each of the NCCA projects, the City's Archaeologist (defined in Mitigation Measure Cul-2) will develop and present in-person, hands-on worker awareness training for historical resources. Training will include information on the possibility of encountering resources during construction, the types of resources that could be seen and how to recognize them, and proper procedures in the event resources are encountered. All field management and supervisory personnel and construction workers involved with ground-disturbing activities will be required to take this training prior to beginning work on the project. Upon completion of the training, workers will be required to sign a form stating that they attended the training, understand, and will comply with the information presented. The same type of worker awareness training will be required for all City and contract staff engaged in O&M activities that would entail ground disturbance in areas not already disturbed by construction. It will be provided by the City's Archaeologist, or another on-call specialist meeting the

same qualifications. The City's Public Works Department will be responsible for ensuring that training is provided for both construction and O&M staff.

Mitigation Measure CUL-4. Evaluation and Treatment of Unanticipated Archaeological Discoveries

If known or suspected cultural resources are discovered during construction or O&M, work in the immediate area of the find will cease and the contractor or O&M staff will be required to notify the City before the end of the work day. The find will be protected in place until the City's Archaeologist (or another specialist meeting the same qualifications) and a trained and qualified Native American monitor who can prove genealogical relationship to at least one of the tribes of the western San Joaquin Valley region have evaluated it and identified appropriate follow-up measures, if any. If the City's Archaeologist determines that the resource qualifies as a *historical resource* and/or *unique archaeological resource* under CEQA, they will notify the City and other appropriate parties and recommend follow-up measures to reduce impacts, in accordance with Section 15064.5 of the *CEQA Guidelines*. Depending on the nature of the find, follow-up measures may include avoidance, preservation in place, recordation, monitoring during ongoing work, additional archaeological testing, and data recovery, among other options. The City's Archaeologist may recommend completion of a formal Archaeological Monitoring Plan (AMP) and/or Archaeological Treatment Plan (ATP), potentially including data recovery, if significant archaeological deposits are exposed during ground-disturbing activities. The City will be responsible for proper implementation of the AMP and ATP. If an AMP or ATP is implemented for a project that requires federal permit authorization (for example, Clean Water Act Section 404 permitting), the City will consult with the federal lead agency and, if appropriate, other regulatory agencies, in developing and implementing the AMP and ATP.

If archaeological evaluation, monitoring, or treatment is required, the City's Archaeologist will prepare and file a Monitoring Closure Report with the City, documenting the nature of the find(s), evaluation methods, and outcomes.

Potential for Disturbance of Human Remains

Because the NCCA site is not sensitive for archaeological resources, discovery of human remains is considered unlikely. However, as with other types of resources, it is not impossible, both during construction and during O&M activities that involve disturbance of areas not already disturbed for construction. Disturbance of human remains could constitute a Significant impact under CEQA. To address potential impacts on human remains the City will implement the following mitigation measure. With Mitigation Measure CUL-5 in place, impacts on human remains would be reduced to a Less than Significant level.

Mitigation Measure CUL-5. Procedures for Discovery of Human Remains

The treatment of human remains and funerary objects discovered during ground-disturbing construction and O&M activity will comply with all applicable state laws. If known or potential human remains are encountered during activities at the NCCA site, work within 50 feet of the discovery and in any nearby areas reasonably suspected to overlie adjacent remains will cease, the find will be protected in place, and the contractor/O&M staff will be required to notify the City before the end of the work day. The City will promptly notify the Merced County Coroner, who will be responsible for determining whether the remains are Native American. If the Coroner determines that the remains are Native American and are not subject to Coroner authority, the Coroner will notify the Native American Heritage Commission, which is responsible for identifying and notifying descendant(s) of the deceased so they can make recommendations regarding the treatment of the remains. The City will be responsible for facilitating the

disposition of remains recommended by the Most Likely Descendant(s). If no satisfactory agreement can be reached as to the disposition of the remains pursuant to state law, the City will respectfully reinter the human remains and items associated with the burial on City property in a location not subject to further subsurface disturbance. A final report detailing the find, follow-up activities, and disposition of remains will be prepared by the City's Archaeologist or other qualified staff, and will be submitted to the City Manager promptly following disposition of the remains. The report will be subject to review and approval by the City Manager.

References Cited in this Section

Basin Research Associates. 2020. Historic Property Survey Report/Finding of Effect: City of Newman Community Conservation Area, 78- and 24-Acre Parcels, Merced County, California. San Leandro, CA. Prepared for Redtail Consulting, Fremont, CA. (Appendix D to this Initial Study.)

University of California Davis Library. 2020. Special Collections: Miller & Lux Maps. Available: https://www.library.ucdavis.edu/news/50-features-special-collections-miller-lux-maps/#:~:text=Henry%20Miller%20and%20Charles%20Lux,late%201800s%20and%20early%201900s. Accessed: November 2020.

VI. ENERGY *Would the project:*	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a) Result in potentially significant environmental impact(s) due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?	☐	☐	☐	■
(b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	■

Discussion of Checklist Responses

Potential to Result in Wasteful, Inefficient, or Unnecessary Energy Consumption

Construction of the NCCA projects would entail direct consumption of energy in the form of vehicle, heavy equipment, and hand equipment fuels. It would also entail indirect consumption of the energy associated with production and market delivery of materials and substances used in construction, such as the concrete used for the pads in the proximal portions of the NEWS and MDTW project forebays, the materials required to construct the community facilities at in the Newman Nature Park, and bedding material, pipe, and other supplies required for water service extension. There would also be indirect energy consumption associated with inoculum harvesting, propagule collection, and production of any container stock and seed stock used in landscape, revegetation, and restoration plantings at the site.

Ongoing O&M for each of the four NCCA projects would also consume energy, both directly and indirectly. Direct energy consumption would include vehicle and hand equipment fuels at all projects, and the energy

required to pump, treat, and deliver water for the handwashing sinks, classroom area sink, and hydration station at the Newman Nature Park and irrigation in the NEWS gateway area. Indirect energy consumption would include the energy needed to produce and deliver paints and other materials and substances needed for routine upkeep of the NCCA facilities over the long term, as well as the energy required to harvest propagules or cultivate and obtain any seed or container stock needed for periodic replanting.

The City's General Plan (City of Newman 2007) recognizes the importance of conserving energy resources and avoiding wasteful use of energy. In the General Plan Natural Resources Element, Goal NR-5 requires the City to "[m]inimize the consumption of energy, water, and non-renewable resources" and Policy NR-5.1 further stipulates that "… new civic buildings shall … exceed the state standards for energy efficiency (Title 24) by at least 15 percent." The Recreation and Cultural Resources Element includes Policy RCR-1.11, requiring the City to "design and maintain park and recreation facilities to minimize water, energy and chemical … use." It is the City's intent to ensure that design, construction, and O&M for all of the NCCA projects is consistent with these requirements. For instance, lighting at the Newman Nature Park facilities would be solar-powered to reduce energy consumption. The Newman Nature Park would also include rainwater capture and greywater reuse demonstration gardens, helping raise community awareness of options to reduce energy consumption in area homes and businesses. Thus, although project design, construction, and O&M would consume energy resources both directly and indirectly, No Impact related to wasteful, inefficient, or unnecessary consumption of energy is anticipated. No mitigation is required.

Potential to Conflict with or Obstruct Energy-Related Plans

Neither the City nor the County has adopted an energy conservation plan at this time, although the County is in the process of developing a Climate Action Plan that will include programs to reduce energy usage (County of Merced 2018). With no adopted energy plan in place at the local level, there would be no potential to conflict with such a plan. Moreover, as discussed above, City policy requires civic facilities to exceed current state standards for energy efficiency, which is consistent with the County's intent to put energy use reduction programs in place. There would be No Impact related to conflict with local energy conservation plans, and no mitigation is required.

By requiring exceedance of state energy efficiency standards, the City is also in compliance with state energy conservation planning. There would be No Impact related to conflict with state energy conservation planning, and no mitigation is required.

References Cited in this Section

City of Newman. 2007. Newman 2030 General Plan. Available: http://www.cityofnewman.com/docman/community-development-department/36-general-plan-final-version/file.html. Downloaded: November 2019.

County of Merced. 2018. Merced County Climate Action Plan. Available: https://mercedcap.rinconconsultants.com/. Accessed: September 2020.

VII. GEOLOGY & SOILS *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
(i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	☐	■
(ii) Strong seismic ground shaking?	☐	☐	■	☐
(iii) Seismic-related ground failure, including liquefaction?	☐	☐	■	☐
(iv) Landslides?	☐	☐	☐	■
(b) Result in substantial soil erosion or the loss of topsoil?	☐	■ (topsoil loss)	■ (soil erosion)	☐
(c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, or collapse?	☐	☐	■	☐
(d) Be located on expansive soil, as defined in the applicable building code, creating substantial direct or indirect risks to life or property?	☐	☐	■	☐
(e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	■
(f) Directly or indirectly destroy a unique paleontological resource or site or a unique geologic feature?	☐	■ (paleontological resources)	☐	■ (geologic features)

Discussion of Checklist Responses

The evaluation and mitigation of geologic hazards are regulated at state and local levels. The principal state regulations governing assessment and mitigation of risks related to geologic hazards are California's Alquist-Priolo Earthquake Fault Zoning Act and Seismic Hazards Mapping Act, which establish statewide processes to

identify hazard areas, and assign local jurisdictions the responsibility of evaluating and mitigating hazards within designated hazard areas.

The Alquist-Priolo Earthquake Fault Zoning Act (California Public Resources Code Sec. 2621 *et seq*.) prohibits the location of most types of structures intended for human occupancy across the traces of active faults and strictly regulates construction in the corridors along active faults (Earthquake Fault Zones). It defines criteria for identifying active faults, gives legal weight to terms such as "active," and establishes a process for local jurisdiction review of building proposals within Earthquake Fault Zones.

Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act (California Public Resources Code Sections 2690–2699.6) is intended to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act focuses on corollary or "secondary" hazards, including liquefaction[7] and seismically induced landslides. Under the Seismic Hazards Mapping Act, the state is charged with identifying and mapping areas at risk of secondary seismic hazards, and cities and counties are required to regulate development within mapped Seismic Hazard Zones. Permit review is the primary mechanism for local regulation of development; local jurisdictions are prohibited from issuing development permits for sites within designated Seismic Hazard Zones until appropriate site-specific geologic and geotechnical investigations have been conducted and measures to reduce potential damage have been incorporated into the development plans.

The California Geological Survey publishes regulatory maps (available at http://maps.conservation.ca.gov/cgs/informationwarehouse/regulatorymaps/) showing the location and extent of the state's Earthquake Fault Zones and Seismic Hazard Zones. Local jurisdictions must enforce the requirements of the Alquist-Priolo Act and Seismic Hazards Mapping Act within the hazard zones delineated on the state's regulatory maps, and may also choose to zone additional faults as active or identify additional areas at risk from secondary seismic hazards. The NCCA site, like most of the Central Valley, is outside the area currently covered by state-issued regulatory maps (California Geological Survey 2019), and at this time neither the Counties of Merced and Stanislaus nor the City have issued local zoning maps, although all three have planning policies in place to address seismic hazards (City of Newman 2007, County of Merced 2013, County of Stanislaus 2016).

Building codes—which are relevant to geologic hazards and seismic safety because they establish standards for earthwork/grading, foundation design, and seismic safety—are adopted at the local jurisdiction level. As identified in Section 2 of this Initial Study, the City's adopted building code is the 2019 version of the California Building Standards Code (CBSC) (California Code of Regulations, Title 24), inclusive of Appendix J (*Grading*).

Potential for Exposure to Surface Fault Rupture

The NCCA site is not within or in close proximity to any Earthquake Fault Zone defined by the State of California; the closest state-zoned fault is the Ortigalita fault, located some 14.5 miles to the southwest (State Geologist 1986, California Geological Survey 2019). As a result, the NCCA projects are considered to be at very low risk of surface fault rupture. No Impact related to surface fault rupture is anticipated, and no mitigation is required.

Potential for Exposure to Seismic Groundshaking

Like much of California, the Newman area and western San Joaquin Valley region in general are at risk of strong seismic groundshaking, and like all projects in seismically active regions, the NCCA projects would

[7] *Liquefaction* occurs when seismic groundshaking causes saturated materials in the subsurface to lose their strength and flow, or behave as a liquid. It can lead to substantial structural damage, particularly to poorly designed structures.

expose new project features to seismic groundshaking risk.

Several new structures would be constructed at the Newman Nature Park, including a community plaza, a shade structure, and outdoor classroom areas, as well as restrooms and an O&M storage building. The NEWS project, wetland project, and MDTW projects would not construct structures except for a small (approximately 10 feet by 10 feet) pump station building that may be added in the future to enable drawdown of the NEWS project micropool for maintenance. The primary concern with regard to seismic groundshaking is the potential for structural damage and resulting injury to members of the public and/or City staff who may be present.

All elements of the NCCA projects and the new water service extension would be designed and constructed in accordance with applicable sections of the City's adopted building code (the 2019 CBSC). Among other provisions in the CBSC, CBSC Chapter 16 lays out minimum design requirements to ensure that the structural components of buildings are adequate to resist anticipated loading, including seismic loading due to ground acceleration in earthquakes. Buildings and other structures are assigned to risk categories that reflect their intended use and occupancy, and design criteria reflect the risk category, site soil properties, and anticipated ground acceleration values based on studies by the U.S. Geological Survey, the Building Seismic Safety Council (which is funded by the Federal Emergency Management Agency), and the American Society of Civil Engineers. Additionally, the City will require site-specific geotechnical investigations for the NEWS, Newman Nature Park, and MDTW projects. One key purpose of these studies will be to provide recommendations for design and construction appropriate to seismic risks at the site, in consideration of site soil and other characteristics.[8]

Although the potential for impacts cannot be entirely avoided, adherence to current City/CBSC design criteria and the recommendations of site-specific geotechnical investigations would ensure that risks of structural damage due to groundshaking, and corollary public safety hazards, are minimized consistent with good engineering practices and the current prevailing standard of care. Residual impacts, if any, are accordingly considered Less than Significant. No mitigation is required.

Potential for Exposure to Seismic-Related Ground Failure

This discussion focuses on liquefaction as the type of seismic ground failure most relevant to the NCCA site. Landslide hazards, including seismically induced landslides, are discussed in the next item.

As identified in the introduction to this checklist section, the State of California has not issued regulatory maps delineating Liquefaction Zones for the vicinity of the NCCA site (California Geological Survey 2019). However, geotechnical studies for recent projects in the general project vicinity have not identified liquefaction or other types of seismically induced ground failure as a concern in the area (e.g., Kleinfelder 2007, Salem Engineering Group 2017). Moreover, as identified above, the City will require preparation of site-specific geotechnical investigations for the NEWS, Newman Nature Park, and MDTW projects, which will include recommendations to address site soil conditions consistent with requirements of the City's adopted building code. With this requirement in place, potential impacts associated with seismically induced ground failure would be minimized consistent with regulatory requirements and current prevailing standards of engineering practice. Residual impacts, if any, are considered Less than Significant, and no mitigation is required.

The new water service extension to serve the NEWS project and Newman Nature Park would also be constructed in accordance with the City's adopted building code, the City's Improvement Standards, and current

[8] Measures identified in geotechnical and other engineering reports to address site hazards and ensure that the design of new construction is appropriate for site conditions are commonly referred to as *recommendations* but in practice are actually binding requirements.

prevailing standards of engineering practice. Potential impacts associated with seismically induced ground failure would be minimized consistent with regulatory requirements and current prevailing standards of engineering practice, and residual impacts, if any, are considered Less than Significant. No mitigation is required.

Potential for Exposure to Landslide Hazards

As identified above, the State of California has not issued regulatory maps delineating Seismically Induced Landslide Zones for the vicinity of the NCCA site (California Geological Survey 2019). However, the NCCA site is located on nearly flat topography at a substantial distance from the rangefronts bounding the San Joaquin Valley. As a result, it is not considered to be at risk from seismically induced landslides or from landslides in general. No Impact related to landslides is anticipated, and no mitigation is required.

Potential for Soil Erosion or Loss of Topsoil

As described in Section 2, construction of all of the NCCA projects would entail ground disturbance. The NEWS and MDTW projects would require fairly extensive earthwork to create the forebays, wetland treatment cells, and the NEWS micropool and provide for O&M access roads/trails. The wetland project would entail recontouring to enhance emergent marsh habitat, create seasonal wetland swales, and optimize conditions in the ephemeral wetland area, consistent with historic conditions. The Newman Nature Park would require grading to accommodate the new community plaza, outdoor classroom and picnic areas, demonstration gardens, and parking area as well as additional trails. Extension of water service would require excavation for pipeline trenches.

Once construction of each project is complete, ongoing O&M activities may intermittently also require ground disturbance. This would be particularly true of the NEWS and MDTW projects, where culverts (NEWS project) and spreaders (MDTW project) enabling passive flow between wetland cells would be periodically evaluated for proper function and could need to be removed and reset to adjust their elevation for more efficient flow. Minor ground disturbance could also be required for maintenance of garden and classroom areas at the Newman Nature Park. Operational ground disturbance is not expected to be necessary at the wetland project, where the goal is to establish areas of functionally self-sustaining wetland, riparian, and grassland habitat.

Soil Erosion

The ground disturbance associated with grading and recontouring for construction of all of the NCCA projects would have the potential to result in accelerated soil erosion. However, all of the NCCA projects would disturb areas greater than 1 acre, and would thus be required by Section 402 of the federal Clean Water Act to obtain authorization under the SWRCB's General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit). This requires preparation and implementation of a site- and project-specific Storm Water Pollution Prevention Plan (SWPPP) that details measures to control erosion and site runoff. Under the current Construction General Permit, SWPPPs must be prepared and implemented by personnel meeting specific qualifications.[9] With the SWPPP in place, soil erosion would be reduced consistent

[9] Since 2009, California has required that SWPPPs be prepared, amended, and certified by a Qualified SWPPP Developer (QSD), and implemented either by a QSD or a by Qualified SWPPP Practitioner (QSP). QSPs may not prepare, amend, or certify SWPPPs. Certification as a QSD or QSP requires the applicant to (1) document possession of appropriate "underlying certification" (such as California licensure as a Professional Engineer, Professional Geologist, Certified Engineering Geologist, or Landscape Architect) providing a basis of skills and knowledge to perform the QSD or QSP role, (2) take a training course offered by a qualified California Construction General Permit Trainer of Record, and (3) take and pass the appropriate examination. QSDs must pass both the QSD and QSP exams while QSPs are required to take only the QSP exam.

with regulatory requirements. It is expected that regulatory permits authorizing the projects would require erosion control to remain in place as needed during the vegetation establishment period following construction, with monitoring—and, if needed, corrective action to repair or replace dysfunctional components—by City and/or consultant staff. The NCCA projects' construction- and vegetation establishment-period impacts related to soil erosion are therefore expected to be Less than Significant, and no mitigation is required.

As discussed in previous checklist sections, water service extension would most likely be coordinated with NEWS project and/or Newman Nature Park construction. In this case, it would be covered under the same SWPPP and regulatory permit package as the larger project, and would be subject to the same requirements. If it proceeds as a separate undertaking, which is considered unlikely, it would still be subject to the requirements of the City's adopted AMM for water quality and habitat protection (AMM-4, Table 2-15). With AMM-4 in place, soil erosion impacts of water service installation are expected to be Less than Significant. No mitigation is required.

Ground-disturbing O&M activities would also have the potential to result in accelerated soil erosion. However, as discussed in Section 2, under the NCCA Master Plan (City of Newman 2021), the City has committed to an AMM for water quality protection (AMM 4, Table 2-15), which includes erosion and runoff control measures such as straw wattles, filter rolls, filter fences, and silt fences, and a requirement that any areas of disturbed vegetation will be reseeded immediately following the completion of work. AMM-4 would remain in force for ground-disturbing O&M activities for the lifespan of the NCCA projects. With AMM-4 in place, soil erosion impacts related to ground-disturbing O&M activities are expected to be Less than Significant. No mitigation is required.

Topsoil Loss

Although the NCCA parcels—in particular, the 78-acre parcel—have been subject to agricultural grading and some degree of cultivation over the years, they do not appear to have undergone deep ripping, and their current vegetated condition shows that although they almost certainly do not retain an undisturbed topsoil layer, sufficient topsoil is present to support successful vegetation growth. Earthwork—including recontouring for the wetland project as well as the deeper cuts and more extensive fill placement required for NEWS and MDTW project construction and possibly also for structural foundations at the Newman Nature Park—would require topsoil removal since the organic content in topsoil precludes its use in engineered fill. Topsoil removal would also be required for water service extension to the NEWS project if Option 2 is selected for water service extension to the Nature Park, and for the portion of Option 1 within the 78-acre parcel. There would thus be potential for topsoil loss during construction if precautions are not taken. Similar, but more areally limited topsoil loss could also occur during ground-disturbing O&M activities, and could also be Significant. To address this, the City will implement Mitigation Measure GEO-1. With this measure incorporated, construction and operational impacts related to topsoil loss would be reduced to a Less than Significant level.

Mitigation Measure GEO-1. Topsoil Protection

To minimize impacts on topsoil resources, construction documents for all NCCA projects will require the following measures for work in vegetated areas.

- The area of disturbance will be limited to the minimum needed to accomplish the necessary grading/recontouring
- Revegetation will reuse onsite topsoil to the extent feasible. In areas where topsoil is present, topsoil will be removed and sidecast separate from other excavation spoils, and will be assessed for reuse in habitat restoration/creation by a qualified biologist or ecologist with local

native plant expertise. If the topsoil is determined to be suitable for onsite reuse in habitat restoration/creation, it will be maintained in a separate stockpile and will be replaced during revegetation. If site topsoil is determined to be unsuitable—for example, due to the presence of excessive invasive species seed bank—clean imported topsoil will be used. If possible, import topsoil will be obtained from a local source or sources within the project watershed, with soil properties generally consistent with those of the NCCA site. Import topsoil will also be assessed and approved by the qualified biologist/ecologist prior to use on the site

If operational or maintenance activities require topsoil disturbance or removal, the same measures will apply.

Potential for Location on Unstable Substrate Materials

Issues related to liquefaction and slope instability (landslides) are discussed in previous items, above. Expansive soils are discussed in the following item. This discussion focuses on the potential for unstable excavation cuts.

As discussed in several items above, earthwork—ranging from fairly extensive excavation and fill placement for the NEWS and MDTW projects to more limited recontouring for the wetland project and trenching for water service extension—would be necessary to construct the NCCA projects. Any excavation carries some risk of instability, but risks would be reduced consistent with good engineering practices and the current prevailing standard of care by adherence to the City's adopted building code (the 2019 CBSC) and recommendations of the site-specific geotechnical investigations required for the NEWS project, Newman Nature Park, and MDTW project. The more limited excavation potentially needed for future maintenance such as adjustment of culvert elevations at the NEWS and MDTW projects would also be required to conform with the City's building code and any relevant recommendations of the original geotechnical investigations. The potential for project construction and O&M to create unstable conditions is therefore considered Less than Significant, and no mitigation is required.

Potential for Location on Expansive Soils

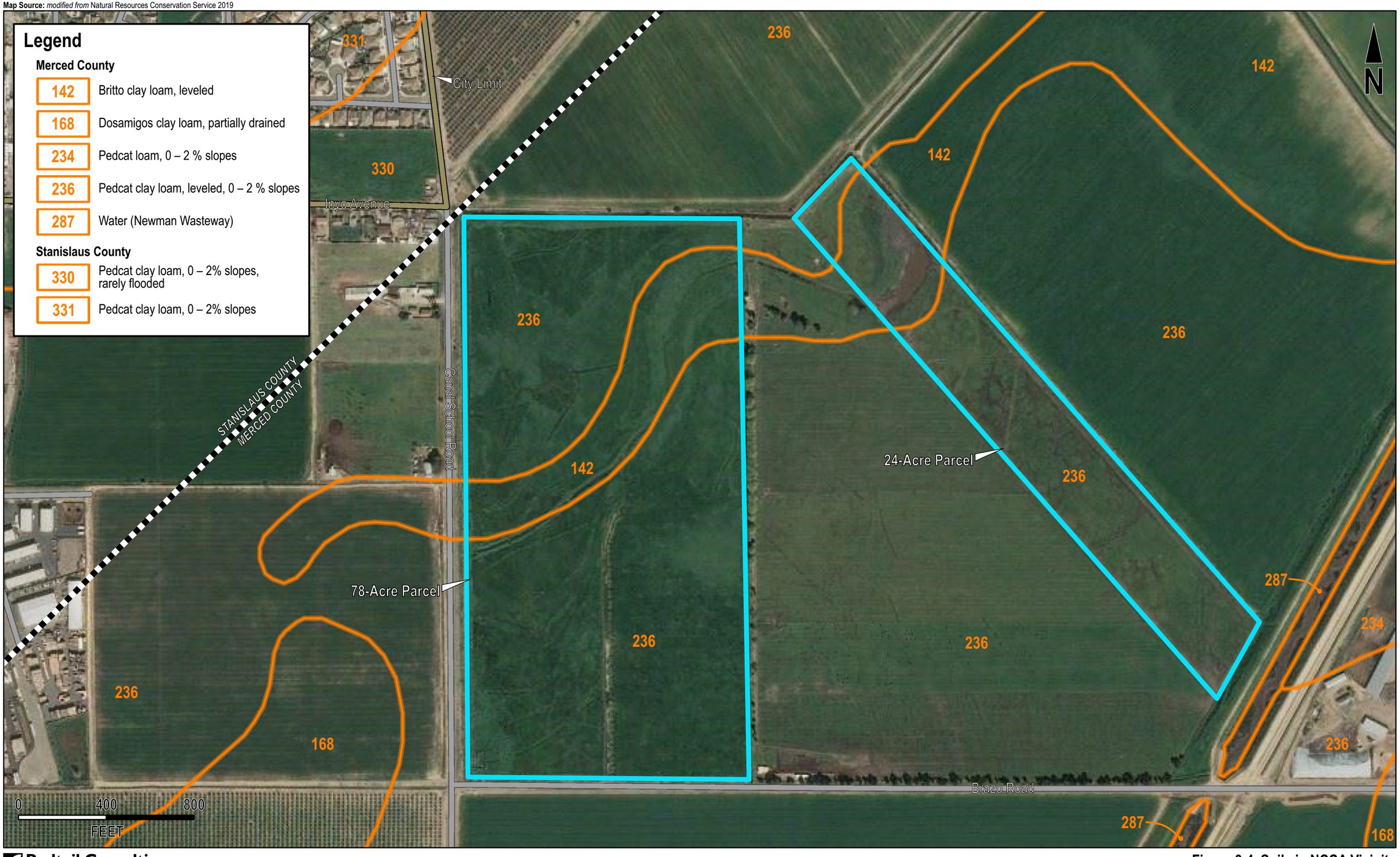
The NCCA site and surrounding vicinity are underlain by soils assigned to the Pedcat, Britto, and Dosamigos series (Figure 3-4). These are saline, clay-rich, loamy soils of alluvial fans, fan aprons, and basin floors, formed in alluvium derived from sedimentary rock. Drainage is poor, such that soils may remain seasonally saturated, and pedogenic calcium carbonate and/or gypsum are present in varying percentages (Natural Resources Conservation Service 2019).

Table 3-8 provides an overview of key characteristics by soil series, including shrink-swell (expansion) potential. As shown on Figure 3-4, the NCCA site is largely underlain by Pedcat clay loam (leveled), with the exception of the central swale, which is underlain by Britto clay loam (leveled).

Table 3-8. Soils in NCCA Vicinity

Soil	Landform	Typical Profile*	Shrink-Swell Potential
Merced County			
Britto clay loam, leveled	Rims on basin floors	0 – 5: clay loam 5 – 22: clay loam 22 – 62: sandy clay loam *Up to 5% $CaCO_3$**, 10% $CaSO_4 \cdot 2H_2O$****	Moderate – high

Map Source: *modified from* Natural Resources Conservation Service 2019



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Environment & Community

Figure 3-4. Soils in NCCA Vicinity
Newman Community Conservation Area Master Plan
City of Newman

Soil	Landform	Typical Profile*	Shrink-Swell Potential
Dosamigos clay loam, partially drained	Alluvial fans	0 – 5: clay loam 5 – 29: clay loam 29 – 62: clay loam *Up to 35% $CaCO_3$, 10% $CaSO_4 \cdot 2H_2O$*	Moderate – high
Pedcat loam, 0 – 2% slopes	Fan aprons	0 – 5: loam 5 – 23: clay 23 – 29: clay 29 – 60: stratified sandy clay loam to clay *Up to 3% $CaCO_3$*	Upper 5 inches: low Depths >5 inches: high
Pedcat clay loam, leveled, 0 – 2 % slopes	Fan aprons	0 – 5: clay loam 5 – 23: clay 23 – 29: clay 29 – 60: stratified sandy clay loam to clay	Upper 5 inches: moderate Depths >5 inches: high
Stanislaus County			
Pedcat clay loam, 0 – 2% slopes	Alluvial fans	0 – 7: clay loam 7 – 25: clay 25 – 51: clay loam 51 – 60: stratified sandy clay loam to clay *Up to 15% $CaCO_3$*	Moderate – high
Pedcat clay loam, 0 – 2% slopes, rarely flooded	Alluvial fans	0 – 7: clay loam 7 – 25: clay 25 – 51: clay loam 51 – 60: stratified sandy clay loam to clay *Up to 15% $CaCO_3$*	Moderate – high

* Depths in inches below ground surface
** Calcium carbonate
*** Gypsum

Source: Natural Resources Conservation Service 2002, 2019; Soil Conservation Service 1990

As shown in Table 3-8, the principal soils of the NCCA site, the Pedcat clay loam (leveled) and the Britto clay loam (leveled), have been identified as moderately to highly expansive (Soil Conservation Service 1990, Natural Resources Conservation Service 2002). Shrink-swell behavior of expansive soils has the potential to damage slabs and foundations and lead to more extensive structural damage in the features they support. There would thus be some risk to the concrete areas in the proximal forebay of the NEWS project and MDTW project and to the Newman Nature Park facilities. However, the City's adopted building code (the 2019 CBSC) includes specific provisions for construction in areas potentially situated on expansive soils, and the site-specific geotechnical investigations the City will require for the NEWS, Newman Nature Park, and MDTW project facilities may require additional measures (recommendations)[10] to prevent damage due to shrink-swell behavior. With adherence to the City's building code and recommendations of the site-specific geotechnical investigations, impacts related to expansive soils would be minimized consistent with regulatory requirements and current prevailing engineering standards. Adherence to the City's building code and prevailing engineering standards would similarly minimize impacts for the water service extension. Residual impacts, if any, are considered Less than Significant. No mitigation is required.

[10] As identified above, although the measures identified in geotechnical and other engineering reports are commonly referred to as *recommendations*, they are actually binding requirements.

Potential for Impacts Related to Septic Tanks/Alternative Wastewater Disposal Systems

The NCCA projects would not employ septic facilities. The restrooms at the Newman Nature Park community area would be equipped with composting toilets, which do not generate wastewater. There would be No Impact related to septic tanks, and no mitigation is required.

Sinks in the Nature Park handwashing area as well as the sink in the outdoor classroom area are planned to drain to vegetated swale/planter areas designed for water treatment, similar to vegetated swales routinely incorporated into large development projects to treat stormwater runoff, and designed consistent with current best practices. Treated water would then infiltrate into the shallow subsurface. With drainage to a vegetated water treatment swale, wastewater from the restroom and classroom area sinks is not expected to result in adverse effects on groundwater quality. There would be No Impact related to alternative wastewater disposal systems, and no mitigation is required.

Potential for Destruction of Paleontological Resources or Geological Features

Paleontological Resources

Paleontological (fossil) resources include preserved remains of past plants and animals as well as animal burrows, traces, tracks, and trackways. They are protected under federal and state regulations, including CEQA, because of their heritage value and their potential to provide scientifically important information.

Fossil materials may be buried in sediment or rock units below the ground surface, such that their presence or absence cannot be determined with certainty in advance of project groundbreaking. As a result, evaluating the potential for impacts on paleontological resources is essentially a risk analysis that addresses the following questions:

- What is the likelihood that scientifically important (significant) paleontological resources[11] are present in the project area? and
- If present, would such resources be disturbed, damaged, or destroyed as a result of project activities?

The likelihood that significant fossil resources are present is evaluated based on the documented track record of the geologic units in the project area with regard to fossil finds. Units that have produced important fossil finds in the past are likely to contain additional materials and are considered sensitive for paleontological resources. The potential for loss of paleontological resources is directly related to the extent of project-related ground disturbance, and particularly ground disturbance involving previously undisturbed substrate materials.

The most detailed published geologic mapping available shows the NCCA site as underlain by sedimentary deposits assigned to the upper informal member of the late Pleistocene through Holocene San Luis Ranch alluvium (Lettis 1982). In the vicinity of NCCA site, these are generally fine-grained deposits accumulated on the middle and lower portions of an alluvial fan complex recording uplift and erosion of the Coast Ranges to the west, and are the parent materials on which the site's Pedcat and Britto soils, discussed above, were developed. Regionally, the San Luis Ranch alluvium overlies a slightly older (mid- to late Pleistocene) sedimentary unit referred to as the Los Banos alluvium; the Los Banos alluvium in turn overlies the Tulare

[11] The Society of Vertebrate Paleontology (SVP) defines *significant paleontological resources* as including "fossils and fossiliferous deposits… consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information." The SVP limits the definition of *paleontological resources* to materials more than about 5,000 years old (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010). The SVP's approach to paleontological resources evaluation, impact analysis, and mitigation was specifically developed to assist lead agencies in complying with CEQA protections for paleontological resources and is adopted here.

Formation of late Pliocene and Pleistocene age (Lettis 1982), which contains the area's major producing potable water aquifers (California Department of Water Resources 2015, City of Newman 2016, San Joaquin River Exchange Contractors GSP Group 2019).

The University of California Museum of Paleontology's (UCMP's) online collections database shows no holdings from the San Luis Ranch alluvium (University of California Museum of Paleontology 2020), but the upper member of the unit has been reported as yielding horse *(Equus* sp.) bone fragments from at least one locality (Lettis 1982). Although recorded finds from the San Luis Ranch alluvium are sparse, this unit is considered highly sensitive for paleontological resources because it has produced vertebrate remains, based on Society of Vertebrate Paleontology protocols (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010), which are recognized as an industry standard for analysis of paleontological resources impacts under CEQA.

The UCMP database similarly lacks records from the Los Banos alluvium (University of California Museum of Paleontology 2020), but this unit has also been reported as yielding vertebrate remains, including *Equus* sp. bones and teeth and bison (*Bison* sp.) bone fragments (Lettis 1982). As such, it is also considered highly sensitive for paleontological resources.

The Tulare Formation has produced plant fossils, including fir (*Abies* sp.), manzanita (*Arctostaphylos* sp.), black walnut (*Juglans hindsii*), pine (*Pinus* sp.), knotweed (*Polygonum* sp.), and giant sequoia (*Sequoiadendron* sp.), as well as unidentified insect remains (University of California Museum of Paleontology 2020). It has also yielded vertebrates, including bison (*Bison* sp.), elephant (*Elephas* sp.), horse (*Equus* sp.), camel (*Camelops* sp.), and Columbian mammoth (*Mammuthus columbi*) (University of California Museum of Paleontology 2020). Based on its track record of producing vertebrate remains as well as diverse plant fossils, the Tulare Formation is considered highly sensitive for paleontological resources.

Construction Period Impacts. Grading and excavation for construction of each of the NCCA projects and excavation for water service extension would have some potential to encounter significant fossil resources. The potential for damage or destruction of resources would increase with the areal extent of earthwork required, and also with the depth of cuts, due to the increased potential to involve strata of the Tulare Formation, present at depth; the potential for Significant impacts is therefore expected to be higher for the NEWS project and MDTW project, but all of the NCCA projects would have some potential for Significant impacts on paleontological resources. To address this, the City will implement Mitigation Measures GEO-2, GEO-3, and GEO-4 below. With these measures incorporated, impacts on paleontological resources during construction of all four projects and extension of water service would be reduced consistent with the current standard of care; residual impacts, if any are considered Less than Significant.

Mitigation Measure GEO-2. Final Design Evaluation and PRMP Development

For each of the NCCA projects, the City will retain qualified staff to review the 90% or 100% design submittal and supporting geotechnical report(s). As used here, *qualified staff* refers to an individual meeting the *qualified professional paleontologist* criteria defined by the Society of Vertebrate Paleontology (SVP) (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010).

The purpose of the design review will be to determine the potential for ground disturbance to involve paleontologically sensitive geologic units (San Luis Ranch alluvium, Los Banos alluvium, and/or Tulare Formation), based on final design, anticipated depth of disturbance, and construction techniques. As such, the design review may include field reconnaissance, if warranted in the opinion of qualified staff.

If there is reasonably foreseeable potential for any of these units to be affected by project-related ground disturbance, the City will require qualified staff (as defined above) to develop a Paleontological Resources Mitigation Plan (PRMP). The PRMP will be consistent with the SVP's *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources* (SVP Impact Mitigation Guidelines Revision Committee 2010) and *Conditions of Receivership for Paleontologic Salvage Collections* (SVP Conformable Impact Mitigation Guidelines Committee 1996). As such, it will provide for at least the following.

- Implementation by qualified personnel, including a supervising paleontologist who meets the requirements for a *qualified professional paleontologist* as defined by the SVP and monitor(s) who satisfy the SVP's requirements for *paleontological resource monitors* (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010)
- Pre-construction survey with salvage or protection in place, in any areas where there would be surface disturbance of the geologic units identified as highly sensitive for paleontological resources (San Luis Ranch alluvium, Los Banos alluvium, Tulare Formation) ("highly sensitive units")
- Pre-construction and construction-period coordination procedures and communications protocols
- Monitoring of ground-disturbing activities known to involve, or potentially involving, the highly sensitive units. In all areas subject to monitoring, monitoring will initially be conducted full-time for grading and excavation, but the PRMP may provide for monitoring frequency in any given location to be reduced once 50% of the ground-disturbing activity has been completed, based on the professional judgment of the supervising paleontologist
- Provisions for a "stop work, evaluate, and treat appropriately" response in the event of a paleontological discovery, with appropriate treatment identified by the supervising paleontologist (see Mitigation Measure GEO-3) based on the nature of the find and prevailing standards for paleontological resources protection
- Sampling and data recovery procedures consistent with SVP protocols (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010, Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1996)
- A repository agreement providing for appropriate curation of any recovered materials, consistent with SVP requirements (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1996)
- Procedures for the preparation, identification, and analysis of fossil specimens and data recovered, consistent with SVP Requirements (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1996) and any additional requirements of the designated repository institution
- Reporting procedures consistent with SVP requirements (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010)

Mitigation Measure GEO-3. PRMP Implementation

Prior to groundbreaking for any of the NCCA projects that are determined to warrant a PRMP (see Mitigation Measure GEO-2), the City will retain a supervising paleontologist meeting SVP standards for a *qualified professional paleontologist* (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010) to implement the requirements of the PRMP. This person may, but will not necessarily, be the same individual who prepared the PRMP. The City will be responsible for ensuring proper implementation of the PRMP.

Mitigation Measure GEO-4. Worker Awareness Training for Paleontological Resources

To support effective PRMP implementation and address the potential for unanticipated discoveries where a PRMP is not required, the City will retain qualified staff to present in-person, hands-on worker awareness training for paleontological resources to ensure that construction staff can recognize fossils in the field. Training will be delivered prior to groundbreaking for each of the NCCA projects. As used here, *qualified staff* refers to an individual who satisfies one or both of the following criteria.

- A qualified professional paleontologist as defined by the SVP (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010) who is experienced in delivering training to nonspecialists
- A California-licensed professional geologist (PG) who has expertise in San Joaquin Valley stratigraphy and paleontology and is experienced in delivering training to nonspecialists

Training will be concise and substantive. It will include information on the possibility of encountering fossils during construction, the types of fossils that may be seen and how to recognize them, and proper procedures in the event fossils are encountered. All field management and supervisory personnel and construction workers involved with ground-disturbing activities will be required to take this training prior to beginning work on the project. Upon completion of the training, workers will be required to sign a form stating that they attended the training, understand, and will comply with the information presented.

Long Term Impacts. Because of the extent of grading and recontouring required to construct each of the NCCA projects, most ground-disturbing O&M activities would affect only previously disturbed substrate materials. With Mitigation Measures GEO-2, GEO-3, and GEO-4 in place during construction, it is very unlikely that significant paleontological resources would be affected by ground-disturbing O&M work in areas that were previously disturbed by construction. If, however, ground disturbance during O&M would affect areas that have not been disturbed by construction, Significant impacts on paleontological resources would be possible; as described for construction, the potential for impacts would increase with greater extent and depth of disturbance. Minor, shallow ground disturbance might avoid impacts, but the potential for impacts cannot be entirely ruled out. To address this, the City will implement Mitigation Measure GEO-5. With Mitigation Measure GEO-5 incorporated, impacts on paleontological resources as a result of ground-disturbing O&M activities would be Less than Significant. No additional mitigation is required.

Mitigation Measure GEO-5. Paleontological Consultation for Ground-Disturbing O&M Activities

Prior to ground-disturbing O&M activities in areas not previously disturbed by construction, the City will retain a qualified professional paleontologist as defined by the Society of Vertebrate Paleontology (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010) to review the proposed O&M activities. The purpose of the review will be to determine the level of risk to paleontological resources as a result of the intended ground disturbance and provide advice regarding

appropriate risk reduction measures. If the paleontologist considers it warranted, Mitigation Measures GEO-2, GEO-3, and GEO-4 will be implemented. Alternately, the professional paleontologist may identify a reduced approach consistent with the SVP's *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources* (SVP Impact Mitigation Guidelines Revision Committee 2010) and *Conditions of Receivership for Paleontologic Salvage Collections* (SVP Conformable Impact Mitigation Guidelines Committee 1996). The City will be responsible for ensuring that the paleontologist's recommendations are properly implemented.

Geological Features

The NCCA site is located on the agricultural floor of the San Joaquin Valley, and is surrounded by actively cultivated lands with the urbanized City immediately to the northwest. No unique geological features are present at or in close proximity to the NCCA site. There would be No Impact on unique geological features, and no mitigation is required.

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VIII. GREENHOUSE GAS EMISSIONS *Would the project:*	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	■	☐
(b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	■

Discussion of Checklist Responses

Background

Based on extensive technical studies, the Intergovernmental Panel on Climate Change (IPCC) has concluded that

> [w]arming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millenia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased….It is *extremely likely* [95–100% probability] that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in greenhouse gas concentrations and other anthropogenic forcings together (Intergovernmental Panel on Climate Change 2013).

Heat-trapping gases are referred to as greenhouse gases (GHGs), also called well-mixed long-lived GHGs. *Well-mixed* refers to the fact that atmospheric concentrations of these pollutants are temporally distributed around the globe—GHG concentrations are not as spatially variant as those of traditional air pollutants. *Long-lived* refers to the fact that the pollutant concentrations remain in the atmosphere for decades—and therefore short-term reductions in emissions do not immediately lead to reductions in atmospheric concentrations.

Water vapor is the most significant heat-trapping gas, but its concentrations fluctuate depending on temperature, and water vapor does not accumulate in the atmosphere like the well-mixed long-lived GHGs. The GHG with the largest heat-trapping impacts is carbon dioxide (CO_2), followed by methane (CH_4) and nitrous oxide (N_2O). Certain fluorinated compounds are also tracked, although these would not be used or produced by any of the NCCA projects and thus are not directly relevant here.

Not all GHGs have an equivalent impact on climate. A variety of metrics have been tabulated to weight the impacts of the various GHGs relative to CO_2—including global warming potential (GWP) and global temperature potential (GTP)—for time horizons ranging from 20 years to 500 years, and the values vary widely. For example, depending on the metric and time horizon, methane is anywhere between 4 and 86 times as important as CO_2 (Myhre et al. 2013). The IPCC has identified that "all choices of metric contain implicit value-related judgements such as type of effect considered and weighting effects over time" (Myhre et al. 2013). However, the prevailing policy has been to use GWPs for the 100-year time horizon. Specifically, to account for the combined impact of GHGs, emissions of each GHG are expressed in terms of *CO_2 equivalents* (CO_2e) by multiplying by the appropriate GWP, and then summed. By definition, CO_2 has a GWP of 1. The 100-year GWPs for the other gases have changed slightly over time; for example, at the time of the 1990 Kyoto Protocol, the GWPs were 21 for CH_4 and 310 for N_2O, but currently California's GHG emission inventory (California Air Resources Board 2019) uses GWPs identified in the IPCC's 4th Assessment Report, which are 25 for CH_4 and 298 for N_2O (Forster et al. 2007).

In California, GHG emissions decreased from 2000 to 2018 (California Air Resources Board 2020). However, while climate change will affect some localities differently than others, the environmental impact in any location is primarily a function of global rather than local GHG levels, and global GHG concentrations have been consistently increasing for several decades (Hartmann et al. 2013).

Potential to Generate Greenhouse Gas Emissions

The 78-acre parcel has been fallow since the 1990s and in recent years has been used primarily for cattle grazing. The NCCA projects would reduce GHG emissions directly through wetland creation and restoration,

native grassland restoration, and tree planting, as follows.

- NEWS project: development of an approximately 21-acre constructed wetland system and planting of some 100 trees and shrubs
- Wetland project: reestablishment, rehabilitation, or enhancement of at least 10 acres of wetland habitat, planting and establishment of at least 50 trees of native species suitable to the site, and restoration of at least 1 acre of native perennial grassland habitat
- MDTW Project: creation of a minimum of 10 acres of perennial or near-perennial freshwater surface-flow wetland; actual wetland creation is expected to be about 15.8 acres based on the current project concept shown in Figure 2-8

Electrical service would not be extended to the NCCA site; where provided, lighting would be solar-powered, and the classrooms/learning areas at the Newman Nature Park would be outdoor-only. Additionally, public use of the NCCA projects would be limited to non-vehicular activities. As a result, the only direct source of GHG emissions associated with these projects would be construction and O&M activities, and the only indirect GHG source would be trips by workers and visitors who drive to the site.

As detailed in Appendix C to this Initial Study, CAPCOA's CalEEMod® software (CalEEMod Version 2016.3.2) was used to quantify the short-term, temporary GHG emissions associated with construction (1,529 metric tonnes [MT] CO_2e) and CARB's EMFAC calculator was used to quantify the annual GHG emissions associated with O&M and visitors (1,475 MT CO_2e/year). The GHG benefit due to the land use change associated with the wetland project is estimated to be approximately 154 MT CO_2e over 50 years (Pinnell pers. comm.).

The SJV APCD has not identified a quantative significance threshold for GHGs. SJV APCD's *Climate Change Action Plan – Resources* webpage (https://www.valleyair.org/Programs/CCAP/CCAP_idx.htm) provides links to the Bay Area Air Quality Management District, the Sacramento Metropolitan Air District, and the South Coast Air Quality Management District. However, these districts have also struggled with quantifying project-level significance thresholds for GHG emissions.

In addressing this challenge, the Bay Area Air Quality Management District (BAAQMD) elected not to recommend a threshold for construction GHG emissions because "there is not sufficient evidence to determine a level at which construction emissions are significant" (Bay Area Air Quality Management District 2009), and calculated an operational emissions threshold of 1,100 MT CO_2e/year based on

(1) an estimate of the emissions reductions that the Bay Area was targeting to achieve by 2020

(2) an estimate of what percentage of housing, commercial, and industrial projects (parks and wetlands restoration projects were not included in the evaluation) would exceed that threshold, and

(3) an estimate of the extent of mitigation applied by projects triggering that threshold (that is, showing that the product of *(2)* and *(3)* above was sufficient to achieve *(1)* (Bay Area Air Quality Management District 2009)

The Sacramento Metropolitan Air Quality Management District opted to use the Bay Area Air Quality Management District's operational emissions threshold and chose to also apply the threshold to construction "in order to maintain a consistent threshold for GHG emissions," but acknowledged that "there are limited options to mitigate GHG emissions onsite," aside from BMPs already employed to reduce criteria air pollutant emissions, such as minimizing idling times, and therefore allowed the construction emissions to be amortized over the life

of the project (Sacramento Metropolitan Air Quality Management District 2014). The South Coast Air Quality Management District (SCAQMD) identifies an operational emissions threshold of 10,000 MT CO_2e/year for stationary sources of air pollution such as industrial equipment, but gives lead agencies discretion for land use projects (South Coast Air Quality Management District 2019).

The primary method that SJV APCD has used to evaluate the significance of project GHG emissions involves a comparison to a Business-as-Usual (BAU) baseline, identifying that projects that reduce GHGs by 29% would be consistent with California's 2020 GHG goal. However, these policies were focused largely on the design of residential and commercial developments, not wetlands or parks projects, and they have not been updated for 2030 – 2040 GHG goals.

- The GHG impacts of the NCCA projects were evaluated based on the principles previously identified by the various agencies. For additional perspective, average emissions from a single semi-tractor trailer truck are approximately 100 MT CO_2e/year (Tamura Environmental 2021; see Appendix C). NCCA GHG emissions (1,528 MT CO_2e total for construction and 1,475 MT CO_2e /year for ongoing operations) are relatively low numbers considered in this context. With regard to construction GHG emissions, both the BAAQMD and SCAQMD concluded that no GHG significance threshold is appropriate. However, all of the NCCA projects would be in service for multiple decades, and dividing total construction GHG emissions by even 10 years gives a value well below the Sacramento Air Quality Management District's significance threshold for amortized construction emissions

- With regard to operational emissions, per analyses conducted by the BAAQMD (Bay Area Air Quality Management District 2009), wetlands restoration projects and parks (in aggregate)—unlike housing and commercial development—are not considered a significant contributor to regional GHG emissions increases, nor are there impactful GHG mitigations that can be undertaken for these types of projects

- With regard to reduction of operational GHG emissions per the SJV APCD's approach, the NCCA projects have been developed to incorporate the GHG reduction strategies identified as feasible to reduce emissions, including use of solar lighting, limited parking availability tailored to anticipated usership, and bicycle racks and end-of-trip facilities to support non-motorized access to the site. Additional GHG reductions would be associated with implementation of Mitigation Measures TR-1 and TR-2, which would limit travel to the site once a threshold is reached, as discussed in detail in the *Transportation* section of this checklist. Provision of electric vehicle charging stations, which is commonly incorporated into projects to reduce GHG emissions, is infeasible at the NCCA, since there would be no electrical power supply to any of the projects

Accordingly, the NCCA projects' individual and collective construction-period and operational GHG emissions are evaluated as Less than Significant, and no mitigation is required.

Potential to Conflict with an Applicable GHG Plan, Policy, or Regulation

GHG reduction plans, policies, and regulations apply at the federal, state, and local levels.

Internationally, on January 20, 2021, President Biden accepted the 2015 Paris Agreement,[12] which identifies a central aim to "strengthen global response to the threat of climate change", including "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase even further to 1.5°C above pre-industrial levels" (United Nations 2015). This is a high-level agreement that operates on a national and industry-wide scale and was not intended to lay out specifics at

[12] See https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/20/paris-climate-agreement/.

the level of individual projects. There is thus no potential for any of the NCCA projects to conflict with the Paris Agreement. There would be No Impact related to conflict with plans or policies at the federal level, and no mitigation is required.

In California, in 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05, identifying a GHG emissions reduction target of 80% below 1990 levels by 2050. Subsequently, Governor Jerry Brown issued Executive Order B-30-15, establishing an interim statewide GHG emissions reduction target of 40% below 1990 levels by 2030 in order to meet the 2050 goal, and Senate Bill 32 (SB 32) went beyond identifying it as a target, by "requir[ing] [CARB] to ensure that statewide greenhouse gas emissions are reduced by 40% below the 1990 level by 2030" (by adding Section 38566 to California's Health and Safety Code). The CARB Scoping Plan for achieving the 2030 GHG target (California Air Resources Board 2017) identifies "[r]ehabilitating and strengthening wetlands … and incorporating natural landscapes into urban environments" as "part of the state's climate solution." The NEWS, wetland, and MDTW projects are all consistent with this thinking, and the DFW grant program (Wetlands Restoration for Greenhouse Gas Reduction) that is funding the wetlands restoration project is part of the California Climate Investments program. The Newman Nature Park—which would emphasize native plant landscaping, community environmental and sustainability education, and non-motorized recreation—is also considered consistent. There would thus be No Impact related to conflict with plans or policies at the state level, and no mitigation is required.

At the regional level, as mentioned above, the SJV APCD has developed CEQA guidance for determining the significance of GHG emissions from stationary sources (such as industrial equipment) and for residential, commercial, and industrial development projects (San Joaquin Valley Air Pollution Control District 2009). For these source types, significance is evaluated based on the extent of GHG reduction measures incorporated in

the project. The SJV APCD guidance does not identify an evaluation paradigm for undertakings such as the NCCA projects. However, the Guidance does contain a provision stating that

> [p]rojects complying with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less than significant individual and cumulative impact for GHG emissions. Such plans or programs must be specified in law or approved by the lead agency with jurisdiction over the affected resource and supported by a CEQA compliant environmental review document adopted by the lead agency.

The City does not have a GHG reduction plan in place and does not explicity regulate GHG emissions through policies or ordinances. The Highway 33 Specific Plan update that is currently in progress with grant support from Caltrans is expected to reduce GHG emissions through a variety of improvements, but the NCCA site is outside the Specific Plan Area—which is limited to the immediate SR 33 corridor—and thus will not fall under the updated Specific Plan requirements.

The County is in the process of developing a Climate Action Plan but has not yet adopted the new Plan (see https://mercedcap.rinconconsultants.com/), and does not regulate GHG emissions by ordinance. However, the County General Plan includes goals and policies relevant to GHG emissions reduction. Goal AQ-1 requires the County to "[r]educe air pollutants and greenhouse gas emissions and anticipate adaptation due to future consequences of global and local climate change." Most of the policies under Goal AQ-1 require the County to take action to encourage or promote adoption of measures that would indirectly reduce GHG emissions—as such, they apply to the County rather than to individual projects approved within the County. Examples include encouraging new residential, commercial, and industrial development to reduce air quality impacts associated with energy consumption (Policy AQ-1.1), encouraging the use of high-mileage fleet vehicles and alternative

fuel vehicles (Policy AQ-1.2), encouraging the use of carbon-efficient farming methods and renewable energy technologies (Policy AQ-1.3), coordinating with other agencies on comprehensive approaches to climate change planning (Policy AQ-1.9), and increasing public awareness of climate change and encouraging residents and businesses to engage in activities to reduce GHG emissions (Policy AQ-1.10) (County of Merced 2013).

However, County General Plan Policy AQ-1.7 requires the County to take measures to reduce the heat island effect (local increases in temperature due to increased absorption and retention of heat in developed areas). Examples of such measures provided in the Policy include preservation of agricultural lands, wildlife habitat, wetlands, watersheds, groundwater recharge areas, and other open space areas that provide carbon sequestration benefits (County of Merced 2013). The NEWS, wetland, and MDTW projects, which would increase the extent of wetlands and improve habitat conditions on the NCCA parcels and would preserve restored and created habitat over multiple decades, are explicitly consistent with this directive. The Newman Nature Park, by increasing public awareness of issues related to watershed health and local natural resources, is also considered indirectly supportive. Additionally, implementation of Mitigation Measures TR-1 (NCCA Usage Monitoring) and TR-2 (Reservations System and Usage Management), described in detail in the *Transportation* section of this checklist, would help to manage increased vehicle travel associated with visitors accessing the NCCA from outside the immediate Newman area and are thus consistent with the spirit and intent of County General Plan Goal AQ-4 ("[r]educe traffic congestion and vehicle trips through more efficient infrastructure and support for trip reduction programs"). The NCCA projects are thus individually and collectively considered consistent with applicable County General Plan goals.

Since the City has no applicable plans, policies, or regulations for GHG emissions reduction, and the NCCA projects are consistent with applicable County policies there would be No Impact related to conflict with plans, policies, or regulations at the regional or local level. No mitigation is required.

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IX. HAZARDS & HAZARDOUS MATERIALS *Would the project:*	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	■ (NEWS and MDTW projects, forebay sediment removal)	■ (construction, routine O&M)	☐
(b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	■	☐
(c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	☐	☐	☐	■
(d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	■ (unanticipated hazardous materials discoveries)	☐	■ (location on listed site)
(e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
(f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	■
(g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	■

Discussion of Checklist Responses

Potential to Create Hazards Related to Transport, Use, or Disposal of Hazardous Materials

Construction of all four NCCA projects would involve the use of substances that qualify as hazardous materials as defined by the State of California (e.g., Health and Safety Code Section 25117), such as vehicle and equipment fuels and lubricants. Extension of water service would also require the use of fuels and lubricants and potentially also the paving and striping media required to restore roadway surfacing following pipeline installation. All such substances would be handled and disposed in strict accordance with good construction practices and applicable federal and state regulations,per standard City practices. As identified in *Geology & Soils* above, the four NCCA projects—because of the extent of ground disturbance involved—are also expected to require SWPPPs, which will lay out measures to prevent and respond to spills. In addition, as discussed in Section 2, the City has committed to implementing an AMM (AMM 4, Table 2-15) to protect water quality and habitat at the NCCA site (AMM-4, Table 2-15), which includes precautions to avoid and respond to spills. With adherence to regulatory requirements, good construction practices, and the added precautions in project SWPPPs and the City's adopted AMM, impacts related to hazardous materials use and handling during construction are expected to be Less than Significant. No mitigation is required.

Similar to construction, routine O&M activities for each of the NCCA projects would likely also require intermittent use of substances qualifying as hazardous, including fuels, lubricants, paints, and possibly also pesticides and/or herbicides approved for use in proximity to wetlands. However, the same precautions would apply; the City requires all staff and contractors to adhere to best practices, applicable regulations, and label warnings, and the adopted AMM for water quality and habitat protection will remain in force for O&M activities throughout the lifespan of the NCCA projects. O&M activities would also be shorter in duration and substantially more restricted in extent than initial project construction. In consideration of these factors, impacts related to hazardous materials use and handling during O&M are also expected to be Less than Significant. No mitigation is required.

In addition to routine, ongoing O&M activities, sediment accumulated in the forebays of the NEWS and MDTW projects would require periodic removal. At the NEWS project, this would occur when sediment accumulation reaches 50% of forebay capacity as indicated by permanent sediment accumulation markers installed during construction, which is projected to occur every 5 – 10 years on average. Sediment removal needs at the MDTW project would likely be similar. Because stormwater entering the NEWS project forebay would contain a substantial proportion of urban runoff, accumulated sediment could include heavy metals and other substances that in sufficient concentrations would render the sediment hazardous and preclude on- or offsite reuse as well as disposal at a Class III (municipal solid waste) landfill. Improper handling or disposal of sediment with elevated contaminant concentrations could result in adverse effects on effects on the environment and human health, potentially rising to the level of a Significant impact. To address this, the City will implement the following mitigation measure. With Mitigation Measure HAZ-1 incorporated, impacts related to handling of potentially hazardous sediment would be Less than Significant. No additional mitigation is required.

> **Mitigation Measure HAZ-1. Testing and Appropriate Disposal of Forebay Sediment**
>
> Prior to removal of sediment from the NEWS project and MDTW project forebays, the City will sample the sediment and test it for hazardous constituents. Sampling and testing will follow current applicable best practices consistent with the federal Environmental Protection Agency's Test Methods for Evaluating Solid Waste (SW-846), or current alternate approved under California law. If the sediment is found to qualify as hazardous per State of California standards, it will be handled and treated as a hazardous material, in compliance with all applicable federal, state, and local requirements. Reuse of sediment that qualifies as hazardous will not be permitted; it will be transported by an appropriately

qualified and licensed hauler and will be disposed appropriately at either a Class II ("designated" wastes that are non-hazardous but may pose a risk to the environment) or Class I (hazardous wastes) landfill, depending on the nature and level of contamination.

Once sediment from each project's forebay has been tested in at least 3 normal water years, 3 wet years, and 3 dry years, testing may be discontinued if sediment has consistently been shown not to qualify as hazardous per State of California standards.

Potential to Create Hazards Related to Hazardous Materials Releases

As discussed in the previous item, construction of the NCCA projects and water service extension, and O&M for the NCCA projects, would require the use of some hazardous substances—such as fuels, lubricants, paints, and paving and striping media, and possibly also pesticides and herbicides—but all such substances would be handled according to best practices, applicable federal and state regulations, label warnings, and the precautions required by project SWPPPs and the City's adopted AMM for water quality and habitat protection (AMM-4, Table 2-15). With these precautions in place, impacts, if any, related to hazardous materials spills or releases during construction and O&M at the NCCA site are expected to be Less than Significant. No mitigation is required.

Potential for Handling or Emission of Hazardous Substances or Waste within 0.25 Mile of a School

No public or private elementary, middle, or high schools are located within 0.25 mile of the NCCA site, and no daycare or preschool facilities have been identified within 0.25 mile of the site. There would be No Impact during NCCA project construction or O&M related to handling or emissions of hazardous materials, substances, or waste within 0.25 mile of an existing school, and no mitigation is required.

Potential to Create Hazards Related to Location on a Listed Hazardous Materials Site

Neither of the NCCA parcels or the adjacent roadway segments is listed for hazardous materials contamination (Department of Toxic Substances Control 2020a, State Water Resources Control Board 2020). There would be No Impact associated with location on a site listed for hazardous materials contamination, and no mitigation is required.

The closest listed site is the former Lucas-Dunkley property (APNs 054-05-09 and 054-050-010), which encompasses a total of about 300 acres southeast of the intersection of Hills Ferry Road and Canal School Road, and was previously crossed by Chevron's Old Valley Pipeline right-of-way. The Old Valley Pipeline conveyed heavy petroleum (crude oil) from oil fields in the Bakersfield area to refineries in Richmond (Contra Costa County) from the early 1900s through the late 1930s. Soils at the site have been identified as contaminated by petroleum hydrocarbons, and the site is currently under a Voluntary Cleanup Agreement with the state Department of Toxic Substances Control (DTSC). However, a human health risk assessment conducted in 2008 concluded that the site is suitable for unrestricted use (Department of Toxic Substances Control 2020b). No Impact is anticipated with regard to the NCCA's location in proximity to this site, and no mitigation is required.

Because of the NCCA site's location in an area with a long history of agricultural use, there may be some potential for unanticipated discoveries of hazardous substances—such as pesticides, herbicides, fuels, and lubricants—during construction and also during ground-disturbing O&M activities. In the event of such a discovery, impacts could be Significant if appropriate precautions are not taken. To address this, the City will implement the following mitigation measure. With Mitigation Measure HAZ-2 incorporated, impacts related to

unanticipated discoveries of hazardous materials or substances would be Less than Significant. No additional mitigation is required.

Mitigation Measure HAZ-2. Hazardous Materials Response

In the event known or suspected hazardous materials are encountered during construction or O&M, work in the vicinity of the find will be suspended until qualified staff (i.e., staff meeting the Environmental Professional qualifications in ASTM E1527-13) retained by the City can assess the nature of the find and stipulate appropriate follow-up and protective measures. Work may proceed elsewhere on the site, assuming the discovery appears to be localized. If qualified staff consider it warranted, the City will conduct a Phase II hazardous materials investigation or appropriate equivalent procedure to determine the nature and extent of contamination, evaluate potential risks, and, if appropriate, stipulate additional precautions and/or response measures. Work in areas of known and potential contamination will not resume until the measures stipulated by qualified staff are implemented. If waste disposal is necessary, materials will be handled and disposed of by a licensed waste-disposal contractor and transported by a licensed hauler to an appropriately licensed and permitted disposal or recycling facility, in accordance with local, state, and federal requirements. Project contract documents for all NCCA projects will stipulate contractor responsibilities in accommodating and assisting with the implementation of these commitments, and these requirements will remain in force for all O&M activities at the NCCA.

Additionally, as detailed in the *Hydrology & Water Quality* section of Table 3-23 (see *Mandatory Findings of Significance* below), preliminary soil and sediment testing conducted at the NCCA site indicates that localized areas with slightly elevated mercury concentrations may be present. As noted in Table 3-23, the presence of mercury in California soils reflects several sources. Mercury was a key component in Gold Rush–era ore refining operations; extensive mining of naturally occurring mercury ores resulted in deposition and downstream transport of mercury-bearing tailings and wastes in some California waterways. Mercury has continued to be mined for industrial applications, although its use has decreased in recent decades due to concerns about toxicity. Naturally occurring mercury ore deposits may also contribute directly to elevated mercury concentrations in soils and sediments. Additionally, mercury occurs as a byproduct of fossil fuel combustion and accumulates at the surface due to atmospheric deposition (e.g., Central Valley Regional Water Quality Control Board 2015). In this context, the SWRCB recognizes a naturally *mercury-enriched region*, where California's principal deposits of mercury ores occur—including the Coast Ranges west of the City—and *trace mercury areas* where ambient mercury levels are not naturally elevated by geologic conditions. In trace mercury areas, typical background levels of mercury in soils and sediments range from 0.05 to 0.1 milligram per kilogram (mg/kg); in the mercury-enriched region, naturally occuring mercury levels typically exceed 0.1 mg/kg and can be as high as 0.3 mg/kg (State Water Resources Control Board 2017).

In early 2021, the UC Merced team collected and analyzed samples of soil and Miller Ditch sediment from the NCCA site. Total mercury content in soils ranged from 60.5 micrograms per kilogram[13] (µg/kg) to 115.0 µg/kg (0.061 mg/kg – 0.115 mg/kg) (dry weight) and total mercury in sediments ranged from 77.0 µg/kg to 126.6 µg/kg (0.077 – 0.127 mg/kg) (dry weight) (Beutel pers. comm.) (see *Mercury* in *Hydrology & Water Quality* section of Table 3-23 below). This is consistent with the NCCA site's setting just east of the state's naturally

[13] Note that a microgram is 1/1,000 of a milligram (1 µg = 0.001 mg).

mercury-enriched region. To put these numbers in further perspective, they can be compared with the San Francisco Bay RWQCB's Environmental Screening Levels and with DTSC's Screening Levels.[14]

The San Francisco Bay RWQCB's Tier 1 Environmental Screening Level (a conservative value intended to be protective at sites with unrestricted land and water use, shallow soil contamination, shallow groundwater, and permeable soils) for mercury in soil is 13 mg/kg (just over 100 times the highest concentration measured in the NCCA samples) (San Francisco Bay Regional Water Quality Control Board 2019a). DTSC's screening level for mercury in soils at residential uses is 1 mg/kg (roughly 10 times the highest concentration measured in the NCCA samples) (Department of Toxic Substances Control 2020c). As a result, Significant impacts related to the presence of mercury in site soils are not anticipated.

Nonetheless, out of an abundance of caution, the City will implement Mitigation Measure C-1, detailed in Table 3-23 under *Mandatory Findings of Significance* below. Mitigation Measure C-1 requires soil testing at each of the NCCA projects prior to construction; soils that exceed the 0.1 mg/kg total mercury threshold (the typical maximum naturally occurring soil mercury level in trace mercury areas) may be offhauled for appropriate disposal per applicable state and federal protocols, or they may be retained in separate, appropriately contained stockpiles and used in lower fill lifts where they are capped and will not be surface-exposed once construction is completed. Following construction, surface soils are to be tested again to verify that finished grades are below the 0.1 mg/kg threshold for total mercury content. With Mitigation Measure C-1 in place, mercury levels in surface-exposed soils would be controlled to a level consistent with naturally occurring trace mercury levels, and impacts related to mercury exposure would be Less than Significant. No additional mitigation is required.

Potential for Hazards Related to Public and Public-Use Airports

Airports in the region around the NCCA site include Castle Airport, Gustine Municipal Airport, Los Banos Municipal Airport, Merced Regional Airport, and Turlock Municipal Airport in Merced County and Crows Landing Airport, Modesto City-County Airport, and Oakdale Municipal Airport in Stanislaus County. Both the County of Merced and the County of Stanislaus have Airport Land Use Compability Plans in place (County of Merced 2012, County of Stanislaus 2016). Airport land use plans serve to coordinate local jurisdiction land use planning and airport operations to protect public welfare, including both the safety of aircraft operations and the safety of persons on the ground. Airport land use plans typically define a larger area (sometimes referred to as the Airport Environs or Airport Influence Area) within which land use planning takes airport operations into account, and, closer to the runway(s), a safety zone where stricter density and use limitations are applied to minimize the number of persons potentially exposed to risks associated with aircraft accidents.

The NCCA site is not within the Airport Influence Area delineated for any of the airports in the region (County of Merced 2012, County of Stanislaus 2016), nor is it within 2 miles of any public or public-use airport—the closest airports are Gustine Municipal Airport, about 3.5 miles to the southeast and Crows Landing Airport about 9 miles to the northwest. No Impact is anticipated related to safety hazards associated with public or public-use airports, either during the construction period or over the long term. No mitigation is required.

[14] The San Francisco Bay RWQCB's Environmental Screening Levels are "conservative screening levels…intended to help expedite the identification and evaluation of potential environmental concerns at contaminated sites" (San Francisco Bay Regional Water Quality Control Board 2020) by "enabl[ing] users to distinguish which sites pose a significant threat" (San Francisco Bay Regional Water Quality Control Board 2019b). DTSC's Screening Levels are intended for use in assessment of human health risks at hazardous waste sites and permitted hazardous waste handling facilities (Department of Toxic Substances Control 2020c). As such, neither set of thresholds represents levels at which remediation or other action is necessarily warranted, but both provide guidance as to levels of contamination that may pose a risk to human health and further evaluation is advisable.

Potential to Interfere with an Emergency Response or Evacuation Plan

As discussed in Section 2, the City's *Improvement Standards and Standard Details*, which apply to all City projects and will be in force for both construction and O&M at the NCCA, including water service extension, provide for traffic control and safety while work is in progress. In general, roadway closures are prohibited, public rights-of-way must be maintained in a convenient, accessible condition, and safe access to private property must be provided. Where barricades, pylons, or other similar measures are needed to ensure traffic safety, they must be configured in a manner than enables emergency vehicle passage. As a result, with adherence to the *Improvement Standards and Standard Details,* neither construction nor O&M at the NCCA site, or for water service extension, is expected to interfere with emergency response or emergency evacuations. There would be No Impact related to such interference, and no mitigation is required.

Potential for Exposure to Wildland Fire Hazards

The National Wildfire Coordinating Group (*n.d.*) defines wildlands as areas "in which development is essentially nonexistent, except for roads, railroads, powerlines, and similar transportation facilities" and where structures, if any, are widely scattered. Although the NEWS, wetland, and MDTW projects would create and restore habitat, the NCCA site is expected to continue to be surrounded by agricultural lands at the edge of the developed City; as such, although the site would offer improved habitat function and value over the long term, it does not qualify as a wildland per se, and implementing the NCCA projects would not change this. There would be No Impact related to increased exposure of persons or structures to wildland fire hazards, and no mitigation is required. More information on wildland fire issues is provided in the *Wildfire* section below.

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X. HYDROLOGY & WATER QUALITY *Would the project:*	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a) Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality?	☐	☐	■ (future WDRs and other water quality degradation, NEWS project and MDTW project; salinity increases, NEWS and MDTW projects)	■ (existing WDRs, all projects; future WDRs, wetland project and Newman Nature Park) (overall long-term water quality Benefit under all projects)
(b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management in the basin?	☐	☐	■ (groundwater recharge, long-term, all projects) (minor Benefit to groundwater recharge, NEWS and wetland projects)	■ (construction and long term, all projects; groundwater use, long term, NEWS, wetland and Newman Nature Park projects)

X. HYDROLOGY & WATER QUALITY *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:				
(i) result in substantial erosion or siltation on- or offsite?	☐	☐	■ (Construction period, all projects; onsite operational siltation, NEWS, wetland, and MDTW projects)	■ (Offsite operational siltation, NEWS, wetland, and MDTW projects; long term overall, water service extension) (Net Benefit to offsite sediment delivery)
(ii) substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or offsite?	☐	☐	☐	■
(iii) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	■ (Benefit to stormwater drainage, NEWS, wetland, and Newman Nature Park projects)
(iv) impede or redirect flood flows?	☐	☐	■ (NEWS project, Newman Nature Park)	■ (wetland project, MDTW project) (potential Benefit, wetland project)
(d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	■
(e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	■ (long-term Benefit)

Discussion of Checklist Responses

Section 303 of the federal Clean Water Act (CWA) requires the states to

- develop water quality standards to protect public health and welfare and enhance water quality
- identify water bodies that fail to meet the applicable standard for one or more pollutants, and

- develop programs to limit pollutant input and assist in recovering the quality of waters that do not meet applicable standards.

Water quality standards must reflect the designated uses of each water body, which may include public water supply, fish and wildlife propagation, recreation, agriculture, industry, navigation, and other purposes.

Water bodies that fail to meet water quality standards for one or more pollutants are referred to as *impaired*, and the list of impaired waters published by each state is often called the Section 303[d] list, from the governing section of the Clean Water Act (CWA). For each impaired water body and pollutant, the states are charged with developing a total maximum daily load (TMDL) program. A TMDL represents the maximum amount of a given pollutant that a water body can accept while still meeting water quality standards; the purpose of a TMDL program is to identify the sources of the pollutant and ways to reduce inputs of that substance. Because TMDL development can be costly and time-consuming, CWA Section 303 requires the states to prioritize the waters on their 303[d] lists so the highest-priority recovery needs can be addressed first.

In California, the EPA delegates CWA Section 303 implementation authority to the SWRCB, which in turn delegates substantial responsibility for water quality control to the nine RWQCBs. This includes:

(1) developing and adopting water quality control plans ("basin plans") for each region's major surface water bodies and groundwater basins. This includes formally identifying ("designating") the beneficial uses[15] of the region's principal waters and the water quality objectives (WQOs) needed to protect them. WQOs represent the level of water quality needed to ensure that a water body continues to meet its designated beneficial uses

(2) implementing programs to achieve the identified WQOs, including action recommendations, implementation schedules, and follow-up measures to determine whether compliance is achieved. This includes but is not limited to implementation and oversight of TMDL programs

(3) regulating discharges of waste that may affect waters of the state, setting standards to maintain the condition of waters that receive waste discharges, and encouraging and assisting in waste disposal programs

The City and the NCCA site are within the Central Valley Region (Region 5), overseen by the Central Valley RWQCB. Other than the San Joaquin River itself and its important tributary Orestimba Creek, the largest surface water bodies in the vicinity of the NCCA site are constructed features: the federal Delta-Mendota Canal and the Newman Wasteway, which was originally intended to transmit emergency releases from the Canal to the San Joaquin River but now also delivers stormwater and agricultural tailwater from the City and surrounding lands. Receiving waters downstream of the NCCA site include the Newman Wasteway, San Joaquin River, and Sacramento – San Joaquin Delta, including the Old River, a principal Delta distributary.

No beneficial uses are designated for the Newman Wasteway in the Basin Plan (Central Valley Regional Water Quality Control Board 2018), although it carries a designation for municipal and domestic supply under the SWRCB's Sources of Drinking Water Policy (Walters pers. comm.). Additionally, discharge from the Newman Wasteway has the potential to affect beneficial uses in downstream receiving waters, particularly those closest

[15] *Beneficial uses* refers to the "resources, services, and qualities" California's surface waters and groundwater provide to the people of the state (San Francisco Bay Regional Water Quality Control Board 2020). A specific range of beneficial uses is laid out in Section 13050[f] of the California Water Code. As a result, a water body's designated beneficial uses do not necessarily represent all of its potential or "reasonable" uses; for instance, wastewater discharge may be a reasonable use but is not recognized as a beneficial use subject to official designation. Protection and enhancement of beneficial uses is a cornerstone of California water quality planning (Central Valley Regional Water Quality Control Board 2018a).

to the outfall, where dilution effects are the least. These are shown in Table 3-9; additional downstream waters, including Suisun and San Francisco Bays, also have designated beneficial uses that are not discussed in detail here.

Table 3-9. Designated Beneficial Uses for Downstream Surface Waters

Water Body	Reach		Beneficial Uses
San Joaquin River	Sack Dam to Merced River*	**Existing:**	agricultural supply (irrigation, stock watering), industrial process supply, water contact recreation, canoeing and rafting, other noncontact recreation, warm freshwater habitat, warm and cold freshwater migration, warm freshwater spawning, wildlife habitat
		Potential:	municipal and domestic supply, cold freshwater spawning
	Merced River to Vernalis	**Existing:**	agricultural supply (irrigation, stock watering), industrial process supply, water contact recreation, canoeing and rafting, other noncontact recreation, warm freshwater habitat, warm and cold freshwater migration, warmwater spawning, wildlife habitat
		Potential:	municipal and domestic supply
Sacramento – San Joaquin Delta	N/A	**Existing:**	municipal and domestic supply, agricultural supply (irrigation, stock watering), industrial service supply, industrial process supply, hydropower generation, water contact recreation, other noncontact recreation, warm and cold freshwater habitat, warm and cold freshwater migration, warmwater spawning, wildlife habitat, navigation
		Potential:	N/A

* Sack Dam is located in northern Fresno County; the Newman Wasteway discharges to the San Joaquin River about 0.7 mile upstream of the Merced River confluence.

Source: Central Valley Regional Water Quality Control Board 2018

In addition to the beneficial uses shown for surface waters in Table 3-9, all of Region 5's groundwaters are considered suitable (or potentially suitable) for municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply, unless they have been specifically designated otherwise by the RWQCB (Central Valley Regional Water Quality Control Board 2018).

Table 3-10 shows CWA Section 303[d]-listed water quality impairments threatening designated beneficial uses in receiving waters immediately downstream of the NCCA site and identifies the impairments for which TMDL programs are in place. Additional impairments have been listed farther downstream in the Sacramento – San Joaquin Delta, Suisun Bay, and San Francisco Bay (State Water Resources Control Board 2016) but are not discussed in detail here since the effects of input from the NCCA site (via the Newman Wasteway) would be substantially diluted by inflow from numerous additional downstream sources before reaching these more distal waters.

Table 3-10. Identified Water Quality Impairments Downstream of NCCA Site

Water Body	Reach	Pollutant	TMDLs in Place
Newman Wasteway	*N/A*	Chlorpyrifos, DDE, dissolved oxygen, fecal indicator bacteria, salinity, simazine	None
San Joaquin River	Mud Slough to Merced River*	Boron, chlorpyrifos, DDT, diazinon, electrical conductivity, Group A pesticides, indicator bacteria, mercury, selenium, toxicity	Chlorpyrifos, diazinon, selenium

Water Body	Reach	Pollutant	TMDLs in Place
	Merced River to Tuolumne River	Alpha-BHC, chlorpyrifos, DDE, DDT, electrical conductivity, Group A pesticides, mercury, specific conductivity, total dissolved solids, toxicity, water temperature	Chlorpyrifos
	Tuolumne River to Stanislaus River	Chlorpyrifos, DDT, diazinon, electrical conductivity, Group A pesticides, mercury, toxicity, water temperature	Chlorpyrifos, diazinon
	Stanislaus River to Delta Boundary	Chlorpyrifos, DDE, DDT, diuron, Group A pesticides, mercury, toxaphene, toxicity, water temperature	Chlorpyrifos
Old River	San Joaquin River to Delta-Mendota Canal	Chlorpyrifos, electrical conductivity, low dissolved oxygen, total dissolved solids	Chlorpyrifos

* The Newman Wasteway discharges to the San Joaquin River between Mud Slough and the Merced River confluence.

Key to Abbreviations:

Alpha-BHC = alpha-benzenehexachloride
Alpha-HCH = alpha-hexachlorocyclohexane
DDE = dichlorodiphenyldichloroethylene
DDT = dichlorodiphenyltrichloroethane

Source: State Water Resources Control Board 2016

Groundwater in the Delta-Mendota Subbasin, where the City and NCCA are located, shows elevated levels of nitrate, arsenic, hexavalent chromium, selenium, total dissolved solids (TDS), sulfate, chloride, and boron, which are addressed by treatment for municipal potable use. Groundwater from the Subbasin's lower aquifer also locally exhibits elevated iron, manganese, and hydrogen sulfide concentrations, and high pH and sodium adsorption ratios that can pose challenges for irrigation use (Kenneth D. Schmidt & Associates 2019).

Potential to Degrade Water Quality

Violation of Water Quality Standards

Construction Period. Construction of all four of the NCCA projects would involve substantial ground disturbance, with the potential to result in accelerated erosion and delivery of elevated sediment loading in runoff to downstream waters. Water service extension would also involve ground disturbance for trenching. If vehicle fuels or lubricants, paints, solvents, adhesives, paving media, or other substances used in construction are spilled, there would also be potential for delivery of other pollutants to offsite waters. To address this, the City has committed to an AMM for water quality protection (AMM-4,Table 2-15), which lays out requirements to control runoff, minimize the potential for spills and leaks of fuels, lubricants, and other substances, and provides for spill containment and response, among other measures.

In addition, as discussed in the *Geology & Soils* and *Hazards and Hazardous Materials* sections of this checklist, because all four of the NCCA projects would disturb an area greater than 1 acre, they would all be required to obtain authorization under the SWRCB's Construction General Permit. The Construction General Permit requires preparation and implementation of a SWPPP that identifies the best management practices (BMPs) or measures that will be implemented to control erosion, prevent spills, and contain site runoff and the monitoring measures that will be implemented to ensure that BMPs are operating effectively.

Since 2009, the Construction General Permit has used a risk-based permitting approach, with key aspects of the permit requirements based on the project's potential to generate sediment runoff and the risk additional sediment loading poses to receiving waters. Higher-risk sites are required to prepare Rain Event Action Plans (REAPs) that lay out procedures to be implemented for the protection of exposed areas in the event

precipitation is forecast as likely. This is expected to be necessary for the NCCA site. Additionally, as of 2009, the Construction General Permit specifies daily quantitative limits (numerical effluent limits or NELs) on pH and sediment content in construction site runoff, and identifies numerical action level (NAL) thresholds at which the project owner or contractor must take action to control and reduce pH and turbidity in site runoff. Since 2009, the state has required that SWPPPs be prepared and implemented by personnel meeting specific qualifications (see footnote 11 on page 3-55).

For the NCCA projects, AMM-4 and the project-specific SWPPPs are expected to effectively control offsite delivery of sediment and other pollutants during construction. AMM-4 would control offsite runoff effectively for water service extension if it is pursued as a separate phase of work.[16] With AMM-4 and project-specific SWPPPs in place, No Impact related to violation of water quality standards during construction is anticipated, and no mitigation is required.

Operations & Maintenance. Similar to construction, some O&M activities would have the potential to result in accelerated erosion, offsite siltation, and delivery of other pollutants such as fuels, lubricants, paints, and solvents offsite. However, the City will continue to require AMM-4 for all ground-disturbing O&M activities and all O&M activities involving the use of other potential pollutant substances for the lifespan of the NCCA projects. In addition, for all O&M activities, fuels, lubricants, paints, and other substances would be handled in accordance with best practices and applicable label restrictions. With AMM-4 and these additional precautions in place, No Impact related to violation of water quality standards during O&M activities is anticipated, and no mitigation is required.

Violation of Waste Discharge Requirements

Discharges of runoff from construction sites are regulated under the SWRCB's Construction General Permit, described in more detail in the *Geology & Soils* section and discussed briefly above. The Construction General Permit applies to projects disturbing 1 or more acres. All NCCA-related projects would comply with the SWRCB's requirements relative to construction General Permit coverage and compliance, as discussed in the *Geology & Soils* and *Hazards & Hazardous Materials* sections and in the previous checklist item. The following discussion focuses on potential for long-term violation of other types of WDRs relevant to the NCCA projects. Discharges from municipal separate storm sewer systems (MS4s) (i.e., storm drain systems that are separate from the municipality's sanitary sewer system, consistent with current design practices) are regulated by the SWRCB's statewide Municipal Stormwater Program, administered by the RWQCBs. As a municipality with a population of less than 100,000 the City falls under the Municipal Stormwater Program's statewide General Permit for the Discharge of Storm Water from Small MS4s. At present, City stormwater is discharged without treatment into the Miller Ditch from the pump station at the northwest corner of Canal School Road and Inyo Avenue. Discharges have consistently been in compliance with the Waste Discharge Requirements (WDRs) stipulated in the General Permit.

The quality of agricultural tailwater and runoff is controlled under the RWQCB's Irrigated Lands Regulatory Program (ILRP), which applies to all Central Valley growers, including those who do not directly discharge to waters of the state.The ILRP requires commercial irrigated lands to obtain regulatory coverage and comply with WDRs issued by the RWQCB. Currently, in addition to permits issued to individual growers, there are eight sub-regional "third-party" groups with separate WDRs specific to their location and types of operations. Growers in

[16] As noted elsewhere in this Initial Study, water service extension may be coordinated with NEWS and/or Newman Nature Park construction. If so, it would be considered as part of the "project" covered in the applicable SWPPP and would be subject to the same SWPPP requirements. If not, it would still be subject to the requirements of AMM-4 (Table 2-15), which was based on typical BMPs required in SWPPPs.

the Newman area who have not obtained individual coverage fall under the Western San Joaquin River WDRs (RWQCB Order R5-2014-0002-08, Central Valley Regional Water Quality Control Board 2014).

No WDRs specific to the NCCA parcels are currently in place. As a result, No Impact is anticipated with regard to violation of existing WDRs, and no mitigation is required.

The paragraphs that follow discuss impacts related to potential future WDRs by project.

NEWS Project. With the NEWS project in place, dryweather flow and City stormwater from events up to and including the 85th percentile, 24-hour storm would be diverted from the Miller Ditch onto the NCCA site for treatment in the NEWS constructed wetlands. Once treated, flows would be discharged back to the Miller Ditch. Based on input from RWQCB staff at the Corps Sacramento District's virtual Interagency Task Force meeting in July 2020, the City anticipates that new WDRs would need to be put in place to authorize discharge from the NEWS project to the Miller Ditch. Pollutant limitations in the new WDRs will be set at levels deemed protective of designated beneficial uses of waters downstream of the site, per regulatory requirements and standard RWQCB practices, and—if the project is funded under the SWRCB Proposition 1 stormwater grant for which the City has applied—the City will be required to monitor NEWS discharges for compliance with the WDRs.[17] If discharges are found to be out of compliance, corrective action will be required, and would be enforced by the SWRCB under the terms of the grant. With this regulatory oversight in place, the potential for impacts related to violation of future WDRs applicable to the NEWS project is expected to be Less than Significant, and no mitigation is required.

Wetland Project, Newman Nature Park. The wetland project and Newman Nature Park would not entail offsite discharges and are not expected to be subject to WDRs. Additionally, the wetland project is not expected to have a surface hydrologic connection to the NEWS project. As a result, neither the wetland project nor the Newman Nature Park would have potential to result in violation of future WDRs. There would be No Impact related to such violation, and no mitigation is required.

MDTW Project. The MDTW project is currently envisioned as discharging primarily to the central swale, where it would contribute flow to support the establishment of an expanded marsh area and quasi-riparian corridor. The central swale has no surface hydrologic connection to the Miller Ditch and downstream receiving waters and this outfall is not expected to require WDRs. However, as discussed in Section 2, the MDTW would also be equipped with an alternate outfall to the Miller Ditch to provide operational flexibility. Similar to the NEWS project, new WDRs are expected to be required for the Miller Ditch discharge, and the discharge would be subject to oversight by the RWQCB, which has the authority to enforce corrective action in the event of a violation. As described for the NEWS project above, impacts would be Less than Significant with regulatory oversight in place, and no mitigation is required. Finally, there is some potential that outflow from the MDTW could be at least intermittently diverted to the NEWS project. In this case, MDTW outflow would influence the quality of the waters discharged and could affect compliance with WDRs. However, the NEWS project would recive only treated water from the MDTW project. Consequently, diverting outflow from the MDTW to the NEWS project is not expected to have a negative effect on the NEWS project's ability to remain in compliance with future WDRs. No Impact related to violation of WDRs is anticipated, and no mitigation is required.

[17] Grant funding is considered critical to NEWS project implementation. If the project is not funded in the current granting cycle, the City anticipates applying for future grant funding that would likely have similar requirements for monitoring (and, if needed, corrective action) to ensure compliance with applicable WDRs.

Other Substantial Degradation of Water Quality

The following paragraphs discuss the water quality impacts of project construction and routine O&M activities, and impacts related to long-term effects of wetland processes at the NCCA on water quality. Analysis is separated for clarity. Discussion below focuses on topics specific to the NCCA; the NCCA projects' potential contribution to identified (303[d]-listed) impairments in downstream waters is discussed in *Cumulative Impacts* under *Mandatory Findings of Significance* at the end of the Section, since impairment rising to the level of 303[d] listing is the result of multiple inputs over time and is thus is an inherently cumulative issue.

Construction and O&M Impacts. The potential for water quality degradation as a result of construction and routine O&M activities is discussed in relation to *Violation of Water Quality Standards* above. As itemized above, all of the NCCA projects would be required to develop and implement project-specific SWPPPs to control the quality of site runoff during construction. The City has also committed to an AMM to protect water quality (AMM-4, Table 2-15), which will be in effect during construction and also during O&M for the lifespan of the NCCA projects and water service extension. With SWPPPs in place where required, and AMM-4 implemented for all NCCA undertakings, the potential for construction and O&M at the NCCA site to result in substantial degradation of water quality would be effectively controlled for all four NCCA projects and for water service extension. There would be No Impact related to substantial degradation of water quality, and no mitigation is required.

Long-Term Benefits and Impacts. The NEWS project, wetland project, and MDTW are all expected to result in direct long-term Benefits to water quality on- and offsite, and the Newman Nature Park also has the potential for long-term indirect Benefits to water quality. The NEWS, wetland, and MDTW projects also have the potential for long-term impacts on water quality as a result of natural wetland processes, including evapotranspiration-related increases in outflow salinity. Benefits and impacts are detailed for each project in the paragraphs below. Once installed the new water service extension would be entirely underground except for minor appurtenances such as valve boxes and meters, and is not expected to affect water quality either directly or indirectly, so it is not discussed further in this section.

NEWS Project. The NEWS project is proposed to treat dry-weather and stormwater runoff that is currently discharged without treatment to the Miller Ditch, Newman Wasteway, and downstream waters. As part of the preliminary design process, pollutant loads in inflow to the NEWS project, and pollutant volume reduction in the treatment wetlands, were modeled using PCSWMM 7.2, which is based on the EPA's Stormwater Management Model (EPA SWMM) and is widely used throughout the United States to estimate pollutant reduction in stormwater projects, including constructed stormwater treatment wetlands.

Dry weather base flow at the City stormwater pump station at Canal School Road and Inyo Avenue was estimated at 0.9 cubic feet per second (1.8 acre-feet/year) based on as-built record drawings for the pump station. Rainfall data, another key input, were obtained from the National Oceanic and Atmospheric Administration's rain station in the City of Modesto, about 20 miles north of the City and NCAA site, which is the closest rain station with the longest period of record. Evapotranspiration rates by month were obtained from DWR's California Irrigation Management Information System (CIMIS) Reference Evapotranspiration Zones data for Evapotranspiration Zone 14, where the NCCA site is located (RICK Engineering 2020).

Data were not available to quantify loading and reduction of all potential pollutants, so modeling concentrated on common urban and agricultural pollutants that could be reliably quantified: fecal indicator bacteria, metals (copper, lead, and zinc), nutrients (nitrites and nitrates, total phosphorus), and fine sediment (total suspended solids). Event mean concentrations for these pollutants for the various land uses in the watershed that delivers runoff to the City stormwater pump station were obtained from the National Stormwater Quality Database;

pollutant reduction values were developed using influent/effluent data from the International Stormwater BMP Database. These values were used to construct the PCSWMM continuous simulation model for the NEWS project facilities. Long-term continuous simulation results from PCSWMM were then analyzed to aggregate pollutant inflow and outflow for individual water years, in order to estimate average annual pollutant reduction (RICK Engineering 2020).

Modeling details are presented in the NEWS Project *Basis of Design Memorandum and Final Stormwater Quality Benefit Analysis* (Appendix E to this Initial Study) (RICK Engineering 2020). Tables 3-11 and 3-12 summarize modeled pollutant load reduction at the NEWS project for the 85th percentile storm event and averaged over an operational year, respectively. As shown in Table 3-11, the NEWS project is expected to remove 100% of the wet weather pollutant loading contributed by urban land uses in the City, in events up to and including the 85th percentile, 24-hour storm (RICK Engineering 2020). Average annual removal would also be 100% for the urban contribution of all pollutants modeled except for lead (90% annually). Modeling shows that the NEWS project would also remove a substantial percentage of most pollutants from agricultural land uses in the area around the City, both in storm events up to the 85th percentile, 24-hour storm and annually.

Table 3-11. NEWS Project Anticipated Pollutant Load Reduction, 85th Percentile Storm Event

Pollutant	Forebay	Wetlands	Micropool	Total	Removal by Contributing Land Use	
					Urban	Agricultural
Fecal indicator bacteria	12%	43%	17%	**72%**	100%	59%
Metals						
Copper (Cu)	45%	24%	9%	**78%**	100%	56%
Lead (Pb)	14%	46%	18%	**78%**	100%	3%
Zinc (Zn)	48%	27%	11%	**86%**	100%	51%
Nutrients						
Nitrites + nitrates	61%	22%	9%	**92%**	100%	90%
Total phosphorus	64%	18%	17%	**90%**	100%	85%
Sediment (TSS)	68%	19%	7%	**94%**	100%	92%

Source: RICK Engineering 2020

Table 3-12. NEWS Project Anticipated Pollutant Load Reduction, Annual Average

Pollutant	Forebay	Wetlands & Micropool	Removal by Contributing Land Use	
			Urban	Agricultural
Fecal indicator bacteria	7%	58%	100%	42%
Metals				
Copper (Cu)	38%	55%	100%	39%
Lead (Pb)	3%	71%	90%	< 1%
Zinc (Zn)	41%	68%	100%	23%
Nutrients				
Nitrites + nitrates	56%	75%	100%	82
Total phosphorus	59%	67%	100%	74
Sediment (TSS)	64%	79%	100%	82

Source: RICK Engineering 2020

Treated water from the NEWS project would be discharged to the Miller Ditch, which empties into the Newman Wasteway for ultimate delivery to the San Joaquin River between Mud Slough and the Merced River.[18] Reduction in levels of fecal indicator bacteria, metals, and nitrates in treated NEWS project effluent would represent an improvement in the quality of City stormwater and dry weather runoff delivered to downstream receiving waters and would support achievement of RWQCB WQOs. Reduced sediment levels would similarly support RWQCB water quality objectives for sediment and suspended material. All of these outcomes would represent direct long-term Benefits to water quality onsite and in downstream receiving waters as a result of implementing the NEWS project.

In addition to offsite discharge of treated water, modeling indicates that some 45 acre-feet per year would infiltrate into shallow groundwater via the NEWS project's unlined wetland treatment basins (RICK Engineering 2020); as discussed in Section 2, the micropool would be lined to prevent infiltration since separation between the bottom of the micropool and the shallow groundwater water table is not adequate to meet RWQCB standards. Since infiltration would occur during the treatment process, infiltrated water would not be fully treated, but its quality would still be improved by residence in the forebay and wetland ponds as well as natural filtration occuring in the substrate. NEWS project infiltration thus has the potential to improve conditions of elevated nitrate content in shallow groundwater, which is a pervasive regional problem in the western San Joaquin Valley. This is also considered a direct long-term Benefit to water quality due to the NEWS project.

Residence in the NEWS project wetland cells would likely result in a slight increase in overall water salinity, due to the reduction in volume resulting from natural evaporation and plant transpiration. Salinity increase due to evaporation is estimated at 2% (Cortez pers. comm.). Transpiration would likely account for approximately another 8%, for a total salinity increase on the order of 10%, assuming values are similar to initial model results for the MDTW project, which assumed a 20-acre project, similar to NEWS (Rodal Morales and Beutel 2020a).

Table 3-13 shows salinity data from preliminary water quality monitoring conducted by the UC Merced team near the outfall from the City stormwater pump station (vicinity of the proposed NEWS project diversion). Figure 3-5 shows the UC Merced sampling locations. Samples were collected at three relevant locations: from the Miller Ditch just upstream of the pump station outfall, from the City stormwater pump station outfall itself, and from the Miller Ditch downstream of the pump station outfall. The dataset is preliminary but gives some indication of likely input salinities in water treated by the NEWS project.

Table 3-13. NEWS Project Inflow Salinity

Date	Conditions*	Sampling Location		
		Miller Ditch U/S of PS Outfall (MD1B)	PS Input to Miller Ditch (MD2A)	Miller Ditch D/S of PS Outfall (MD2B)
09/12/2019	High flow/dry	—	—	319
09/27/2019	High flow/dry	—	—	267
10/25/2019	Low flow/dry	—	1,323	—
03/13/2020	Low flow/dry	762	—	860
03/16/2020	Low flow/wet	657	—	—
04/06/2020	Low flow/wet	783	178	—

[18] The City is also considering future diversion of a portion of treated NEWS effluent for use in reducing effluent salinity at the City's WWTP. Such a diversion would take place downstream of the NEWS outfall to the Miller Ditch. Consequently, water quality in the Miller Ditch and downstream water bodies would still receive some long-term benefit from NEWS treatment. This issue is not discussed further, since future diversions are not presently considered reasonably foreseeable. If the City moves forward with diversion of treated NEWS outflow to the WWTP at some point in the future, this would constitute a new, separate project subject to additional CEQA analysis.

Date	Conditions*	Sampling Location		
		Miller Ditch U/S of PS Outfall (MD1B)	PS Input to Miller Ditch (MD2A)	Miller Ditch D/S of PS Outfall (MD2B)
05/29/2020	Low flow/wet	856	—	1,648
06/29/2020	Low flow/dry**	547	—	1,270
07/31/2020	High flow/dry	492	—	474
09/04/2020	High flow/dry	586	—	588
10/16/2020	Low flow/dry**	808	1,580	1,633
11/23/2020	Low flow/wet	623	—	761
01/14/2021	Low flow/wet	1,338	—	1,388
1/29/21	High flow/wet	113.5	150.9	111
	Average:	***688 µS/cm***	***808 µS/cm***	***847 µS/cm***
			Annual average, all locations:	***781 µS/cm***

* Refers to flow level in Miller Ditch and ambient weather conditions.

** Flows largely diverted to adjacent pasturage during these two events.

Key to Abbreviations:

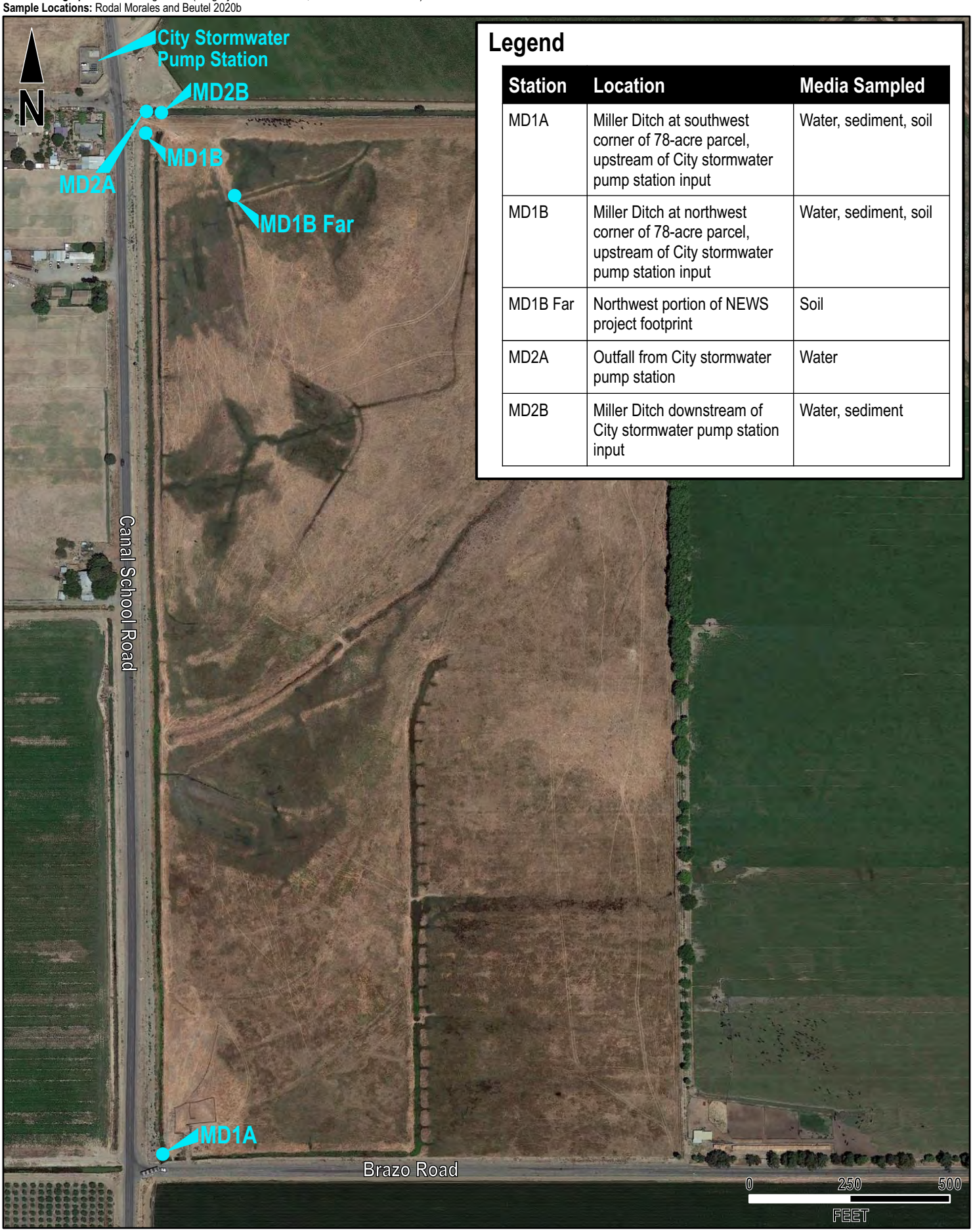
µS/cm = microSiemens per centimeter (a measure of electrical conductivity)
PS = City stormwater pump station at Canal School Road and Inyo Avenue
— = no data available
U/S = upstream
D/S = downstream
PS = City stormwater pump station at Canal School Road and Inyo Avenue

Source: Rodal Morales and Beutel 2020b, Rodal Morales pers. comm.

As Table 3-13 shows, salinity in Miller Ditch waters tends to be lower under high-flow conditions during the dry months, when flows are more influenced by input from the CCID canal (diverted for irrigation use in the late spring and summer) and less so by high-salinity groundwater. Salinity in the Miller Ditch increases at the end of the irrigation season, when CCID diversions are suspended and the influence of saline shallow groundwater becomes more important (Rodal Morales and Beutel 2020b). Peak salinities in discharge from the City's stormwater pump station (October 2019, October 2020) are attributed to a combination of low-flow conditions and dry weather, when stormwater runoff is absent and pump station throughput is dominated by agricultural runoff and shallow groundwater. Salinities in the pump station discharge are expected to be much lower in wet weather conditions when urban runoff is more volumetrically important (Beutel and Rodal Morales pers. comm.). This is supported by the much lower values reported for wet-weather sampling events at the pump station outfall (April 2020 and late January 2021).

With a maximum input salinity to the NEWS project between 1,323 microSiemens/cm (µS/cm) (maximum salinity reported in the City pump station outflow) and 1,648 µS/cm (maximum salinity measured in Miller Ditch downstream of the pump station discharge), and assuming a salinity increase of 10% within the NEWS project wetlands, maximum outflow salinities in water returned to the Miller Ditch could be on the order of 1,455 – 1,813 µS/cm. This probably represents an intermittent worst case; as discussed above, salinities appear to peak in low-flow dry months when irrigation diversions to the Miller Ditch are minimized and rainfall provides little or no dilution, and are lower during other parts of the year (Rodal Morales and Beutel 2020b). On annual average, output salinities are expected to be on the order of 859 µS/cm (10% increase from annual average input salinity of 781 µS/cm).

Aerial Photograph Source: GoogleEarth (imagery date 07/18/2019, downloaded 01/21/2021)
Sample Locations: Rodal Morales and Beutel 2020b



Legend

Station	Location	Media Sampled
MD1A	Miller Ditch at southwest corner of 78-acre parcel, upstream of City stormwater pump station input	Water, sediment, soil
MD1B	Miller Ditch at northwest corner of 78-acre parcel, upstream of City stormwater pump station input	Water, sediment, soil
MD1B Far	Northwest portion of NEWS project footprint	Soil
MD2A	Outfall from City stormwater pump station	Water
MD2B	Miller Ditch downstream of City stormwater pump station input	Water, sediment

Redtail Consulting
Environment & Community

Figure 3-5. UC Merced Sampling Locations
Newman Community Conservation Area Master Plan
City of Newman

The Basin Plan for the Central Valley Region (Central Valley Regional Water Quality Control Board 2018) did not originally establish specific numerical WQOs for salinity in the Newman Wasteway, in the San Joaquin River downstream of the Mud Slough confluence, or in area groundwaters, although WQOs have been set for Sacramento – San Joaquin Delta waters farther downstream (e.g., State Water Resources Control Board 2006, 2018), and for "special cases" outside the Delta, including portions of the upstream San Joaquin River and the Sacramento River, as well as various tributaries (Central Valley Regional Water Quality Control Board 2018).

Anticipated output salinities were therefore compared to the SWRCB's standards for salinity in drinking water—900 μS/cm recommended, with an upper limit of 1,600 μS/cm—which should be reasonably protective of most beneficial uses.[19] These thresholds are parallel with recently adopted amendments to the Basin Plan, which included WQOs for salinity in all waters designated for use as domestic or municipal supply ("MUN" designation) based on the drinking water Maximum Contaminant Levels permissible under California state law (California Code of Regulations, Title 22): 900 μS/cm (recommended) and 1,600 μS/cm (upper limit), with compliance to be based on annual average of sample results (Central Valley Regional Water Quality Control Board 2020). These thresholds are considered applicable to the Newman Wasteway, which carries the MUN designation.

Although maximum output salinities (potentially as high as 1,813 μS/cm for short periods during the warm dry months) are above the upper limit drinking water standard, the annual average output salinity projected from Table 3-13 (859 μS/cm) is below the recommended 900 μS/cm salinity level for drinking water and substantially below the upper limit salinity standard of 1,600 μS/cm. Consistent with limits established in the recently adopted Basin Plan amendments for MUN-designated waters, this is considered a Less than Significant impact, and no mitigation is required.

Wetland Project. The wetland project would not include water treatment facilities per se, but it would increase the extent and improve the quality and function of wetlands on the NCCA parcels, expanding the natural filtration function of wetland habitat at the site. Although the wetland project as currently planned would not discharge offsite, it is expected to improve the quality of water infiltrating into shallow groundwater by comparison with current conditions. Effects would likely be magnified by more stringent management of grazing at the site, which is expected to reduce fecal input to infiltrating waters. These outcomes are considered direct long-term Benefits to water quality as a result of the wetland project.

MDTW Project. The MDTW would treat currently untreated irrigation supply and agricultural tailwater from the Miller Ditch. Pollutant removal modeling recently conducted for the MDTW (Rodal Morales and Beutel 2020a, Rodal Morales and Beutel 2021, Appendix F to this Initial Study) used the P-k-C* method of Kadlec and Wallace (2009), which is a mass balance model for water and pollutant removal that assumes areal first-order removal and non-ideal flow. Modeling assumed a 15.8-acre facility and focused on key agricultural pollutants (nitrate and total phosphorus) and salinity derived from soils and/or groundwater. Miller Ditch flow and water quality input values were derived from preliminary monitoring conducted at the NCCA site in 2019 – 2020 (Rodal Morales and Beutel 2020b, Rodal Morales et al. 2020; see Appendix F).

Results of pollutant removal modeling are summarized in Table 3-14 and detailed in the UC Merced team's recent Hydrology Mass Balance and Pollutant Removal Modeling memorandum and a subsequent update

[19] The current Basin Plan for the Central Valley Region (Central Valley Regional Water Quality Control Board 2018) references the 2006 Basin Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary system (State Water Resources Control Board 2006) relative to salinity limits for Delta waters. SWRCB drinking water standards were used as a basis to evaluate project impacts here because they provide a straightforward means to assess and contextualize impacts on immediate downstream waters by comparison with existing conditions; this is discussed further under *Cumulative Impacts* in *Mandatory Findings of Significance* below (see Table 3-23).

(Rodal Morales and Beutel 2020a, 2021; Appendix F to this Initial Study). Substantial decreases in nitrate and total phosphorus concentrations are anticipated, while salinity would increase slightly due to reduction in water volume as a result of evaporation and plant transpiration.

Table 3-14. MDTW Project Anticipated Pollutant Load Reduction

Pollutant	Inflow Concentration	Outflow Concentration	% Change
Nitrate	2.03 mg/l*	0.75 mg/l	63% decrease
Total phosphorus	0.31 mg/l	0.15 mg/l	52% decrease
Salinity	711 mS/cm*	800 mS/cm	13% increase

* mg/l = milligrams per liter
** µS/cm = microSiemens per centimeter (a measure of electrical conductivity)

Source: Rodal Morales and Beutel 2021

Treated water from the MDTW would primarily be discharged to the central swale to support the expanded marsh and quasi-riparian corridor created by the wetland project, although an alternate outfall to the Miller Ditch would be provided to enable operational flexibility. Retaining some or all MDTW effluent onsite in the central swale would allow infiltration into shallow groundwater, helping to reduce nitrate levels, which have historically been high due to agricultural input; note that infiltration is not anticipated via the MDTW's wetland cells, since they would be lined to promote retention and increase treatment effectiveness. To the extent that MDTW effluent returns to the Miller Ditch (and ultimately the Newman Wasteway and San Joaquin River), reduction in nitrate and total phosporus levels would also accrue to these downstream waters, although some infiltration would also occur via unlined channel inverts. All of these outcomes represent direct long-term Benefits to water quality as a result of the MDTW project.

The increase in salinity in treated MDTW effluent would also affect shallow groundwater and/or downstream waters, depending on where the effluent is discharged. In consideration of the SWRCB's standards for salinity in drinking water and recently adopted Basin Plan limits for salinity in MUN-designated waters—900 µS/cm recommended, with an upper limit of 1,600 µS/cm—this is considered a Less than Significant impact: the increase would be small (~13%) and treated effluent would still be well below both the recommended and upper-limit standards for potable water use and the corresponding Basin Plan limits. No mitigation is required.

Newman Nature Park. The Newman Nature Park would not provide for water quality treatment per se, but it would include various public education components related to watershed health, water quality issues, "natural" water quality treatment via wetland processes, and water conservation options, including native plant gardening, rainwise gardening, and rainwater capture and reuse. As such, although it would not directly benefit water quality, the Nature Park would increase public awareness of water quality issues and provide tools that can be used at area homes and businesses. This is considered an indirect long-term Benefit to area water quality.

Potential to Impede Sustainable Groundwater Management

Construction Period. Construction of each of the NCCA projects and the water service extension would involve some use of water. This would include water used to control fugitive dust during excavation, grading, trenching, and recontouring as well as small-scale short-term use at the NEWS project and MDTW project in the concrete mix used to create the hardscape pads in the forebays. Water is expected to come from the City's municipal supply, which relies exclusively on groundwater. However, construction use for each of the NCCA projects would be limited, temporary, and short-term, similar to the demand for other land development projects of commensurate extent, and the demand projections used in the City's water supply planning factor in typical

construction use in addition to domestic, municipal, agricultural, and industrial consumption. In this context, construction-related use of City groundwater supply for the NCCA projects is not expected to impede sustainable groundwater management. There would be No Impact, and no mitigation is required.

Post-Construction Vegetation Establishment Period. Establishment of plantings at the NEWS, wetland, and MDTW projects could require at least intermittent watering during the first few years following construction of each project, particularly if the establishment period for any of the projects falls during particularly dry and/or hot years. As discussed in Section 2, the existing well onsite is planned for destruction per County requirements, and would not be used for irrigation. Irrigation during the vegetation establishment period is expected to rely on either Miller Ditch water or City municipal groundwater supply. Hand watering may be used, or water-efficient temporary irrigation may be provided. Like construction use, post-construction irrigation consumption would be limited, temporary, and short-term, and is expected to be well within the City's supply capacity if City water is used. No Impact related to impedance of sustainable groundwater management is anticipated, and no mitigation is required.

Operations & Maintenance. Two factors are relevant in considering long-term potential to deplete groundwater supply or impede sustainable groundwater management: groundwater consumption and the potential to impede groundwater recharge. They are addressed separately in the paragraphs that follow.

Groundwater Consumption. Some O&M activities would require intermittent, short-term use of City groundwater supply, such as cleaning the trash capture device at the NEWS project and restroom cleaning and occasional wash-down of common spaces in the Newman Nature Park community facilities area. This is expected to be well within City supply capacity; City water supply planning takes municipal O&M use into account. O&M use of City groundwater supply is therefore not expected to substantially decrease groundwater supplies or otherwise impede sustainable groundwater management. There would be No Impact, and no mitigation is required.

Once plantings become established, no irrigation would be provided for the wetland or MDTW projects. At the NEWS project, water-efficient drip or rotor/rotator overhead spray irrigation using City groundwater supply would be provided during the vegetation establishment period immediately following planting, along Canal School Road, on the basin slopes, and in the gateway planting areas. Long-term irrigation would be provided only for the gateway area but is not expected to be necessary in other portions of the NEWS project footprint. Irrigation at the NEWS project is not expected to exceed maximum applied water allowances dictated by California's Model Water Efficient Landscape Ordinance[20] (MWELO).

Demonstration gardens and landscaping at the Newman Nature Park would also be equipped with water-conserving irrigation meeting MWELO standards. The irrigation system for the demonstration gardens would likely use a variety of delivery methods depending on the application, size of the area receiving irrigation, and the plants or plant communities being irrigated. Some areas would use a drip delivery system to demonstrate this method at a residential scale. Other areas may use a water-efficient spray system; this would be appropriate where a larger area needs to be covered and where drip irrigation could present a long-term maintenance concern. The irrigation system controller would include a weather sensor to override the automatic watering schedule when it rains. Landscape areas, and possibly other plantings as well, would be designed for temporary establishment irrigation, which would be removed or turned off once the drought-tolerant native

[20] The Model Water Efficient Landscape Ordinance, originally enacted in 1993 and updated in 2015 at the height of California's most recent drought, is a state regulation intended to prevent wasteful use of water for landscape irrigation. It requires cities and counties to enforce landscaping water efficiency standards for all projects that are subject to permit, plan check, or design review and have landscaped areas of 500 square feet or more (California Department of Water Resources 2020c, 2020d).

plantings are fully established. Additionally, where small areas of impervious surface are used, they would be graded to drain toward plantings to avoid water waste and further demonstrate rainwater capture techniques.

Irrigation use at municipal facilities is also factored into City water supply planning. Irrigation use at the NCCA would be limited, would meet MWELO standards, and is expected to be within City supply capacity. It is therefore not expected to substantially decrease groundwater supplies or otherwise impede sustainable groundwater management. There would be No Impact related to irrigation use, and no mitigation is required.

Impedance of Groundwater Recharge. Average net recharge to the Delta-Mendota Subbasin is estimated at 147,000 acre-feet per year (AFY). Primary sources of recharge include infiltration of irrigation water, seepage through the unlined inverts of ditches and canals, direct infiltration of rainfall, and groundwater recharge and recovery projects undertaken by local agencies, such as the Los Banos Creek Recharge and Recovery Project, Orestimba Creek Recharge and Recovery Project, BB Limited Recharge Project, and Farmers Water District Recharge Project. Recharge is currently exceeding withdrawals in the Subbasin (San Joaquin River Exchange Contractors GSP Group 2019a).

The NCCA site's current contribution to recharge is not quantified. However, the NCCA parcels are assumed to be contributing to recharge due to seasonal flood irrigation and the permeability of soils at the site. Increased extent and duration of ponding at the site by comparison with current conditions would increase recharge; addition of impermeable surfaces would impede recharge.[21]

Anticipated impacts by project are summarized below.

- The NEWS project would increase duration and extent of ponding at the NCCA site and would also add small areas of impermeable surface to the 78-acre parcel, comprising the 0.79-acre concrete pad in the forebay and the lined 2.2-acre micropool. Table 3-15 summarizes permeable wetland losses and gains in the NEWS project footprint. Wetland gains include the portion of the forebay that would not be hardscaped (calculated as 2.5 acres less the 0.79-acre footprint of the concrete pad), but do not include the lined 2.2-acre micropool.

Table 3-15. Wetland Loss and Gain at NEWS Project[22]

Habitat Type	Loss	Gain*	Net Change
Seasonal wetland	1.909	9.71	+8.620
Ditch	0.002	0.0	-0.002
Total	***1.911***	***9.71***	***+8.618***

Note: Wetland gains do not include hardscaped portion of forebay area.

Source: Poisson pers. comm.

As a result of increased wetland acreage and extended ponding, the NEWS project is modeled to result in approximately 45 AFY of infiltration (RICK Engineering 2020). Impacts, if any, on groundwater

[21] Extension of water service would not add new areas of impermeable surface since the new water service would either follow Canal School Road and Brazo Road to the site (in an alignment that is already paved), or would be installed along the north and east boundaries of the 78-acre parcel where it would be in a subsurface trench with permeable fill and no paving. Accordingly, water service extension is not discussed further in this item.

[22] As discussed in *Potential for Adverse Effects on Protected Wetlands* under *IV. Biological Resources*, all wetland disturbance and loss would be compensated consistent with resource agency permit conditions, consistent with regulatory requirements.

recharge are expected to be Less than Significant, and NEWS project infiltration is expected to represent a small Benefit by comparison with current conditions. No mitigation is required.

- Infiltration due to the wetland project has not been modeled but is also expected to increase. This is largely due to the expansion and improvement of perennially ponded marsh within the central swale, where a total 6.04 acres of emergent marsh habitat would be reestablished and the existing 1.406 acres would be enhanced, relying first on Miller Ditch diversions and then on MDTW outflow to provide for sustained ponding. Flood irrigation would be discontinued, and ponding duration would decrease substantially, where 3.8 acres of ephemeral wetlands are planned for enhancement on the southeast portion of the 24-acre parcel. However, the decrease in infiltration due to these changes should be offset by increased infiltration via the enhanced swale area. Impacts on groundwater recharge, if any, would be Less than Significant, with an overall minor Benefit anticipated. No mitigation is required.

- At 15.8 acres in total, the MDTW project would add about 15 acres of impermeable surface to the 78-acre parcel, representing the extent of the lined wetland cells. However, treated water from the MDTW project would primarily be diverted into the central swale, where infiltration would occur; alternate diversions to the Miller Ditch would also enable infiltration through the unlined channel invert. Consequently, the net loss to infiltration, if any, would be minor, and is considered Less than Significant. No mitigation is required.

- The Newman Nature Park would also add a small area of impermeable surface to the 78-acre parcel, due to the concrete pad at the shade structure. This is expected to be offset by capture and infiltration of runoff from all hardscaped areas at the project, including the shade structure area as well as areas surfaced by permeable hardscape media. Impacts of the Newman Nature Park on groundwater recharge, if any, are therefore considered Less than Significant. No mitigation is required.

Potential to Alter Existing Drainage Patterns

Increased Erosion or Siltation

Construction Period. As discussed above, ground disturbance during construction of each of the NCCA projects and the water service extension would have some potential to accelerate localized soil erosion and offsite delivery of sediment, but because of the extent of ground disturbance, all of the NCCA projects would be required to develop and implement project-specific SWPPPs as well as implementing the City's adopted AMM for habitat and water quality protection (AMM-4, Table 2-15). Water service extension may be included in one or more of the NCCA project SWPPPs, depending on the timing of construction, but in any case would be subject to AMM-4. With these requirements in place, all of the undertakings' potential to result in impacts related to increased erosion and siltation during construction would be Less than Significant. No mitigation is required.

Operations & Maintenance. AMM-4 would continue to be required for ground disturbance during O&M at all four NCCA projects. With AMM-4 in place, long-term potential for ground-disturbing O&M activities to result in impacts related to increased erosion and siltation is also expected to be Less than Significant. No mitigation is required.

Water service extension would not result in long-term modifications to surface water flow or drainage, since it would be entirely underground. It would have No Impact over the long term, and no mitigation is required.

By design, however, the NCCA projects would modify surface water flow and drainage at the site, as detailed in Section 2 and summarized below.

- The NEWS project would divert untreated dry weather flow and storm runoff from the Miller Ditch, distribute it through a series of wetland areas for treatment by natural wetland processes, and return it to the Miller Ditch. A key aspect of NEWS project treatment would be ponding in the forebay to enable sediment settlement. Additional settlement of the finest sediment fraction would occur in the wetland areas and micropool prior to discharge back to the Miller Ditch. By retaining water onsite and allowing sediment to settle in the forebay and treatment wetlands, the NEWS project would reduce sediment loading in the Miller Ditch; since water moving through the NEWS project would be contained within wetland areas configured for passive flow, offsite runoff would also be reduced. The NEWS project would have No Impact related to long-term increases in offsite siltation, and is expected to result in a substantial Benefit to offsite/downstream delivery of sediment load. No mitigation is required.

  The NEWS project, by design, would increase onsite siltation (sediment settling), as an aspect of the water treatment process. The location of siltation would be confined by wetland basin design, with the majority of settlement occurring in the forebay; only the finest-grained portions of the suspended sediment load would be expected to move beyond the forebay into the wetland areas. Accumulated sediment would be periodically removed from the forebay to maintain ponding and settlement capacity, as described in Section 2 of this Initial Study. In this context, increased onsite siltation at the NEWS project is considered a Less than Significant impact. No mitigation is required.

- The wetland project would not deliver flows offsite, due to project design; thus, over the long term, it would have No Impact related to increased offsite siltation. No mitigation is required.

  Minor sediment mobility may occur within the wetland project over the long term, particularly during larger storm events and wetter winters, analogous to a natural wetland system. Because this is inherent in the project design, and is specifically intended to replicate natural processes, any such mobility is considered a Less than Significant impact, particularly as flows would not be delivered to offsite receiving waters. No mitigation is required.

- The MDTW project would divert water from the Miller Ditch for treatment in vegetated wetland cells, and would primarily discharge treated water onsite, to the central swale, with an alternate discharge to the Miller Ditch. As described for the NEWS project, a key aspect of water treatment at the MDTW would be ponding in the forebay area to enable sediment settlement. Additional settlement of fine suspended load would occur in the wetland areas. As a result, similar to the NEWS project, the MDTW project would have No Impact related to long-term increases in offsite siltation, and could result in a Benefit to sediment loading in the Miller Ditch to the extent that treated flows are returned to the Ditch. Also similar to the NEWS project, the increase in sediment accumulation at the MDTW is a feature of the project's design, and is specifically intended to benefit water quality. In this context, although the MDTW project would increase onsite siltation (sediment accumulation), this impact is considered Less than Significant. No mitigation is required.

- The Newman Nature Park would incorporate features to prevent offsite runoff, such as the use of permeable surfaces graded to drain to vegetated planting areas. No Impact related to increased on-or offsite siltation is anticipated as a result of the Newman Nature Park, and no mitigation is required.

Increased Runoff Leading to Flooding

As described in the previous item, the NEWS and MDTW projects would recontour the site to contain, manage, and treat water diverted from the Miller Ditch; if anything, these projects would reduce uncontrolled offsite runoff. Additionally, because some of the diverted flow would infiltrate into the subsurface through the bottoms of unlined wetland areas (NEWS project) and the central swale (MDTW project), the flow volume returned to the

Miller Ditch would be less than that originally diverted. The NEWS and MDTW projects would thus have no potential to result in a long-term increase in offsite flood hazards. There would be No Impact, and no mitigation is required.

The wetland project would also be configured to retain flows onsite, where they would contribute to wetland development. It would not deliver flows offsite, and would therefore have no potential to increase offsite flood hazards. There would be No Impact, and no mitigation is required.

At the Newman Nature Park, the footprints of structures such as the restrooms and O&M storage building would slightly decrease total infiltration at the site and could slightly increase runoff. There would also be a small area of concrete beneath the shade structure. However, the project would rely on permeable surfaces such as DG and permeable pavers to the extent feasible, and, as discussed in the previous item, hardscape areas would be graded to drain to vegetated swales and planters, to enable infiltration. No Impact related to increase in offsite flood hazards is anticipated as a result of the Newman Nature Park, and no mitigation is required.

Extension of water service would not add new areas of impermeable surface, since it would either follow Canal School Road and Brazo Road to the site, within an alignment that is already paved, or would be installed along the north and east boundaries of the 78-acre parcel where it would be in a subsurface trench with permeable fill and no paving. Water service extension would therefore have No Impact related to increase in offsite flood hazards, and no mitigation is required.

Exceedance of Stormwater Drainage Capacity

As described in the previous items and in more detail in Section 2, neither the NCCA projects nor the planned water service extension would add impermeable hardscape to the site, except for the concrete pad in the proximal portion of the NEWS project forebay and a similar hardscaped area in the MDTW forebay, which would be necessary to facilitate periodic sediment removal, and both of which would be within bermed forebay areas that drain only to onsite wetlands. Hardscape used in the Newman Nature Park would be permeable treatments wherever this is feasible, and hardscaped areas would be graded to drain to vegetated swales/planter areas. As a result, none of the projects would increase storm runoff from the site. On the contrary, the NEWS project would reduce the amount of storm runoff delivered to the Miller Ditch by about 45 AFY due to infiltration in the wetland areas, and the wetland project would result in more efficient and beneficial management of storm runoff within the site, potentially also reducing overland runoff to the Miller Ditch. As a result, No Impact is anticipated with regard to exceedance of stormwater drainage capacity as a result of any of the projects, and there could be a Benefit to stormwater management as a result of the NEWS and wetland projects. No mitigation is required.

Additionally, by increasing public awareness of rainwise gardening techniques, the Newman Nature Park could increase rain capture and reuse in the community as a whole, potentially resulting in overall reduction of storm runoff from the City as a whole over the long term. This is not quantifiable at the present time, but is considered a potential long-term Benefit with regard to stormwater drainage capacity.

New Sources of Polluted Runoff

The NCCA projects would all minimize the use of impervious surfaces to the extent feasible. New areas of impervious surface would include the concrete apron in the NEWS project forebay, the comparatively small footprint of the NEWS project micropool (approximately 2.2 acres), which would be lined to prevent infiltration into the shallow groundwater table, and small areas of concrete or similar hardscape at the Newman Nature Park, such as the shade structure foundation and ADA parking stalls. Because the NEWS and wetland projects would be configured to create ponding onsite, these features would not increase runoff from the site. The MDTW project would also include a concrete apron in the proximal forebay area, and its wetland areas would be

lined to increase retention times. However, the primary discharge from the MDTW would flow to the central swale, which is bermed and does not drain offsite. An alternate outfall would allow diversion of MDTW discharge to the Miller Ditch, but this would be treated water rather than untreated stormwater runoff. Hardscape areas at the Newman Nature Park would be graded to drain toward adjacent planted areas to maximize rainwater capture and infiltration and avoid uncontrolled runoff.

O&M at all of the projects would have the potential to generate silt as a result of ground disturbance, and would use potential pollutants such as fuels, lubricants, paints, and solvents, but the potential for release and offsite delivery of these substances would be effectively addressed by the requirement for continued implementation of AMM-4 (see Table 2-15) throughout the lifespan of the NCCA.

With AMM-4 in place, and considering the configuration of the four NCCA projects, none of the projects is expected to result in new sources of polluted runoff entering downstream waters. There would be No Impact, and no mitigation is required.

Impedance or Redirection of Floodflows

Flood hazard mapping issued by the Federal Emergency Management Agency (2020) shows the NCCA site within Zone A, which is defined as the area subject to inundation by the 1%-annual-chance flood event, commonly referred to as the 100-year floodplain. The site is also within the dam failure inundation zone for San Luis Dam (County of Stanislaus 2015), located about 17 miles to the south-southwest.

- The NEWS project would reconfigure the northwest quadrant of the 78-acre parcel to create constructed wetland basins. The only above-grade features included in the NEWS project would be fencing to provide for public safety, and the small pump station that may be added in the future to enable drawdown of the micropool for maintenance. Fencing would be split rail–type and would not present a substantial obstacle to floodflows. The pump station would be very small (approximately 10 feet by 10 feet). While this small facility could impede or redirect floodflows on a very localized basis, the NCCA site is surrounded by nearly flat, low-lying agricultural lands with only a few, widely scattered structures. Floodflows locally diverted or impeded by the pump station would be able to disperse essentially unimpeded into adjacent areas, and are not expected to place other properties at substantially increased risk. Impacts related to impedance and redirection of floodflows are thus considered Less than Significant, and no mitigation is required.

- The wetland project would modify topography and hydrology to increase the extent and quality of wetlands but would not install new above-grade structures of any kind. If fencing is used to protect the new wetland areas from grazing damage during establishment, it is expected to be barb-wire or similar and would not substantially impede or redirect floodflows. From the perspective of floodflow management, the most substantial change as a result of the wetland project is expected to be expansion of the marsh area in the central swale, and reestablishment/expansion of the surface hydraulic connection between the central swale and the southwest portion of the 78-acre parcel, which if anything would increase the 78-acre parcel's ability to accommodate floodflows. No Impact is anticipated, and impacts could be Beneficial. No mitigation is required.

- The MDTW project would construct wetland treatment basins in the southwest quadrant of the 78-acre parcel but would not install new above-grade structures of any kind, with the possible exception of split-rail or similar fencing and informational signage, which would have very little potential to impede or redirect floodflows. No Impact related to impedance or redirection of floodflows is anticipated, and no mitigation is required.

- The Newman Nature Park would add several new structures and other above-grade features to the site, primarily in the community facilities area in the southeast quadrant of the 78-acre parcel (Figure 1-2, Figure 2-7). These would include a community plaza area, restrooms, an O&M storage area, picnic facilities, outdoor learning areas, and raised beds for some of the native plant and rainwise gardening demonstrations. The presence of new above-grade structures and facilities would have some potential to redirect floodflows and could result in minor localized impedance of flow. However, with the exception of the restroom building and O&M storage, the new structures would be open to the elements and therefore would not create substantial obstructions to floodflows. Moreover, as identified above, the NCCA site is surrounded by nearly flat, low-lying agricultural lands with only a few, widely scattered structures. As with the NEWS project pump station, floodflows locally diverted or impeded by the new structures associated with the Newman Nature Park would be able to disperse relatively unimpeded, and are not expected to place other properties at substantially increased risk. Impacts related to impedance and redirection of floodflows are thus considered Less than Significant, and no mitigation is required.

Potential for Release of Pollutants Due to Flood, Tsunami, or Seiche Inundation

Tsunami refers to a wave or series of waves caused by disturbance of the sea floor by an earthquake, a subsea landslide, or a subsea volcanic eruption. As such, tsunamis are a coastal hazard. A *seiche* is an oscillatory ("sloshing") wave in an enclosed body of water, caused by earthquake shaking or winds from a severe storm front.

The NCCA site is located in an inland valley and thus is not at risk of tsunami inundation (California Geological Survey 2019). The nearest enclosed body of water potentially subject to seiche hazard is San Luis Reservoir, located along Highway 152 about 17 miles south-southwest of the NCCA site. Because of its distance from the reservoir, the NCCA site is not considered to be at substantial risk of seiche inundation. No Impact with regard to either tsunami or seiche inundation is anticipated, and no mitigation is required.

As discussed above, the NCCA site is within the 100-year floodplain and also within the dam failure inundation zone for San Luis Dam. However, the City does not intend to store potential pollutants on the site. As a result, No Impact related to release of pollutants in the event of a flood is anticipated. No mitigation is required.

Potential to Conflict with or Obstruct a Water Quality Control or Groundwater Management Plan

Water Quality Control Plan

The RWQCB oversees water quality in the project region, pursuant to California's Porter-Cologne Water Quality Control Act and the federal Clean Water Act. As of the preparation of this Initial Study, the guiding document is the *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region, Fifth Edition* (Central Valley Regional Water Quality Control Board 2018).

Construction Impacts. As discussed above, ground disturbance during construction of each of the NCCA projects and the planned water service extension would have some potential to degrade water quality through accelerated erosion and delivery of sediment to offsite receiving waters. Accidental releases or discharges of pollutants such as vehicle and equipment fuels and lubricants are also possible during construction. However, as previous items discuss, the City has committed to an AMM with measures to protect water quality (AMM-4, Table 2-15), and all four of the NCCA projects are also expected to develop and implement project-specific SWPPPs as a condition for authorization under the SWRCB's statewide Construction General Permit. With AMM-4 and, where applicable, additional SWPPP requirements in place, the potential for adverse impacts on water quality during construction would be controlled consistent with applicable regulatory requirements and

construction best practices. There would be No Impact related to conflict with or obstruction of the Basin Plan as a result of construction, and no mitigation is required.

Long-Term Impacts. O&M at the NCCA site would also have some potential to result in delivery of sediment and/or pollutant substances to downstream waters, similar to construction but more limited due to the restricted extent of O&M activities. However, AMM-4 will remain in effect for O&M throughout the lifespan of the NCCA projects. With AMM-4 in force, the potential for adverse effects on water quality as a result of O&M would be controlled in accordance with construction best practices. There would be No Impact related to conflict with or obstruction of the Basin Plan as a result of O&M, and no mitigation is required.

Long-Term Benefits. As discussed in *Other Substantial Degradation of Water Quality* under *Potential to Degrade Water Quality* above, the NEWS project, wetland project, and MDTW project are all expected to result in long-term direct Benefits to water quality, and the Newman Nature Park has the potential for long-term indirect Benefits to water quality. All of these outcomes would be supportive of Basin Plan goals and policies and are considered Benefits to Basin Plan implementation.

Groundwater Management Plan

California's Sustainable Groundwater Management Act of 2014 requires the formation of Groundwater Sustainability Agencies (GSAs) to manage withdrawals from medium- and high-priority groundwater basins at sustainable levels (California Department of Water Resources 2020a). California's groundwater basins are prioritized for management based on the overlying population, the projected rate of population growth, the number of public and other wells that draw water from the basin, the importance of groundwater as a primary source of supply, and documented impacts on the basin such as overdraft, ground subsidence, and saline intrusion (California Water Code Section Section 10933). The City and surrounding area, including the NCCA site, overlie the Delta-Mendota Groundwater Subbasin of the San Joaquin River Groundwater Basin. The Delta-Mendota Subbasin is considered a high-priority basin, and as of 2016 was identified as a critically overdrafted basin by the state Department of Water Resources (City of Newman 2016).

If multiple GSAs are active within a basin, they must coordinate their efforts. The City serves as the GSA within City limits, and also participates in regional groundwater management planning as a member of the San Joaquin River Exchange Contractors (SJREC) Groundwater Sustainability Planning (GSP) group, along with the Cities of Gustine, Los Banos, Dos Palos, Firebaugh, and Mendota and the Counties of Merced, Madera, and Fresno. The relevant regional groundwater management plan is the *Groundwater Sustainability Plan for the San Joaquin River Exchange Contractors GSP Group* (San Joaquin River Exchange Contractors GSP Group 2019a), inclusive of Appendix Q (San Joaquin River Exchange Contractors GSP Group 2019b), which is specific to conditions in the City of Newman.

In addition to the requirements of the Sustainable Groundwater Management Act, California's Urban Water Management Planning Act requires municipal water suppliers that serve more than 3,000 AFY, or serve more than 3,000 urban connections, to prepare an Urban Water Management Plan (UWMP) every 5 years. The UWMP must assess the reliability of the supplier's water sources over a 20-year planning window, identify demand management measures and water shortage contingency plans (including existing and planned uses of recycled water), and report on progress toward meeting the statewide demand reduction target (20% reduction in per-capita urban water consumption by 2020) (California Department of Water Resources 2020b). The City's UWMP was most recently updated in 2016. Although it is a long-term goal to add surface water to its water supply, the City presently derives all of its water supply from groundwater and addition of surface water to the supply portfolio is not considered cost-feasible. Direct use of recycled water within City limits is also cost-infeasible at present (City of Newman 2016). In this context, the City's UWMP—which focuses on existing

groundwater supply and includes demand management measures as required by the Urban Water Management Planning Act—can also be considered a groundwater management plan.

As of 2015, the City had already met both its 2015 interim target and its 2020 confirmed target for water use reduction by substantial margins, as shown in the table below.

Table 3-16. City Water Use Reduction Targets and Recent Per-Capita Water Use

10-Year Baseline Water Use	2015 Interim Use Reduction Target	2020 Confirmed Use Reduction Target	2015 Per-Capita Water Use
239 gallons/person/day	215 gallons/person/day	191 gallons/person/day	**158 gallons/person/day**

Source: City of Newman 2016

Short- and Long-Term Impacts. As discussed above, although it is a long-term goal to add surface water to the supply portfolio (City of Newman 2016), the City presently derives all of its water supply from groundwater. Consequently, in the near term and reasonably foreseeable future, all use of City water supply for the NCCA projects would represent use of groundwater. That said, none of the NCCA projects would be heavily reliant on City water supply, as discussed in the following paragraphs.

- During construction, the NEWS project would use City water supply to control dust generated by grading to create the forebay, wetland areas, and micropool; in compacting fill to meet design specifications; in constructing the concrete pad in the proximal forebay area; and for other incidental uses on the work site. Construction use for the NEWS project would be temporary and short-term and water demand would be similar to the demand for other development projects of commensurate extent, or possibly lower, because comparatively less hardscape would be used than for urban development. Additionally, demand projections used in City groundwater management planning factor in not only domestic use but also typical construction, municipal, agricultural, and industrial consumption. In this context, use of groundwater for NEWS construction is within the scope of both regional and City groundwater use planning and is not considered to be in conflict with sustainable groundwater management planning. Moreover, development of a stormwater treatment facility at the NEWS site is called out as a planned future project in the City's UWMP (City of Newman 2016); NEWS project construction is therefore explicitly consistent with the UWMP. There would be No Impact with regard to conflict with or impedance of a groundwater management plan during construction, and no mitigation is required.

  Following construction, hand watering may be required to ensure establishment of plantings in the wetland areas. This would be restricted to the dry season, and would typically continue for only a few years. Water used during the establishment period could be diverted from the Miller Ditch; alternately, City water supply may be used. Miller Ditch supply is currently used for flood irrigation on the 78-acre parcel, and hand watering would be expected to use a reduced volume. If City supply is used, similar to construction usage, the demand for short-term hand watering is considered to be within the scope of the City's water use planning, which accounts for municipal O&M use. Thus under either scenario, there would be No Impact with regard to conflict with or impedance of a groundwater management plan during the establishment period, and no mitigation is required.

  Over the long term, the NEWS project would use City supply only for water-efficient, MWELO-compliant irrigation in the gateway area. Intermittent minor use of City water could also be necessary for various O&M activities such as cleaning the trash capture device. However, as identified above, the NEWS project is identified as a planned future project in the City's current UWMP (City of Newman 2016);

operation of the NEWS project is thus considered consistent with the UWMP. There would be No Impact over the long term with regard to conflict with or impedance of a groundwater management plan during the establishment period, and no mitigation is required.

- Like the NEWS project, the **wetland project** would likely make minor use of water to control dust during grading and recontouring for wetland enhancement, and would probably also continue to use small amounts of water—either Miller Ditch diversions or City supply—for hand watering during the vegetation establishment period. The demand during construction would be comparatively small, and would be restricted to the short period (estimated at approximately 1 month) when active earthwork is occuring. Hand watering would be restricted to the dry season and is not expected to continue for more than 3 – 5 years. As such, both construction and establishment period use of City ground water supply is within the scope of consumption used in City groundwater management planning and is considered consistent with such planning. There would be No Impact with regard to conflict with or impedance of a groundwater management plan during the construction and vegetation establishment periods, and no mitigation is required.

  Once the new plantings become established they would be self-sustaining under the natural rainfall regime and with first Miller Ditch and then MDTW flows supporting the expanded marsh area. As a result, following the establishment period, no further use of City groundwater supply is anticipated for the wetland project. There would thus be No Impact with regard to conflict with or impedance of a groundwater management plan over the long term, and no mitigation is required.

- Construction and establishment period use of City water for the **MDTW project** would be similar to that described above for the NEWS project, given the generally similar nature and areal extent of the two projects. Following the vegetation establishment period, the MDTW project is not expected to use water for irrigation although minor, intermittent use of City water could be required for some O&M activities, as it would at the NEWS project. As discussed for the NEWS project, all of these uses are considered consistent with both the City's UWMP (City of Newman 2016) and the regional Groundwater Sustainability Plan (San Joaquin River Exchange Contractors GSP Group 2019a, 2019b). There would be No Impact with regard to conflict with or impedance of a groundwater management plan, and no mitigation is required.

- Like the other three NCCA projects, the **Newman Nature Park** would use water for construction. As discussed above for the NEWS and MDTW projects, use of City water for Nature Park construction would be short-term and temporary, and within the scope of construction activities factored into City groundwater management planning. It is therefore considered consistent with both City's UWMP (City of Newman 2016) and the regional Groundwater Sustainability Plan (San Joaquin River Exchange Contractors GSP Group 2019a, 2019b). There would be No Impact with regard to conflict with or impedance of a groundwater management plan during construction, and no mitigation is required.

  Once the Newman Nature Park is operational, use of City water would continue for the hydration station, the hand-washing station, the classroom area sink, water efficient MWELO-compliant irrigation for the demonstration gardens, and incidental O&M uses. This type of municipal water consumption for O&M at public facilities is also taken into account in City groundwater management planning and is therefore considered consistent with both the City's UWMP (City of Newman 2016) and the regional Groundwater Sustainability Plan (San Joaquin River Exchange Contractors GSP Group 2019a, 2019b). There would be No Impact with regard to conflict with or impedance of a groundwater management plan over the long term, and no mitigation is required.

Long-Term Benefits. As discussed under *Water Quality Control Plan* above, the NEWS and MDTW projects are expected to foster groundwater infiltration and improve the quality of water infiltrated into groundwater. The wetland project would also improve the quality of infiltrated waters. This is consistent with the regional Groundwater Sustainability Plan's sustainable management criterion addressing degraded groundwater quality, and is considered a long-term Benefit for implementation of regional and local groundwater management plans.

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XI. LAND USE & PLANNING *Would the project:*	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a) Physically divide an established community?	☐	☐	☐	■
(b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	■

Discussion of Checklist Responses

Potential to Physically Divide an Established Community

The NCCA site is located in an area zoned A-1 for General Agriculture by the County and is outside Newman City limits. It is also just outside the City's Sphere of Influence, which defines the extent of the area the City

envisions may be annexed and developed under the current General Plan (City of Newman 2007). As identified in previous checklist sections, it is largely surrounded by open agricultural lands. Although a few existing semi-rural residences are present immediately across Canal School Road from the 78-acre parcel, and the southern extent of the City's developed footprint is in close proximity to the northwest, there are no nearby residential uses to the south, southeast, or east. Thus, although each of the NCCA projects would add a new element to the project vicinity, none of them has the potential to physically divide an existing community. There would be No Impact, and no mitigation is required.

The new water service extension, as discussed in previous checklist section, would be underground, and as such would have no potential to result in physical division of an existing community. It would also have No Impact, and no mitigation is required.

Potential to Conflict with Land Use Plans, Policies, or Regulations Adopted to Reduce Environmental Impacts

Because the NCCA site is located in unincorporated lands within the County of Merced, the primary document guiding land use at the site is the County's current General Plan, which designates the two parcels comprising the site—along with surrounding lands—for agricultural use. Under the County General Plan, the agricultural designation is intended to provide for cultivated agricultural practices that rely on good soil quality, adequate water availability, and minimal slopes (County of Merced 2013).

The minimum allowable parcel size in areas designated by the County for agricultural use is 20 acres, residential development is stringently limited, and non-residential floor area ratios (FARs)[23] are capped at 0.1 (County of Merced 2013). This means that on the 78-acre parcel where the Newman Nature Park facilities would be located, the maximum permissible extent of new structures would be 339,768 square feet.

The Newman Nature Park would construct several structures, including a community plaza and outdoor classroom areas. The total square footage of the community facilities complex—including demonstration gardens, picnic area, and parking area as well as new structures—would be on the order of 181,000 square feet, assuming all the amenities described under Project Elements in Section 2 are constructed. The only other building or structure added to the parcel as a result of the NCCA projects would be the small (10-foot by 10-foot) pump station structure potentially added to the NEWS project in the future. The square footage of new structures added to the 78-acre parcel would thus be well below the County FAR limit, both on a project-by-project basis and collectively. No new structures or buildings of any kind are planned for the 24-acre parcel. The NCCA projects, both individually and as a program, are therefore considered considered consistent with County General Plan land use standards for agricultural parcels. There would be No Impact related to conflict with land use plans, policies, or regulations adopted to reduce environmental impacts. No mitigation is required.

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[23] Floor area ratio refers to the ratio between the gross square footage of a building (irrespective of number of stories) and the square footage of the parcel it is built on. For example, on an 8,000–square foot parcel with an allowable FAR of 1.00, either a building with a single 8,000–square foot story or a building with two 4,000–square foot stories would be allowable.

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XII. MINERAL RESOURCES *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	■
(b) Result in the loss of availability of a locally- important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	■

Discussion of Checklist Responses

Under the Surface Mining and Reclamation Act (SMARA) (California Public Resources Code Sections 2710–2719), the State of California evaluates and classifies the mineral resources of lands throughout the state. Evaluation commonly occurs on a county by county basis but may also focus on areas that are of particular interest or concern due to the known presence of resources. Lands are designated with Mineral Resource Zone (MRZ) identifiers, as follows. MRZ classification is based on available geologic information—including geologic mapping and other information on surface exposures, drilling records, and mine data—in combination with socioeconomic factors such as market conditions and urban development patterns.

- MRZ-1: areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- MRZ-2: areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood for their presence exists.
- MRZ-3: areas containing mineral deposits, the significance of which cannot be evaluated from available data.
- MRZ-4: areas where available information is inadequate for assignment into any other MRZ.

Additional sub-classification is used in some areas to provide further nuance.

The goal of SMARA is to avoid and manage land use conflicts between urban growth and essential mineral production. It provides a comprehensive surface mining and reclamation policy intended to encourage production and conservation of mineral resources while seeking to ensure that the adverse environmental effects of mining are prevented or minimized; that mined lands are reclaimed and residual hazards to public health and safety are eliminated; and that other values such as recreation, watershed, wildlife, and aesthetic quality are considered when decisions to allow mining are made.

Within geologically diverse Merced County, MRZ zoning has been established for concrete aggregate, lode gold, clay, and diatomite/gypsite. The NCCA site is located in an area zoned MRZ-3a SG-3, reflecting the potential for the San Luis Ranch alluvium to produce economically valuable sand and gravel. The most current Merced County mineral land classification report cautions that further exploration in MRZ-3a zoned areas could result in reclassification as either MRZ-2 (significant mineral deposits present) or MRZ-1 (significant mineral deposits not present or unlikely to be present) (Clinkenbeard 1999).

Potential to Reduce Availability of Regionally Important Mineral Resources

As an area zoned MRZ-3, the vicinity of the NCCA site is not known to support mineral resources of regional or statewide importance. Moreover, as identified in the previous checklist section, the site is located in an area zoned A-1 (General Agriculture) by the County, is surrounded by extensive acreage designated for agricultural use in the County General Plan (County of Merced 2013), and is immediately adjacent to Newman City limits and the City's Sphere of Influence, which represents the City's anticipated development footprint in coming years (City of Newman 2007).

Although the County may allow extractive uses such as quarries and gravel pits in A-1 zoned areas under a Conditional Use Permit (County of Merced Unified Development Ordinance Title 2 Chapter 18.10), sand and gravel extraction would be incompatible both with surrounding agricultural uses—which are central to the economic health of the western San Joaquin Valley—and with existing and future City development. As a result, even if the MRZ-3 zoning understates the presence of aggregate resources in the NCCA vicinity, the County is unlikely to approve sand and gravel production activities at the parcels that make up the NCCA site. In this context, the NCCA projects and water service extension are therefore considered very unlikely to result in loss or reduced availability of mineral resources of value to the western San Joaquin Valley region or the state as a whole. No Impact is anticipated, and no mitigation is required.

Potential to Reduce Availability of Locally Important Mineral Resources

As discussed in the previous item, although economically viable mineral resources may be present in the NCCA vicinity, it is very unlikely—due to existing County zoning and land use designations, City land use planning, and the surrounding mosaic of land uses—that extractive activities would be permitted at this location. Approval of the NCCA projects and water service extension is therefore considered very unlikely to result in loss or reduced availability of locally important mineral resources. No Impact is anticipated, and no mitigation is required.

References Cited in this Section

City of Newman. 2007. Newman 2030 General Plan. Available: http://www.cityofnewman.com/docman/community-development-department/36-general-plan-final-version/file.html. Downloaded: November 2019.

Clinkenbeard, J.P. 199. Mineral Land Classification of Merced County, California. Available: https://maps.conservation.ca.gov/cgs/informationwarehouse/mlc/. Downloaded: August 2020.

County of Merced. 2013. 2030 Merced County General Plan. Available: https://www.co.merced.ca.us/100/General-Plan. Downloaded: May 2020.

XIII. NOISE *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(a) Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project, in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	■ (construction)	■ (O&M, visitor presence and activity)	☐
(b) Result in generation of excessive groundborne vibration or groundborne noise levels?	☐	■ (construction)	■ (O&M)	■ (visitor presence and activity)
(c) For a project located in the vicinity of a private airstrip or within an airport land use plan area, or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■

Discussion of Checklist Responses

In general, noise in the City is regulated under Section 9.13 of the City Code (available online at https://www.codepublishing.com/CA/Newman/) and the Health and Safety Element of the General Plan (City of Newman 2007).

The City Code designates Newman as a "quiet city" and establishes the City's commitment to prohibiting unnecessary, excessive, and annoying sound levels. It does not set specific levels at which noise is considered to violate the quiet city policy; instead, it recognizes that noise disturbance is contextual, and requires consideration of multiple factors in determining whether a noise violation is occurring. These include not only the intensity of the sound, but also its pitch and duration, the time of day, existing levels of background noise, and whether the sound is associated with a necessary activity such as garbage collection.

The General Plan supports the quiet city policy by identifying noise levels considered compatible with the various land uses within the City and setting standards to protect noise-sensitive land uses from ongoing noise associated with sources such as highways, railway operations, and industry. Land uses considered sensitive to noise include residences as well as schools, hospitals, care facilities, hotels and motels, libraries, museums, and meeting halls. The General Plan noise standards are intended to apply to the sources of noise that contribute to the community noise environment over the long term. They are quantitative, and are set at levels that should allow the full range of activities associated with each noise-sensitive use to proceed without disturbance (City of Newman 2007).

Consistent with the quiet city policy, the General Plan also recognizes the potential for short-term disturbance due to construction, establishes typical construction hours to reduce the potential for disturbance, and requires

the implementation of noise and disturbance reduction measures during construction, as follows (City of Newman 2007).

- Construction activities are normally limited to the hours between 7 AM and 7 PM Monday through Friday and 8 AM to 7 PM on Saturday
- Contractors are required to use available noise suppression devices and properly maintain and muffle loud construction equipment
- Staging and unnecessary idling of construction equipment is prohibited within 200 feet of noise-sensitive land uses

The City does not have Citywide quantitative limits for construction noise in place, recognizing that "acceptable" levels of construction noise are highly contextual—a one-size-fits-all limit could be too restrictive in some areas, and insufficiently protective in others. However, quantitative noise limits may be included as conditions in City permits authorizing construction.

The City does not explicitly regulate vibration.

Potential to Generate Substantially Increased Ambient Noise Levels

The closest noise-sensitive land uses to the NCCA site are residences immediately across Canal School Road and along Inyo Avenue west of Canal School Road, about 150 feet to just under 700 feet away from the closest portions of the 78-acre parcel. Numerous additional homes are present off Canal School Road northwest of the intersection with Inyo Avenue. The closest homes in this development are about 450 feet away from the northwest corner of the 78-acre parcel. If water service extension follows Canal School Road and Brazo Road (Option 1, Figure 2-9), the alignment would pass within 100 feet of the closest homes.

Construction

Construction of each of the NCCA projects and the water service extension would add noise to the community environment as a result of heavy equipment operation, hand tool use, worker vehicles, materials deliveries via heavy trucks, and general human presence and activity. Although the types of noise generated would be similar to existing noise sources associated with ongoing agricultural activities in the area, construction would represent a new noise source and could be disturbing to project neighbors, particularly at the homes closest to the site and when work is occurring in the northwest and west portions of the 78-acre parcel. Disturbance would be temporary and comparatively short-term, since work in areas closest to existing homes would represent only a fraction of the total construction window. This would be particularly true for water service extension, since construction would roll progressively along the alignment at a rate of about 100 feet per day. Nonetheless, some residents could experience Significant noise disturbance. To address potential concerns about noise disturbance, the City will implement the following mitigation measures. With Mitigation Measures NOI-1 and NOI-2 in place, the impacts of construction noise on project neighbors would be reduced to the extent feasible while still enabling efficient construction to progress and are considered Less than Significant.

Mitigation Measure NOI-1. Reduced Construction Hours in Vicinity of Residences

To reduce the potential for disturbance, no construction activity at or adjacent to the NCCA site will be permitted within 1,500 feet of residences on any weekend days or before 8 AM or after 5 PM on weekdays.

Mitigation Measure NOI-2. Noise Disturbance Coordinator

During construction of each of the NCCA projects, informational signage posted at the work site will include the name and contact information for a City staff person to serve as the designated Noise Disturbance Coordinator. This person may, but will not necessarily, be the same person designated as the Visual Disturbance Coordinator under Mitigation Measure AES-2. The Noise Disturbance Coordinator will be available during regular business hours to monitor concerns and will be responsible for responding to public complaints regarding construction noise and vibration disturbance. In the event a noise/vibration disturbance complaint is received, they will be responsible for determining the cause of the complaint and ensuring that reasonable measures are implemented to correct the problem.

O&M and Facilities Use

Over the long term, O&M and use of the NCCA projects would add noise to the community environment, due to ongoing vehicles, equipment, and worker activities and the presence of visitors using the trails and other facilities at the site.

As discussed in Section 2, routine O&M activities such as inspections, trash removal, restroom cleaning, and landscape maintenance would require only a small number of vehicles and personnel and typically would not use heavy equipment. They would also be intermittent and of short duration, and the types and levels of noise generated would be generally consistent with ambient noise in an active agricultural area. Some activities, such as removal of sediment from the NEWS and MDTW project forebays, would require heavy equipment and thus would generate higher levels of noise but would be infrequent—likely occurring only once in a period of 5 – 10 years. They would also be of short duration, and would be restricted to daytime hours during the week, which would reduce the potential for disturbance to neighboring residences. Noise associated with O&M at the NCCA site is accordingly not expected to result in substantial disturbance to project neighbors. Impacts, if any, are expected to be Less than Significant, and no mitigation is required.

Use of the NCCA would be restricted to non-motorized recreation; activities that would take place on the site, such as walking, bicycling, and nature viewing are typically fairly quiet, although the presence of visitors on NCCA trails would generate some noise, such as conversations and laughter. However, the noise associated with small groups would be consistent with noise associated with small groups of agricultural workers and likely would not represent a substantial change from current conditions, nor would it be out of place in the context of the neighboring residential uses. Additionally, large group gatherings would typically focus in the Newman Nature Park community facilties area and the outdoor learning areas, which would be located in the southeast and east portions of the 78-acre parcel, separated from the closest residences by at least 0.3 mile. In view of the nature-oriented goals of the NCCA, amplified sound—such as live music or DJ events—would not be permitted at group gatherings, and the intervening distance should prevent larger gatherings from disturbing project neighbors. Noise associated with visitor presence and activity is not expected to result in substantial disturbance and is considered consistent with the quiet city policy that governs City noise planning. Impacts are expected to be Less than Significant, and no mitigation is required.

Potential to Generate Excessive Groundborne Vibration/Groundborne Noise

Construction

In addition to noise, construction activity can also generate potentially annoying levels of vibration and at higher levels can result in damage to older or poorly constructed structures. No vibration-sensitive structures are located in proximity to the NCCA site, but excessive vibration could result in disturbance to project neighbors.

However, vibration generated by heavy construction equipment is typically below the level of perception at distances greater than about 100 feet from the active work site, and no residences are within this distance of the areas where earthwork would be required at the NCCA site itself. The potential for disturbance would be further reduced by the limits on construction hours established in Mitigation Measure NOI-1, and Mitigation Measure NOI-2 provides an avenue to resolve concerns should they arise. For the four NCCA projects, with Mitigation Measures NOI-1 and NOI-2 in place, impacts related to groundborne vibration and groundborne noise are expected to be Less than Significant. No additional mitigation is required.

Water service extension would entail construction within 100 feet of homes along Canal School Road if Option 1 (Figure 2-9) is selected. Construction in closest proximity to homes would be very short-term; the total duration within 100 feet of each existing home is anticipated to last no more than 2 – 3 days, assuming a typical construction rate of 100 linear feet per day, and small-diameter pipeline installation and small-scale repaving operations typically do not use the types of equipment most associated with high levels of vibration. Nonetheless, vibration levels could be perciptible, and could create annoyance or disturbance. To address this concern, the City will implement the following mitigation measure, which focuses on limiting or avoiding the types of construction activities and equipment most likely to result in elevated vibration levels. With Mitigation Measure NOI-3 in place, vibration impacts on project neighbors are expected to be Less than Significant. No additional mitigation is required.

Mitigation Measure NOI-3. Limits on Use of Impact and Vibratory Equipment Near Residences

No construction equipment or activities reasonably anticipated to generate vibration levels in excess of 94 vibration decibels (VdB) or a peak particle velocity of 0.2 inches per second at a distance of 25 feet from the source will be permitted within 100 feet of existing residences. Prohibited equipment will include vibratory rollers.

O&M and Facilities Use

The majority of routine O&M activities would not use heavy equipment or other sources of substantial vibration. Sediment removal from the NEWS and MDTW project forebays would require heavy equipment but would be infrequent (anticipated once every 5 – 10 years at each project), would be short-term, and would adhere to standard City workweek hours, as identified above. Moreover, neither of the forebays would be located within 100 feet of existing residences. O&M is therefore not expected to result in disturbance related to excessive groundborne vibration or noise. Impacts, if any, are considered Less than Significant, and no mitigation is required.

Use of the NCCA facilities would not entail any activities producing substantial groundborne vibration or noise. There would be No Impact due to NCCA use, and no mitigation is required.

Potential for Exposure to Excessive Airport Noise

Noise Related to Private Airstrips

The NCCA site is not located in proximity to any private airport or airstrip. There would be No Impact related to exposure of construction workers, City staff, or members of the public visiting the new NCCA facilities to excessive noise associated with private airstrips. No mitigation is required.

Noise Related to Public/Public Use Airports

As discussed above in the *Hazards & Hazardous Materials* section of this checklist, the NCCA site is not within any airport land use plan area or within 2 miles of any public or public use airport. There would be No Impact

related to exposure of construction workers, City staff, or members of the public visiting the new NCCA facilities to excessive noise related to public or public use airport operations. No mitigation is required.

Reference Cited in this Section

City of Newman. 2007. Newman 2030 General Plan. Available: http://www.cityofnewman.com/docman/community-development-department/36-general-plan-final-version/file.html. Downloaded: November 2019.

XIV. POPULATION & HOUSING *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	■
(b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

Discussion of Checklist Responses

Potential to Induce Unplanned Population Growth

None of the NCCA projects would construct new housing or commercial uses, nor would they in any way modify the City's existing land use planning. As a result, they would not directly result in population growth. Additionally, since they focus on water treatment and public recreation and education opportunities and would not extend roadways or services (other than the water service needed to support irrigation at the NEWS project gateway and the Newman Nature Park facilities), they would not remove obstacles to growth or otherwise indirectly induce population growth.

Extension of utility service is commonly identified as a growth-inducing factor. However, the new water service to the NCCA site would serve very limited uses:

- at the NEWS project, water-efficient irrigation in the gateway area
- at the Newman Nature Park, supply for the handwashing and hydration stations and outdoor classroom area sink as well as water-efficient irrigation for the parking area landscaping and demonstration gardens

The water service extension would be sized specifically for these uses and would be routed as directly as possible to the site (Figure 2-9). The City is not contemplating further extensions or other services from this line; any new residential or other development in the area around the NCCA would require a separate extension of water service. As a result, extension of water service to the NCCA is not considered as removing an obstacle to growth or otherwise indirectly inducing growth.

A small number of short-term, temporary jobs would be created by construction of each of the NCCA projects, and over the long term, a small number of new permanent positions may also be created by the need for O&M at each of the projects (City of Newman 2021). It is the City's policy to prioritize hiring locally where this is possible, so it is likely that most of the workforce needed to construct, operate, and maintain the NCCA projects would be drawn from the existing population in the area. The City has also reached out to the California Conservation Corps about the potential for assistance with construction of the Newman Nature Park, and some Corpsmembers could be from outside the immediate area; but California Conservation Corps staff are mobile based on the needs of the projects they support, and would not represent a long-term addition to population in the Newman area.

In view of the factors described above, the NCCA projects are not expected to result in substantial population growth, and would not result in unplanned growth. There would be No Impact, and no mitigation is required.

Potential to Displace Existing Populations or Housing

The workforce required to construct the NCCA projects and water service extension would be comparatively small (estimated at no more than 20 – 40 persons at a maximum for each project, depending on overlap between positions) (see Tables 2-8, 2-10, and 2-12). The number of new positions, if any, created to support O&M over the longer term would be much smaller. Additionally, as identified in the previous item, both construction and long-term hiring is expected to draw primarily from the locally available workforce; to the extent the California Conservation Corps is involved in Newman Nature Park construction, they could be housed in Conservation Corps dormitories and thus would not require local housing. In view of the small number of persons involved, and the likelihood that most or many of them would already be local residents, No Impact related to displacement of people is anticipated during either the construction or operational period for any of the NCCA projects. No mitigation is required.

The parcels that comprise the NCCA site are currently vacant and undeveloped, are zoned and designated for agricultural use (County of Merced 2013), and are outside the City's Sphere of Influence, which represents the extent of the area the City anticipates annexing and developing in the reasonably foreseeable future (City of Newman 2007). Implementing the NCCA projects therefore would not displace existing housing, nor would it decrease the availability of land for potential future housing development. There would be No Impact with regard to displacement of housing, and no mitigation is required.

References Cited in this Section

City of Newman. 2007. Newman 2030 General Plan. Available: http://www.cityofnewman.com/docman/community-development-department/36-general-plan-final-version/file.html. Downloaded: November 2019.

City of Newman. 2021. Newman Community Conservation Area Master Plan. (Third Administrative Draft.) (February.) Prepared for City of Newman by Redtail Consulting, Fremont, CA. Appendix A to this Initial Study.

County of Merced. 2013. 2030 Merced County General Plan. Available: https://www.co.merced.ca.us/100/General-Plan. Downloaded: May 2020.

XV. PUBLIC SERVICES *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
(i) Fire protection?	☐	☐	☐	■
(ii) Police protection?	☐	☐	☐	■
(iii) Schools?	☐	☐	☐	■
(iv) Parks?	☐	☐	☐	■ (long-term Benefit)
(v) Other public facilities?	☐	☐	☐	■

Discussion of Checklist Responses

As discussed in *Population & Housing* above, the NCCA projects would not directly induce population growth, nor would they remove obstacles to growth or otherwise indirectly foster development, such as by extending roadways. As a result, they would have No Impact related to the need to construct new public facilities or expand public services. No mitigation is required.

Moreover, by providing recreational opportunities that are not currently available in the Newman area, the NEWS project, MDTW project, and in particular the Newman Nature Park would result in a direct long-term Benefit to park resources in the City and surrounding region. By contributing to the visual and educational resources available at the NCCA site, the wetland project would also indirectly result in a Benefit to park and recreational opportunities in the City and region.

References Cited in this Section

None.

XVI. RECREATION *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	■
(b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	■	☐	☐

Discussion of Checklist Responses

Potential to Increase Use of Existing Parks/Recreational Facilities

As discussed in *Population & Housing* and *Public Services* above, the NCCA projects would not construct new housing, relocate or displace populations, or indirectly foster future planned or unplanned growth. Therefore, they would not increase the use of existing parks or recreational facilities. There would be No Impact related to overuse and physical deterioration of parks or recreational facilities, and no mitigation is required.

Potential to Include or Require Construction or Expansion of Parks/Recreational Facilities

As described in Section 2 of this Initial Study, three of the four NCCA projects would include recreational facilities, as follows.

- NEWS project and MDTW project: unpaved O&M access opened for public non-motorized recreational use (walking, jogging, bicycling, nature viewing, etc.)
- Newman Nature Park: additional trails for non-motorized use, in addition to community plaza, outdoor learning areas, picnic area, shade structure, and demonstration garden areas

The purpose of this Initial Study is to analyze the impacts of constructing, operating, and maintaining the NCCA projects, including but not limited to their recreational components. As discussed in other sections of this checklist (*Aesthetics*, *Biological Resources*, *Cultural Resources*, *Geology & Soils*, *Hazards & Hazardous Materials*, *Noise*, and *Transportation*), there would be potential for Significant impacts on several resources as a result of the projects. However, the City has identified mitigation measures that will be implemented to address those impacts. With these measures incorporated, impacts would be Less than Significant, as itemized in prior sections of this checklist. No additional mitigation is required.

References Cited in this Section

None.

XVII. TRANSPORTATION *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☐	■
(b) Conflict or be inconsistent with *CEQA Guidelines* Section 15064.3, Subdivision [b]?	☐	■	☐	☐
(c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	■ (overflow parking)	■ (incompatible uses)	■ (existing design geometry, new design geometry)
(d) Result in inadequate emergency access?	☐	☐	☐	■
(e) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	■

Discussion of Checklist Responses

Potential to Conflict with Circulation System Programs, Plans, Ordinances, or Policies

The circulation system plans most relevant to the NCCA are the City's Non-Motorized Transportation Plan (City of Newman 2013), the County's Regional Bicycle Transportation Plan (County of Merced 2008), and the Merced County Association of Governments' Regional Transportation Plan/Sustainable Communities Strategy (Merced County Association of Governments 2018). General Countywide guidance is provided in the Transportation and Circulation Element of the County General Plan (County of Merced 2013), and the City also regulates aspects of the circulation system under the City Code (Title 10, *Traffic Regulations* and Title 11, *Public Ways and Property*).

Non-Motorized Transportation Plan

The Non-Motorized Transportation Plan is intended to guide development of bicycle and pedestrian facilities throughout the City (City of Newman 2013) and focuses on the portion of the General Plan Bicycle Network Plan (City of Newman 2007, Figure TC-2) within and immediately adjacent to City limits. As a step-down from bicycle and pedestrian planning at the General Plan level, the Non-Motorized Transportation Plan integrates and builds on policies in the General Plan (City of Newman 2007) as well as regional non-motorized transportation planning efforts. It assesses City needs, lays out specific goals, policies, and actions for bicycle and pedestrian transit in the City, recommends specific projects to achieve these ends, provides design standards, and

identifies potential funding sources to defray project costs. It also identifies support programs to increase public awareness and encourage bicycling and walking for pleasure and transportation, including a Safe Routes to School program. As laid out in the Non-Motorized Transportation Plan, the City's vision emphasizes the following overall goals (City of Newman 2013).

- Improving pedestrian and bicyclist safety
- Making trails accessible to all users, including pedestrians, bicyclists, and the physically disabled
- Creating a cohesive pedestrian and bicycle network that meets the needs of the community and encourages bicycling and walking
- Implementing General Plan policies in order to create an enjoyable environment that promotes walking and bicycling
- Encouraging community members to take advantage of non-motorized transportation opportunities in the City

One of the City's aims in selecting the location for the NCCA—immediately outside City limits and easily accessible from anywhere in the City—was to encourage the community to visit the NCCA on foot or by bicycle, and to provide a desirable destination for walkers and bicyclists. This will be facilitated in the future by construction of a bicycle route/multi-use trail extending along Canal School Road, connecting bike lanes and paths in the City proper with points south, as recommended in the Non-Motorized Transportation Plan (Figure 3-6). Additionally, as described in Section 2, the NCCA is planned to provide an internal network of trails for pedestrian and bicycle use, including the O&M access roads serving the NEWS and MDTW projects, which would be open to the public for non-motorized recreational use, as well as dedicated trails constructed as part of the Newman Nature Park project. The Nature Park is also expected to provide bicycle racks, restrooms, and a drinking water station, per the Non-Motorized Transportation Plan's Education and Encouragement Policy 1, which requires "end-of-trip" facilities to make bicycling a genuinely viable alternative to driving. These facilities would be designed to meet applicable County standards. As a result, the NCCA is considered consistent with and supportive of the Non-Motorized Transportation Plan. There would be No Impact with regard to conflict with this plan, and no mitigation is required.

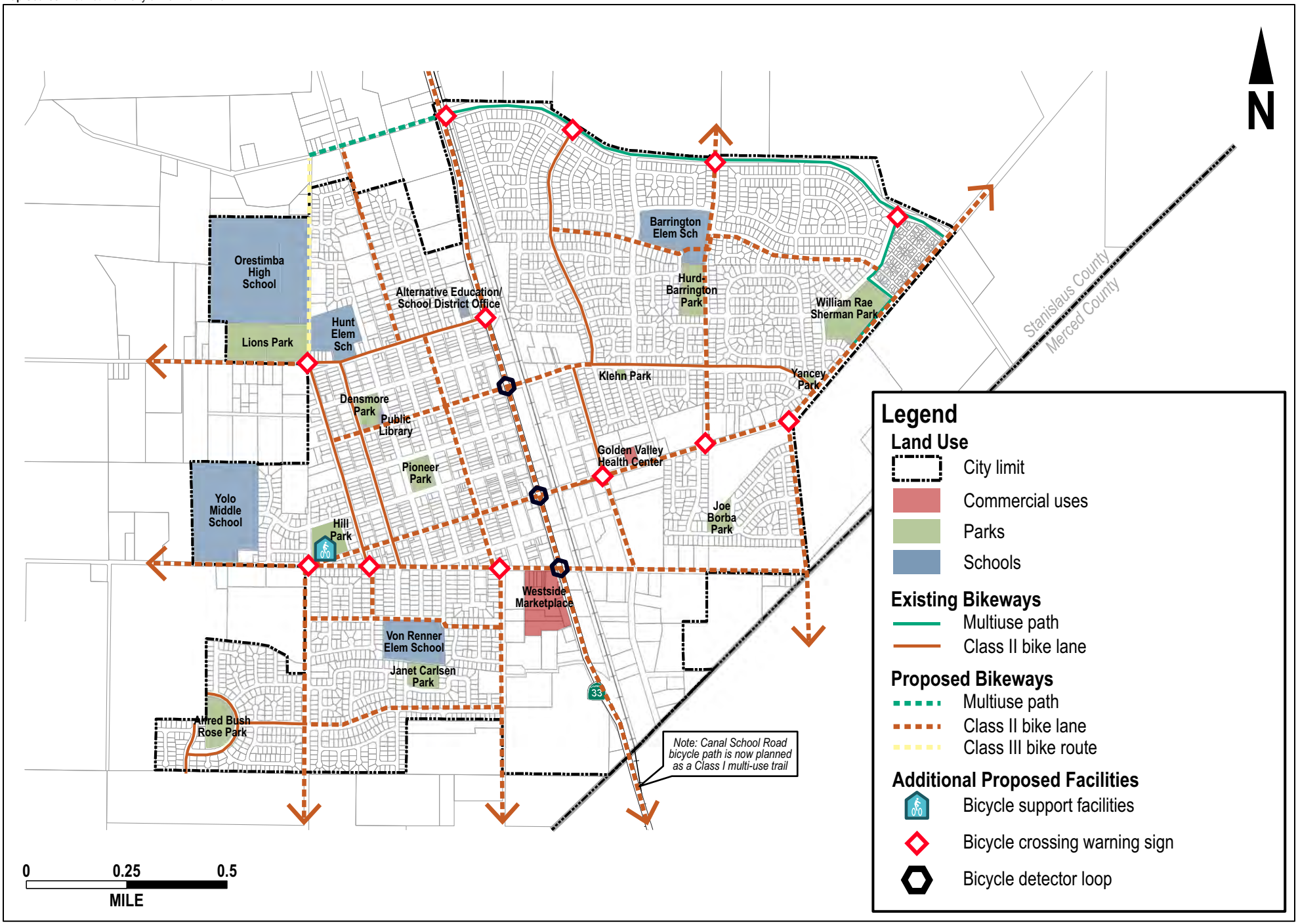
Regional Bicycle Transportation Plan

The Regional Bicycle Transportation Plan (County of Merced 2008) is intended to provide a long-range vision for development of a regional bikeway network connecting cities and unincorporated areas Countywide. Desired outcomes include reducing single-occupant vehicle travel and increasing bicycle use for commute travel. To support these outcomes, the Plan provides

- guidance to make new development and roadway design more bicycle-friendly
- standards for bikeway design
- standards for end-of-trip bicycle parking and storage facilities

Although the NCCA would not directly support bicycle commuting or reduce vehicle usage, none of the NCCA projects would be contrary to the Regional Bicycle Transportation Plan's vision or goals. Moreover, as identified above, the NCCA's location adjacent to City limits and the planned Canal School Road multi-use trail/bikeway is intended to encourage local users to access the site by bicycle, as identified above. Additionally, trails within the NCCA itself would encourage bicycle use in general and as such could have an indirect effect in support of

Map Source: *modified from* City of Newman 2013



Redtail Consulting
Environment & Community

Figure 3-6. Bicycle Projects Recommended in City Non-Motorized Transportation Plan

Newman Community Conservation Area Master Plan

City of Newman

bicycle use in other locations and for non-recreational purposes such as bicycle transit. They would also be designed consistent with applicable County standards, as identified above. There would be No Impact with regard to conflict with the Regional Bicycle Transportation Plan, and no mitigation is required.

Regional Transportation Plan

The Regional Transportation Plan/Sustainable Communities Strategy links transportation and land use planning with the goal of ensuring that the County's transportation network addresses both existing and future needs and will continue to operate efficiently over the next 25 years, offering sufficient capacity to meet demand and providing mobility options for all County residents. The Regional Transportation Plan component focuses on transportation infrastructure needs, while the Sustainable Communities Strategy component addresses planned growth patterns (County of Merced 2008).

Goals of the Regional Transportation Plan/Sustainable Communities Strategy include creating a "safe, connected, and integrated regional transportation system for bicyclists and pedestrians" and providing "economical, long-term solutions to transportation problems by encouraging community designs that encourage walking, transit, and bicycling." An additional goal focused on sustainable community design envisions "[r]educ[ing] per capita [GHG] emissions by coordinating compact growth with alternative transportation" and "[p]rotect[ing] and enhanc[ing] the natural environment." The plan also recognizes that infrastructure that encourages bicycle and pedestrian travel will help the County to meet statewide emissions reduction standards by reducing vehicle use (County of Merced 2008).

As identified in the previous paragraphs, the NCCA's location and design are specifically intended to encourage bicycle as well as pedestrian use, both to access the site and within the NCCA itself. Locating the NCCA immediately adjacent to City limits on parcels easily accessible from the City center is also consistent with the Plan's emphasis on compact growth, and NCCA goals (itemized in Section 1 of this Initial Study) are oriented toward preservation and enhancement of the natural environment in the Newman area. The NCCA projects, and the program as a whole, are therefore considered consistent with the County's Regional Transportation Plan/Sustainable Communities Strategy. There would be No Impact related to conflict with this plan, and no mitigation is required.

County General Plan Transportation and Circulation Element

The County General Plan Transportation and Circulation Element lays out a policy context to support safe and efficient circulation of people, vehicles, and goods throughout the County, identifying goals and policies for the circulation system in order to balance the needs of motorists, bicyclists, and pedestrians while accomodating the unique needs of farm equipment and movement of agricultural commodities. Recognizing that the circulation needs of urbanized areas differ from those of rural areas, the functional roadway classification used in the Transportation and Circulation Element identifies different roadway classes with differing functions and standards for urban and rural portions of the County (County of Merced 2013).

Relevant goals identified in the Transportation and Circulation Element include the following.

- Goal CIR-2: Provide and manage parking to accommodate auto usage while minimizing the impacts of excessive parking supply
- Goal CIR-4: Maintain and expand a safe, continuous, and easily accessible bicycle and pedestrian circulation system

Policies identified under these goals are not directly germane to the NCCA, but the NCCA is generally consistent with these goals, as follows.

- As discussed under *Potential to Increase Hazards Due to Design Geometry or Incompatible Uses* below, the NCCA would provide parking for NCCA users who arrive by car, at a level that is expected to be adequate but would not be excessive, including provisions for safe overflow parking under Mitigation Measure TR-3. As described in detail below, overflow parking improvements on Brazo Road will be required to meet County roadway design standards as laid out in the County Department of Public Works Improvement Standards and Specifications
- The NCCA would provide a destination that is connected to the City via the future multi-use trail along Canal School Road

Moreover, the NCCA projects are all consistent with the County's overarching vision of balancing the needs of drivers, bicyclists, and pedestrians. There would be No Impact related to conflict with the County's Transportation and Circulation Element, and no mitigation is required.

Newman City Code

Title 10 of the City Code lays out the City's traffic regulations, including "rules of the road" for pedestrians and bicyclists and various requirements and limitations on stopping, standing, and parking for vehicles. Title 11 provides standards for the design and construction of public ways, including general provisions, standards for underground utilities, street trees, water services, stormwater management, and parks and recreation–related improvements. As City undertakings, all four of the NCCA projects will be required to comply with all relevant portions of the City Code. No Impact with regard to conflict with the City Code is anticipated, and no mitigation is required.

Potential for Conflict or Inconsistency with *CEQA Guidelines* Section 15064.3[b]

Background

Section 15064.3 of the state's *CEQA Guidelines*, adopted as an option in December 2018, and mandatory statewide as of July 1, 2020, lays out the state's current process for evaluating and determining the significance of transportation impacts, with an emphasis on vehicular (roadway) traffic.

For many years, the prevailing approach to analysis of traffic impacts under CEQA focused on roadway and intersection function or *level of service* (LOS)—that is, on the experience of the driver in traffic. Under this approach, as long as roadways and intersections were projected to function at acceptable levels as defined by local agency standards, a project's impacts were typically found to be Less than Significant even if the project would add a considerable volume of traffic to the roadway system.

In recent years, however, the focus of concern has shifted progressively from roadway and intersection function to the potential for projects to increase overall vehicular travel, expressed as *vehicle miles traveled* or VMT. In part, this responds to the increasing visibility of climate change issues; vehicle exhaust is a source of GHG emissions. It also reflects growing concern about the other environmental impacts of development "sprawl" and an increased will to capitalize on opportunities for infill and redevelopment of more compact urban centers.

Now, under *CEQA Guidelines* Section 15064.3[b], VMT—defined as "the amount and distance of automobile travel attributable to a project"—is explicitly recognized as the most appropriate metric for transportation impacts and lead agencies are directed that a potential "effect on automobile delay" should not be regarded as a significant environmental impact for most projects. The lead agency has discretion in choosing the method used

to identify a project's VMT (*CEQA Guidelines* 15064.3 [b][4]) and, implicitly, the responsibility to identify an appropriate, substantiated threshold of significance (the level at which project VMT is considered a significant impact and requires mitigation). The *Guidelines* (15065.3[b][3]) also afford lead agencies the discretion to utilize qualitative methodology if quantitative methods or models are not yet available to estimate VMT for near-term projects.

Potential VMT Impacts

To estimate VMT generated by a new facility or project, it is necessary to understand how many vehicle trips would access the facility each day, and where those trips would come from. Daily VMT is then a function of number of trips per day and the typical or average mileage per trip. In the following discussions, trip generation refers to one-way trips unless otherwise specified; VMT calculation doubles the mileage assumed for a one-way trip to obtain totals based on two-way mileages.

Construction Period. Construction of each of the NCCA projects would generate vehicle trips for contractor mobilization/demobilization, materials deliveries, and worker commutes, translating to an increase in VMT in the Newman area. As discussed in Section 2, the maximum number of workers onsite for construction of any single project would be on the order of 18 – 20 at the peak of Newman Nature Park grading (see Table 2-12). Even assuming construction of all four projects during the same timeframe (which is highly unlikely since implementation of each project would be contingent on the City obtaining grant funding and only two of the projects have been funded to date), maximum onsite staffing would not exceed about 60 persons. This represents 60 commute round trips per day, with a small number of additional trips for materials deliveries, plus mobilization and demobilization of construction equipment.

Guidelines issued by the Governor's Office of Planning and Research (2018) indicate that projects with a *long-term* trip generation rate of less than 110 one-way trips per day can be assumed to have a Less than Significant transportation impact. At a maximum of slightly over 60 round trips, or 120 one-way trips, per day, even an unrealistic worst-case scenario for construction traffic is within 10% of this threshold More realistic scenarios of 20 staff onsite at a time (slightly over 20 round trips or 40 one-way trips per day) are well below the threshold. Implementation of Mitigation Measure TR-3, described in detail below, could slightly increase trip generation due to the presence of additional construction workers for a short portion of the NEWS and Newman Nature Park projects, but even with this measure incorporated, trip generation would likely be within the maximum estimate above. Additionally, as discussed elsewhere in this checklist, the City has a policy of "hiring local" to the extent feasible, so the majority of the trips generated would be fairly low-mileage—and construction traffic would be a temporary short-term contribution to overall VMT in the Newman area and western San Joaquin Valley region. In this context, construction VMT generation associated with the NCCA projects is considered Less than Significant. No mitigation is required.

Long Term. Long-term VMT generation associated with the NCCA is expected to represent two types of visitors: *local users* from the City and immediate surrounding area, and *regional visitors* who access the NCCA from outside the Newman area. O&M would also periodically generate VMT associated with City staff trips to the NCCA site, disposal of sediment removed from the NEWS and MDTW project forebays (anticipated once every 5 – 10 years on average), and potentially also for occasional delivery of materials and supplies required for maintenance, including long-term implementation of mitigation measures such as BIO-2 (*Biological Resources*), GEO-1 (*Geology, Soils, & Seismicity*), HAZ-1 (*Hazardous & Hazardous Materials*), and TR-1 (*Transportation*).

Table 3-17 summarizes anticipated local visitor usage based on usage at other City facilities, including Sherman Park, which offers walking trails with well-documented visitor use. Values in Table 3-17 represent estimated

usage at "full buildout" conditions with all four of the NCCA projects completed and open to the public. As indicated in the table, the NCCA is expected to generate on the order of 45 daily trips by local visitors at buildout.[24]

Table 3-17. Anticipated Local Visitor Usage at NCCA

Use Category	# of Visitors	Rate of Visits	Transport	Vehicle Occupancy	Trips/Day (Average)	Annual Visitor-Days	Daily One-Way Trips (Average)	Daily VMT
School field trips	30	3 days/week	bus	30	0.9	4,680	0.9	1
Weekday walkers	20	5 days/week	car	2.25	12.7	5,200	12.7	20
Weekend walkers	30	2 days/week	car	2.25	7.6	3,120	7.6	12
Casual bicyclists	25	2 days/week	car	2.75	5.2	2,600	5.2	8
Senior field trips	20	1 day/week	bus/van	8	7.5	1,040	0.7	0
Classes/workshops	50	2 days/week	car	2.25	12.7	5,200	12.7	12
Special events	50	4 days/month	car	2.75	4.8	2,400	4.8	20
Seasonal visitors	30	1 day/month	car	2.25	0.9	360	0.9	8
					Total local use:	**24,600**	**45.3**	**73**
					Average daily local visitors:	**67.4**		

Source: K.D. Anderson & Associates 2020

Regional visitor usage at the NCCA is more difficult to predict, particularly as there is no analogous facility elsewhere in the region, uses at the closest open space parklands in the Newman area differ from those proposed at the NCCA[25], and detailed usage data for facilities in the region were largely unavailable as of the preparation of this Initial Study. For perspective, analysis considered usage rates at two facilities that have some important factors in common with the NCCA, and for which fairly detailed visitor data are available: the San Luis National Wildlife Refuge (NWR) in Los Banos (within Merced County), and the East Bay Regional Park District's Coyote Hills Regional Park in Fremont (in Alameda County). Table 3-18 provides an overview of these facilities and their similarities to—and key differences from—the NCCA.

Table 3-18. Overview of Facilities Considered for Regional VMT Assessment

Facility	Uses Offered	Key Similarities	Key Differences
San Luis National Wildlife Refuge	Hiking, hunting, fishing, wildlife viewing, bird watching, visitor center, public events	• Focus on nature-oriented recreation and education • Located in western San Joaquin Valley	• Far larger than NCCA at 26,800 acres • Offers auto tour routes • Offers visitor center with educational exhibits and group events

[24] Note that Table 3-17 includes trips by "casual bicyclists" who drive to the NCCA site to take advantage of user-friendly trails and other amenities for bicycle use. Because the NCCA site is not currently accessed by bicycle trails/bikeways, vehicle access is assumed for families with small children and other riders who may prefer not to ride along Canal School Road or Inyo Avenue to reach the site—neither of these roadways offers paved shoulders and vehicle travel speeds are high, which could be discouraging to some riders. Over the longer term, as the City completes the planned Class I multi-use trail along Canal School Road, bicycle access to the NCCA will become more feasible for all riders, and is expected to increase, although some riders may still choose to access the NCCA by car in order to ride there.

[25] For instance, the China Island Unit and Salt Slough units of the state's North Grasslands Wildlife Area—two of the open space resources closest to the City—see primarily hunting use, and the George J. Hatfield State Recreation Area, also located close to the City, offers swimming, fishing, and camping. None of these uses are planned for the NCCA.

Facility	Uses Offered	Key Similarities	Key Differences
			• Regionally and nationally visible due to National Wildlife Refuge status
Coyote Hills Regional Park	Bicycling/mountain biking, walking, bird watching, jogging, nature exploration, picnicking, group camping, visitor center, open house events including 2,000-year old Ohlone village	• Focus on nature-oriented recreation and education • Offers walking trails through water treatment marshlands	• Substantially larger than NCCA at 1,266 acres • Located in urbanized San Francisco Bay area • Has visitor center with exhibits and events • Offers extensive upland as well as wetland experiences

Sources: U.S. Fish and Wildlife Service 2020, East Bay Regional Park District 2020

Table 3-19 below summarizes visitor usage data for San Luis NWR and Coyote Hills Regional Park.

Table 3-19. Visitor Usage at San Luis NWR and Coyote Hills Regional Park

Facility	Annual Usage	Visits/Day
San Luis National Wildlife Refuge	• 80,000 visits total • 70,000 visits for non-hunting uses • 55% of non-hunting visits (38,500 visits/year) are from outside western San Joaquin Valley Region, including East Bay region, San Jose area, Sacramento area, Fresno area • 45% of non-hunting visits (31,500 visits/year) are from within western San Joaquin Valley region	• 192 total visits/day for non-hunting uses, on average - 106 non-hunting visits/day from outside western San Joaquin Valley region - 48 non-hunting visits/day from within western San Joaquin Valley region
Coyote Hills Regional Park	*Annual visit data not tabulated* *Data on visitor origin not currently available*	• Weekdays: 250 – 500 visits/day • Weekends: 1,250 – 1,750 visits/day

Sources: Sparks pers. comm., McDonell pers. comm.

As Table 3-18 shows, both San Luis NWR and Coyote Hills Regional Park are much larger facilities than the approximately 100-acre NCCA would be at buildout, both offer a wider range of uses, and both have advantages over the NCCA in terms of visitor draw—San Luis NWR no doubt benefits from the visibility associated with being part of a well known national system, and Coyote Hills is part of a highly visible regional park system in a densely populated metropolitan area. As a result, visitor figures for these two parklands would be an outside maximum that is probably unrealistic for what the NCCA might be expected to draw from the larger region. It is unlikely that the NCCA would ever match Coyote Hills' weekend VMT figures in particular; these almost certainly reflect the park's location in an urbanized area with easy access for nearby suburban residents and freeway adjacency facilitating visits from other parts of the Bay Area.

However, City staff have estimated that regional recreational visits to the NCCA at buildout could be double the visit rates generated by the local Newman population; the NCCA would be a unique facility located within easy reach of several other small municipalities whose residents would likely also make use of it, and it also has the potential to draw from a larger area, as evidenced by usage patterns at other open space in the region. Doubling local NCCA usership rates would give an estimated (2 x 67.4) or about 135 visits per day by regional (non-Newman-area) visitors, which is within about 27% of the 106 non-hunting visits per day from outside the western San Joaquin Valley region reported by San Luis NWR staff (Sparks pers. comm.). As such it is probably within a reasonable ballpark, and may be somewhat conservative (i.e., overestimated) since the NCCA would

be a smaller facility and would not have the visibility of the NWR system.

At an average automobile occupancy rate of 2.25 persons per vehicle (which is conservatively based on East Bay Regional Park District usage of 2 – 3 persons per car; McDonell pers. comm.), 135 visits per day translates to about 120 annual average trips per day. Added to that total should be visits by community college and university students engaged in research and/or living laboratory experiences, since the City will invite participation by institutions throughout the western San Joaquin Valley (City of Newman 2021) and possibly extending into the Bay Area. This is roughly estimated at about 20 students per year visiting the site weekly or about 4 days per month, each of whom is assumed to travel alone, by car. Based on these assumptions, student visits would add about 5 trips per day on annual average; this gives an estimated total of about 125 regional trips/day.

Adding total local trips per day and total regional trips per day gives a combined total of about (45.3+119.8+5.3) or 170.4 (one-way) trips per day generated by NCCA usage. Table 3-20 shows the corresponding VMT generation based on the mileage assumptions presented in notes to the table. As shown, the NCCA could generate 9,457 daily VMT at buildout.

Table 3-20. Potential VMT Generation Associated with NCCA Usage

Visitor Category	Average Daily Trips*	Mileage per Trip	Daily VMT
Local users	45.3	1.6**	73
Regional users (general public)	119.8	75***	8,986
Regional users (research students)	5.3	75***	398
Totals:	**170.4**	**N/A**	**9,457**

* Trip calculation assumed an average of 2.25 persons per car, based on East Bay Regional Park District usage of 2 – 3 persons per car (McDonell pers. comm.).

** Local trip mileage represents the distance from Newman city center via arterial routes to Newman Nature Park parking area.

*** Regional trip mileage was calculated as the average of the highway/freeway distances between City of Newman and San Jose, San Rafael, Sacramento, and Fresno.

Source: K.D. Anderson & Associates 2020

As discussed in Section 2 and elsewhere in this checklist, the NCCA projects are planned for implementation one at a time as funding becomes available. Additionally, the NCCA is expected to gain visibility—both in the local community and regionally—over time. As a result, visitor use, and associated VMT generation, would ramp up gradually over time. Assuming the NCCA reaches maximum usage in about 10 years, NCCA VMT generation due to visitor usage would represent only about 0.11% percent of Countywide daily VMT, based on projections by the Merced County Assocation of Governments, which place Countywide daily VMT at about 8,300,000 as of 2030 (Merced County Association of Governments 2018).

The current state Office of Planning and Research guidance for evaluating transportation impacts using the VMT standard does not identify significance thresholds for undertakings like the NCCA projects that would not involve residential, retail, or office uses (Office of Planning and Research 2018), and neither the City nor the County has currently adopted significance thresholds for VMT, although the City expects to develop them in the near future. Combined with the substantial uncertainty in projecting regional usership, this makes it difficult to assess the significance of NCCA VMT generation in a meaningful way.

However, as identified in *Construction Period* above, projects that would generate less than 110 trips per day over the long term are currently presumed to have a Less than Significant transportation impact (Office of Planning and Research 2018). In this context, based on visitor usage alone there is some potential that the

NCCA could result in a Significant impact with regard to VMT generation, since estimates detailed above suggest it could generate on the order of 170 trips per day when both local and regional visitors are considered. Additional VMT would be generated by O&M. To address the potential for Significant VMT impacts, the City will implement the following mitigation measures, which take advantage of the anticipated slow increase in NCCA usage to enable the City to monitor NCCA usage, improve understanding of local and regional use patterns, refine understanding of associated VMT generation, and respond adaptively over time. With Mitigation Measures TR-1 and TR-2 in place, impacts would be addressed to the extent feasible without undermining the NCCA's overarching purpose of providing a nature-oriented recreational and educational resource that serves not only the immediate City but also the larger surrounding region. Residual impacts, if any, are considered Less than Significant.

Mitigation Measure TR-1. NCCA Usage Monitoring

Prior to construction of the Newman Nature Park, the City will take the following actions to monitor NCCA usage

- At least monthly, the City will conduct one weekday and one weekend user poll at peak use hours to determine the number of visitors onsite, identify whether they are local or from outside the area, and if they are from outside the City's Sphere of Influence, how far they travelled to visit the NCCA. Information on number of visitors per car will also be collected to calibrate understanding of visitors/car trips ratio, supporting more accurate projections of future VMT generation
- Data will be maintained by the Public Works Department and will be summarized, reviewed, and evaluated annually to determine whether NCCA usage is generating in excess of 110 trips per day. Data analysis will include projections of coming-year usership and trip generation

When the Newman Nature Park is constructed, the City will ensure that the entrance to the parking area is equipped with a vehicle detection loop or similar technology such that vehicles entering the parking area are counted. The City will also continue to conduct user surveys as described above, and all data will continue to be maintained, and evaluated annually, by the Public Works Department, also as described above.

If or when usership is found to exceed 110 trips per day or alternate screening criteria adopted by the City of Newman through a process consistent with *CEQA Guidelines* requirements and applicable recommendations of the Office of Planning and Research, or is projected to exceed this threshold in the coming year, the City will implement Mitigation Measure TR-2. Alternately, if at some time in the future a regional VMT reduction program meeting Office of Planning and Research (2018 or future-current) standards is developed and offers other opportunities to address VMT generation (such as in-lieu fees to support mitigation actions that can reasonably be expected to occur), the City may elect to participate in this program rather than implementing Mitigation Measure TR-2, assuming an appropriate offset for NCCA-generated VMT can be demonstrated.

The Public Works Department will also monitor and track VMT associated with O&M at the NCCA site and will seek to minimize VMT where this is feasible without compromising the function, value, or community benefits of the NCCA facilities.

Mitigation Measure TR-2. Reservations System and Usage Management

The City will install an automatic gate on NCCA parking lot access and will develop and implement an online reservations system to limit site visitation. This may be used to maintain overall usership at a trip generation level that represents a Less than Significant transportation impact per current guidance from the Office of Planning and Research or other relevant entity, *and/or* to prioritize local over regional users such that projected VMT generation is maintained at a level below current applicable significance thresholds. If VMT generation is selected as the metric to guide usership management, it will be projected using current prevailing methods as of the time the relevant analysis is prepared. Management of regional usership may use any of several methods to control trip and/or VMT generation, potentially including but not necessarily limited to

- prioritizing group visits that access the NCCA by bus or van, such as school field trips and senior excursions
- promoting and facilitating carpools and ridesharing for NCCA visitors
- prioritizing local usage over regional usage
- other methods developed by the City based on usership surveys and community priorities and needs

Potential to Increase Hazards Due to Design Geometry or Incompatible Uses

Existing Design Geometry

In 2013, responding to concerns about travel speeds and safety on Canal School Road between Inyo Avenue and Driskell Avenue to the north, the City retained a traffic engineering consultant to perform a safety assessment, identify traffic constraints, and recommend improvements to increase roadway and intersection safety. Traffic volumes were found to be low, but northbound speeds along Canal School Road were high, related to vehicles entering the City from the unincorporated rural County. Collision rates were also substantially higher than would typically be anticipated on similar roadways based on Caltrans studies (3.75 collisions per million vehicles vs. a projected 0.86 collisions per million vehicles over an approximately 4-year period). The majority of the reported collisions involved northbound drivers leaving the road. All but two were single vehicle incidents; one involved failure to yield by a motorist entering Canal School Road from a side street, and another involved a conflict created by motorists slowing to turn at an intersection (K.D. Anderson & Associates 2013).

Factors contributing to roadway safety concerns were identified as including difficulty identifying the roadway margin in dark conditions at night, a horizontal curve at Inyo Avenue that was likely somewhat undersized for higher travel speeds. The study recommended a number improvements to reduce roadway hazards, as follows (K.D. Anderson & Associates 2013).

- installation of an oversized speed limit sign at Inyo Avenue with 45 mile per hour speed limit pavement marking
- restriping of the centerline stripe on Canal School Road within the City
- installation of an edge line stripe on the east side of Canal School Road north of Inyo Avenue
- installation of a street light at the Canal School Road/Inyo Avenue intersection
- installation of a flashing speed limit beacon on the speed limit sign at Inyo Avenue

As of 2021, all of these recommendations have been implemented. As a result, No Impact is anticipated with regard to existing design geometry.

New Design Geometry

None of the NCCA projects are planned to result in modification to public roadways, other than where driveways are added to allow access to the NEWS project gateway area, the MDTW project O&M roads/trails, and the Newman Nature Park parking area. The City's adopted *Improvement Standards and Standard Details*, which apply to all City undertakings, lay out specific requirements for driveway design. First and foremost, all driveway design must comply with Section 73 of Caltrans' *Standard Specifications*, which covers driveways along with related features such as sidewalks, gutters, and curb ramps. In addition to compliance with statewide specifications, the *Improvement Standards* also define additional requirements for vehicle, pedestrian, and facility safety specific to driveway design for City projects.

Additionally, because County encroachment permits would be needed for driveway access to the NEWS project from Canal School Road and to the MDTW and Newman Nature Park projects from Brazo Road, all driveways and associated roadway modifications would be required to meet relevant County standards; designs would be subject to County review and approval. In particular, as mentioned in Section 2, driveway access to the NEWS project may be shifted farther south on Canal School Road from the location shown on Figure 2-4, or may be reconfigured, if requested by the County.

With adherence to the City's required design standards (City *Improvement Standards and Standard Details* and Section 73 of the Caltrans *Standard Specifications*) and relevant County requirements, and with County review to ensure that safety standards are met, there would be No Impact related to hazardous design geometry. No mitigation is required.

Although the planned water service extension could be installed within existing roadways (Option 1, Figure 2-9), affected portions of roadways would be restored to their pre-project conditions following pipeline installation, with no modification to existing designs. The water service extension would therefore have no potential to result in roadway alterations with hazardous design geometry; there would be No Impact, and no mitigation is required.

Overflow Parking

The wetland project, which was funded under a 2019 DFW grant to the City, would be the first project implemented at the NCCA. It would not include provisions for public access and therefore would not generate public parking demand. The NEWS project, funded by an SWRCB grant awarded in early 2021, is expected to be the next project implemented. Because it would include O&M access opened to the public for trails use, some demand for public parking would be generated once the NEWS project comes online. As described in Section 2, this is expected to be accommodated in the gateway area, which would have space for 8 – 10 vehicles at a time and would also offer a space for bus drop-offs. In the first few years of operation, the NEWS project is expected to draw visitors primarily from the local Newman area, anticipated at about 23 visits (= 45.3 / 2; see Table 3-20) per day at a maximum. The length of daylight hours in the Newman area ranges from about 9 hours in the winter to about 14 hours in the summer (Sunrise Sunset 2020). Assuming daytime-only use, and an average visit length of 3 hours, this means each space could turn over about three times on a winter day and about four and a half times on a summer day. These turnover rates would provide capacity for 24 – 30 daily vehicle-visits in the winter and 36 – 45 vehicle visits in the summer, exceeding the anticipated number of daily visits year-round.

Once the Newman Nature Park comes online, it would provide additional parking for NCCA visitors in a parking area off of Brazo Road (Figure 2-7). As described in Section 2, the parking area is expected to provide a total of

35 stalls, including five ADA stalls. As at the NEWS project—assuming about 9 hours of daylight in the winter and 14 hours of daylight in the summer (Sunrise Sunset 2020), daytime use only, and an average visit length of 3 hours—each space at the Nature Park could turn over about three times on a winter day and about four and a half times on a summer day, providing capacity for 90 daily vehicle-visits in the winter and 135 vehicle visits during the summer, in addition to use of the five ADA stalls. On average, as discussed above, the NCCA is projected to generate 85 daily vehicle visits (i.e., 170 daily trips / 2; see Table 3-20) once it is fully operational and regional visitors are added to local usage. At buildout, therefore, the NCCA is expected to continue to have adequate capacity to accommodate anticipated parking demands year-round.

As with any public park, however, there may be periods during the day when peak visitation creates parking demand that exceeds the available supply. This may be particularly true if the NEWS project is in fact constructed first and usage ramps up more quickly than anticipated, before the Newman Nature Park and its larger parking area are constructed. In this case, overflow parking would likely spread onto unpaved shoulders along adjacent roadways. Allowing 25 feet per vehicle, roughly 52 overflow vehicles could be accommodated along just the north side of Inyo Avenue in the 0.25-mile stretch south of Inyo Avenue, increasing available parking by a factor of 5 – 6. This is expected to be more than adequate for peak demands before the availability of additional parking at the Nature Park

Once the Nature Park is completed and the public is accessing the south portion of the 78-acre parcel, about 100 additional vehicles could be accommodated using both sides of Brazo Road east of Canal School Road. This would triple parking supply at the Nature Park, and again should be more than adequate for peak demands. However, although both Inyo Avenue and Brazo Road offer wide shoulder areas, the shoulders are currently unsurfaced and there is a possibility that parking would encroach onto the paved roadway surfaces, which could create conflicts with vehicle travel and/or emergency vehicle passage. Additionally, if NCCA visitors park along the south side of Inyo Avenue, they could impede overflow parking and/or access for homes along this roadway. At worst, all of these impacts could be significant. To address this, the City will implement the following mitigation measure. With Mitigation Measure TR-3 in place, impacts would be reduced to a Less than Significant level.

Mitigation Measure TR-3. Overflow Parking Improvements on Inyo Avenue and Brazo Road

If the NEWS project is constructed before the Newman Nature Park, as part of the NEWS project the City will provide improvements to the north shoulder (only) of Inyo Avenue to provide for safe accomodation of overflow parking. The shoulder will be graded if necessary and will be graveled and/or paved for parking. Existing utilities will be protected in place. Improvements will initially be equal to 20 parking spaces (500 feet), but the City will continue to monitor usage at the NCCA per Mitigation Measure TR-1, and will extend the graveled and/or paved shoulder if necessary, taking into account the anticipated timing of Newman Nature Park construction and increased availability of onsite parking. *No Parking* signage meeting City standards will be installed along the south side of Inyo Avenue to prevent overflow parking from encroaching on residential frontages and access.

In conjunction with improvements to the shoulders of Inyo Avenue, the City will also coordinate with the County Public Works Department to install *No Parking* signs along both sides of Canal School Road adjacent to the NCCA, to prevent overflow parking from encroaching on travel and residential frontages and access along Canal School Road. Installation of signage will be the City's responsibility.

If the NEWS project is constructed after the Newman Nature Park, the City may reevaluate the need for overflow parking along Inyo Avenue based on usage monitoring conducted per Mitigation Measure TR-1. Improvements as described above will be provided if warranted.

As part of the Newman Nature Park project, the City will provide improvements to the shoulders of Brazo Road to provide for safe accommodation of overflow parking. Shoulders on both sides of the road will be graded if necessary, and graveled and/or paved for parking. The length of the improvements will initially be equal to 30 parking spaces (750 feet), but the City will continue to monitor usage at the NCCA per Mitigation Measure TR-1, and will expand the graveled and/or paved shoulder length as needed. If the Newman Nature Park is constructed before the NEWS project, *No Parking* signage along both sides of Canal School Road adjacent to the NCCA will be installed at the time the Nature Park is constructed.

All improvements along Inyo Avenue and Brazo Road will be the City's responsibility but Brazo Road improvements will be coordinated with the County Public Works Department and will meet County roadway standards as laid out in the current version of the *Merced County Department of Public Works Improvement Standards and Specifications*.

Incompatible Uses

Construction of the NCCA projects, installation of the water service extension, and some O&M activities at the NCCA site would temporarily add heavy construction equipment and haul trucks to roadways around the site, for contractor mobilization/demobilization, materials deliveries, and City O&M access. However, area roadways already support some similar types of uses as agricultural equipment is mobilized/demobilized between cultivated areas. Moreover, the presence of equipment and truck traffic for each project, and for future O&M activities, would be short-term and limited. As a result, impacts are considered Less than Significant. No mitigation is required.

Potential to Result in Inadequate Emergency Access

As discussed in the *Hazards & Hazardous Materials* portion of this checklist, the City's *Improvement Standards and Standard Details* provide for traffic control and safety while work is in progress. Roadway closures are generally prohibited, public rights-of-way must be maintained in a convenient, accessible condition, access to private properties must be maintained, and where barricades, pylons, or other similar measures are needed to ensure traffic safety, they must be configured in a manner than enables emergency vehicle passage. With adherence to the *Improvement Standards and Standard Details,* neither construction nor O&M at the NCCA site itself or offsite for the water service extension would result in inadequate emergency access to the NCCA site or to neighboring parcels. There would be No Impact related to inadequate emergency access as a result of construction or O&M, and no mitigation is required.

Additionally, as discussed in the previous item, the City requires driveway design to comply with Caltrans standards and additional City requirements; driveways accessing the NEWS project, MDTW project, and Newman Nature Park would thus be adequate to provide safe ingress and egress by emergency vehicles. O&M access roads would also be designed to accommodate trucks and other large vehicles, enabling emergency vehicles to move through the parcel if needed for emergency response. There would be No Impact related to inadequate emergency access as a result of project design, and no mitigation is required.

Potential to Conflict with Applicable Congestion Management Program and/or LOS Standards

Congestion Management Program

The City does not have a congestion management program, and as a small rural community, has no need for one. The Merced County Association of Governments is responsible for managing congestion Countywide, and does so through its Regional Transportation Plan/Sustainable Communities Strategy (Merced County Association of Governments 2018), which links transportation and land use planning to ensure that the

transportation network addresses both existing and future needs and will continue to operate efficiently over the next 25 years. As identified above, the NCCA projects, and the program as a whole, are consistent with the Regional Transportation Plan/Sustainable Communities Strategy. There would be No Impact related to conflict with this plan, and no mitigation is required.

LOS Standards

The most recent available information on traffic volumes carried by arterial roadways accessing the NCCA site—collected in 2013 as part of a safety assessment for the Canal School Road/Inyo Avenue intersection—are summarized in Table 3-21. Traffic counts were collected each hour in each direction over a 24-hour period, using pneumatic tube counters, and data were then summed to develop daily totals and totals for the morning and evening commute hours (AM Peak Hours and PM Peak Hours, respectively) when traffic is typically at its heaviest.

Table 3-21. Traffic Volumes on Roadways Accessing NCCA

Roadway	Location	Direction	Traffic Volumes		
			Daily	AM Peak Hour	PM Peak Hour
Canal School Road	South of Inyo Avenue	Northbound	1,574	112	149
		Southbound	1,380	111	107
		Total:	***2,954***	***223***	***256***
Canal School Road	South of Rodeo Grounds Way	Northbound	1,684	117	165
		Southbound	1,438	119	105
		Total:	***3,122***	***236***	***270***
Hills Ferry Road	East of Canal School Road	Northbound	2,503	222	202
		Southbound	2,550	131	238
		Total:	***5,053***	***353***	***440***

Source: K.D. Anderson & Associates 2013

As shown in Table 3-21, traffic volumes are comparatively low even taking into account the potential for increases since 2013. All of these roadways are classified as 2-lane arterials[26] that would be expected to maintain the City's (and the County's) minimum LOS standard (LOS C, or light congestion with occasional backups at critical approaches) at traffic volumes between 14,000 and 16,000 (K.D. Anderson 2013, City of Newman 2007). Traffic volumes less than 10,500 represent LOS A (uncongested operation) on 2-lane arterial roadways (City of Newman 2007). Inyo Avenue also qualifies as a 2-lane arterial.

As discussed above and itemized in Section 2, construction of each of the NCCA projects would add a small number of vehicles to roadways in the vicinity of the NCCA site: a (likely unrealistic) outside maximum of slightly over 60 round trips or 120 one-way trips per day if all projects were under construction at the same time, with slightly over 20 round trips or 40 one-way trips per day more likely. Since these roadways are all currently operating well under capacity, and expected to continue in this condition for the immediate foreseeable future, there should be No Impact on roadway or intersection LOS as a result of construction traffic. No mitigation is required.

[26] The City defines *arterials* as "major roadways that provide the primary routes across Newman and connect the city with surrounding sities as well as with adjacent major highways" (City of Newman 2007).

At buildout, the NCCA is anticipated to generate as much as 170 one-way trips per day, factoring in both local and regional visitor usage, with all projects considered; trip generation for each of the projects individually would represent a fraction of this total. O&M would add an additional small number of trips, as detailed in Section 2 and mitigation measures in this checklist. This comparatively small increase in traffic—considered project-by-project or as a buildout total—would be well within roadway capacity and would have No Impact on roadway or intersection LOS in the vicinity of the NCCA. Regional effects on LOS would be proportionally smaller, since regional visitors would come from a wider area, distributing a small number of trips over a larger roadway network. No Impact on regional roadway or intersection LOS is anticipated. No mitigation is required.

References Cited in this Section

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XVIII. TRIBAL CULTURAL RESOURCES *Would the project:*	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
(i) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1[k], or	☐	☐	☐	■
(ii) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Subdivision [c] of Public Resources Code Section 5024.1[a]	☐	☐	☐	■

[a]In applying the criteria set forth in Subdivision [c] of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Discussion of Checklist Responses

Potential for Adverse Change in Significance of a Tribal Cultural Resource

As discussed in more detail in the *Cultural Resources* section of this checklist, a search of the NAHC's Sacred Lands database and outreach to local Native American authorities identified no tribal cultural resources associated with the NCCA site. No known prehistoric, ethnographic, or contemporary Native American tribal cultural resources, including sacred places and traditional use areas, were identified in, adjacent to, or near either of the NCCA parcels (Basin Research Associates 2020). No Impact on tribal cultural resources—including NRHP- and CRHR-listed resources and those identified by local agencies—is anticipated, and no mitigation is required.

Reference Cited in this Section

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XIX. UTILITIES & SERVICE SYSTEMS *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(a) Require or result in the relocation or construction of new or expanded water or wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	■ (NEWS and project and Newman Nature Park, water service only)	☐	■ (wetland and MDTW projects, all utilities; NEWS project and Newman Nature Park, wastewater, stormwater, natural gas, electricity telecommunications)
(b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☐	■
(c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	■
(d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	■
(e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	■

Discussion of Checklist Responses

Potential Need for New or Relocated Utilities

The wetland project and MDTW project would not require water or wastewater service, additional offsite stormwater drainage infrastructure, electricity, natural gas service, or telecommunications service. They would have No Impact related to the need for new or relocated utilities, and no mitigation is required.

The NEWS project similarly would have no need for wastewater service, improvements to offsite stormwater drainage infrastructure, electricity, natural gas service, or telecommunications service. It would have No Impact

related to the need for new or relocated utilities of these types, and no mitigation is required.

Lighting at the Newman Nature Park would be solar-powered, so there would be no need for electric service. Restrooms would offer composting toilets, avoiding the need for wastewater service. Runoff from small areas of hardscape would be directed to landscape and garden areas for onsite reuse, so there would be no effect on offsite storm drainage needs. There would also be no need for natural gas service or telecommunications services at the Nature Park. The Newman Nature Park would therefore have No Impact related to these any of these utilities, and no mitigation is required.

The NEWS project and Newman Nature Park would, however, be served by City water—at the NEWS project, this would support water-efficient irrigation in the gateway area, and at the Nature Park, it would be used for irrigation in the demonstration gardens and parking area landscaping, and for the hydration station, learning area sink, and handwashing facilities. As discussed in Section 2 and previous checklist sections, water service would be extended from the City's existing 8-inch-diameter water pipeline at the corner of Canal School Road and Inyo Avenue. The new installation could be coordinated with NEWS project or Newman Nature Park construction, phased between the projects, or—less likely—could occur as a separate installation once it is certain the other projects will proceed. Impacts of extending water service to the Nature Park have been considered under all relevant resource topics in this checklist, with mitigation identified where appropriate (see *Noise* section). No additional impacts not discussed elsewhere in this checklist are anticipated. Since mitigation has been identified elsewhere in this checklist for impacts of water service installation, and the need for water service is an outcome of the NEWS and Newman Nature Park projects, impacts of these projects with regard to water service installation are considered Less than Significant with mitigation incorporated. No additional mitigation is required.

Potential for Insufficient Water Supplies

The NCCA projects would not involve housing construction and would neither increase nor relocate populations (see *Population & Housing* above). As a result, they would not increase regional water demand. As discussed in the *Hydrology & Water Quality* section of this checklist, construction of each of the NCCA projects would entail limited, short-term, and temporary use of City water supply. Limited use of Miller Ditch and/or City water could continue to support hand watering of plantings at the NEWS, wetland, and MDTW projects in the vegetation establishment period immediately following construction, particularly if construction occurs during unusually dry or hot years. If Miller Ditch water is used, consumption would likely be less than under the current flood irrigation regime. Over the long term, irrigation at the NEWS project and Newman Nature Park and the handwashing and outoor classroom area sinks and hydration station at the Nature Park would rely on City water. Some O&M activities would also likely make intermittent use of City water over the long term. However, usage both during and after construction would be limited, and, as discussed in *Hydrology & Water Quality* above, City water planning takes both construction and municipal usage into account; as a result, none of the NCCA projects is expected to result in water supply insufficiency in normal, dry, or even multiple dry years. No Impact is anticipated, and no mitigation is required.

Potential for Determination of Inadequate Capacity by Wastewater Treatment Provider

The City provides wastewater treatment for most uses within City limits, although some properties, both within City limits and in the City's larger Sphere of Influence, remain on septic systems. Wastewater from the City is conveyed to the City's Wastewater Treatment Plant (WWTP), located about 1 mile north of the City adjacent to the Newman Wasteway, within the Sphere of Influence but outside City limits. The WWTP is operated by the Public Works Department and is mandated by the General Plan to maintain adequate capacity to serve the needs of existing and future development (City of Newman 2007).

The NEWS project, wetland project, and MDTW project would not generate wastewater and thus would have no potential to result in a determination of inadequate wastewater treatment capacity. The only wastewater generated by the Newman Nature Park would be from the handwashing sinks at the restrooms and sink in the outdoor classroom/learning area, since the restrooms would be equipped with composting toilets. Drainage from the handwashing and classroom area sinks would be accommodated in vegetated planter/French drain systems; there would be no need to route wastewater from the Nature Park offsite for treatment. As a result, the Newman Nature Park would also have no potential to result in a determination of inadequate wastewater treatment capacity. There would be No Impact, and no mitigation is required.

Potential to Generate Excessive Solid Waste or Impair Waste Reduction Goals

The following discussion addresses the potential to generate solid waste that would exceed the capacity of local infrastructure or otherwise impair the attainment of the City's solid waste reduction goals. Compliance with federal, state, and local waste reduction standards is discussed below, under the next item.

Solid waste from the City and immediate surrounding area is handled by Bertolotti Disposal. Solid waste is transported to the Stanislaus County Fink Road Sanitary Landfill, located nearby in Crows Landing, for disposal. The County of Stanislaus recently applied to the California Department of Resources Recycling and Recovery (CalRecycle) for a revision to the Fink Road Landfill's operating permit that would authorize increasing landfill design capacity from 14.64 to 18.29 million cubic yards and extending the landfill's anticipated closure date from 2023 to 2050 (CalRecycle 2020a). The requested permit revisions were approved in March 2020, nearly doubling the landfill's permitted capacity. Greenwaste is collected by the City for composting at a facility in the Modesto area.

Construction Period. Construction of each of the NCCA projects would generate some waste, including excavated soils, vegetation slash suitable for greenwasting, and trash and food refuse from construction staff meals onsite..

For the NEWS project, the majority of the "waste" generated by construction would be excavated soils, estimated to total on the order of 108,000 CY (Whitaker Construction 2020). The City has received a request from a local landowner to purchase excavated soils for offsite reuse and anticipates that the majority of NEWS excavation spoils would be sold to this party or other local developers; this is a common practice in the Newman area due to the need to raise building pads above the flood elevation. A similar arrangement is anticipated for excavation spoils from the MDTW project. Excavation—and the resulting need for spoils reuse or disposal—would be substantially less for the wetland project and Newman Nature Park.

With larger volumes of excavation spoils sold to private parties for offsite reuse, the total amount of construction waste requiring disposal is expected to be well within the expanded capacity of the Fink Road Landfill for all of the NCCA projects. If any site soils are found unsuitable for offsite reuse as a result of the soil testing required under Mitigation Measure C-1 (see Table 3-23 in *Mandatory Findings of Significance* below), they would be offhauled for appropriate disposal per applicable state and federal regulations. Volumes are not expected to be large and should be easily accomodated at suitable facilities. Construction is therefore not expected to result in generation of solid waste exceeding the capacity of local infrastructure, nor would it otherwise impair the the City's ability to achieve its goals of reducing solid waste at the source. There would be No Impact, and no mitigation is required.

Water service extension would also generate some waste during construction. If Option 2 (Figure 2-9) along the boundaries of the 78-acre parcel is selected, the types of waste would be similar to those described for the four NCCA projects: excavated soils, vegetation slash, and trash and food refuse from construction staff meals. If

Option 1 within existing roadways is chosen, waste would include pavement removed to open the pipeline trench and any excavated materials that cannot be reused onsite. In either case, volumes would be comparatively small and are expected to be well within the scope of projects typically accommodated at the Fink Road landfill. No Impact related to exessive solid waste generation or impedance of solid waste reduction goals is anticipated, and no mitigation is required.

Operations & Maintenance. Similar to construction, ongoing O&M at the NCCA site would also generate some solid waste. This would include sediment removed from the NEWS and MDTW project forebays, trash and recycling collected in onsite receptacles from visitors to the facilities, and waste materials from periodic facilities upkeep and repairs.

Sediment removal is expected to occur once every 5 – 10 years at the NEWS project; the MDTW project would likely be similar. Volumes at both projects would be comparatively small. At the NEWS project, removals would be approximately 50% of the total forebay capacity (see *Project Operations & Maintenance* in Section 2 of this Initial Study), or about 10,000 CY, assuming a 2.5-acre forebay with a depth of approximately 5 feet (RICK Engineering 2020). Design for the MDTW project is still in the conceptual phases, but assuming an approximately 1.75-acre forebay per the conceptual design (Figure 2-8) and a similar program of removals when sediment accumulation reaches 50% of total forebay capacity, removals would be on the order of 7,000 CY with a forebay depth of 5 feet and 14,000 CY if the forebay is as deep as 10 feet.

Because of the potential for heavy metal and other contamination, sediment from the NEWS project may need to be disposed rather than sold for reuse. This may also be appropriate for the MDTW project due to the potential for agricultural contaminants. As discussed in the *Hazards & Hazardous Materials* section of this checklist (see Mitigation Measure HAZ-1), sediment would be tested prior to disposal and would be routed to the appropriate type of landfill based on contaminant levels. This could be the Fink Road Landfill, or—if contaminant levels are elevated—could be an alternate Class II or Class I facility. Alternately, if sediment proves not to be contaminated, some or all of it may be saleable for offsite reuse, and the City would seek to do so if feasible. Because of the infrequent need for disposal of sediment, the limited volumes involved at any one time, and the potential for waste to be diverted to any of several facilities and/or sold offsite, disposal of sediment removed from the NEWS and MDTW project forebays is expected to be within the capacity of receiving landfills. Sediment removal is therefore not considered to represent generation of solid waste in excess the capacity of local infrastructure, nor would it otherwise impair the attainment of the City's solid waste reduction goals. There would be No Impact, and no mitigation is required.

Based on experience at other City recreational facilities, the City estimates that routine generation of trash and recycling from the NCCA projects would be on the order of 2 cubic yards/week or less, although special events or periods of higher than normal use could temporarily increase waste generation. As of 2019, however, the Fink Road landfill was receiving almost 800 tons of solid waste each day, or more than 5,000 tons weekly (County of Stanislaus 2019); thus, even doubling or tripling the anticipated waste generation level of 2 cubic yards/week would still represent a small fraction of the total waste received by the Fink Road Landfill and recycling facilities. Waste generated by occasional facility repairs would be intermittent and small-volume. Neither source is considered to represent excessive waste generation and neither source would exceed the capacity of local infrastructure or otherwise impair the attainment of the City's solid waste reduction goals. There would be No Impact, and no mitigation is required.

Compliance with Federal, State, and Local Solid Waste Management and Reduction Statutes

Numerous statutes and regulations at the federal, state, and local levels govern solid waste management and waste stream reduction. At the federal level, these include the Resource Conservation and Recovery Act

(RCRA) of 1976 and Pollution Prevention Act (PPA) of 1990. At the state level, the most relevant statue is the Integrated Waste Management Act of 1989.

Responding to concerns about dwindling availability of landfill capacity, the Integrated Waste Management Act established targets of 25% diversion of solid waste from landfills by January 1, 1995, and 50% diversion of waste by January 1, 2000, applicable to all California cities and counties. Each city and county was required to develop a Source Reduction and Recycling Element that lays out a program of source reduction, recycling, and composting to reduce waste delivery to landfills, identifies the landfill and transformation capacity needed to accommodate waste that cannot be diverted, and provides for public education on waste reduction, among other requirements. Counties were also required to prepare a Siting Element that identifies areas where waste disposal and transformation facilities can be located to meet the needs identified in Source Reduction and Recycling Elements. Source Reduction and Recycling Elements, and County Siting Elements, were required to be reviewed and approved by the California Integrated Waste Management Board (established by the Act from prior existing state boards), and must be updated and re-approved every 5 years.

The City, as well as the County of Stanislaus (where the City is located) and the County of Merced (where the NCCA site is located), all have Source Reduction and Recycling Elements in place. The City's General Plan includes a Goal requiring that the City "provide for the collection and disposal of solid waste while minimizing the generation of waste" (Goal PFS-7, City of Newman 2007). Policies under this goal include PFS-7.1, requiring continued compliance with and updates to the adopted and state-approved Source Reduction and Recycling Element, and PFS-7.4, requiring the City to meet or exceed all state standards relative to waste management and reduction. Enforcement at the project-specific level is provided by Building Department oversight and the Public Works Department's construction inspectors.

With the City's waste management and waste reduction policies in place, both construction and O&M for the NCCA projects would be maintained in compliance with all applicable local and state statutes and regulations governing solid waste management. The state statutes are complementary to and consistent with federal requirements; compliance with state statutes would therefore also maintain the City and NCCA projects in compliance with applicable federal requirements. There would be No Impact related to conflict with federal, state, or local waste management and reduction statutes. No mitigation is required.

References Cited in this Section

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XX. WILDFIRE *If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:*	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	■
(b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or to the uncontrolled spread of a wildfire?	☐	☐	☐	■
(c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, or power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	■
(d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	■

Discussion of Checklist Responses

Background

Firefighting responsibility in California wildlands is divided among local, state, and federal entities depending on land ownership, characteristics, population, and incorporation status. Section 4125 of the California Public Resources Code charges the Board of Forestry and Fire Protection with delineating portions of the state where the financial responsibility for preventing and suppressing wildland fires rests primarily with the state. These *State Responsibility Areas* (SRAs) include

- lands that are partially or wholly covered by forests or by trees that produce or are capable of producing forest products
- lands that are sources of water for irrigation, domestic, or industrial use and are partially or wholly covered by vegetation that protects the soil from excessive erosion, retards runoff, or accelerates groundwater infiltration

Adjacent lands that are used, or have the potential to be used, for range or forage purposes are also considered SRAs, as are unincorporated city and county areas with populations less than 25,000, unless the county has accepted fire prevention and suppression responsibility by ordinance. The California Department of Forestry and Fire Protection (CAL FIRE) is responsible for protection within SRAs.

Lands owned or controlled by a federal agency are considered Federal Responsibility Areas (FRAs), and most lands within incorporated city or county boundaries are considered Local Responsibility Areas (LRAs) (California Code of Regulations Sections 4125 – 4129). Within FRAs, fire protection is typically provided by the federal agency that owns or manages the land. Within incorporated LRAs, the local jurisdiction is typically the fire protection provider. In the City itself, fire protection is provided by the Newman Fire Department, a 20-member volunteer force that recently received an Insurance Services Office (ISO) rating of 5.[27] Lands outside city limits to the south and east, including the NCCA site, are served by the Merced County Fire Department.

Potential for Wildfire Impacts

The NCCA site is surrounded by actively cultivated croplands immediately outside City limits; as discussed in the *Hazards & Hazardous Materials* section of this checklist, it is not within a wildland area nor is it on the urban-wildland interface. It is also outside zones of High and Very High Fire Hazard Severity identified by CAL FIRE for the western San Joaquin Valley and the adjacent rangefront (California Department of Forestry and Fire Protection 2020). The NCCA projects

- would have no potential to impair an adopted emergency response plan or emergency evacuation plan for a wildland area
- would not involve or modify the management of wildlands and thus would have no potential to increase the overall risk of wildfire in the area
- would not result in development in or adjacent to wildlands, potentially increasing exposure to wildfire or wildfire-related pollutants
- would not require installation or maintenance of infrastructure in wildlands, potentially increasing wildfire risks
- would not construct housing or relocate populations and therefore would not expose people or structures to risks associated with wildland fire, including fire and smoke damage, accelerated post-fire runoff, post-fire slope instability, and drainage changes

There would be No Impact related to an increase in wildfire-related hazards, and no mitigation is required.

Reference Cited in this Section

California Department of Forestry and Fire Protection. 2020. FHSZ Viewer. Available: https://egis.fire.ca.gov/FHSZ/. Accessed: August 2020.

[27] The ISO evaluates fire departments to determine property insurance costs using a 100-point Fire Suppression Rating Schedule that evaluates key factors affecting department performance: emergency communication systems (10 points), department-related factors (personnel, capabilities, equipment, and training) (50 points), water supply (40 points), and community risk reduction (5.5 "extra credit" points). Overall ISO ratings range from 1 to 10, with 1 considered the best.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
(a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	■ (overall degradation of environmental quality, elimination of examples of major periods of California history/prehistory)	☐	■ (reduction or elimination of fish and wildlife populations, including rare species, elimination of plant or animal communities)
(b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	■ (*Hydrology & Water Quality*, contributions to downstream impairments for mercury, pesticides)	■ (all other resources)	☐
(c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	■ (multiple potential Benefits)	☐	☐

Discussion of Checklist Responses

Potential to Degrade the Quality of the Environment

Potential for Substantial Environmental Degradation

As detailed in prior sections of this checklist (*Aesthetics*, *Biological Resources*, *Cultural Resources*, *Geology & Soils*, *Hazards & Hazardous Materials*, *Noise*, and *Transportation*), the NCCA projects would have some potential to result in Significant short- and/or long-term impacts on several resources. However, the City has committed to mitigation measures to address all of these impacts, as laid out in Table 3-22. With these measures in place, all impacts identified would be reduced to Less than Significant levels. The potential for substantial environmental degradation is therefore considered Less than Significant with Mitigation Incorporated, and no additional mitigation is required.

Table 3-22. Summary of Potentially Significant Impacts and Mitigation Measures

Potentially Significant Impact	Mitigation Measure(s)
Aesthetics	
Adverse Effects on a Scenic Vista *(construction period)*	• AES-1. Construction Site Housekeeping and Visual Screening • AES-2. Visual Disturbance Coordinator
Degradation of Visual Character or Quality *(construction period)*	• AES-1. Construction Site Housekeeping and Visual Screening • AES-2. Visual Disturbance Coordinator
New Sources of Light or Glare *(long-term O&M)*	• AES-3. Use of Non-Glare Finishes • AES-4. Standards for Nighttime Security Lighting
Biological Resources	
Adverse Effects on Special-Status Species: Disturbance and/or Removal of Parry's Rough Tarplant *(construction, NEWS and wetland projects)*	• BIO-1. Protection and Recovery of Parry's Rough Tarplant at NCCA Site
Adverse Effects on Sensitive Natural Communities (Coastal and Valley Freshwater Marsh) *(long term)*	• BIO-2. Long-Term Protection and Restoration of Coastal and Valley Freshwater Marsh and Other Sensitive Habitats
Cultural Resources	
Adverse Change in Significance of Historical Resources *(construction and long-term O&M)*	• CUL-1. Protection of Old Santa Fe Grade
Adverse Change in Significance of Archaeological Resources *(construction and long-term O&M)*	• CUL-2. Retention of On-Call Archaeologist • CUL-3. Worker Awareness Training for Cultural Resources • CUL-4. Evaluation and Treatment of Unanticipated Archaeological Discoveries
Disturbance of Human Remains *(construction and long-term O&M)*	• CUL-5. Procedures for Discovery of Human Remains
Geology & Soils	
Topsoil Loss *(construction and long-term O&M)*	• GEO-1. Topsoil Protection
Destruction of Paleontological Resources *(construction)*	• GEO-2. Final Design Evaluation and PRMP Development • GEO-3. PRMP Implementation • GEO-4. Worker Awareness Training for Paleontological Resources
Destruction of Paleontological Resources *(long-term O&M)*	• GEO-5. Paleontological Consultation for Ground-Disturbing O&M Activities
Hazards & Hazardous Materials	
Hazards Related to Transport, Use, or Disposal of Hazardous Materials *(long-term O&M)*	• HAZ-1. Testing and Appropriate Disposal of Forebay Sediment
Unanticipated Hazardous Materials Discoveries *(construction and long-term O&M)*	• HAZ-2. Hazardous Materials Response • C-1. Pre- and Post-Construction Soil Testing for Mercury
Noise	
Potential to Generate Substantially Increased Ambient Noise Levels *(construction)*	• NOI-1. Reduced Construction Hours in Vicinity of Residences • NOI-2. Noise Disturbance Coordinator
Potential to Generate Excessive Groundborne Vibration/Groundborne Noise *(construction, water service extension only)*	• NOI-3. Limits on Use of Impact and Vibratory Equipment Near Residences

Potentially Significant Impact	Mitigation Measure(s)
Transportation	
Conflict or Inconsistency with *CEQA Guidelines* Section 15064.3[b] *(long term)*	• TR-1. NCCA Usage Monitoring • TR-2. Reservations System and Usage Management
Increased Hazards Due to Design Geometry *(overflow parking)*	• TR-3. Overflow Parking Improvements on Inyo Avenue and Brazo Road

Potential for Substantial Reduction in Habitat, Reduction in Fish and Wildlife Populations Below Self-Sustaining Levels, Elimination of Plant or Animal Communities, or Reduction or Restriction of Rare or Endangered Plant or Animal Ranges

As discussed in detail in the *Biological Resources* section of this checklist, all of the NCCA projects would incorporate AMMs for special-status species during construction (Table 2-15). AMMs would remain in force during O&M for the lifespan of all four projects. Additionally, as itemized in Table 3-22, the City has committed to mitigation measures to address potential impacts on Parry's rough tarplant and sensitive natural communities, reducing them to levels evaluated as Less than Significant. Moreover, over time, the NEWS, wetland, and MDTW projects would all improve habitat function and value on the NCCA site by comparison with current conditions. As a result, none of these projects would substantially reduce fish and wildlife habitat availability, reduce fish or wildlife populations, eliminate plant or animal communities, or substantially reduce the number or restrict the range of any rare or endangered plant or animal species. On the contrary, they are expected to result in long-term overall Benefits to special-status plants and several special-status wildlife species, including northwestern pond turtle, western spadefoot, giant garter snake, and Yellow-billed Magpie. They are also expected to result in Benefits to breeding for a number of special-status bird species: Tricolored Blackbird, Swainson's Hawk, Northern Harrier, Loggerhead Shrike, Yellow-billed Magpie, and non-listed birds protected by the federal Migratory Bird Treaty Act. There would be No Impact under this criterion as a result of the NEWS, wetland, or MDTW project, and no mitigation is required.

The Newman Nature Park would result in a small loss of fairly low-value wetland and non-native grassland habitat to enable construction of the community facilities on the 78-acre parcel. However, in view of the NCCA site's disturbed condition and current use for grazing, the abundance of open cultivated lands surrounding the site, and the availability of less-disturbed and higher-quality habitat along the nearby San Joaquin River corridor, this is not considered to represent a substantial reduction in wildlife habitat and would not create pressures causing local populations to drop below self-sustaining levels or threatening to eliminate plant or animal communities. Moreover, losses of wetland habitat are expected to be compensated consistent with regulatory requirements under permits needed to authorize the project. Additionally, like the other NCCA projects, the Newman Nature Park would incorporate extensive AMMs (Table 2-15) to protect special-status species both during initial construction and over the long term. It would therefore have no potential to substantially reduce the number or restrict the range of any rare or endangered plant or animal species. There would be No Impact under this criterion as a result of the Newman Nature Park project, and no mitigation is required.

Potential to Eliminate Important Examples of California History or Prehistory

As discussed in more detail in the *Cultural Resources* section of this checklist, if work associated with the wetland project is not staged and contained appropriately, there would be some potential for direct impacts on the historic Santa Fe Grade, which was originally constructed to provide railroad passage through wetlands in the western San Joaquin Valley, was never used for its intended purpose, and was subsequently converted to a roadway accessing ranchlands owned by the Miller and Lux cattle company. The City has committed to mitigation to prevent such impacts (Mitigation Measure CUL-1, *Protection of Old Santa Fe Grade*). With this

measure incorporated, impacts would be reduced to a Less than Significant Level. No additional mitigation is required.

The NCCA site is not considered sensitive for archaeological resources, but as in any area with a long history of human habitation, there may be some potential for unanticipated discoveries, including both archaeological resources and human remains. To address this potential, the City has committed to additional mitigation measures, as follows.

- CUL-2. Retention of On-Call Archaeologist
- CUL-3. Worker Awareness Training for Cultural Resources
- CUL-4. Evaluation and Treatment of Unanticipated Archaeological Discoveries
- CUL-5. Procedures for Discovery of Human Remains

With these measures in place, impacts would be reduced to a Less than Significant level. No additional mitigation is required.

Potential Contributions to Cumulative Impacts

CEQA Requirements

The state's *CEQA Guidelines* explicitly recognize that no project is implemented in a vacuum: a project's effects may combine with those of other past, present, and future projects to create an additive effect on the environment. Repeated small impacts over time may also accumulate to create a larger impact. As a result, in addition to considering a proposed project's incremental (project-specific) outcomes (discussed in the preceding checklist sections), lead agencies are required to analyze *cumulative impacts,* which include:

- the combined impacts of multiple projects, including the proposed project (*CEQA Guidelines* 15355[b]), and
- the combined impact of repeated activities under a single project over time (*CEQA Guidelines* 15355[a])

A project's incremental (project-specific) impact may be individually less than significant, but become significant when viewed in connection with the effects of of other past, present, and future projects—that is, it may become *cumulatively considerable* in the larger context (*CEQA Guidelines* 15065[a][3]). Both types of impacts must be discussed in detail when the impact would be significant and the project has the potential to make a cumulatively considerable contribution (*CEQA Guidelines* 15130).

Two approaches are permitted as the basis to identify cumulative impacts that warrant analysis

- a list of past, present, and probable future projects, including projects outside the control of the lead agency for the proposed project (*CEQA Guidelines 15130*[b][1][a]), or
- a summary of projections contained in an adopted local, regional, or statewide plan, such as a general plan, a regional transportation plan, or a greenhouse gas emissions reduction, or a prior environmental document prepared for such a plan (CEQA Guidelines 15130[b][1][B])

When the "list" approach is used, the lead agency must consider and define the appropriate geographic scope for analysis (*CEQA Guidelines* 15130[b][1][B][3]). Although not explicitly required by the *Guidelines*, this step also makes sense as the starting point for analysis using the "summary of plan projects" approach.

Methods Used in Cumulative Impacts Analysis

The following analysis used a modified version of the "summary" approach. The summary approach requires a broad, long-term view of regional conditions, and was therefore identified as suitable for the resources most relevant to the NCCA projects' potential impacts (and benefits)—for instance, biological resources and water quality. In view of the comparatively short duration of work required to construct each the NCCA projects and their location at a remove from rapidly developing areas, the potential for overlap, if any, between NCCA project construction and other projects would be fairly limited. However, the NCCA projects themselves are both individual undertakings and components of a long-term program of improvements to the NCCA site. Thus, even without additional projects in the vicinity, these four projects would have the potential to result in combined cumulative effects on the environment, potentially both adverse and beneficial. Analysis therefore considered the individual projects' potential to (1) contribute to and (2) independently create cumulative impacts, as well as their combined potential to result, as a program, in new cumulative impacts.

Outcomes of Cumulative Impacts Analysis

Table 3-23 presents the cumulative impacts analysis and findings for the NCCA projects. AMMs referenced in Table 3-23 are presented in detail in Table 2-15.

Note that Table 3-23 omits the resources on which the NCCA projects have been found to have No Impact at the project-specific level (*Agriculture & Forestry Resources*, *Energy*, *Land Use & Planning*, *Mineral Resources*, *Population & Housing*, *Public Services*, and *Wildfire*). With No Impact, the NCCA projects would have no potential either to contribute to an existing Significant cumulative impact on these resources, or to create a new cumulative impact due to repeated activities over the long term, either individually or collectively.

The only projects anticipated in the NCCA vicinity are minor undertakings (single building permits) in the unincorporated County that would have very short construction periods and very limited potential for impacts (Maxey pers. comm.). As a result, cumulative impacts on all resource topices, if any, resulting from overlap between any of the NCCA projects and other reasonably foreseeable unrelated undertakings in the vicinity are expected to be Less than Significant. This topic is not discussed further, and no mitigation is required.

Potential for Substantial Adverse Effects on Human Beings

As described in Section 2 of this Initial Study, the City has committed to a suite of AMMs to avoid and reduce adverse environmental effects during construction and long-term O&M (Table 2-15). Additionally, as Table 3-22 above itemizes, the City has committed to mitigation measures that would reduce project-specific impacts that cannot be avoided through the AMMs to a Less than Significant level. The City will also implement mitigation measures at the cumulative level to address the potential for contributions to the Significant existing cumulative impacts with regard to mercury impairment and pesticide impairment in downstream receiving waters (Mitigation Measures C-1, C-2, and C-3; see Table 3-23). With all of these measures incorporated, the short- and long-term potential for the NCCA projects to result in adverse effects—either direct or indirect—on human beings would be Less than Significant. No additional mitigation is required.

Additionally, the NCCA—and the individual NCCA projects—were developed with the aim of providing specific benefits to the community and the environment, as laid out in the *Goals and Objectives* presented in Section 1 of this Initial Study. Based on analysis presented in the preceding sections of this checklist, the following

Table 3-23. Cumulative Impacts Analysis

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
Area Included	Rationale		Contribution to Existing Impact	Potential for New Impact	
Aesthetics					
General Plan Planning Area and immediate surrounds	Aesthetic values in incorporated areas are regulated at the local jurisdiction level, through the General Plan, Precise or Specific Plans, zoning ordinances, and other regulations and policies. Aesthetic character and quality can vary substantially between adjacent communities, and even within a single jurisdiction, depending on permitted land uses and the governing plan document(s), and aesthetics in each community exists in the context of that community as well as neighboring jurisdictions (in this case, portions of unincorporated Stanislaus and Merced Counties adjoining the Planning Area).	No. Aesthetic character and quality in the City (including the Sphere of Influence and larger Planning Area) are controlled and maintained through the General Plan (City of Newman 2007) and zoning ordinance, which provide Goals, Policies, Actions, and standards aimed at maintaining community character and aesthetics. Aesthetics in adjacent areas of unincorporated Stanislaus and Merced Counties are controlled by the Counties' respective General Plans (County of Merced 2013, County of Stanislaus 2015) and zoning ordinances.		■	<u>Individual Potential to Create or Contribute to New Impact</u> Lands surrounding the NCCA site are currently zoned and planned for agricultural use. The following discussion assumes that agricultural uses would continue in the site vicinity, but allows for the potential that zoning could change in the future, such that construction related to new development replaces agricultural activity on some neighboring parcels. The planned water service extension would have No Impact over the long term on visual resources, other than enabling some of the Benefits associated with the NEWS project. As a result, it is discussed below only when relevant. *Construction Period and Visual Recovery.* All of the NCCA projects would require vegetation removal, some degree of grading, and construction staging/laydown, which would result in visual changes some viewers may experience as adverse, potentially representing Significant impacts at the project-specific level. Additionally, if construction of any of the NCCA projects were to overlap with construction on nearby parcels, total visual disturbance would be amplified and could represent a Significant cumulative impact. All of this would also be true for water service extension. However, as described in the *Aesthetics* section of this checklist, the City has committed to mitigation measures to reduce the visual impacts of construction at the NCCA site and provide the community with a way of reporting any aesthetic concerns and ensuring that reasonable measures are implemented to correct the problem. With measures AES-1 (*Construction Site Housekeeping and Visual Screening*) and AES-2 (*Visual Disturbance Coordinator*) in place, project-specific visual impacts during the construction period would be reduced to a Less than Significant level, and each project's construction-period contribution to potential cumulative impacts would be controlled, rendering it Less than Cumulatively Considerable. Following construction, each of the NCCA projects would undergo a visual recovery period while new plantings become established, transitioning to the project's final, mature appearance. During this period, visual disturbance would be substantially reduced from that experienced during construction since earthwork would be complete, heavy equipment would no longer be active on the site, and there would be no need for materials staging, and the appearance of the completed project site would be neat, orderly, and generally consistent with the cultivated character of surrounding agricultural lands. As a result, visual changes during the recovery/establishment period are not expected to substantially affect the visual intactness or unity of views in the vicinity of the site, and some viewers may experience the addition of water features at the NEWS and MDTW projects and tree plantings at the NEWS and wetland projects as Benefits to the vividness of area views. Recovery period conditions associated with water service extension Option 2 would be similar, and although it would not independently result in visual Benefits, it would enable Benefits associated with the NEWS project. The individual projects' recovery period contributions to potential cumulative impacts associated with overlapping construction periods are therefore evaluated as Less than Cumulatively Considerable and potentially Beneficial. No additional mitigation is required at the cumulative level, and no further analysis is warranted. *Long Term.* Once the projects become fully established, their appearance would be relatively stable. As green, vegetated areas, the footprints of the NEWS, wetland, and MDTW projects would be generally consistent with surrounding agricultural lands, and farther to the east, with natural areas along the San Joaquin River corridor. Repeated activities associated with the projects would be limited to routine O&M and the presence of visitors enjoying the new amenities. The small numbers of vehicles and staff onsite for O&M at each of the projects would not be visually out of place in an actively cultivated agricultural area, and even the infrequent presence of heavy equipment for sediment removal in the NEWS and MDTW project forebays would be consistent with activity on neighboring parcels. The routine presence of visitors and their vehicles would add a new visual element but would be largely screened from offsite viewers by vegetation, including trees planted along Canal School Road and in the gateway area by the NEWS project and plantings around the Newman Nature Park parking area (see Figures 2-5 and 2-7). As a result, neither long-term O&M nor visitor activity at the individual NCCA projects is expected to result in material visual disturbance. New cumulative impacts, if any, related to ongoing O&M and use of the individual NCCA projects are expected to be Less than Significant, and contributions to larger cumulative impacts on visual resources in the site vicinity, if any, are expected to be Less than Cumulatively Considerable. No mitigation is required at the cumulative level, and no further analysis is warranted.

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
Area Included	Rationale		Contribution to Existing Impact	Potential for New Impact	
					Program Potential to Create or Contribute to New Impact *Construction Period and Visual Recovery*. Depending on the availability of funding, there is some potential that more than one of the NCCA projects could be under construction at the same time, and water service extension would likely be coordinated with construction of the NEWS project and/or Newman Nature Park. If so, visual impacts of construction would be more extensive, and would represent a cumulative effect. The contribution to a larger cumulative impact would also be greater, if multiple NCCA projects overlap with construction on nearby parcels. However, the same mitigation measures (AES-1 and AES-2) would be in effect to reduce visual disturbance, decreasing both the cumulative impact of constructing more than one NCCA project at the same time and the projects' combined contribution to larger effects. Additionally, with multiple projects at the NCCA constructed at once, the total duration of visual disturbance would be reduced. As a result, potential cumulative impacts associated with constructing multiple NCCA projects during the same window are expected to be Less than Significant, and the contribution to a larger cumulative impact would be Less than Cumulatively Considerable. No additional mitigation is required at the cumulative level, and no further analysis is warranted. *Long Term.* As each NCCA project is completed, the level of O&M activity at the site would increase, incrementally increasing the number of vehicle visits to the site, and the number of staff intermittently present. Visitor use is also expected to increase as the NCCA becomes increasingly established and well known in the community. The potential for visual disturbance would therefore amplify as each project is added to the site. As identified above on a project-specific level, however, activity and usage would still be limited, and the maximum level of activity and usage would still be generally consistent with agricultural activity on surrounding parcels. Additionally, as identified above on a project-specific level, activity and vehicles would be increasingly screened by tree plantings along Canal School Road, in the NEWS project gateway area, and around the Newman Nature Park parking area. As a result, long-term cumulative impacts related to O&M and visitor presence and activity at the NCCA are evaluated as Less than Significant. No mitigation is required at the cumulative level, and no further analysis is warranted.
Air Quality					
San Joaquin Valley Air Basin	California's air basins are defined based on a combination of political, geographic, and meteorological criteria (California Air Resources Board 2012, 2018) to include both source and receptor areas for pollutant emissions. Addressing cumulative air quality impacts in a basinwide context supports comprehensive analysis.	Yes. The SJV Air Basin is currently in Extreme Nonattainment of federal standards for ozone, and in Nonattainment of state ozone standards and federal and state standards for PM2.5. Each Nonattainment status represents a Significant existing cumulative impact on air quality.	■		Air quality degradation is an inherently cumulative impact since it represents the contributions of multiple projects and multiple pollutant sources over time. Analysis in the *Air Quality* section of this checklist is therefore also inherently cumulative. No further analysis is warranted, and no mitigation is required.
Biological Resources					
Western San Joaquin Valley region	The location, nature, and extent of biological and jurisdictional habitat resources are controlled by physiography and climate, with a secondary overprint resulting from human influences via patterns of land development. As a result, habitats and patterns of species use at and around the NCCA site are interconnected with the larger mosaic in the western San Joaquin Valley region, necessitating analysis in a regional context.	Yes. Like many parts of California, the western San Joaquin Valley region has experienced substantial loss and degradation of natural habitats as a result of extensive agricultural use and localized urban expansion over the past 2 centuries. This represents a Significant cumulative impact at the landscape or habitat level. Additional Significant cumulative impacts at the species level are considered to exist where individual plant and wildlife species have been identified as qualifying for federal or state special status.	■	■	Contribution to Existing Impact As described in the *Biological Resources* section of this checklist, a number of state- and/or federally listed wildlife species (i.e., species subject to a Significant existing cumulative impact) have the potential to use habitat on the NCCA site. These include northwestern pond turtle, western spadefoot, giant garter snake (unlikely but not impossible), Tricolored Blackbird, Burrowing Owl, Northern Harrier, Yellow-billed Magpie, American badger (also very unlikely), and San Joaquin kit fox. Swainson's Hawk and Loggerhead Shrike have been observed on the site in recent months. One special-status plant species, Parry's rough tarplant, has also recently been documented on the site. Several other special-status plants (heartscale, crownscale, lesser saltscale, vernal pool smallscale, and San Joaquin spearscale) were not observed during protocol-level surveys conducted in the 2020 blooming season, but are conservatively assumed to have some potential to be present in subsequent years since they are known from the vicinity and the site offers suitable habitat. To address the potential for impacts to special-status species, the City has committed to a suite of AMMs that will be required both during construction of the NCCA projects and water service extension and also during ongoing O&M at the NCCA site once each project is completed. The AMM suite includes a provision for periodic reevaluation of site conditions and reassessment and updates of the AMMs to enable adaptive response as the habitat mosaic on the site changes with the implementation and maturation of each project. This would

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
Area Included	Rationale		Contribution to Existing Impact	Potential for New Impact	
					provide for long-term species protection under evolving conditions. Additional measures may be required by the resource agencies as conditions of the regulatory permits authorizing each project. If so, these will be incorporated into the AMM suite, becoming part of short- and long-term protection for species at the NCCA. The City has also committed to a mitigation measure (BIO-1) to address potential reductions in the Parry's rough tarplant population due to construction of the NEWS and wetland projects, which includes provisions for revegetated Parry's tarplant to be monitored, maintained, and protected as part of the wetland project, subject to DFW oversight. With these protections in place, impacts on all special-status species except Parry's rough tarplant were evaluated as Less than Significant at the project level, with a potential for Benefit to special-status plants, northwestern pond turtle, western spadefoot, giant garter snake, Tricolored Blackbird breeding, Swainson's Hawk breeding, Northern Harrier breeding, Loggerhead Shrike breeding, and overall use by Yellow-billed Magpie. Potential construction period impacts of the NEWS and wetland projects on Parry's rough tarplant were evaluated as Less than Significant with Mitigation Measure BIO-1 incorporated. Since impacts on special-status species and their habitats are inherently a contribution to a Significant cumulative impact, these same AMM protections and Mitigation Measure BIO-1 would ensure that the projects' individual short- and long-term contributions to existing impacts on listed and other special-status species are Less than Cumulatively Considerable. No additional mitigation is required at the cumulative level, and no further analysis is warranted. Over time, there may be some potential for additional listed or candidate species (which would also qualify as species subject to a Significant existing cumulative impact) to use the NCCA site, as habitat conditions change as a result of the NEWS, wetland, and MDTW projects. For this reason, the AMM suite was designed to be adaptive over time, such that it will not only maintain protection for species known to be present but will also be expanded to incorporate protective measures for any additional species identified as potentially present on the site in the future. With this adaptive provision in place, the potential for construction, O&M, and use of the NCCA projects to contribute to additional existing cumulative impacts on special-status species is expected to be Less than Cumulatively Considerable. No mitigation is required at the cumulative level, and no further analysis is warranted. <u>Individual and Program Potential to Create New Impact</u> At just over 100 acres, the NCCA site is small in the context of the western San Joaquin Valley. Ongoing O&M and visitor presence at the site is therefore extremely unlikely to result in cumulative impacts that would imperil species not already listed, either at the program (sitewide) level, or, even more unlikely, at the project-specific level. The NCCA projects, and the NCCA program as a whole, are therefore evaluated as having No Potential to create new cumulative impacts related to listing or regional decline of species not already affected in this manner. No mitigation is required at the cumulative level, and no further analysis is warranted.
Cultural Resources					
Western San Joaquin Valley region and greater California	The presence or absence of cultural resources is independent of current political boundaries, reflecting instead past patterns of land use combined with complex factors that control resource preservation and loss over time. For a more comprehensive and conservative analysis, cumulative impacts on these resources were therefore addressed in the context of the western San Joaquin Valley region and California as a whole rather than focusing exclusively on the immediate vicinity of the NCCA site or an area defined by current political boundaries.	Yes. Urban/suburban expansion has substantially modified the Native American cultural legacy in the western San Joaquin Valley region and throughout California in the past 200 years. This includes culturally important sites, culturally important plant and wildlife resources, and traditional cultural practices. This is considered a Significant cumulative impact with regard to loss of cultural resources.	■	N/A	<u>Contribution to Existing Impact</u> The NCCA site is not considered sensitive for archaeological resources, but, as in any area with a long history of human habitation, there may be a potential for unanticipated discoveries, potentially including human remains. To address this, the City has committed to several mitigation measures: CUL-2 (*Retention of On-Call Archaeologist*), CUL-3 (*Worker Awareness Training for Cultural Resources*), CUL-4 (*Evaluation and Treatment of Unanticipated Archaeological Discoveries*), and CUL-5 (*Procedures for Discovery of Human Remains*). These measures would reduce impacts consistent with the prevailing standard of care and applicable state law, and with them in place, impacts were evaluated as Less than Significant at the project-specific level. Potential contributions to the existing cumulative impact with regard to loss of the Native American cultural legacy are also evaluated as Less than Cumulatively Considerable. No additional mitigation is required at the cumulative level, and no further analysis is warranted. <u>Potential to Create New Impact</u> In the project region, this analysis does not apply to cultural resources, since a cumulative regional impact related to loss of cultural resources already exists. The NCCA projects' long-term incremental impacts on individual cultural resources, if any, would constitute contributions to the existing cumulative impact, rather than creating a new, separate cumulative impact. No further analysis is warranted.

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
Area Included	**Rationale**		**Contribution to Existing Impact**	**Potential for New Impact**	
Geology & Soils					
Western San Joaquin Valley region	The mosaic of permissable land uses—which relates directly to patterns of topsoil loss, and to the exposure of people and structures to seismic hazards—is regulated at the local jurisdiction level, but the impacts are felt both locally and regionally, at the landscape level. Accordingly, impacts related to soil resources and seismic hazards were considered in the regional context of the western San Joaquin Valley region.	*Topsoil loss/unavailability:* No. Progressive development in the western San Joaquin Valley has resulted in some loss and reduction in availability of topsoil, and extensive agricultural cultivation has disturbed native soil profiles. However, the San Joaquin Valley urban footprint remains comparatively small by comparison with many parts of California. Additionally, soils remain productive in the region, as demonstrated by the continued dominance of agriculture as a mainstay of the regional economy and the emphasis on agriculture in local jurisdiction planning documents (e.g., City of Newman 2007, County of Merced 2013, County of Stanislaus 2015). As a result, the existing cumulative impact with regard to topsoil loss is considered Less than Significant. No further analysis is warranted, and no mitigation is required at the cumulative level. *Seismic hazards:* Yes. Over time, progressive development of western San Joaquin Valley communitieshas has placed an increasing number of residents and structures, and an expanding infrastructure network at some level of risk of earthquake effects. Although this cumulative impact is arguably less than in other parts of the state (for instance, the Bay Area and Los Angeles County – Orange County regions, which are densely developed and traversed by numerous active faults), it is nonetheless considered Significant.	■ (seismic hazards)	■ (topsoil loss)	Contribution to Existing Impact – Exposure to Seismic Hazards As discussed in the *Geology & Soils* section of this checklist, all of the project elements added by the individual NCCA projects and the water service extension would be exposed to seismic groundshaking risk, and there is some potential they could be affected by seismically induced liquefaction. Where structures are involved—such as the pump station that may be added to the NEWS project, and the community facilities at the Newman Nature Park—there would be corollary risks that structural damage could result in injury to NCCA visitors and/or City staff. However, all NCCA project elements and facilities would be constructed in accordance with the City's adopted building code (the 2019 version of the CBSC), which includes extensive provisions for seismic safety. The City will also require a geotechnical investigation prepared by qualified staff for each of the NCCA projects. Consistent with prevailing engineering practice and building code requirements, the geotechnical investigations will, if appropriate, include additional site-specific recommendations[1] to address seismic risks. Although the potential for impacts cannot be entirely avoided, adherence to current City/CBSC design criteria and the recommendations of site-specific geotechnical investigations would ensure that seismic risks are minimized consistent with good engineering practices and the current prevailing standard of care. Residual impacts, if any, were evaluated as Less than Significant at the project-specific level, and contributions to the regional impact related to seismic hazard exposure are also considered Less than Cumulatively Considerable. No mitigation is required at the cumulative level, and no further analysis is warranted. Individual and Program Potential to Create New Impact – Topsoil Loss Ongoing O&M for each of the NCCA projects would include some activities that could result in disturbance or loss of topsoil. However, the purpose of O&M will be to keep each project functioning at its best, which puts a priority on minimizing topsoil disturbance and loss over the long term. Moreover, the City has committed to implement a mitigation measure (GEO-1, *Topsoil Protection*) with specific requirements to avoid and minimize loss of topsoil. This measure will be in effect for construction of each of the NCCA projects and for portions of the planned water service extension in vegetated areas, and will remain in effect for ground-disturbing O&M activities. With Mitigation Measure GEO-1 in place, impacts related to loss of topsoil were evaluated as Less than Significant at the project level, and contributions to cumulative regional loss of topsoil would also be Less than Cumulatively Considerable both for the individual NCCA projects and for the NCCA on a sitewide basis. No additional mitigation is required at the cumulative level, and no further analysis is warranted.
Greenhouse Gas Emissions					
San Joaquin Valley Air Basin	Analysis of cumulative impacts related to GHG emissions considered emissions within the project vicinity and SJV Air Basin, within the larger context of a globalized impact.	Yes. A growing scientific and regulatory consensus recognizes GHG as a cumulative long-term concern at the local, national, and worldwide scales.	■	N/A	Similar to air quality degradation, GHG levels are an inherently cumulative impact. GHG emissions are analyzed at a cumulative level in the *Greenhouse Gas Emissions* section of this Initial Study checklist; no further analysis is warranted, and no mitigation is required.

[1] Referred to in the industry as recommendations, these are actually binding requirements, as identified in the *Geology and Soils* section of this checklist.

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
Area Included	**Rationale**		**Contribution to Existing Impact**	**Potential for New Impact**	
Hazards & Hazardous Materials					
General Plan Planning Area and surrounds	Hazardous materials contamination reflects past and current land use patterns, as well as topographic, climatic, hydrologic, and soils-related factors. For a comprehensive assessment, analysis considered hazardous materials throughout the City's jurisdiction and in the immediate surrounding area.	No. Although the SWRCB's GeoTracker database (State Water Resources Control Board 2020) shows a number of known contaminated sites within and surrounding the Planning Area, all but one have been remediated and are in "Closed" status as of 2020. As a result, the vicinity of the NCCA sites is not considered to be subject to a Significant cumulative impact with regard to hazardous materials contamination.		■	<u>Individual and Program Potential to Create New Impact</u> As discussed in the *Hazards & Hazardous Materials* section of this checklist, both construction and O&M for all of the NCCA projects and the water service extension would involve the use of substances that qualify as hazardous materials as defined by the State of California, such as fuels, lubricants, paints, and—if Option 1 is selected for the water service extension—roadway paving and striping media. However, all such substances would be handled and disposed in strict accordance with good construction practices and applicable federal and state regulations; this is a standard City requirement. The City has also committed to implementing an AMM to protect water quality and habitat at the NCCA site (AMM-4,Table 2-15), which includes additional precautions to avoid and respond to spills, and the four NCCA projects are expected to require SWPPPs that may include further measures. With these protections in place, impacts related to hazardous materials use and handling during construction were evaluated as Less than Significant at the project-specific level. The potential for ongoing, repeated activities that involve hazardous substances to create a new long-term cumulative impact related to hazardous material contamination is also considered Less than Significant, both for the individual NCCA projects and sitewide, for the NCCA as a whole. No mitigation is required at the cumulative level, and no further analysis is warranted.
Hydrology & Water Quality					
Bennett Valley – San Joaquin River watershed and downstream receiving waters	*Surface Water.* The NCCA site is located in the Bennett Valley – San Joaquin River watershed. Contributions to existing cumulative impacts on surface drainage and surface water quality would be limited to the NCCA site vicinity and downstream receiving waters, which include the Newman Wasteway, San Joaquin River, and portions of the Sacramento – San Joaquin Delta, Suisun Bay, and San Francisco Bay. *Groundwater.* The NCCA site overlies the Delta-Mendota Groundwater Subbasin of the San Joaquin River Groundwater Basin. Contributions to cumulative impacts on groundwater supply and quality would be limited to the subbasin.	*Surface Water.* Yes. As detailed in Table 3-13, the Newman Wasteway and San Joaquin River have been identified as impaired for numerous pollutants. Additional impairments have been identified in waters farther downstream. Each of these impairments, which is the result of inputs from multiple sources over time, represents a Significant existing cumulative impact. Well-documented bioaccumulation of methylmercury in the regional food web also represents a Significant existing cumulative impact. *Groundwater.* Yes. The Delta-Mendota Subbasin is designated as critically overdrafted by the state Department of Water Resources (2020). The condition of overdraft is considered to represent a Significant existing cumulative impact. Additionally, groundwater in the Delta-Mendota Subbasin shows elevated levels of nitrate, arsenic, hexavalent chromium, selenium, total dissolved solids (TDS), sulfate, chloride, and boron, which must be addressed for municipal potable use. Groundwater from the lower aquifer also locally exhibits elevated iron, manganese, and hydrogen sulfide concentrations, and high pH and sodium adsorption ratios that can pose challenges for irrigation use (Kenneth D. Schmidt & Associates 2019). Although some of these constituents are naturally occuring rather than a result of human activity, this is nonetheless	■	■	<u>Contribution to Existing Impacts</u> *Surface Water Quality.* Existing water quality impairments (Significant cumulative impacts to water quality) identified for the Newman Wasteway include dissolved oxygen, fecal indicator bacteria, salinity, the pesticides chlorpyrifos and DDE, and the herbicide simazine. Chlorpyrifos is attributed to agricultural use, while the sources of the other pollutants are unknown (State Water Resources Control Board 2016). Existing water quality impairments for the San Joaquin River at and downstream of the confluence with the Newman Wasteway include boron, electrical conductivity, fecal indicator bacteria, low dissolved oxygen, mercury, selenium, specific conductivity, total dissolved solids, toxicity, water temperature, Group A pesticides, additional pesticides including alpha-benzenehexachloride (alpha-BHC), chlorpyrifos, DDE, DDT, diazinon, and toxaphene, as well as the herbicide diuron (see Table 3-13 for details by reach). Sources of the majority of these pollutants are unknown, although diuron is attributed to agricultural use (State Water Resources Control Board 2016). The following paragraphs discuss the NCCA projects' individual and collective potential for contributions to these existing Significant cumulative impacts, and related Benefits. Since the Newman Nature Park would not offer direct water quality treatment, it is only addressed where relevant. However, as the *Hydrology & Water Quality* section of this checklist describes, the Nature Park would offer public education components related to water quality issues and watershed health, and would provide tools and techniques for water quality improvement that can be used at area homes and businesses. This was evaluated as an indirect long-term Benefit to area water quality at the project-specific level, and is also considered a Beneficial contribution with regard to cumulative water quality degradation in the Newman area and downstream. *Boron and Selenium.* Boron is an essential micronutrient. It is taken up by plants but does not biomagnify in the food web, and can be removed in treatment wetlands by sorption to metal oxides, clays, calcareous minerals (such as pedogenic carbonates or caliche), and accumulated peat (Beutel pers. comm.[a]). Boron removal has not been modeled for the NEWS and MDTW projects, but both projects are expected to reduce boron levels in discharged waters. With increased extent and functionality of wetlands at the NCCA site, this would likely represent a Beneficial contribution to downstream impairments for boron by comparison with existing conditions. Selenium is also taken up by plants, and unlike boron, can bioaccumulate and biomagnify in the food web in its oxidized and organic forms. However, anoxic conditions in wetland environments foster the formation of insoluble reduced forms of selenium, which does not bioaccumulate or biomagnify (Beutel pers. comm.[a]). As a result, enhanced and created wetlands at the NCCA site are expected to act as a sink for selenium, representing a potential Benefit to selenium levels in downstream receiving waters. *Mercury.* As mentioned in the *Hazards & Hazardous Materials* section of this checklist, mercury was a key component in historic Gold Rush ore refining operations, resulting in extensive mining and the deposition and subsequent downstream transport of mercury-bearing tailings and wastes in California waterways. More recently, both native mercury (quicksilver) and mercury ores such as cinnabar have continued to be extracted for their economic applications, although use has been decreasing due to concerns about

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
Area Included	Rationale		Contribution to Existing Impact	Potential for New Impact	
		conservatively considered a Significant cumulative impact.			toxicity. Mercury also occurs as a byproduct of fossil fuel combustion and accumulates at the surface due to atmospheric deposition (e.g., Central Valley Regional Water Quality Control Board 2015). Mercury occurs in several forms in the environment. In aquatic settings it may occur in solution, but because it is extremely hydrophobic it is more commonly present in a colloidal state or bound to particulate matter. Mercury may also react to form toxic organic compounds such as monomethylmercury (CH_3Hg+), commonly referred to as methylmercury. Mercury methylation typically occurs due to bacterial activity at or near the sediment-water interface, although methylation may also occur in anoxic waters. Because methylmercury is largely produced by anaerobic sulfate-reducing (and, to a lesser extent, iron-reducing) bacteria, anoxic conditions tend to foster mercury methylation (California Water Boards Statewide Mercury Program 2017). Methylmercury in particular has become a substantial concern statewide because it is toxic and highly bioaccumulative and tends to concentrate "up the food chain," with concentrations increasing at higher trophic levels (e.g., Wiener et al. 2003, Central Valley Regional Water Quality Control Board 2015). Both the NEWS project and the MDTW project would depend in part on local development of low-oxygen or anoxic conditions for water treatment; bacterial denitrification requires anoxic conditions, and as identified above, such conditions would also be beneficial for selenium removal. Anoxic conditions could also develop in deeper portions of the emergent marsh expanded by the wetland project. Consequently, to the extent that mercury is present in the system at the NCCA site, or in input waters, there is potential for mercury methylation to occur. Unfortunately, although the San Joaquin River between Mud Slough and the Merced River confluence is identified as impaired for mercury (State Water Resources Control Board 2016; see Table 3-13), there is very little information currently available on mercury levels in sediments or waters in the immediate Newman area (see California Environmental Data Exchange Network 2020). However, samples from the immediate NCCA vicinity were recently collected and analyzed by the UC Merced team; results are presented in Table C-1 and sampling locations are shown on Figure 3-5. **Table C-1. Total Mercury Content in Water, Sediment, and Soil, NCCA Vicinity** | Location | Total Hg, Water[a] | Total Hg, Sediment[b] | Total Hg, Soil[b] | |---|---|---|---| | MD1A | 9.34 ng/l | 77.0 µg/kg | 70.6 µg/kg | | MD1B | 6.77 ng/l | 126.6 µg/kg | 115.0 µg/kg | | MD1B Far | — | — | 60.5 µg/kg | | MD2B | 7.08 ng/l | 97.7 µg/kg | — | Notes: [a] EPA Method 1631 [b] EPA Method 7473, values reported as dry weight; sediment samples collected in Miller Ditch at same locations as corresponding water samples, soil samples collected from terrestrial landscape 10 – 20 meters from corresponding water/sediment sample locations, except for MD1B Far (see Figure 3-5) *Source: Beutel pers. comm.[b]* As shown in Table C-1, mercury concentrations in four of the six sediment/soil samples are well below the 0.1 mg/kg dry weight threshold at which levels are considered elevated[2] (State Water Resources Control Board 2017a) and further action is typically triggered, and mercury levels in Miller Ditch waters are below the 12 ng/l threshold applicable for municipal wastewater and industrial

[2] As identified *in Hazards & Hazardous Materials*, the SWRCB (2017a) recognizes a naturally *mercury-enriched region* where California's principal deposits of mercury ores occur, in contrast to *trace mercury areas* where ambient mercury levels are not naturally elevated by geologic conditions. In trace mercury areas, typical background levels of mercury in soils and sediments range from 0.05 to 0.1 mg/kg; in the mercury-enriched region, naturally occuring mercury levels typically exceed 0.1 mg/kg and may be as high as 0.3 mg/kg.

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
Area Included	Rationale		Contribution to Existing Impact	Potential for New Impact	
					discharges and considered protective of human health and the food web in flowing water bodies by the SWRCB (2017b). However, both sediment and soil at one location (MD1B on Figure 3-5) exceeded 0.1 mg/kg total mercury (dry weight). Increased offsite delivery of sediment-bound mercury as a result of the NCCA projects is not anticipated, since the NEWS and MDTW projects would Benefit downstream sediment delivery and the wetland and project and Newman Nature Park would not increase it (see discussion in *Increased Erosion or Siltation* under *Potential to Alter Existing Drainage Patterns*, *Hydrology & Water Quality* section of this checklist). Additionally, both the NEWS and MDTW projects are expected to reduce downstream delivery not only of coarser sediment load but also of the fine sediment fraction that is likely of greatest concern for mercury contamination, due to settlement in the forebays, followed by additional settlement in wetland areas, and—at the NEWS project—final polishing in the micropool. However, the NEWS, MDTW, and wetland projects are all considered to have some potential to result in increased mercury methylation. Mercury methylation may be occurring in wetlands onsite under existing conditions, and in the Miller Ditch, but since all three projects would increase the extent of wetlands, they could increase total mercury methylation sitewide, both individually and collectively. Although elevated nitrate levels have been shown to decrease mercury methylation (e.g., Beutel et al. 2017), it is not clear that this would be sufficient to offset the potential for increases in methylation due to implemenation of the NEWS, wetland, and/or MDTW projects. As a result, both the NEWS project and—to the extent it discharges offsite—the MDTW project are considered to have the potential to increase offsite (downstream) delivery of methylmercury, and all three projects could increase bioaccumulation of methylmercury at the NCCA site. Identifying the level at which such increases would become cumulatively considerable is difficult because it must take context and feasibility into consideration. Ideally, the water column in slow-moving water bodies such as marshlands should contain no more than 4 nanograms per liter (ng/l) total mercury; this is the level identified as protective of human and environmental health by the SWRCB's current Statewide Mercury Provisions (State Water Resources Control Board 2017b). As identified above, in flowing municipal wastewater and industrial discharges to receiving water bodies with designated Community, Cultural, Wildlife, Marine, and Rare beneficial uses, the water column can contain up to 12 ng/l without adverse effect on human health or higher trophic levels in the food web (State Water Resources Control Board 2017). Potential to result in exceedance of 4 ng/l in wetlands at the NCCA site or 12 ng/l in receiving waters could be considered the threshold at which a project's individual and collective contributions to mercury impairment become cumulatively considerable. However, achievement of the 4 ng/L target likely will not be practicable, due to preexisting levels of mercury in input waters, which meet the 12 ng/L standard for flowing waters but exceed the 4 ng/L standard applicable to slow-moving or standing waters. Thus, although the 4 ng/l and 12 ng/l thresholds provide useful guidance, and represent highly desirable targets, because of the baseline level of mercury contamination, the site-specific focus for each NCCA project must—pragmatically—be on minimizing onsite and downstream contributions to existing impairments to the extent feasible, taking into account existing mercury levels at the project site. Moreover, the SWRCB has identified that wetland and restoration projects should not be prevented due to mercury concerns (State Water Resources Control Board 2017c; see discussion in Section 6.10). In this context, recognizing that there may be some potential for the NCCA projects to (1) result in a cumulatively considerable contribution to the existing Significant impact related to impairment of downstream waters for mercury, (2) contribute to existing regional levels of mercury bioaccumulation, and/or (3) over time, collectively result in a new Significant cumulative impact related to mercury bioaccumulation at the NCCA site, the City will implement the following measures. With Mitigation Measures C-1 and C-2 in place, the NCCA projects' contribution(s), both individually and collectively, to existing downstream impairments for mercury would be reduced to the extent feasible, consistent with current RWQCB practices, and would be under ongoing oversight by the RWQCB. The projects' individual and collective potential to contribute to existing levels of mercury bioaccumulation, and to create a new localized cumulative impact with regard to mercury bioaccumulation, would also be reduced to the extent feasible. Additionally, under Mitigation Measure C-2, the NEWS, wetland, and MDTW projects stand to provide a Benefit to understanding of mercury presence and cycling in constructed and restored San Joaquin Valley wetlands. Residual contributions, and residual impacts, if any, are considered Less than Cumulatively Considerable and Less than Significant respectively. No further analysis is warranted.

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
Area Included	Rationale		Contribution to Existing Impact	Potential for New Impact	
					Mitigation Measure C-1. Pre- and Post-Construction Soil Testing for Mercury Prior to construction of the NEWS, wetland, and MDTW projects, the City will conduct further testing to characterize mercury levels in soils involved in project earthwork. Samples will be collected from at least 3 locations within each proposed habitat type within each project footprint. Soil testing will also be conducted in the footprint of the Newman Nature Park, with samples collected from at least 3 locations within each area planned for earthwork and/or future public use. At each location within each project, samples from surface, mid-depth, and maximum anticipated depths of excavation will be collected. Sample locations will be areally distributed to maximize coverage, and sample locations at the NEWS, wetland, and MDTW projects will be coordinated with RWQCB staff and subject to RWQCB approval. Sample collection will conform to Chapter 3 (*Inorganic Analytes*) of EPA's SW-846 Compendium. Testing will conform to EPA Method 7473. Site soils found to exceed the 0.1 mg/kg total mercury (dry weight) threshold will be removed from the site and disposed of appropriately, consistent with all applicable state and federal protocols. Alternately, they may be separately stockpiled for onsite reuse in lower fill lifts that will not be exposed at the surface and will not be subject to surface water flow or ponding when the project is complete. If soils are stockpiled for reuse, stockpiles will be covered and soils will be watered during placement, to prevent the generation of fugitive dust with elevated mercury levels, and runoff control will be in place to prevent offsite transport. Appropriate personal protective equipment will be required for all construction-site personnel working with or potentially exposed to these soils, consistent with any applicable California state requirements. At the NEWS, wetland, and MDTW projects, once construction is complete, and before new water flows are introduced to the project, at least one soil sample will be collected and analyzed from each habitat type/land use within the project footprint (including wetland habitat, uplands, and—if any—access roadways and parking area). At the Newman Nature Park, at least one sample will be collected within each public use area that has exposed soils (i.e., is not paved or surfaced); multiple samples will be collected from each trail, covering and characterizing the length of the trail. Sample locations at the NEWS, wetland, and MDTW projects will be coordinated with RWQCB staff and will be subject to RWQCB approval, and sampling and analysis protocols will be the same as those identified above. The purpose of this second round of analysis will be to verify that all surface-exposed soils and soils exposed to surface water flow or ponding are below the 0.1 mg/kg total mercury (dry weight) threshold. If this is confirmed, no further action with regard to soils will be required. If any soils are found to exceed the 0.1 mg/kg total mercury (dry weight) threshold, remedial action will be taken. Remedial action at the NEWS, wetland, and MDTW projects will be coordinated with RWQCB staff and a remedial action plan will be submitted to the RWQCB and must be approved by the RWQCB before action is taken. At all of the projects, remedial actions may include, but will not necessarily be limited to, the following: capping with clean imported fill verified to contain levels below the 0.1 mg/kg total mercury (dry weight) limit, removal, appropriate disposal, and replacement with clean imported fill verified to contain levels below the 0.1 mg/kg total mercury (dry weight) limit, or—where feasible without impeding the function of the project—capping with rock or permeable paving media. At all four NCCA projects, unless preconstruction soil testing has shown that soils within the project footprint are consistently below the 0.1 mg/kg total mercury threshold throughout the site, future modifications requiring earthwork in areas not previously disturbed by construction will be subject to the same testing and remedial action requirements laid out for construction. **Mitigation Measure C-2. Aqueous Mercury Monitoring and Management** Following construction completion at the NEWS, wetland, and MDTW projects, the City will conduct testing for aqueous methylmercury levels in input, onsite, and effluent waters. Testing will be initiated once vegetation is established and each project is determined by the design team or other appropriately qualified personnel to be functioning at a mature level. Samples will be collected from the following locations. • NEWS project: Miller Ditch input to project, at least one location within each wetland cell within project, micropool, discharge to Miller Ditch • Wetland project: Miller Ditch input to project, at least one location within each wetland habitat type on 78-acre parcel, at least one location within each wetland habitat type on 24-acre parcel

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
Area Included	Rationale		Contribution to Existing Impact	Potential for New Impact	
					• MDTW project: Miller Ditch input to project, at least one location in each wetland cell within project, discharge from project Sample collection will follow EPA Method 1669 or updated EPA equivalent. Samples will be analyzed consistent with EPA Method 1631 or updated EPA equivalent. Sample locations will be coordinated with RWQCB staff and will be subject to RWQCB approval. The goal of sampling and analysis will be to show that wetlands on the NCCA site are not increasing methylmercury above input levels. Testing and analysis will be conducted each year for a minimum of 3 consecutive years. If the methylmercury level in any of the tested samples is found to substantially exceed the level in input waters to the project (as determined by the City in consultation with RWQCB staff), corrective action will be taken. A corrective action plan will be submitted to RWQCB staff for review and feedback, and may include, but will not necessarily be limited to, the following: managing wetland inputs seasonally, managing wetland throughput to modify residence times, and capping of bottom sediment in the location producing exceedance. If/when sampling has shown that NCCA wetlands are not increasing methlymercury above input levels over 3 consecutive years of testing, no further action with regard to aqueous methylmercury will be required. To enable the NCCA projects to contribute to long-term increased understanding of mercury cycling in enhanced and restored wetlands, the City will provide the RWQCB with annual reports describing that year's (1) sampling and analysis activities, (2) results, and (3) corrective actions implemented, if any. Activities and results will be detailed on a project-specific basis, but monitoring reports for all three projects may be combined for efficiency. *Dissolved Oxygen.* Constructed wetlands at both the NEWS and MDTW projects are expected to develop low-oxygen or anaerobic areas, analogous with natural wetlands of similar size. This is positive, since removal of nitrate—the denitrification process, with bacterial reduction of nitrate ions resulting in inert molecular nitrogen—depends on low-oxygen conditions (e.g., Rodal Morales and Beutel 2020a). The wetland areas would not be uniformly low-oxygen, however, and movement of water between wetland cells, and from the project footprints to offsite receiving waters, would foster re-oxygenation. Contributions of the NEWS and MDTW projects to downstream impairment for low dissolved oxygen levels are therefore expected to be Less than Cumulatively Considerable. No mitigation is required at the cumulative level, and no further analysis is warranted. *Fecal Indicator Bacteria.* Depending on their ecology, treatment wetlands may act as either sources or sinks of fecal bacteria, but in general, when inflow bacterial concentrations exceed a level about 1,000/100 milliliters (anticipated following storm events), removal is expected (Beutel pers. comm.[a]). Additionally, a recent study suggests that fecal coliform removal in treatment wetlands correlates at least weakly with removal of turbidity, implying that sediment settlement is an important mechanism for fecal coliform removal (Beutel et al. 2013). This further suggests that forebays will be important in removing fecal coliform delivered to the NEWS and MDTW projects. Based on modeling summarized in the *Hydrology & Water Quality* section of this checklist (see Tables 3-14 and 3-15) and detailed in Appendix E, the NEWS project is expected to remove about 72% of the fecal indicator bacteria load delivered by the 85th percentile 24-hour storm event and 58% of inflow fecal indicator bacteria loading on annual average. Removals would likely be broadly similar in the MDTW project. Both of these projects are therefore expected to have a Beneficial effect on fecal indicator bacteria loading delivered to the Miller Ditch, San Joaquin River, and receiving waters farther downstream. No mitigation is required at the cumulative level, and no further analysis is warranted. The wetland project would not discharge offsite. As a result, it has No Potential to contribute to (or to directly Benefit) existing downstream impairments for fecal indicator bacteria. No mitigation is required at the cumulative level, and no further analysis needed. Considered as an aggregated program, the NCCA projects are expected to result in substantial reduction of fecal indicator bacteria loading delivered offsite. This would be due in part to fecal coliform removal at the NEWS and MDTW projects, discussed above. Additionally, although grazing use is likely to continue on the project, substantially less acreage would be available for grazing with all of the projects implemented. Grazing would be restricted primarily or entirely to the wetland project footprint, where it would be strictly managed for wetland health. This would probably mean a reduction in number of animals present. Seasonal restrictions are also likely. Grazing is likely to be excluded from the central swale at least seasonally, and cattle would no longer have access to the ditch along the south boundary of the 78-acre parcel because it would be incorporated into the MDTW project, conveying inflow from the Miller Ditch to

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
Area Included	Rationale		Contribution to Existing Impact	Potential for New Impact	
					the forebay. Reducing cattle access to open water would further reduce the potential for delivery of fecal indicator bacteria offsite, as would discontinuing the current regime of flood irrigation (Foss pers. comm.). The combined contribution of the four NCCA projects to downstream impairments for fecal indicator bacteria would thus be Beneficial. No mitigation is required at the cumulative level, and no further analysis is warranted. *Pesticides.* Construction is not expected to make use of either pesticides or herbicides, but there is some potential for limited use of pesticides and herbicides during O&M, particularly at the Newman Nature Park. Some of the pesticides for which the Newman Wasteway and/or San Joaquin River have been identified as impaired have been banned in the United States, most for several decades. These include benzene hexachloride and its isomers, DDT, and toxaphene (Colorado Environmental Pesticide Education Program 2006, Agency for Toxic Substances and Disease Registry 2020). DDE, although chemically related to DDT, has no commercial use (Agency for Toxic Substances and Disease Registry 2020). As a result, there is no potential for these substances to be used in any capacity at the NCCA. However, use of other pesticides and herbicides could contribute to the existing identified impairments for these substances in the Newman Wasteway and San Joaquin River. To address this concern, the City will implement the following mitigation measure. With Mitigation Measure C-3 incorporated, the NCCA projects' contributions to existing identified impairment for pesticides in the Newman Wasteway and San Joaquin River would be reduced to a Less than Cumulatively Considerable level. No additional mitigation is required, and no further analysis is warranted. **<u>Mitigation Measure C-3. Integrated Pest Management and Limited Use of Chemical Pesticides</u>** Pest and invasive species control at the NCCA—whether conducted by City staff or by contractor(s) retained by the City—will emphasize Integrated Pest Management (IPM) practices consistent with prevailing best practices and current guidance of the Integrated Pest Management Institute of North America. The City's Public Works Department will be responsible for ensuring that IPM is the go-to standard operating procedure for the NCCA. Use of chemical pesticides and herbicides will be avoided to the extent practicable at the NCCA while maintaining habitat function and quality and appropriate public recreation values. Pesticides and herbicides for which impairments have been identified in immediate downstream receiving waters (the Newman Wasteway and San Joaquin River) will not be used under any circumstances. As of 2021, prohibited substances are Group A pesticides, chlorpyrifos, diazinon, diuron, and simazine, in addition to all substances banned in the United States. The City's Public Works Department will be responsible for reviewing the State Water Resources Control Board's Clean Water Act Section 303[d] list as it is updated and ensuring that if additional pesticide or herbicides impairments are identified in the Newman Wasteway or San Joaquin River downstream of Mud Slough, these substances are added to the list of substances prohibited at the NCCA. *Pollutant Remobilization.* In addition to direct delivery of pesticides as a result of O&M, ground disturbance associated with both construction and O&M at the NCCA projects could mobilize contaminants potentially contained within soils at the site. If runoff from disturbed areas is not properly contained, these could be delivered to adjacent reaches of the Miller Ditch or transported by overland runoff, in either case potentially reaching the Newman Wasteway, San Joaquin River, and receiving waters farther downstream. There would thus be some potential for ground disturbance to contribute to existing impairments for pesticides, herbicides, fecal indicator bacteria (due to animal wastes), generalized toxicity, and possibly also mercury, salinity, selenium, and conductivity. However, as described in Section 2 (see Table 2-15) and the *Hydrology & Water Quality* section of this checklist, the City has committed to an AMM to protect water quality, which includes provisions for erosion and runoff control. This AMM will be in force during construction of each NCCA project and will continue to be required for all ground-disturbing O&M activities at the NCCA. Additional conditions may be required by the resource agencies as conditions of the permits authorizing the NCCA projects. With these protections in place, the NCCA projects' potential to contribute to these additional identified impairments as a result of ground disturbance—both individually and collectively—would be controlled to a Less than Cumulatively Considerable Level. No mitigation is required at the cumulative level, and no further analysis is warranted. *Salinity and Related Factors.* As discussed in the *Hydrology & Water Quality* section of this checklist, constructed treatment wetlands typically increase salinity somewhat as water in wetland cells evaporates and is taken up by vegetation. Evapotranspiration rates, and resulting increases in salinity, depend on a variety of factors, including wetland configuration, type and density of vegetation, ambient temperature, and relative humidity. Salinity increases between inflow and outflow at the MDTW are expected to be on the order of 10%

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
Area Included	Rationale		Contribution to Existing Impact	Potential for New Impact	
					on annual average, with slightly higher values in the warm dry months of summer and early fall, and lower values in winter and early spring (Beutel pers. comm.[a], Rodal Morales and Beutel 2020). Values are expected to be similar for the NEWS project. Both projects would therefore deliver treated water with a slightly higher salinity than the untreated inflow they receive. The SWRCB's limits on salinity in potable water supply—which are consistent with salinity WQOs for waters carrying the domestic or municipal supply use ("MUN") designation established by recently adopted Basin Plan amendments (Central Valley Regional Water Quality Control Board 2020)—were used to assess project-specific impact severity in the absence of WQOs for salinity specific to immediate downstream receiving waters. The salinity of outflows from the MDTW would be well within the limits established by the SWRCB for potable water supply. NEWS project outflows could periodically exceed the SWRCB's upper salinity for potable water supply, but are expected to be below both the recommended and upper limit salinity thresholds on annual average. Based on compliance with potable water standards, which should be relatively protective of most beneficial uses, impacts related to offsite delivery of waters with (slightly) increased salinity were evaluated as Less than Significant on the project-specific level. As shown in Table 3-13, waters immediately downstream of the NCCA site have identified impairments for factors related to salinity: the Newman Wasteway is identified as impaired for salinity, and the San Joaquin River between Mud Slough and the Merced River confluence is identified as impaired for electrical conductivity. Reaches of the San Joaquin River farther downstream (Merced River to Tuloumne River, Tuolumne River to Stantislaus River) are also impaired for conductivity. Various waterways within the Sacramento – San Joaquin Delta are also identified as impaired for conductivity, total dissolved solids, and/or chloride, again all aspects of salinity (State Water Resources Control Board 2016). No TMDLs are currently in place for any of these identified impairments and sources of salinity have not been specifically identified, although a review of the current Section 303[d] list of impaired water bodies shows multiple tributaries delivering elevated-salinity input to the San Joaquin River (State Water Resources Control Board 2016). In this context, salinity inputs from the Newman Wasteway are only one of many sources. Moreover—and more importantly—outflows from the NEWS and MDTW projects would be in compliance both with state salinity limits for drinking water supply and with the recently adopted Basin Plan WQOs for water bodies carrying the MUN designation. WQOs in particular are established in a cumulative context, taking into account the effect of multiple inputs into a watershed system, and with the goal of protecting uses both in and downstream of a water body. Accordingly, based on compliance with WQOs, potential increases in NEWS and MDTW project outflow salinities are evaluated as a Less than Cumulatively Considerable contribution to downstream impairments for salinity and related factors. No mitigation is required at the cumulative level, and no further analysis is warranted. *Groundwater Supply*. As discussed in the *Hydrology & Water Quality* section of this checklist, both construction and routine O&M would use City water supply, which is entirely reliant on groundwater at this time. However, usage would be limited and comparatively short-term for construction and temporary post-construction irrigation of plantings, and even more limited and intermittent for O&M. Some water would also be used on an ongoing basis at the Newman Nature Park hydration station, handwashing sinks, and for irrigation. The City's water supply planning takes typical construction as well as municipal O&M into account, however, and the anticipated level of usage is not expected to impede sustainable groundwater management. Additionally, the NEWS and wetland projects are expected to increase net infiltration of surface water into the shallow subsurface over the long term. The MDTW project would decrease recharge of shallow groundwater within its footprint, but would discharge to the central swale, where infiltration would occur. On balance, as discussed in the section of this checklist, these three projects are expected to increase groundwater recharge at the NCCA site. The Newman Nature Park would not increase infiltration, but also—because of the use of permeable media in exterior surfaced areas, the small footprints of the new structures, and drainage of hardscape to permeable vegetated planters/swales—would not materially decrease groundwater recharge. On balance, therefore, the NCCA projects' contributions to the existing impact with regard to overdraft in the Delta-Mendota Subbasin—both individually and at the collective programmatic level—are expected to be Less than Cumulatively Considerable. No mitigation is required at the cumulative level, and no further analysis is required. *Groundwater Quality*. Significant existing impacts to groundwater quality in the Delta-Mendota Subbasin are identified under *Significant Existing Cumulative Impact?* above and to the left. In the unconfined upper aquifer (assumed to be hydrologically connective with shallow

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
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					groundwater at the NCCA site), they include elevated levels of nitrate, arsenic, hexavalent chromium, selenium, total dissolved solids (TDS), sulfate, chloride, and boron. Currently, untreated stormwater from the majority of the City and some adjacent agricultural lands is conveyed via the Miller Ditch to the Newman Wasteway, and untreated agricultural tailwater is used for flood irrigation to improve grazing at the NCCA site. Infiltration through the unlined Miller Ditch invert and on the NCCA parcels themselves thus delivers untreated storm- and tailwater to shallow groundwater and potentially, over time, to the upper aquifer, which is the primary producing aquifer in the Newman area. With implementation of the NEWS project, stormwater infiltrating at the NEWS project would be partially treated through residence in the forebay and wetland cells, reducing levels of nitrates and other pollutants; infiltration would not occur via the NEWS project micropool, which would be lined. This would represent a Beneficial contribution to existing cumulative impacts on groundwater quality by comparison with current conditions at the site. Additionally, although the MDTW's wetland cells would be lined to increase residence times for treatment, treated water from the MDTW—also with reduced levels of nitrate—would be discharged to the central swale, enabling infiltration in this unlined area. This would also represent a Benefit by comparison with current conditions. Some level of Benefit to groundwater may also result from the wetland project, due to longer ponding times and natural treatment processes in higher-quality wetlands than are currently present on the NCCA site. As a result, the individual contributions of the NEWS, MDTW, and wetland projects to existing impacts on groundwater quality in the Delta-Mendota Subbasin are considered Less than Cumulatively Considerable, with a Benefit anticipated as a result of all 3 projects. No mitigation is required at the cumulative level, and no further analysis is warranted. As discussed under *Surface Water Quality* above, both the NEWS and MDTW projects would increase salinity of outflow waters slightly by comparison with inflow (estimated at 10% based on modeling conducted for the MDTW). However, NEWS and MDTW project outflows are still expected to meet or exceed state standards for potable water supply. As a result, potential increases in NEWS and MDTW project outflow salinities are evaluated as a Less than Cumulatively Considerable contribution to existing elevated levels ofsalinity in area groundwaters, particularly when viewed in the context of the other water quality benefits the projects would provide. No mitigation is required at the cumulative level, and no further analysis is warranted. With the City's identified AMMs (Table 2-15) in place, the Newman Nature Park is not expected to materially affect the quality of water infiltrating via its permeable surfaces. Its individual contribution to existing impacts on groundwater quality in the Delta-Mendota Subbasin is therefore expected to be Less than Cumulatively Considerable. No mitigation is required at the cumulative level, and no further analysis is warranted. The collective program-level contribution of the NCCA projects to existing identified impacts on groundwater quality, as the aggregate of the 4 projects' individual Less than Cumulatively Considerable/Beneficial contributions—is also expected to be Less than Cumulatively Considerable, with net overall Benefits anticipated. No mitigation is required, and no further analysis is warranted. <u>Individual and Program Potential to Create New Impact</u> *Surface and Groundwater Quality*. With AMM-4 (see Table 2-15) and Mitigation Measure CUME-1 implemented, the potential for the NCCA projects—either individually or collectively at the program level—to result in new degradation of surface or groundwater quality would be effectively curtailed. Moreover, as discussed in the *Hydrology & Water Quality* section of this checklist, the NEWS project, which would discharge offsite to the Miller Ditch, is expected to be subject to new WDRs issued and overseen by the RWQCB. The same would be true of the MDTW project if it is equipped with a secondary outfall to the Miller Ditch, and possibly also if it only discharges to the central swale. WDRs for offsite discharge would provide additional protection for receiving and downstream surface waters. They would also be protective of groundwater quality, by mandating the standards to which water is treated in the NEWS and MDTW projects and indirectly controlling the quality of water that infiltrates into the subsurface. In consideration of AMM-4, Mitigation Measure CUME-1, and anticipated output water quality control via WDRs, none of the NCCA projects is expected to result in new adverse effects on water quality due to repeated activities over the long term. The potential for new cumulative impacts as a result of the NCCA projects (individually or collectively) is considered Less than Significant. No additional mitigation is required at the cumulative level, and no further analysis is warranted. *Groundwater Supply*. With an existing Significant cumulative impact on groundwater supply identified (critical overdraft in the Delta-Mendota Subbasin), any further impacts on groundwater supply due to repeated activities over time at the NCCA would represent contributions to

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
Area Included	Rationale		Contribution to Existing Impact	Potential for New Impact	
					that impact rather than a new separate impact created by the NCCA projects. As discussed above, contributions are expected to be Less than Cumulatively Considerable. No further analysis is warranted.
Noise					
Area within 1,500 feet of NCCA site	The 1,500-foot radius around the NCCA parcels represents the distance potentially affected by maximum construction noise levels at the NCCA. This is conservatively based on the long-term noise compatibility guidelines for residential uses established in the City's General Plan (City of Newman 2007), and construction noise levels calculated using methods of the Federal Transit Administration (2006) and the equipment assumptions detailed in Section 2 of this Initial Study checklist. O&M-related noise levels would be lower since fewer pieces of equipment would be in use at the same time for the infrequent activities requiring heavy equipment. Areas outside this radius would not be substantially affected by construction or O&M noise from the NCCA site, so NCCA noise would neither create nor substantially contribute to cumulative impacts outside this radius.	No.		■	As discussed in the *Noise* section of this checklist, the City does not have quantitative standards in place. Rather, City ordinances and policies emphasize preserving the "quiet city" environment and reducing or avoiding disturbance due to construction noise. In that context, this analysis focused on the potential for disturbance of project neighbors, particularly the residences near the NCCA site, as a result of cumulative noise effects. <u>Individual Potential to Create New Cumulative Impact</u> **Construction.** Construction of each of the NCCA projects and the planned water service extension would be a temporary and comparatively short-term process, but could still last long enough that project neighbors would find the effects of noise due to ongoing construction activities disturbing. To address this at the project-specific level, the City has committed to mitigation measures that would limit construction activity within 1,500 feet of noise-sensitive uses (residences) near the NCCA site to daytime weekday hours to reduce disruption (NOI-2), and provide an avenue to address project neighbor noise concerns should any arise (NOI-2). The City has also committed to a measure (NOI-3) to reduce the potential for construction vibration disturbance. With these measures incorporated, impacts were evaluated as Less than Significant at the project level. These measures are also expected to effectively prevent each project from creating a Significant cumulative noise disturbance impact due to ongoing activity throughout the construction period. No additional mitigation is required at the cumulative level, and no further analysis is warranted. **O&M and Facilities Use.** As discussed in the *Noise* section of this checklist, O&M and use of each of the new NCCA projects would add noise to the community environment. However, routine O&M activities would be intermittent and short-term, and the types and levels of noise generated would be generally consistent with ambient noise in the surrounding active agricultural area. Use of the NCCA would be restricted to non-motorized recreation; activities that would take place on the site, such as walking, bicycling, and nature viewing are typically fairly quiet, although the presence of visitors on NCCA trails would generate some noise, such as conversations and laughter. Like O&M however, these types of noise would be consistent with noise associated with small groups of agricultural workers in the vicinity, likely would not represent a substantial change from current conditions, and would not be out of place in the context of neighboring residential uses. Additionally, large group gatherings would typically focus in the Newman Nature Park community area and the outdoor learning areas, which would be located in the southeast and east portions of the 78-acre parcel, separated from the closest residences by at least 0.3 mile. Amplified sound—such as live music or DJ events—would not be permitted at group gatherings, and the intervening distance should prevent larger gatherings from disturbing project neighbors. Moreover, the City intends to continue to enforce its quiet city policy to prevent disturbance over time. Impacts associated with O&M and visitor presence at the new NCCA projects were therefore found Less than Significant at the project-specific level, and are also expected to represent a Less than Significant impact at the cumulative level. No mitigation is required at the cumulative level, and no further analysis is warranted. <u>Program Potential to Create New Cumulative Impact</u> **Construction.** As discussed in the NCCA Master Plan (City of Newman 2020, Appendix A to this Initial Study), the wetland project has been funded by a DFW grant, and the City will need to obtain additional outside (grant) funding to implement the other three NCCA projects. As a result, it is unlikely that more than one of the projects would be constructed at the same time. Nonetheless, depending on grant timelines and the City's success in acquiring funding, it is conceivable that construction windows could overlap to some extent, increasing cumulative noise levels generated by construction activity. However, although adding more pieces of heavy equipment to the site would increase cumulative noise levels, the increase would be comparatively small for each added piece because of the way additive noise is perceived (discussed in detail in Federal Transit Administration 2006). Additionally, as identified above, with no quantitative standards in place for construction noise, the primary concern with regard to cumulative noise and vibration effects is the potential for increased disturbance to neighboring residences. This should be effectively addressed by Mitigation Measures NOI-1, NOI-2, and NOI-3 (discussed above and detailed in the *Noise* section of this checklist). With these mitigation measures in place, overlapping construction of two or more of the projects is not expected to result in a

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
Area Included	Rationale		Contribution to Existing Impact	Potential for New Impact	
					Significant cumulative impact related to noise disturbance. No additional mitigation is required at the cumulative level, and no further analysis is warranted. **O&M and Facilities Use.** As each of the NCCA projects comes online, the level of O&M- and visitor-associated noise generated by the NCCA would increase. However, as discussed above, the level and types of noise generated are not expected to be excessive or out of place in the surrounding agricultural and residential context. Moreover (also identified above), the City is committed to continuing to enforce its quiet city policy to control noise and avoid disturbance. In view of these factors, cumulative long-term noise impacts resulting from the additive effects of the NCCA projects are expected to be Less than Significant. No mitigation is required at the cumulative level, and no further analysis is warranted.
Transportation					
City Sphere of Influence and western San Joaquin Valley region	Analysis focused on the area that is within the City's control for planning purposes, but also considered the larger area that would receive VMT due to regional visitor traffic, and where regional visitor traffic could affect roadway and intersection function and safety.	Yes. The Program Environmental Impact Report for the City's current General Plan (City of Newman 2007) identified Significant and Unavoidable impacts on LOS on City streets and traffic levels on the regional roadway system in Merced and Stanislaus Counties outside the City's Sphere of Influence. Because the "project"-level traffic analysis conducted for the General Plan addressed the buildout of the proposed General Plan along with projected regional growth in the two Counties, the conclusions of that analysis were identified in the Program Environmental Impact Report as both project-specific and cumulative (City of Newman 2006). These impacts are therefore considered to represent Significant existing cumulative impacts with regard to transportation.	■	■	<u>Contribution to Existing Impact</u> **LOS.** As discussed in the *Transportation* section of this checklist, the NCCA projects could generate as many as 170 new one-way trips per day at buildout, representing the addition of some 85 (= 170/2) vehicles to area roadways. This total represents an estimate for all four NCCA projects; trip generation for each individual project would be a fraction of the total. As discussed in the *Transportation* section of this checklist, this is not expected to degrade roadway or intersection function in the vicinity of the NCCA (where trips would be most concentrated), since these roadways are functioning at LOS A, well below ultimate roadway capacity (K.D. Anderson & Associates 2013). Regional effects on LOS would be proportionally smaller, since regional visitors would come from a wider area, distributing a small number of trips over a larger roadway network. Project-specific analysis presented in the *Transportation* section concluded that the NCCA projects (individually and collectively) would have No Impact on local or regional LOS, and their potential contribution to the existing Significant cumulative LOS impact is evaluated as Less than Cumulatively Considerable. No mitigation is required at the cumulative level, and no further analysis is warranted. **VMT.** Based on the level of trip generation associated with NCCA usage—170 trips per day, exceeding the 110-trips-per-day threshold below which the Office of Planning and Research (2018) advises that VMT impacts can be assumed to be Less than Significant—the NCCA projects would have some potential to result in a Significant impact related to VMT generation as usership increases over time. This is also evaluated as a Cumulatively Considerable contribution to regional VMT generation. However, as discussed in the *Transportation* section of this checklist, the City has committed to mitigation measures that will take advantage of the anticipated slow ramp-up in NCCA usage to enable monitoring of NCCA usage coupled with an adaptive response to manage usage so that trips to the facility are maintained below the 110-trips-per-day threshold. Alternatively, these measures allow the City to participate in a regional VMT reduction program rather than limiting NCCA usership, if a program meeting Office of Planning and Research standards becomes available in the future. With these measures in place, VMT impacts would be reduced to Less than Significant level when considered in the project-specific context, and would also represent a Less than Cumulatively Considerable contribution to regional VMT generation. No additional mitigation is required at the cumulative level, and no further analysis is warranted. <u>Individual and Program Potential to Create New Impact</u> Based on current Office of Planning and Research (2018) guidance for analysis of cumulative transportation impacts, "[a] project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. Accordingly, a finding of a less-than-significant project impact would imply a less than significant cumulative impact, and vice versa." Thus, although the NCCA would generate trips and VMT associated with visitor usage, the same suite of mitigation measures adopted to maintain trip generation and VMT below the threshold of significance at the project-specific level would also ensure that trip and VMT generation is maintained at a level that does not represent a Significant new cumulative transportation impact over time, both for each individual project (which would generate a proportion of the total facility-wide VMT) and for the NCCA as a whole. There would be No Impact with regard to creation of a new cumulative impact related to trip or VMT generation. No additional mitigation is required at the cumulative level, and no further analysis is warranted.

Area of Analysis		Significant Existing Cumulative Impact?	Analysis Needed		Discussion
Area Included	Rationale		Contribution to Existing Impact	Potential for New Impact	
Utilities & Service Systems					
General Plan Planning Area	Analysis focused on the area within which the City is responsible for providing or contracting utilities and services such as water treatment, wastewater treatment, and solid waste removal.	No. The City's General Plan (City of Newman 2007) explicitly requires the City to maintain an adequate level of water service (Goals PFS-3), wastewater collection and treatment (Goal PFS-4), storm drainage (Goal PFS-5), agricultural tailwater drainage (Goal PFS-6), and to provide for collection and disposal of solid waste while minimizing waste generation (Goad PFS-7). The City has been proactive in meeting these requirements. For instance, a new City potable water supply well is under construction and the City has embarked on a program of upgrades to the City's wastewater treatment plant (described in detail in Chapter 1 of the NCCA Master Plan, Appendix A to this Initial Study). Two of the NCCA projects also indirectly address utility/service system needs: the NEWS project would treat currently untreated stormwater, and the MDTW project would treat currently untreated agricultural supply and tailwater.		■	<u>Individual and Program Potential to Create New Impact</u> As discussed in the *Utilities & Service Systems* section of this checklist, over both the short and long term the NCCA projects would have No Impact at the project-specific level with regard to insufficient water supply, need for new supplies of water, inadequacy of wastewater treatment capacity, generation of excessive solid waste or waste in excess of available disposal capacity, and non-compliance with federal, state, or local solid waste statutes. They would therefore have No Potential, individually or collectively, to create new cumulative impacts in these areas through repeated activities over the long term. The NEWS project, wetland project, and MDTW project would also have No Impact, either short- or long-term, with regard to construction of new or expanded water or wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, and No Potential, individually or collectively, to create new cumulative impacts associated with such installations. No mitigation is required at the cumulative level, and no further analysis of any of these topics is warranted. The NEWs project would be served by City water for irrigation in the gateway area, and the Newman Nature Park would use City water for the hydration station, restroom hand washing, and irrigation. As discussed in Section 2 of this Initial Study, water supply would be provided by installing a new connection from the City's 8-inch-diameter water line at the corner of Canal School Road and Inyo Avenue. Like all pipelines, the new service could eventually require repair or replacement, with the potential for corollary impacts. The nature and timing of such repairs are not reasonably foreseeable at this time; future repairs would therefore be subject to separate future CEQA review. However, it is worth noting that the impacts of repairs to existing small-diameter pipelines within public roadways are typically minimal, such that stand-alone projects generally qualify for exemption from CEQA (either statutory exemption per *CEQA Guidelines* Section 15282[k] if less than 1 mile long with no surface facilities involved, or Class 1 categorical exemption per *CEQA Guidelines* Section 15301), and portions of future repair activities within the NCCA boundaries—where the potential for impacts would be greater—would be subject to all AMMs adopted for resource protection. Moreover, repair or replacement activities, while reasonably foreseeable, would be very infrequent. Cumulative impacts due to repeated activities in association with the new water service connection to the NEWS and Newman Nature Park are therefore expected to be Less than Significant. No mitigation is required at the cumulative level, and no further analysis is warranted.

Benefits would result from their implementation. All of these outcomes would represent direct or indirect Benefits to human beings in the Newman community and western San Joaquin Valley, as summarized in Table 3-24. No mitigation is required.

Table 3-24. Summary of NCCA Project Benefits and Human Outcomes

Benefit	Project(s)	Human Outcome
Benefits to scenic vistas and area aesthetics, at least as experienced by some viewers	All NCCA projects	Direct Benefit related to improved quality of life
Benefits to habitat function and quality	NEWS, wetland, and MDTW projects	Indirect Benefit due to overall environmental quality improvement
Benefits to special-status species	NEWS, wetland, and MDTW projects	Indirect Benefit due to overall environmental quality improvement
Improvements in the Santa Fe Grade's context, due to restoration/enhancement of the wetland environments the Grade was originally constructed to cross	NEWS, wetland, and MDTW projects	Direct Benefit resulting from improved conservation of cultural resources
Benefits to water quality onsite and in downstream receiving waters	NEWS, wetland, and MDTW projects	Indirect Benefits due to improvement in environmental quality and increased support of designated beneficial uses
Potential for minor Benefit to groundwater recharge	NEWS project	Indirect Benefit due to increase in groundwater resources
Benefit to (reduction in) offsite sediment delivery	NEWS, wetland, and MDTW projects	Indirect Benefit due to improvement in downstream water quality
Benefit to stormwater management	NEWS and wetland projects	Indirect Benefit due to improvement in environmental quality
Benefit to floodflow management	Wetland project	Potential minor direct Benefit due to improved safety
Increased support of Basin Plan implementation	All projects	Indirect Benefit due to improved water quality, increased support for designated beneficial uses
Benefits to parklands and recreational opportunities	All projects	Direct Benefit due to increase in nature-oriented recreational resources

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Acronyms & Abbreviations

ADA	Americans with Disabilities Act
ADWF	average dry weather flow
AFY	acre-feet per year
alpha-BHC	alpha-benzenehexachloride
AMM	Avoidance and Minimization Measure
BAU	Business-as-Usual
BAAQMD	Bay Area Air Quality Management District
BMP	best management practice
BPS	Best Performance Standards
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
CalRecyle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBSC	California Building Standards Code
CCID	Central California Irrigation District
CEDEN	California Environmental Data Exchange Network
CEQA	California Environmental Quality Act
CH_4	methane
CIMIS	California Irrigation Management Information System
cfs	cubic feet per second
City	City of Newman
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
Construction General Permit	SWRCB General Permit for Discharges of Storm Water Associated with Construction Activity
Corps	U.S. Army Corps of Engineers
County	County of Merced
CRAM	California Rapid Assessment Method
CRHR	California Register of Historical Resources
CTS	California tiger salamander
CRPR	California Rare Plant Rank
CWA	Clean Water Act
CY	cubic yards
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DFW	California Department of Fish and Wildlife
DG	decomposed granite
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EPA	federal Environmental Protection Agency
EPA SWMM	federal Environmental Protection Agency's Stormwater Management Model
FAR	floor area ratio
FHWA	Federal Highway Administration
FTC	full trash capture
GHG	greenhouse gas
GSA	Groundwater Sustainability Agency
GSP	groundwater sustainabiility planning
GTP	global temperature potential
GWP	global warming potential
HAP	hazardous air pollutant(s)
hp	horsepower
I	Interstate
ILRP	Irrigated Lands Regulatory Program
IPCC	Intergovernmental Panel on Climate Change
ISO	Insurance Services Office
ITP	Incidental Take Permit
LAFCo	Local Agency Formation Commission (Merced County)
LED	light-emitting diode
LOS	level of service
mg/kg	milligrams per kilogram
µg/l	micrograms per liter
µm	micrometer
µS/cm	microSiemens per centimeter
m^3/day	cubic meters per day
Master Plan	Newman Community Conservation Area Master Plan
MCL	maximum contaminant level
MGD	million gallons per day
MRZ	Mineral Resource Zone
MS4	municipal separate storm sewer system
MT	metric tons
MWELO	Model Water Efficient Landscaping Ordinance
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCA	Newman Community Conservation Area
NCCA parcels	78-acre and 24-acre parcels comprising the NCCA site
NCCA projects	projects described in the NCCA Master Plan, implementing the Master Plan vision
NAL	numerical action level
NEL	numerical effluent limit
ng/l	nanograms per liter
NO_2	nitrous oxide
NO_x	oxides of nitrogen
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
O&M	operations and maintenance
PM2.5	airborne particulate matter smaller than 2.5 µm in diameter
PM10	airborne particulate matter smaller than 10 µm in diameter
PPA	Pollution Prevention Act
PRMP	Paleontological Resources Mitigation Plan
QSD	Qualified SWPPP Developer
QSP	Qualified SWPPP Practitioner
RCRA	Resource Conservation and Recovery Act
REAP	Rain Event Action Plan
RPA	Registered Professional Archaeologist
RWQCB	Regional Water Quality Control Board
ROG	reactive organic gases
SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
SJREC	San Joaquin River Exchange Contractors
SJV Air Basin	San Joaquin Valley Air Basin
SJV APCD	San Joaquin Valley Air Pollution Control District
SMARA	Surface Mining and Reclamation
SPAL	SJV APCD Small Project Analysis Level
SR	State Route
SRA	State Responsibility Area
SVP	Society of Vertebrate Paleontology
SWAMP	Surface Water Ambient Monitoring Program
SWPPP	Stormwater Pollution Prevention Plan
TAC	toxic air contaminant(s)
TDS	total dissolved solids
TMDL	total maximum daily load
UCMP	University of California Museum of Paleontology
USFWS	U.S. Fish and Wildlife Service
UWMP	Urban Water Management Plan
VdB	vibration decibels
VELB	Valley elderberry longhorn beetle
VMT	vehicle miles traveled
WDR	Waste Discharge Requirement
Williamson Act	California Land Conservation Act of 1965
WQO	water quality objective
WWTP	City of Newman Wastewater Treatment Plant

CITY OF Newman CALIFORNIA

Newman Community Conservation Area Master Plan

Initial Study and Proposed Mitigated Negative Declaration

March 2021

APPENDICES

Redtail Consulting
Environment & Community

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Newman Community Conservation Area

Initial Study and Proposed Mitigated Negative Declaration
APPENDICES

March 2021

CITY OF
Newman
CALIFORNIA

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Appendix A

NCCA Master Plan

CITY OF Newman CALIFORNIA

Newman Community Conservation Area
Master Plan

Third Administrative Draft
February 2021

Redtail Consulting
Environment & Community

Cover image aerial photograph source: GoogleEarth (imagery date 07/18/2019, downloaded 03/16/2020)

Newman Community Conservation Area

Master Plan

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Attachments *[To be appended as they are developed.]*

Chapter 1

Introduction

Purpose and Scope of this Master Plan

This Master Plan was developed to guide project implementation, operations, and maintenance at the Newman Community Conservation Area (NCCA), which will encompass three separate but related habitat restoration and creation projects, a multi-use trail system, and other amenities that will provide public access, nature viewing, and nature- and conservation-oriented education benefits to the community. This Master Plan lays out the City of Newman's (City's) vision for the NCCA and provides a framework to guide project planning, construction, operations, and maintenance. It also includes a strategy for immediate and longer-term operational funding for the NCCA. As such, the Master Plan expands and updates the vision described in the City's previous Planning Framework for the NCCA (City of Newman 2020a).

Overview of Plan Vision

The NCCA is planned to occupy two parcels: a 78-acre parcel located at the southeast corner of Canal School Road and Inyo Avenue and a nearby 24-acre parcel located northeast of Brazo Road. Together, the two parcels make up the Plan Area (Figure 1-1). The following projects are envisioned within the Plan Area (Figure 1-2):

- in the northwest portion of the 78-acre parcel, the Newman Environmental Wetland System (NEWS project), an approximately 21-acre constructed wetland complex that will treat stormwater and dry season runoff from the City and surrounding agricultural lands prior to discharge to the Newman Wasteway[1] and, ultimately, the San Joaquin River
- in the central and east portions of the 78-acre parcel, extending to the 24-acre parcel, an approximately 11-acre seasonal wetland, riparian, and grassland restoration project (wetland project) emphasizing natural sequestration of greenhouse gases (GHGs)
- in the southwest portion of the 78-acre parcel, the Miller Ditch Treatment Wetland (MDTW, MDTW project) an additional ~16-acre constructed wetland creation project that is being planned in

[1] The Newman Wasteway (Figure 1-1) was constructed as part of the federal Central Valley Project, to convey emergency releases from the Delta-Mendota Canal to the San Joaquin River (for more information, see U.S. Bureau of Reclamation and California Department of Water Resources 2010).

collaboration with the University of California, Merced (UC Merced) Environmental Systems Graduate Group to treat water from the Miller Ditch, with a focus on removing agricultural pollutants

- in the southeasternmost portion of the 78-acre parcel, community-oriented recreational and educational facilities potentially including a community gathering plaza, outdoor classroom areas, and native plant, rainwise garden, and low-impact development demonstration areas, with an unpaved trail network and interpretive signage extending throughout the 78-acre parcel to enable appropriate public recreational access and tie all of the projects together (Newman Nature Park, Nature Park)

The projects are described in more detail in Chapter 4 (*Vision, Goals, & Objectives*). With these projects in place, the NCCA will offer a unique resource, the first of its kind in the region, combining environmental benefit with previously unavailable opportunities for public recreation and nature- and conservation-oriented education.

Relationship to Other Plans & Policies

This Master Plan was not developed in a vacuum. Like all California jurisdictions, the City engages in planning on many fronts and responds to multiple regulatory requirements. As a result, this Master Plan must dovetail into a matrix of other plans and policies that define the City's vision for the future and maintain it in compliance with legal mandates. The City also participates in, and operates in the context of, regional planning efforts. Key plans and policies that shaped this Master Plan, or will intersect with it in some way, are discussed in the following sections. They include

- the City's current General Plan
- the Water Quality Control Plan (Basin Plan) for the Sacramento and San Joaquin River basins
- the Irrigated Lands Regulatory Program
- the Pyrethroid Management Plan
- the Storm Drainage Master Plan
- the Urban Water Management Plan
- the regional Groundwater Sustainability Plan
- Waste Discharge Order R5-2018-0024
- the City's Parks and Recreation Master Plan
- the City's Non-Motorized Transportation Plan

General Plan

General Plan Overview

The General Plan (City of Newman 2007) is the City's fundamental planning document, capturing the community's values and aspirations for the shared environment in coming decades. It begins with a *Vision Statement* that establishes a sense of purpose and mission and sets the tone for the specific direction the General Plan provides. Two components of the *Vision Statement* are particularly relevant to the NCCA and this Master Plan:

Map Source: *modified from* City of Newman 2007

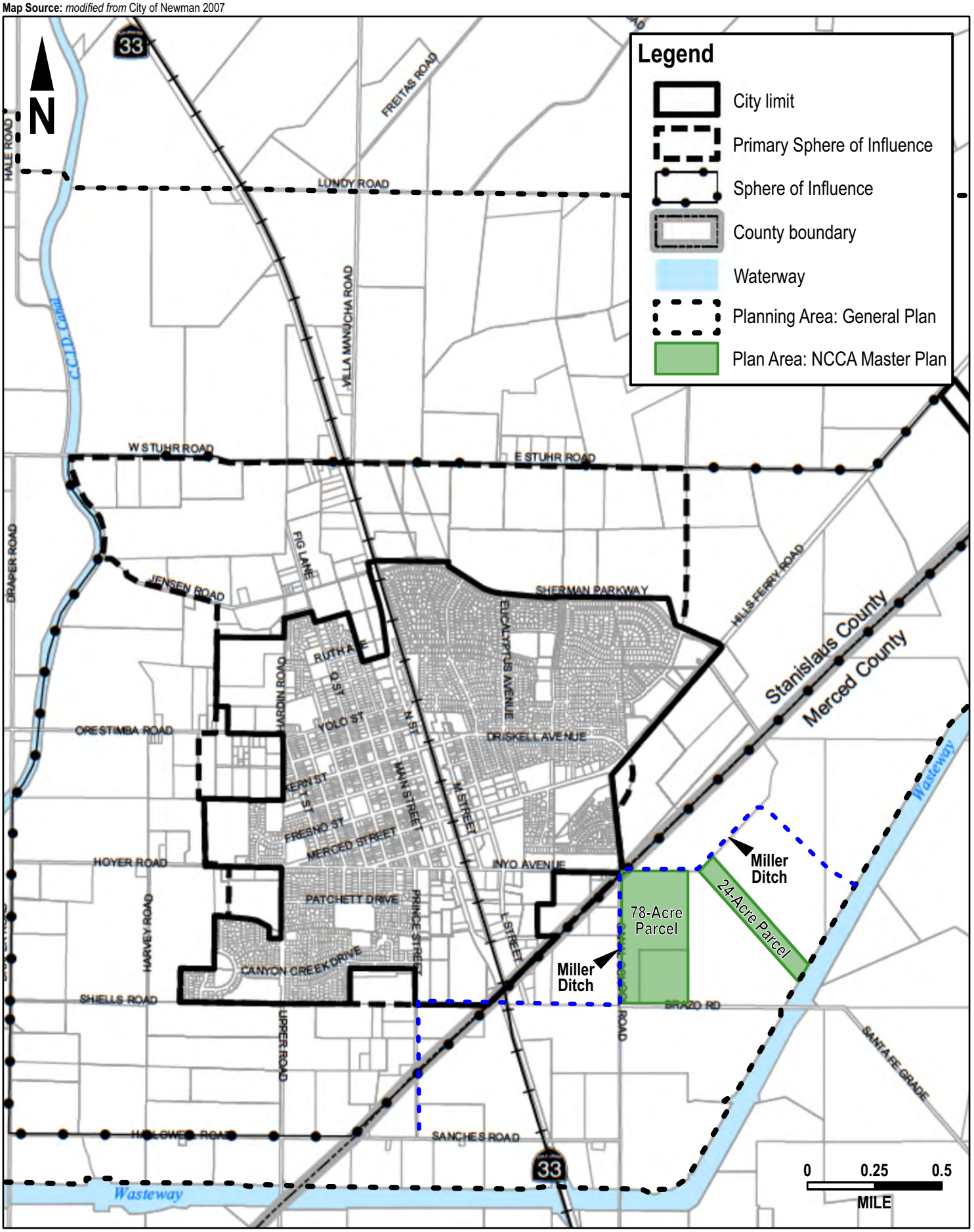

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Figure 1-1. Site Location and Plan Area Extent
Newman Community Conservation Area Master Plan
City of Newman

Aerial Photograph Source: GoogleEarth (imagery date 07/18/2019, downloaded 03/16/2020)

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Environment & Community

Figure 1-2. Conceptual Site Layout Showing NCCA Project Footprints
Newman Community Conservation Area Master Plan
City of Newman

- *"There will be a range of activities available in Newman for all residents, including youth and seniors. Parks scattered throughout the city will provide…facilities that promote community gatherings. A network of pedestrian trails and bike paths will connect residents to parks…"* The NCCA will help to fulfill this vision by providing walking and bicycling opportunities as well as nature-oriented recreation such as nature viewing and birding. It will also offer nature- and conservation-oriented public education amenities, likely including outdoor "classroom" areas and native plant and rainwise garden demonstrations as well as a public gathering plaza that will be available for City and private events. Facilities will be ADA-compliant and accessible to all, and interpretive signage will be provided in both English and Spanish to serve the City's diverse population

- *"Newman will provide a variety of employment options for local residents, from entry-level to more advanced positions in the trade, office, and higher-paying retail industries."* Construction, operation, and maintenance of NCCA facilities will require labor and staffing. Some of this will be covered by existing City staff, but the NCCA is also expected to generate new employment and volunteer opportunities both during construction and over the long term, and the City will build on existing dialogue with local job training programs, schools, and non-profit organizations to help fill this need with maximum benefit to the local community, as Chapters 5 and 7 discuss in more detail

Following the *Vision Statement*, the core of the General Plan consists of seven topical chapters or "elements" that satisfy the State of California's legal requirements for local jurisdiction general plans (California Government Code §65302) and are consistent with recommendations of the Governor's Office of Planning and Research (2017):

- Land Use
- Transportation and Circulation
- Public Facilities and Services
- Recreational and Cultural Resources
- Natural Resources
- Health and Safety
- Community Design

Each General Plan element identifies goals, policies, and actions that

- express policy direction with regard to the City's physical, social, economic, cultural, and environmental character
- provide a comprehensive guide for decisions about land use, community character, circulation, open space, the environment, and factors related to public health and safety.
- serve as the City's "constitution" for land use and community development, providing the legal foundation for all zoning, subdivision, and public facilities ordinances, decisions, and projects

Goals are descriptions of general desired results the City seeks to achieve. *Policies* are specific statements intended to guide decision making toward the achievement of goals. The *actions* identified under some policies represent specific programs, measures, procedures, and techniques the City has identified to support the implementation of policies and achievement of goals (City of Newman 2007).

Relationship to this Plan

The table below identifies General Plan goals and policies relevant to this Master Plan and describes the Plan's role in implementing them. Like all of the City's "topic-specific" plan documents, this Master Plan is ultimately guided by the General Plan and can be viewed as a step-down plan from the General Plan.

Table 1-1. Relationship between NCCA Master Plan and General Plan Goals and Policies

Goal	Policy	Relationship to NCCA and Master Plan
Transportation and Circulation Element		
TC-7: Provide a bicycle and pedestrian network to encourage bicycling and walking for both transportation and recreation	TC-7.1: The City shall create and maintain a safe and convenient system of pedestrian and bicycle facilities that encourages walking or bicycling as an alternative to driving. These routes should directly link residential neighborhoods, parks, schools, downtown, neighborhood shopping centers, public facilities, and employment centers	Located at the southeast corner of Canal School Road and Inyo Avenue, the 78-acre parcel that will form the core of the NCCA is adjacent to the Class I separated bike path planned to extend from the City itself south along Canal School Road, continuing south of Brazo Road as a Class II bike lane. The Plan Area would thus be accessible from both north and south by non-motorized traffic and is planned as offering a destination for recreational riders of all ages. This Master Plan also provides for a network of multi-use trails within the 78-acre parcel, to encourage bicycling and walking within the Plan Area itself
	TC-7.2: The City shall promote development and street patterns that encourage walking, bicycling and other forms of non-motorist transportation	
	TC7.7: The City shall require inclusion of bicycle parking facilities at all new major public facilities	This Master Plan provides for bicycle parking to accommodate visitors accessing the NCCA via bike paths
Public Facilities and Services Element		
PFS-2: Promote efficiency, convenience and complementary relationships in the siting of public facilities	PFS-2.4: The City shall promote the selective clustering of public and quasi-public facilities such as…parks…and community activity centers	The NCCA will support multiple separate but interrelated projects that, when completed, will occupy the entirety of the 78-acre parcel and a substantial portion of the nearby 24-acre parcel, taking maximum advantage of the available acreage to provide complementary nature- and environmentally oriented improvements
PFS-3: Maintain an adequate level of service in the City's water system to meet the needs of existing and future development	PFS-3.10: The City shall require the use of drought-tolerant plant species and drip irrigation systems in the landscaping of new public and private open space areas, common areas, and parks…	This Master Plan requires all plantings to be native species suitable to their locations within the various NCCA projects. Hand watering will likely be provided during the vegetation establishment period for each project, but irrigation is not expected to be necessary over the long term, except in the event of prolonged drought. Drip irrigation or other water-efficient irrigation using City water may be provided for the demonstration garden areas and landscaping but would use small volumes of water well within City supply capacity
PFS-5: Maintain an adequate level of service in the City's storm drainage system to accommodate runoff from existing and future development and to prevent property damage due to flooding	PFS-5.2: Future drainage system discharges shall comply with applicable State and federal pollutant discharge requirements	Both the NEWS project and the MDTW project specifically focus on water treatment via natural wetland/marshland processes and will contribute directly to the quality of stormwater and agricultural tailwater discharged to the Newman Wasteway and ultimately into the San Joaquin River, supporting

Goal	Policy	Relationship to NCCA and Master Plan
		long-term achievement of regional water quality goals
Recreation and Cultural Resources Element		
RCR-1: Establish and maintain a system of public parks, open spaces and recreation facilities suited to the needs of Newman residents	RCR-1.3: The City shall acquire land or options on land for future parks and recreation development at the earliest practical time…such land may be land banked for future park development	The City's purchase of the two parcels that comprise the NCCA occurred in direct response to this requirement for proactive forward planning of open space
	RCR-1.6: All parks shall be designed to be accessible to all ages and disabled persons	Facilities at the NCCA will be ADA-compliant and fully accessible, consistent with City policies for new City construction
	RCR-1.11: The City shall design and maintain park and recreation facilities to … preserve wildlife habitat where appropriate, and incorporate native plants …	Although the two parcels comprising the NCCA currently offer some value to wildlife, they are substantially disturbed by prior cultivation and current unseasonable irrigation and grazing use (Kevin Merk Associates 2019, Vollmar Natural Lands Consulting 2021), such that their current habitat value is limited. The vision for habitat restoration and creation defined in this Master Plan is expected to substantially increase the value of the habitat offered by the two parcels while providing for its long-term preservation
	RCR-1.14: The City shall pursue development of a citywide network of pedestrian and bicycle ways … The pedestrian and bicycle ways system should be designed to directly link residential neighborhoods, parks, schools, downtown, neighborhood shopping centers and employment centers	This Master Plan builds on and expands this vision by locating a nature-oriented destination facility immediately adjacent to planned bicycle paths and lanes, and by providing for a network of multi-use trails internal to the NCCA
RCR-6: Preserve and promote Newman's historic and cultural resources by developing heritage tourism and establishing the City as a regional tourist destination		This Master Plan envisions the NCCA, as the first facility of its kind in the region, as a destination attraction serving not only Newman residents, but visitors from throughout the surrounding area. As discussed in more detail in Chapter 4, interpretive signage will include information on the Newman area's Native American heritage developed in collaboration with local tribal representatives
Natural Resources Element		
NR-2: Protect water quality in the San Joaquin River and the area's groundwater	NR-2.4: The City shall support efforts at the county, regional and State levels to reduce runoff of toxic agricultural chemicals into the area's watercourses and groundwater basin NR-2.6: The City shall comply with the requirements of the National Pollut[ant] Discharge Elimination System (NPDES)	As identified above, the NEWS and MDTW projects focus on water treatment via natural wetland/marshland processes. They reflect the City's commitment to reducing pollutant levels in discharges to the Newman Wasteway and San Joaquin River and in infiltration to shallow groundwater

Goal	Policy	Relationship to NCCA and Master Plan
NR-3: Protect sensitive native vegetation and wildlife communities and habitat	NR-3.3: The City shall support and participate in local and regional attempts to restore and maintain viable habitat for endangered plant and animal species, and wetlands. To this end, the City shall work with surrounding jurisdictions and State and federal agencies in developing a *Habitat Management Plan*. Such a plan shall provide data for the Newman area on special-status species, including the Swainson's Hawk, and shall provide guidelines and standards for mitigation of impacts on special-status species	This Master Plan represents an important step in implementing Policy NR3.3, through extensive restoration and creation of wetland and associated habitats, and as Chapter 7 discusses, may offer future opportunities to dovetail with the City's HMP
	NR-3.7: Parks, drainage detention areas and other open space uses shall incorporate, where feasible, areas of native vegetation and wildlife habitat	As discussed above, this Master Plan limits plantings at the NCCA to suitable native vegetation, and emphasizes the restoration and creation of habitat
NR-4: Promote and improve air quality in Newman and the region	This Master Plan is not directly germane to any of the specific policies called out in the General Plan under Goal NR-4, but by providing for restoration, creation, and long-term preservation of up to 40 acres of wetland and associated habitat, it will be supportive of General Plan Goal NR-4. Additionally, as discussed further in Chapter 6, the wetland project is being partially funded through a California Department of Fish and Wildlife (DFW) Wetlands Restoration for Greenhouse Gas Reduction Program grant awarded in 2019 and will be required to meet greenhouse gas reduction targets under the terms of the grant	

Water Quality Control Plan (Basin Plan)

Clean Water Act Section 303 Requirements

Section 303 of the federal Clean Water Act (CWA) requires the each of the 50 states to

- develop water quality standards to protect public health and welfare and enhance water quality
- identify water bodies that fail to meet the applicable standard for one or more pollutants, and
- develop programs to limit pollutant input and assist in recovering the quality of waters that do not meet applicable standards

Water quality standards must reflect the designated uses of each water body, which may include public water supply, fish and wildlife propagation, recreation, agriculture, industry, and other purposes, in addition to navigation. New and revised standards are subject to review and approval by the federal Environmental Protection Agency (EPA).

Water bodies that fail to meet water quality standards for one or more pollutants are referred to as *impaired*, and the list of impaired waters published by each state is often called the Section 303[d] list, from the governing section of the CWA. For each impaired water body and pollutant, the states are charged with developing a total maximum daily load (TMDL) program. A TMDL represents the maximum amount of a given pollutant that a water body can accept while still meeting water quality standards; the purpose of a TMDL program is to identify the sources of the pollutant and ways to reduce inputs of that substance. Because TMDL development can be

costly and time-consuming, CWA Section 303 requires the states to prioritize the waters on their 303[d] lists so the highest-priority recovery needs can be addressed first.

Basin Planning in California

In California, the EPA delegates CWA Section 303 implementation authority to the State Water Resources Control Board (SWRCB), which in turn delegates substantial responsibility for water quality control to the Regional Water Quality Control Boards (RWQCBs). This includes:

- developing and adopting water quality control plans ("basin plans") for each region's major surface water bodies and groundwater basins. This includes formally identifying ("designating") the beneficial uses[2] of the region's principal waters and the water quality objectives (WQOs) needed to protect them. WQOs represent the level of water quality needed to ensure that a water body continues to meet its designated beneficial uses, and may be numerical (quantitative) or narrative (descriptive)
- implementing programs to achieve the identified WQOs, including action recommendations, implementation schedules, and follow-up measures to determine whether compliance is achieved. This includes but is not limited to implementation and oversight of TMDL programs
- regulating discharges of waste that may affect waters of the state, setting standards to maintain the condition of waters that receive waste discharges, and encouraging and assisting in waste disposal programs

Plan Area and Downstream Water Quality

The City is within the Central Valley Region (Region 5), overseen by the Central Valley RWQCB. Other than the San Joaquin River itself and its important tributary Orestimba Creek, the largest surface water bodies in the vicinity of the Plan Area are constructed features: the federal Delta-Mendota Canal and the Newman Wasteway, which was originally intended to transmit emergency releases from the Canal to the San Joaquin River but now also delivers stormwater and agricultural tailwater from the City and surrounding lands. Receiving waters downstream of the Plan Area include the Newman Wasteway, San Joaquin River, and Sacramento – San Joaquin Delta, including the Old River, a principal Delta distributary.

No beneficial uses are designated for the Newman Wasteway in the Basin Plan (Central Valley Regional Water Quality Control Board 2018a), although it carries a designation for municipal and domestic supply under the SWRCB's Sources of Drinking Water Policy (Walters pers. comm.). Additionally, discharge from the Newman Wasteway has the potential to affect beneficial uses in downstream receiving waters, particularly those closest to the outfall, where dilution effects are the least. These are shown in Table 1-2 at the top of the next page; additional downstream waters, including Suisun and San Francisco Bays, also have designated beneficial uses that are not discussed in detail here.

[2] *Beneficial uses* refers to the "resources, services, and qualities" California's surface waters and groundwater provide to the people of the state (e.g., San Francisco Bay Regional Water Quality Control Board 2020). A specific range of beneficial uses is laid out in Section 13050[f] of the California Water Code. As a result, a water body's designated beneficial uses do not necessarily represent all of its potential or "reasonable" uses; for instance, wastewater discharge may be a reasonable use but is not recognized as a beneficial use subject to official designation. Protection and enhancement of beneficial uses is a cornerstone of California water quality planning (Central Valley Regional Water Quality Control Board 2018a).

Table 1-2. Designated Beneficial Uses for Downstream Surface Waters

Water Body	Reach		Beneficial Uses
San Joaquin River	Sack Dam to Merced River*	**Existing:**	agricultural supply (irrigation, stock watering), industrial process supply, water contact recreation, canoeing and rafting, other noncontact recreation, warm freshwater habitat, warm and cold freshwater migration, warm freshwater spawning, wildlife habitat
		Potential:	municipal and domestic supply, cold freshwater spawning
	Merced River to Vernalis	**Existing:**	agricultural supply (irrigation, stock watering), industrial process supply, water contact recreation, canoeing and rafting, other noncontact recreation, warm freshwater habitat, warm and cold freshwater migration, warmwater spawning, wildlife habitat
		Potential:	municipal and domestic supply
Sacramento – San Joaquin Delta	N/A	**Existing:**	municipal and domestic supply, agricultural supply (irrigation, stock watering), industrial service supply, industrial process supply, hydropower generation, water contact recreation, other noncontact recreation, warm and cold freshwater habitat, warm and cold freshwater migration, warmwater spawning, wildlife habitat, navigation
		Potential:	N/A

* Newman Wasteway discharges to the San Joaquin River about 0.7 mile upstream of the Merced River confluence.

Source: Central Valley Regional Water Quality Control Board 2018a

In addition to the beneficial uses shown for surface waters in Table 1-2, all of Region 5's groundwaters are considered suitable (or potentially suitable) for municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply, unless they have been specifically designated otherwise by the RWQCB (Central Valley Regional Water Quality Control Board 2018a).

Table 1-3 shows CWA Section 303[d]-listed water quality impairments threatening designated beneficial uses in receiving waters immediately downstream of the Plan Area and identifies the impairments for which TMDL programs are in place. Additional impairments have been listed farther downstream in the Sacramento – San Joaquin Delta, Suisun Bay, and San Francisco Bay (State Water Resources Control Board 2016) but are not discussed in detail here since they have a less direct relationship to this Master Plan.

Table 1-3. Identified Water Quality Impairments Downstream of Plan Area

Water Body	Reach	Pollutant	TMDL Status
Newman Wasteway	*N/A*	Chlorpyrifos	*No TMDL in place at this time*
		DDE	*No TMDL in place at this time*
		Dissolved oxygen	*No TMDL in place at this time*
		Fecal indicator bacteria	*No TMDL in place at this time*
		Salinity	*No TMDL in place at this time*
		Simazine	*No TMDL in place at this time*
San Joaquin River	Mud Slough to Merced River*	Boron	*No TMDL in place at this time*
		Chlorpyrifos	**Being addressed under EPA-approved TMDL**
		DDT	*No TMDL in place at this time*
		Diazinon	**Being addressed under EPA-approved TMDL**
		Electrical conductivity	*No TMDL in place at this time*

Water Body	Reach	Pollutant	TMDL Status
		Group A pesticides	*No TMDL in place at this time*
		Indicator bacteria	*No TMDL in place at this time*
		Mercury	*No TMDL in place at this time*
		Selenium	**Being addressed under EPA-approved TMDL**
		Toxicity	
	Merced River to Tuolumne River	Alpha-BHC	*No TMDL in place at this time*
		Chlorpyrifos	**Being addressed under EPA-approved TMDL**
		DDE	*No TMDL in place at this time*
		DDT	*No TMDL in place at this time*
		Electrical conductivity	*No TMDL in place at this time*
		Group A pesticides	*No TMDL in place at this time*
		Mercury	*No TMDL in place at this time*
		Specific conductivity	*No TMDL in place at this time*
		Total dissolved solids	*No TMDL in place at this time*
		Toxicity	*No TMDL in place at this time*
		Water temperature	*No TMDL in place at this time*
	Tuolumne River to Stanislaus River	Chlorpyrifos	**Being addressed under EPA-approved TMDL**
		DDT	*No TMDL in place at this time*
		Diazinon	**Being addressed under EPA-approved TMDL**
		Electrical conductivity	*No TMDL in place at this time*
		Group A pesticides	*No TMDL in place at this time*
		Mercury	*No TMDL in place at this time*
		Toxicity	*No TMDL in place at this time*
		Water temperature	*No TMDL in place at this time*
	Stanislaus River to Delta Boundary	Chlorpyrifos	**Being addressed under EPA-approved TMDL**
		DDE	*No TMDL in place at this time*
		DDT	*No TMDL in place at this time*
		Diuron	*No TMDL in place at this time*
		Group A pesticides	*No TMDL in place at this time*
		Mercury	*No TMDL in place at this time*
		Toxaphene	*No TMDL in place at this time*
		Toxicity	*No TMDL in place at this time*
		Water temperature	*No TMDL in place at this time*
Old River	San Joaquin River to Delta-Mendota Canal	Chlorpyrifos	**Being addressed under EPA-approved TMDL**
		Electrical conductivity	*No TMDL in place at this time*
		Low dissolved oxygen	*No TMDL in place at this time*
		Total dissolved solids	*No TMDL in place at this time*

* Newman Wasteway discharges to the San Joaquin River between Mud Slough and the Merced River confluence.

Key to Abbreviations:

Alpha-BHC = alpha-benzenehexachloride
Alpha-HCH = alpha-hexachlorocyclohexane
DDE = dichlorodiphenyldichloroethylene
DDT = dichlorodiphenyltrichloroethane

Source: Central Valley Regional Water Quality Control Board 2016, 2019

Basin planning is an ongoing process. Among the planning efforts currently in progress (Central Valley Regional Water Quality Control Board 2020a) are

- development of a salinity and nitrate control plan (Central Valley Salinity Alternatives for Long-Term Sustainability)
- development of WQOs for ammonia
- development of policies to address issues related to onsite wastewater treatment systems

Relationship to this Plan

Two of the projects envisioned in this Master Plan—the NEWS project and the MDTW project—are specifically intended to improve water quality by treating currently untreated stormwater runoff and agricultural tailwater prior to discharge into jurisdictional waters (see Chapter 4 for more information on goals and objectives for each of the NCCA projects). The wetland project, by improving the extent, quality, and function of wetlands on the Plan Area parcels, would also indirectly benefit water quality. As such, all three of these projects are supportive of regional water quality in general and of Basin Plan goals to protect and enhance beneficial uses of waters downstream of the Plan Area. They will also support Basin Plan protection for beneficial uses of groundwater through designs that adequately separate water undergoing treatment from the shallow groundwater table, and by improving the quality of surface waters that may contribute recharge to local shallow groundwater reserves downstream of the Plan Area. The Newman Nature Park will provide new opportunities for community education on environmental topics, potentially including water quality protection and water conservation, and is therefore also viewed as supportive of Basin Plan goals.

All three projects will also support salinity and nitrate reduction in waters downstream of the NCCA and thus are consistent with the intent of the in-progress Central Valley Salinity Alternatives for Long-Term Sustainability salt and nitrate control plan.

Irrigated Lands Regulatory Program

Overview

In 2003, the RWQCB debuted its Irrigated Lands Regulatory Program (ILRP) to protect surface waters in the Central Valley region from the effects of agricultural runoff, and in 2012 the program was expanded to include protection for groundwater. Initially, the ILRP regulated only activities conducted by growers directly discharging irrigation tailwater or stormwater from irrigated fields. It now regulates all Central Valley growers, including those who do not directly discharge to waters of the state (Central Valley Regional Water Quality Control Board 2020a). The ILRP requires commercial irrigated lands, including nurseries and managed wetlands, to obtain regulatory coverage and comply with Waste Discharge Requirements (WDRs) issued by the RWQCB. Regulatory coverage is not required for properties that are not used for commercial purposes, properties that are dryland farmed, or commercial irrigated lands that are covered under another RWQCB regulatory program such as those for dairy and poultry operations (Central Valley Regional Water Quality Control Board 2020b).

Growers have the option of obtaining individual coverage, which entails issuance of WDRs specific to their operation, or may choose to join a water quality coalition ("third-party group") along with other growers and enroll in joint coverage that requires them to comply with WDRs issued on a sub-region basis. The coalition option offers the advantage of assistance with ILRP compliance, monitoring, and reporting requirements, and can reduce costs and streamline the compliance process for individual growers (Central Valley Regional Water Quality Control Board 2020b).

Currently, there are 8 sub-regional third-party groups with separate WDRs: Eastern San Joaquin Watershed, Grassland Drainage Area, Rice Growers within the Sacramento Valley, Sacramento River Watershed, San Joaquin County and Delta Area, Tulare Lake Basin Area, Western San Joaquin River, and Western Tulare Lake Basin Area (Central Valley Regional Water Quality Control Board 2020). Growers in the Newman area who have not obtained individual coverage fall under the Western San Joaquin River WDRs (RWQCB Order R5-2014-0002-08) (Central Valley Regional Water Quality Control Board 2014).

Western San Joaquin River Third-Party Group WDRs

Among other provisions, the Western San Joaquin River third-party group WDRs require the following of member growers (Central Valley Regional Water Quality Control Board 2014).

- Compliance with applicable California Water Code, Basin Plan requirements, and SWRCB plans and policies
- Compliance with specific monitoring and reporting requirements
- Implementation of water quality management practices to meet specified receiving water limitations
- Implementation of erosion control and sediment discharge prevention measures to minimize or eliminate the discharge of sediment above background levels; if discharges have the potential to degrade surface waters, a Sediment and Erosion Control Plan meeting specific requirements is required
- Preparation and implementation of a farm-specific irrigation and nitrogen management plan to minimize excess nutrient application
- Adherence to applicable state, county, or local agency standards governing water wells and groundwater quality; if no such standards apply, adherence to the California Department of Water Resources' (DWR's) water well standards is required as a minimum

In addition, settling ponds, basins, and tailwater recovery systems must be constructed, maintained, and operated in a manner that prevents erosion and slope failure, minimizes the discharge of sediment, and prevents groundwater degradation. Construction and operation must comply with applicable Natural Resources Conservation Service (NRCS) standards, NRCS or University of California Cooperative Extension recommendations, or another equivalent standard. Finally, member growers must participate in the coalition's outreach/education activities, and must provide the third-party with the information it requires to fulfill its responsibilities under the WDRs.

The third-party in turn is required to:

- develop and implement plans to track and evaluate the effectiveness of water quality management practices
- conduct water quality monitoring and assessments in conformance with quality assurance/quality control requirements
- conduct education and outreach activities to inform members of program requirements and water quality problems, including WQO exceedances or water quality degradation identified by the third-party or the RWQCB; outreach must include information on nitrogen application policies and the potential impact of nitrates on groundwater, and may need to be provided in multiple languages, depending on grower demographics

- work cooperatively with the RWQCB to ensure that all members are providing required information and taking necessary steps to address any identified exceedances or degradation
- inform members in a timely manner of any Notices of Violation received and provide them with information on the reason(s) for the violation
- ensure timely and complete submittal of plans and reporting required by the WDRs

Relationship to this Plan

The quality of Miller Ditch agricultural tailwaters—and by extension the waters treated by the NEWS and MDTW projects—directly reflects the efficacy of the Western San Joaquin Watershed third-party group and member growers in implementing ILRP WDRs, while the treatment provided at the NCCA will further increase the quality of agricultural tailwater and stormwater runoff conveyed to downstream waters. As such, the NEWS and MDTW projects can be viewed as complementary to ILRP requirements. In addition, the outdoor classrooms and community plaza expected to be provided at the Newman Nature Park will offer appropriate venues for third-party group outreach and educational activities and thus also indirectly support the ILRP.

Pyrethroid Management Plan

Background

Pyrethrins and pyrethroids are pesticides widely used in agriculture, for household applications, for pet flea control, and in mosquito control. Pyrethrins are derived from natural chrysanthemum flowers; pyrethroids are synthetic agents whose chemical structures are adapted from those of pyrethrins to increase their stability in sunlight. More than 3,500 pyrethrins and pyrethroids are registered with the EPA, and their use has increased in recent years due to the reduced application of the more acutely toxic organophosphate and carbamate pesticides (Environmental Protection Agency 2019).

In 2017, responding to identified impairment for pyrethroids in some 14 Central Valley water bodies, the RWQCB adopted Resolution R5-2017-0057, amending the Basin Plan to include measures for the control of pyrethroid pesticide discharges to waters of the state (Central Valley Regional Water Quality Control Board 2017). The RWQCB's Resolution R5-2017-0057

- established a TMDL program for nine of the impaired water bodies, where multiple sources discharge pyrethroids
- prohibited all pyrethroid discharges above specified concentrations unless the discharger has a pyrethroid management plan in place (referred to as the "conditional prohibition" since discharge is conditioned on limiting or managing discharges), and
- required agricultural dischargers of pyrethroids to the remaining five water bodies (those where agricultural discharge is the only significant source of pyrethroids) to develop management plans to reduce pyrethroid pesticide discharges to levels below the narrative WQO for toxicity within 20 years

It also put monitoring requirements in place to enable the RWQCB to evaluate progress in reducing pyrethroid discharges and preventing pesticide-related toxicity in area waters (Central Valley Regional Water Quality Control Board 2017), and committed the RWQCB to consider adoption of a numerical WQO for pyrethroids within 15 years.

All municipalities holding permits to discharge stormwater to waters under RWQCB jurisdiction are subject to the Resolution R5-2017-0057 conditional prohibition, and municipal stormwater permittees not subject to the

new TMDL must conduct baseline monitoring and provide their monitoring data to the RWQCB. However, small municipalities that hold a Phase II municipal separate storm sewer system (MS4) permit for stormwater discharge may choose to acknowledge that the existing data accurately represent their discharges, forgo baseline monitoring, and develop and implement a pyrethroid management plan. Municipal wastewater permittees are likewise subject to the conditional prohibition, and those not subject to the TMDL must also provide baseline monitoring to the RWQCB (City of Newman 2020b).

City Plan Development

As a small municipality operating under an MS4 permit (discussed further in *Storm Drainage Master Plan* below) as well as a municipal wastewater discharger (see *Waste Discharge Order R5-2018-0024* below), the City has elected to move directly to preparation of a Pyrethroid Management Plan as the most efficient and cost-effective approach to meet Resolution R5-2017-0057 requirements. The Plan is being developed in collaboration with 16 other small municipal dischargers, the unincorporated community of Mountain House, and the Counties of El Dorado, San Joaquin, and Stanislaus.

As of the preparation of this Master Plan, the City's Pyrethroid Management Plan (City of Newman 2020b) is still in draft, with completion and adoption anticipated by mid-2021. The draft Plan provides for (1) education and outreach activities to raise awareness of pesticide threats to water quality and ways to reduce environmental pesticide contamination; (2) active pollution prevention measures; and (3) reporting to track implementation and results, combined with adaptive management to increase Plan effectiveness going forward.

Education and outreach activities will include residential outreach, point-of-purchase outreach, outreach to pest control and landscape professionals, and outreach related to landscaping and irrigation practices. Education and outreach will encourage greater reliance on integrated pest management (IPM)[3] techniques, reduced overall pesticide use, and landscaping and irrigation best practices that reduce runoff, and will be provided bilingually in Spanish and English, consistent with the City's standard approach. Activities may be coordinated with the other participating dischargers for greater coverage and effectiveness (City of Newman 2020b).

The Plan also provides for measures to be implemented at City-owned and City-operated facilities. Similar to the approach encouraged for landscaping and structural professionals and the community at large, measures implemented by the City are expected to emphasize a shift to greater reliance on IPM and reduction in overall pesticide use, and will include adoption of an IPM policy that applies to all City and contractor staff engaged in pest management at City owned or operated facilities. The City will also increase the regulation of pesticide use within City limits and take greater part in the overall dialogue concerning pesticide regulation (City of Newman 2020b).

In addition to requiring dischargers to curtail or manage pyrethroid levels, Resolution R5-2017-0057 requires annual reporting to document the management practices that have been implemented, evaluate their success, and identify ways to adjust or add measures to increase effectiveness. This adaptive management approach will require monitoring of pyrethroid concentration trends. Approaches were undetermined as of the preparation of the draft Pyrethroid Management Plan, but the RWQCB is expected to issue additional guidance for small

[3] Integrated pest management (IPM) uses an understanding of pest biology to bring a combination of biological, cultural, physical, and chemical tools to bear on pest-related risks in a way that minimizes environmental as well as economic and health risks. IPM strives to correct the factors conducive to pest problems and emphasizes using approved pesticides only when necessary. Originally developed for agricultural pest management, IPM is now increasingly used in residential, recreational, institutional, and wildland contexts (IPM Institute of North America 2018, 2020).

municipal dischargers, which will be incorporated into the Plan as it is developed further (City of Newman 2020b).

Relationship to this Plan

There is a natural dovetail between the aims of the Pyrethroid Management Plan and the projects envisioned under this Master Plan. By treating currently untreated stormwater runoff and agricultural tailwater, the NEWS and MDTW projects will contribute to overall reduction of pesticide levels in waters discharged to the Newman Wasteway and San Joaquin River, amplifying the benefits of measures put in place under the Pyrethroid Management Plan. In addition, as mentioned above, the Newman Nature Park will provide an excellent forum for community outreach about IPM, ways of reducing pesticide use, and landscaping, irrigation, and runoff control best practices. These themes are all entirely consistent with the City's vision for the Nature Park (see Chapter 4 for more detail), and the demonstration gardens, outdoor classrooms, and community plaza will provide ideal sites for community outreach events under the Pyrethroid Management Plan.

Storm Drainage Master Plan

City Stormwater Management

Management and discharge of stormwater from the City is regulated under the SWRCB's statewide general permit authorizing MS4 discharges (General Permit) (State Water Resources Control Board 2013).

The Public Works Department is responsible for stormwater drainage facilities within the City, and is explicitly required by the General Plan to maintain a level of service adequate to accommodate runoff from existing and future development and avoid flood-related property damage (Goal PFS-5, City of Newman 2007). This necessitates periodic assessment of existing storm drainage capacity, coupled with forward planning that takes into account foreseeable development in this rapidly growing community. Since 1994, the City has maintained a Citywide Services Master Plan that includes stormwater drainage and flood protection as components. Only a few years after the original 1994 plan was prepared, it was updated by a step-down plan focusing on storm drainage (City of Newman 2001), due to a rapid pulse of development. The 2001 update remains in effect.

Drainage in the City and surrounding area flows generally eastward (City of Newman 2001), reflecting the City's location in an area historically tributary to the San Joaquin River. Within the City itself, a large proportion of storm runoff is collected in a system of underground storm drain pipelines, flows to the trunk lines within Inyo Avenue and Canal School Road, and is delivered to the City pump station near the northwest corner of these two roadways. The pump station discharges to the Miller Ditch, an agricultural ditch that conveys flow from the Central California Irrigation District (CCID) canal west of the City for agricultural use and collects return agricultural tailwater and stormwater.[4] The Miller Ditch in turn discharges to the Newman Wasteway and ultimately into the San Joaquin River (Figure 1-3). In addition to the direct outfall that discharges low flows from the Miller Ditch to the Newman Wasteway, an overflow pipeline carries excess flow from large storm events northeast from the Miller Ditch to a separate outfall into the Newman Wasteway (Figure 1-3). Some of the remaining storm runoff not captured by the storm drain system enters other CCID ditches within the City via overland flow (City of Newman 2001).

[4] The Miller Ditch is owned and operated by adjacent agricultural landowners; CCID provides coordination and assists with maintenance (Martin pers. comm.).

Source: *compiled from* City of Newman (1997); aerial photograph from GoogleEarth (imagery date 07/18/2019, downloaded 05/27/20)
For illustration only; locations not field-verified

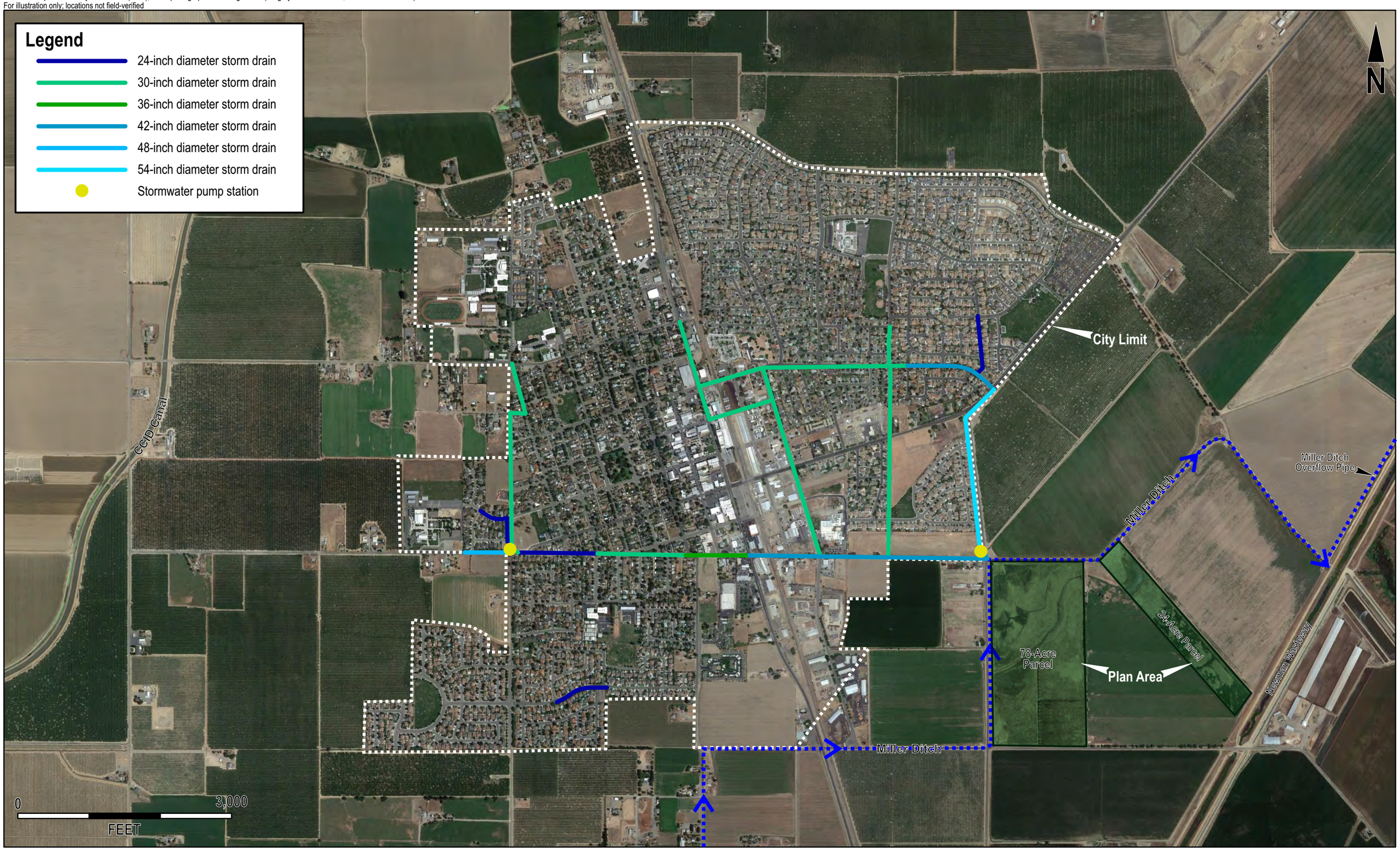

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Figure 1-3. Trunk Storm Drain Network
Newman Community Conservation Area Master Plan
City of Newman

Relationship to this Plan

At present, the City's stormwater runoff is not treated prior to discharge. One purpose of this Master Plan is to provide for treatment of a substantial portion of City storm runoff through development and operation of a constructed stormwater treatment wetland that would receive flow from the Miller Ditch immediately downstream of the pump station at Inyo Avenue and Canal School Road (the NEWS project). As such, this Master Plan expands on the City's current Storm Drain Master Plan (City of Newman 2001).

Additionally, this Master Plan requires the new treatment wetland constructed under the NEWS project to provide sufficient capacity to accommodate the design event that carries the greatest pollutant loading to the Newman Wasteway and San Joaquin River, the 85th percentile, 24-hour storm event (see *Goals & Objectives by Project* in Chapter 4). This is consistent with pollution control requirements of the General Permit, which prohibits discharges with the potential to cause a "condition of pollution or nuisance" that would threaten public health, aesthetics, or beneficial uses of waters of the state (State Water Resources Control Board 2013).

Urban Water Management Plan & Groundwater Sustainability Plan

Potable Water in the City

The Public Works Department owns and operates the City's potable water system and is the only public water agency serving the City and its Sphere of Influence (City of Newman 2007). Similar to stormwater drainage, the General Plan requires Public Works to maintain water service adequate to meet the demands of existing and future development (Goal PFS-3, City of Newman 2007). In addition to the General Plan, forward planning for potable water supply also responds to the Urban Water Management Planning Act of 1983 (California Water Code §§10610 – 10657) and the Water Conservation Act of 2009 (California Water Code §10608), which established a 20% reduction in per capita urban water use by 2020 as a statewide goal.

Every 5 years, California's Urban Water Management Planning Act requires municipal water suppliers that (1) serve more than 3,000 acre-feet/year, or (2) serve more than 3,000 urban connections, to prepare an Urban Water Management Plan (UWMP). The UWMP must assess the reliability of the supplier's water sources over a 20-year planning window, identify demand management measures and water shortage contingency plans (including existing and planned uses of recycled water), and report on progress toward meeting the statewide demand reduction target (California Department of Water Resources 2020a). The City's current Urban Water Management Plan was most recently updated in 2016 (City of Newman 2016).

The City obtains 100% of its potable water supply from local groundwater (City of Newman 2007, City of Newman 2016). Public Works operates four municipal wells with current pumping rates ranging from about 1,200 gallons per minute (gpm) to 1,600 gpm (Figure 1-4) (San Joaquin River Exchange Contractors GSP Group 2019a). A fifth City production well with an anticipated capacity of 1,800 gpm is being designed and will be online by early to mid-2021 (Figure 1-4). A number of additional wells in the area are operated by private entities and by the CCID.

The City overlies the Delta-Mendota Groundwater Subbasin of the San Joaquin River Groundwater Basin. The Delta-Mendota Subbasin has two principal aquifers—both in alluvial materials of the Pliocene – Pleistocene (Lettis 1982) Tulare Formation—that are separated by a regionally extensive aquitard, the Corcoran Clay member. The upper aquifer is largely unconfined and the lower aquifer is confined by the Corcoran Clay. Groundwater flow is generally eastward (City of Newman 2016, San Joaquin River Exchange Contractors GSP Group 2019b, Central Valley Regional Water Quality Control Board 2018b). Most groundwater in the Newman area is drawn from the upper aquifer, although the City's wells and some deeper irrigation wells tap the lower aquifer. Cased depths of City wells range from 450 to 635 feet. Wells No. 1R and No. 8 are screened only in the

lower aquifer; Wells No. 5 and No. 8 are screened in both aquifers (see Figure 1-4 for well locations) (San Joaquin River Exchange Contractors GSP Group 2019a).

California's Sustainable Groundwater Management Act of 2014 (SGMA) requires the formation of Groundwater Sustainability Agencies (GSAs) to manage withdrawals from medium- and high-priority groundwater basins[5] at sustainable levels (California Department of Water Resources 2020b). If multiple GSAs are active within a basin, they must coordinate their efforts. The City serves as the GSA within City limits, and also participates in regional groundwater management planning as a member of the San Joaquin River Exchange Contractors (SJREC) Groundwater Sustainability Planning (GSP) group, along with the Cities of Gustine, Los Banos, Dos Palos, Firebaugh, and Mendota and the Counties of Merced, Madera, and Fresno.

GSAs are required to develop Groundwater Sustainability Plans or provide an acceptable alternative that meets SGMA requirements. SJREC GSP's current Groundwater Sustainability Plan (San Joaquin River Exchange Contractors GSP Group 2019b) was adopted in 2019.

Relationship to this Plan

No new wells would be necessary for the projects envisioned in this Master Plan. Hand watering is expected to be necessary during the vegetation establishment periods for each of the projects, and would use potable supply from the City water system, likely delivered to the site via water trucks for maintenance staff use. Long-term supply to the hydration station, gardens, and landscaping at the Newman Nature Park would also use City water from existing sources, delivered by extending service from City water lines at the intersection of Inyo Avenue and Canal School Road. Hand-watering use would be limited and comparatively short-term, and ongoing use of potable supply would also be very limited. Both are expected to be well within the capacity of existing and projected City supply and therefore consistent with the City's commitments under the GSP and its overall responsibility for potable water supply to City residents and businesses.

Waste Discharge Order R5-2018-0024

City Wastewater Treatment

The City of Newman provides wastewater treatment for most uses within City limits, although some properties, both within City limits and in the larger Sphere of Influence, remain on septic systems. Wastewater from the City is conveyed to the City's Wastewater Treatment Plant (WWTP), operated by Public Works and—like the City's stormwater and potable water systems—mandated by the General Plan to maintain adequate capacity to serve the needs of existing and future development (Goal PFS-4, City of Newman 2007). Influent wastewater has a substantial residential and commercial component, but also includes input from four industrial sources within City limits, including a cheese manufacturing facility that alone contributes some 25% of total influent volume (Central Valley Regional Water Quality Control Board 2018b).

The WWTP is located about 1 mile north of the City adjacent to the Newman Wasteway, within the Sphere of Influence but outside City limits (Figure 1-5). Its current average dry weather flow (ADWF) capacity is 1.25 million gallons per day (MGD). Key facilities at the WWTP include

- a bar screen at the inlet

[5] Groundwater basins are prioritized for management based on the overlying population, the projected rate of population growth, the number of public and other wells that draw water from the basin, the importance of groundwater as a primary source of supply, and documented impacts on the basin such as overdraft, ground subsidence, and saline intrusion (California Water Code §10933).

Map Source: *modified from* City of Newman 2015

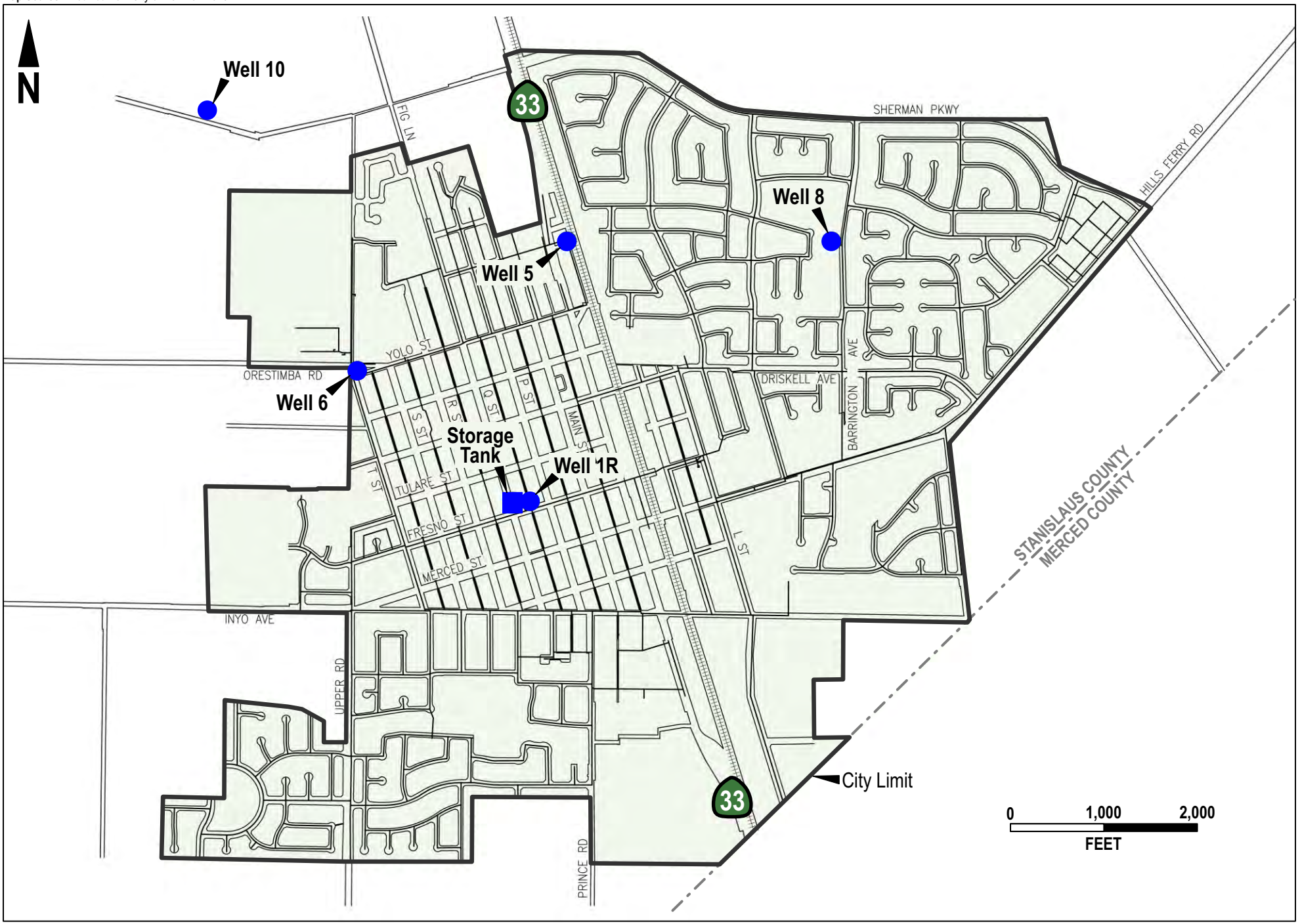

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Figure 1-4. Locations of City Potable Water Supply Wells
Newman Community Conservation Area Master Plan
City of Newman

Aerial Photograph Source: GoogleEarth (imagery date 07/08/2019, downloaded 05/13/2020)

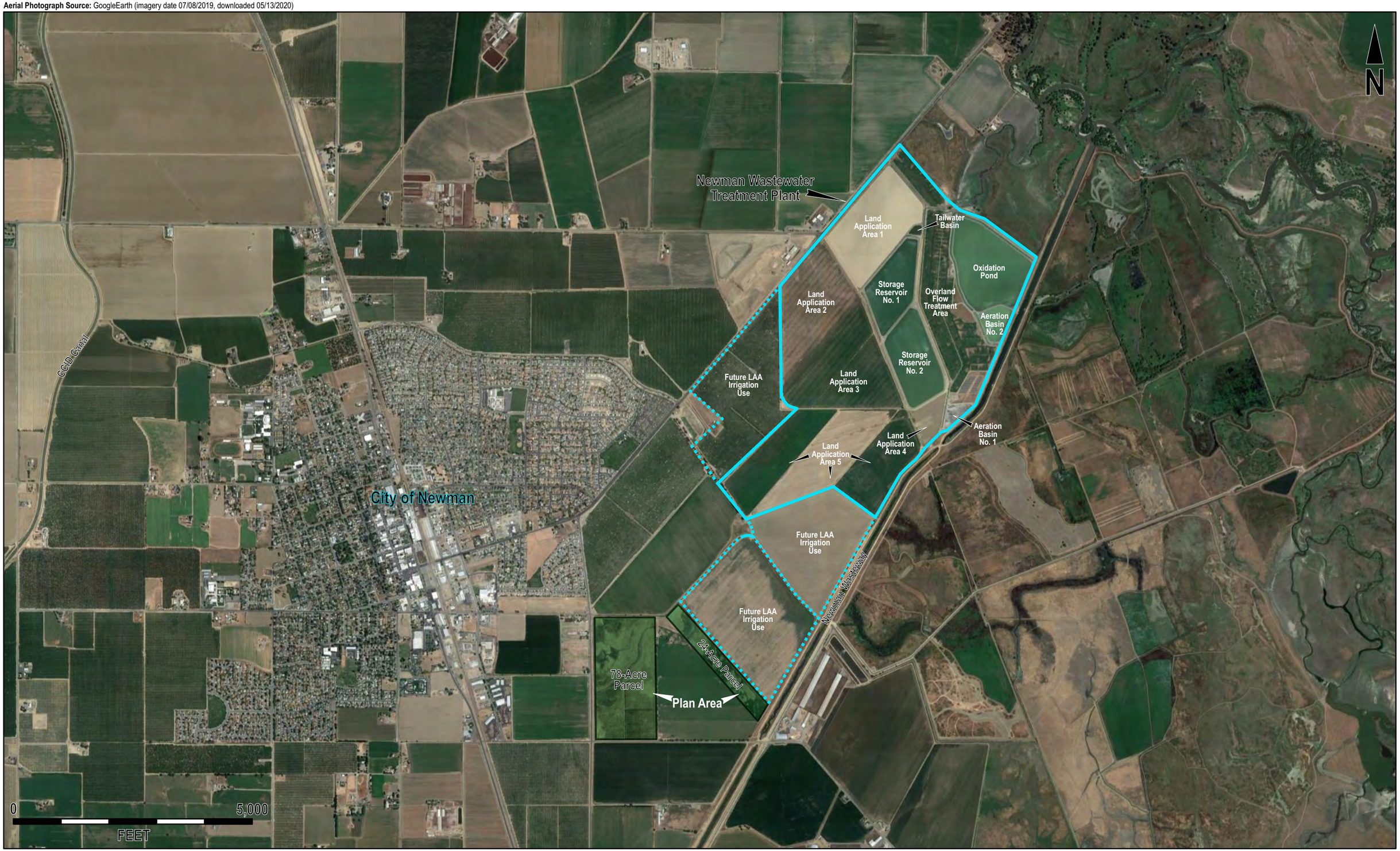

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Figure 1-5. Location and Layout of City Wastewater Treatment Plant
Newman Community Conservation Area Master Plan
City of Newman

- two unlined earth basins (Basin 1 and Basin 2)
- an unlined 50-acre oxidation pond
- two unlined effluent storage reservoirs with a combined capacity of 230 million gallons (MG)
- 60 acres of overland flow terraces
- 341 acres of land application areas (LAAs)
- an approximately 1-acre tailwater pond
- approximately 200 acres of additional City-owned lands adjacent to the existing LAAs, slated for future LAA use, and an additional approximately 100 acres to the northwest, currently in almonds but planned for future LAA use

With 2 feet of freeboard maintained, Basin 1 and Basin 2 have operational capacities of 7 MG and 9 MG respectively, and the capacity of the oxidation pond is 90 MG (Central Valley Regional Water Quality Control Board 2018b).

Influent wastewater is routed into Basin 1 for anaerobic treatment and then to Basin 2 for aerobic treatment (see Figure 1-5 for WWTP layout). From Basin 2, it enters the oxidation pond for bacterial oxygenation. Undisinfected secondary effluent is typically retained in the storage reservoirs for dry-season flood irrigation of crops such as alfalfa, corn silage, and oats grown under City management on the LAAs. Tailwater from all of the LAAs is collected in the tailwater pond and returned to the storage reservoirs (City of Newman 2007, Central Valley Regional Water Quality Control Board 2018).

Influent and effluent quality are monitored by the City. Recent data indicate that the waste stream contains high-strength organic material and there has been concern that the WWTP's capacity is inadequate to provide effective treatment (Central Valley Regional Water Quality Control Board 2018b). At present, however, 65% of influent biological oxygen demand is removed in Basin 1, and effluent discharged to the LAAs is meeting applicable standards (Perry pers. comm.). High effluent salinity has also been documented, and is attributed to increased influent salinity that is further elevated by evaporation during treatment and storage (Central Valley Regional Water Quality Control Board 2018b). The City has taken steps to reduce influent salinity through source control, and effluent discharged to the LAAs is also meeting salinity standards (Perry pers. comm.), but further measures to address both organic content and salinity may become necessary due to concerns about the effect of high-salinity, organic-rich effluent infiltrating into groundwater via the LAAs (Central Valley Regional Water Quality Control Board 2018b).

Planned WWTP Improvements

For some time, the City has considered WWTP capacity a principal factor limiting growth (City of Newman 2007), and in response to this concern and problems with effluent quality has been working with an engineering consultant and the Central Valley Regional Water Quality Control Board (RWQCB) to plan and implement a program of upgrades to the WWTP. The first phase of upgrades would entail the following improvements (Central Valley Regional Water Quality Control Board 2018b).

- Creating a new unlined 9-MG aeration basin (Basin 3) by installing baffles to separate off a 5-acre portion of the existing oxidation pond

- Modifying the headworks to provide for more flexible flow-splitting capabilities that allow influent to be directed to Basin 1, Basin 2, and/or Basin 3 with the ratio of the split adjusted to optimize treatment under seasonally variable weather conditions
- Adding baffling, short circuit prevention, and more effective mixing to Basin 1 to provide better treatment for high-strength organic content influent
- Irrigating with a combination of effluent and groundwater to reduce salinity loading to shallow groundwater to a range comparable with effluent from historic agricultural practices
- Nearly doubling the extent of the LAAs by bringing two new LAAs online

Phase I improvements are planned for completion by mid-2022. With Phase I completed, the WWTP's ADWF capacity would increase from 1.25 MGD to 1.5 MGD.

A second phase of improvements is planned for stepwise implementation as further capacity becomes necessary to accommodate growth in the City. Phase II is expected to include the following improvements.

- Increasing the capacity of Basin 3 from 9 MG to 20 MG by expanding the baffled portion of the oxidation pond
- Adding new aerators to Basin 3
- Installing a new 130-MG effluent storage basin (Storage Basin 3) in the existing LAA3
- Modifying and improving the influent distribution system to allow recirculation to any or all of the aeration basins
- Adding more groundwater and/or surface water to the irrigation mix to further reduce salinity and organic loading; surface water could potentially be obtained from the CCID, or might need to come from other sources if CCID supply does not become available
- Further increasing the extent of the LAAs

When all Phase II improvements are in place, the WWTP's ADWF capacity would be increased to 2.4 MGD.

Relationship to this Plan

As described above, the Phase I and Phase II improvements planned at the WWTP provide for progressive blending of saline effluent used to irrigate the LAAs with less saline water. This was originally envisioned as beginning with groundwater in Phase I, and transitioning either to increased use of groundwater or to use of groundwater plus CCID surface water in Phase II.

This Master Plan was intended in part to offer a third possibility: the use of treated discharges from the NEWS and/or MDTW projects. This could substantially decrease the need for groundwater use at the LAAs, decreasing pressures on the groundwater basin. However, retaining treated NCCA outflow in the Newman Wasteway rather than diverting it would reduce pollutant loading in the Wasteway, which has been identified as impaired for pesticides (State Water Resources Control Board 2016; see Table 1-3 above), and would also benefit water quality in the San Joaquin River and downstream receiving waters, also identified as impaired for multiple parameters (State Water Resources Control Board 2016; see Table 1-3). In this context, the City intends to evaluate various scenarios for the use of treated runoff from the NCCA, and to select the one that offers the

best balance of environmental benefit, benefit to the community, and cost-effectiveness. As a result, this Plan was developed to offer maximum flexibility and does not prescribe downstream use of NCCA discharges.

Parks & Recreation Master Plan

The City's Parks and Recreation Master Plan (City of Newman 1995) articulates goals, policies, and standards for the location, size, and characteristics of existing and proposed parks. It was originally prepared as a step-down from the 1992 General Plan, and has continued in use with adoption of the current General Plan (City of Newman 2007), since many of aspects of the City's vision for long-term development of public and private parkland spaces remain unchanged. The majority of the Parks and Recreation Master Plan focuses on "conventional" urban parks and community spaces and thus is not directly germane to the vision of this Master Plan. Rather, this Master Plan was developed in part to complement the types of facilities addressed by the Parks and Recreation Plan. However, this Master Plan is entirely aligned with the fundamental goal laid out in the Parks and Recreation Master Plan: "establish[ing] a system of public park and recreation facilities suited to the needs of Newman residents." Existing park spaces and the needs of the Newman community and surrounding area are discussed further under *Need for NCCA* in Chapter 2.

Non-Motorized Transportation Plan

City Vision for Non-Motorized Transportation

Consistent with General Plan Goal RCR-1.14 (see Table 1-1), in 2013 the City adopted a Non-Motorized Transportation Plan (NMTP) to guide development of bicycle and pedestrian facilities throughout the City (City of Newman 2013). The NMTP focuses on the portion of the General Plan Bicycle Network Plan (City of Newman 2007, Figure TC-2) within and immediately adjacent to City limits.

As a step-down from General Plan bicycle and pedestrian planning, the NMTP integrates and builds on policies in the General Plan (City of Newman 2007) as well as regional non-motorized transportation planning efforts. It assesses City needs, lays out specific goals, policies, and actions for bicycle and pedestrian transit in the City, recommends specific projects to achieve these ends, provides design standards, and identifies potential funding sources to defray project costs. It also identifies support programs to increase public awareness and encourage bicycling and walking for pleasure and transportation, including a Safe Routes to School program.

The City's vision for non-motorized transportation emphasizes the following overall goals (City of Newman 2013).

- Improving pedestrian and bicyclist safety
- Making trails accessible to all users, including pedestrians, bicyclists, and the physically disabled
- Creating a cohesive pedestrian and bicycle network that meets the needs of the community and encourages bicycling and walking
- Implementing General Plan policies in order to create an enjoyable environment that promotes walking and bicycling
- Encouraging community members to take advantage of non-motorized transportation opportunities in the City

Recommended projects identified in the NMTP include pedestrian-oriented and bicycle-oriented improvements, as well as City-wide improvements to enhance overall safety and qualify of experience for both pedestrians and bicyclists, such as sidewalk resurfacing and curb ramp improvements, road maintenance, improved wayfinding

signage, street and pathway lighting, and public art installations. Recommended bicycle projects include new and improved bicycle lanes and paths as well as *Bicycle Crossing* signs at key locations and bicycle detector loops to assist bicyclists in safely navigating signalized intersections (Figure 1-6).

Relationship to this Plan

One of the City's aims in selecting the location for the NCCA—immediately outside City limits and easily accessible—was to encourage the community to visit the NCCA on foot or by bicycle, and to provide a desirable destination for walkers and bicyclists. Access will be facilitated by construction of the NMTP-recommended bicycle route extending along Canal School Road, connecting bike lanes and paths in the City proper with points south (Figure 1-6).[6] Additionally, the NCCA is planned to provide an internal network of trails for pedestrian and bicycle use, including the O&M access roads serving the NEWS and MDTW projects, which would be open to the public for non-motorized recreational use, as well as dedicated trails constructed as part of the Newman Nature Park project. As such, the NCCA is part of the City's broader vision, articulated in the NMTP, of encouraging non-motorized transportation and recreational uses.

Once the Newman Nature Park is completed, the NCCA will also provide facilities such as bicycle racks, restrooms, and a drinking water station, consistent with NMTP Education and Encouragement Policy 1, which requires "end-of-trip" facilities to make bicycling a genuinely viable alternative to driving.

Contents and Organization of this Plan

In addition to this introductory chapter, this Master Plan contains the following sections:

- *Chapter 2: Background*, including information on the Newman community, the need for the NCCA, NCCA planning to date, and the regulatory context and requirements for the projects laid out in this Master Plan
- *Chapter 3: Existing Conditions at NCCA Site*, including designated, historic, and current land uses; Plan Area physiography, hydrology, and soils; biological and jurisdictional habitat resources; and other factors relevant to project planning and implementation at the NCCA
- *Chapter 4: Vision, Goals, & Objectives* for each of the NCCA projects, and a brief discussion of other related efforts and projects
- *Chapter 5: Implementation,* including project timing and priorities as well as implementation responsibility for the construction, post-construction, and long-term O&M periods
- *Chapter 6: Funding Strategy* for project planning and design, project construction, post-construction monitoring and maintenance of restored and created habitat, and long-term operations and maintenance (O&M) of the NCCA projects
- *Chapter 7: Future Opportunities*, discussing future environmental opportunities created by the NCCA as well as opportunities for community economic and educational benefits and volunteer involvement springboarding from the vision in this Master Plan

[6] The Canal School Road bike route project is discussed further under *Related Projects* in Chapter 4. Originally laid out as a Class I separated multi-use trail in the General Plan Bicycle Network Plan (City of Newman 2007, Figure TC-2), it was recommended as a Class II bicycle lane in the NMTP (City of Newman 2013) due to potential concerns about right-of-way width. Based on recent reevaluation, the City has concluded that the originally planned Class I trail will be feasible without acquisition of additional right-of-way, and intends to proceed on this basis.

Map Source: *modified from* City of Newman 2013

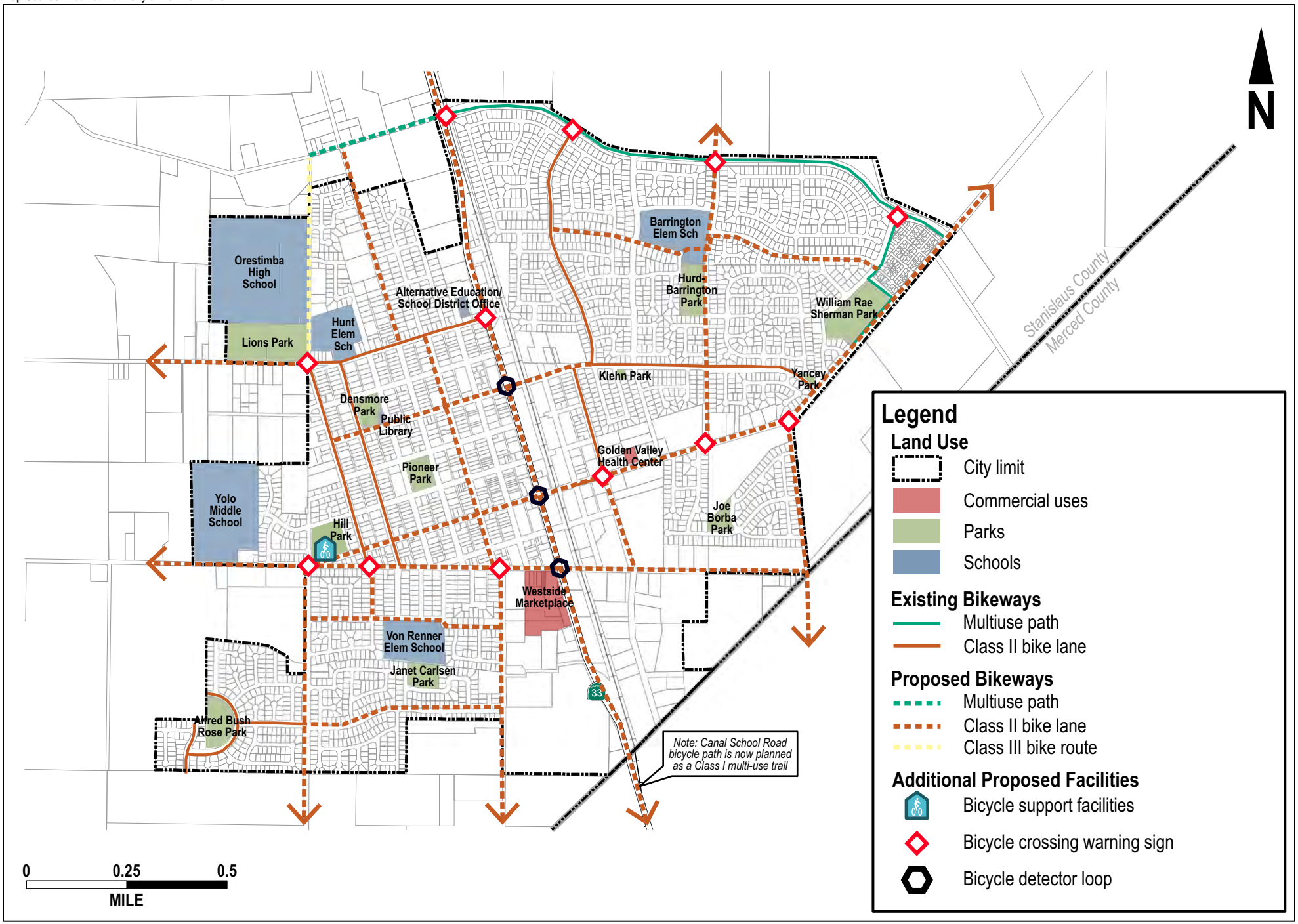

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Figure 1-6. Bicycle Projects Recommended in Non-Motorized Transportation Plan
Newman Community Conservation Area Master Plan
City of Newman

- *Chapter 8: Protecting Plan Area Resources*, including information on the City's planning for long-term preservation of the Plan area as an environmental and community resource, and the measures adopted to protect sensitive habitats and special-status plants and wildlife in the Plan Area

A list of acronyms and abbreviations follows Chapter 8 as an 11 x 17 foldout.

This Plan also includes an *Attachments* section that will be populated with additional step-down plans as these are developed, including post-construction Monitoring and Maintenance Plans for the restored and created habitat areas, and long-term O&M plans for each of the NCCA projects.

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Chapter 2

Background

Community Overview

Context

Located in the northwestern San Joaquin Valley about 5 miles east of Interstate (I) 5, the City is accessed from north and south via State Route (SR) 33, which runs through the center of the City as N Street. Access from I 5 is provided by West Stuhr Road, a 2-lane semi-rural arterial roadway. Neighboring communities include Crows Landing and Patterson, about 6 and 13 miles to the north along SR 33 respectively, and Gustine, 4 miles to the south. From Gustine, SR 140 provides access east into the heart of the Valley and to the foothills region and Sierra Nevada beyond (Figure 2-1).

The City itself occupies a footprint of just over 2 square miles. As of the preparation of the current General Plan, the City's Sphere of Influence, comprising lands the City may annex and urbanize in coming decades, covered about another 6 square miles (City of Newman 2007). The City and its Sphere of Influence are entirely within Stanislaus County. The City's larger Planning Area—the area encompassed in the General Plan vision—extends west toward I 5 and south and east to the Newman Wasteway and San Joaquin River, within Merced County. The NCCA Plan Area is adjacent to the County line within Merced County (Figure 1-1, Figure 2-1).

Founded in 1888 and incorporated in 1908 as Central Valley agriculture became increasingly important and rail transit opened widening markets, the City remained small and relatively stable for decades, but with shifting regional pressures it has grown rapidly in the last 30 years, from a population of approximately 4,000 in 1990 (City of Newman 2007) to an estimated 11,658 as of 2018 (United States Census Bureau 2020). At least in part, this growth reflects a new commuter population drawn to the area by more affordable housing, a relaxed pace, and high quality of living. Commuters tap into diverse employment markets as far away as the San Francisco Bay Area and Sacramento metropolitan regions, but agriculture and ranching still dominate the local economy. In this context, the City emphasizes the importance of valuing its heritage and maintaining its small-town character—including a vibrant historic downtown area—while looking to the opportunities of an evolving future.

Community Demographics

The table at the top of the next page summarizes City demographics.

Table 2-1. City of Newman Demographics

Race and Hispanic Origin	Percentage of Population
White	87.8%
White, not Hispanic or Latino	24.7%
Hispanic or Latino	69.7%
African-American	2.2%
Asian	1.3%
American Indian or Alaska Native	0.7%
Two or more races	3.2%

Source: United States Census Bureau 2020

Recent census data indicate that 56.5% of households in the City speak a language other than English at home (United States Census Bureau 2020). Although there is a proportion of Portuguese-speaking households, the majority of these are Spanish-speaking, and the City now routinely provides information and outreach bilingually in Spanish and English.

Median household income for the period 2014 – 2018 was $60,934 (2018 dollars), substantially below the statewide figure for the same period, $71,228. Education levels are also currently lower in the City than statewide. As of 2014 – 2018, 75.9% of community members over the age of 25 reported completion of high school and 10% reported a bachelor's or higher degree, by comparison with 82.9% and 33.3% statewide (United States Census Bureau 2020). Based on an income survey conducted in 2018 with assistance from a state Drinking Water State Revolving Fund grant, the City has been designated a Severely Disadvantaged Community (SDAC) by the Department of Water Resources (DWR).

Need for NCCA

The NCCA is intended to meet three needs:

- providing treatment for the City's previously untreated stormwater and agricultural tailwater runoff prior to discharge into the Newman Wasteway and San Joaquin River
- improving overall air, water, and habitat quality in the Newman area, as a benefit to the community, area wildlife, and the environment as a whole
- providing opportunities for nature-oriented open space recreation and nature education that are not currently available in the Newman area

Parklands and open spaces are a critical aspect of community livability and the ability to connect with nature is increasingly understood as vital to mental and physical health, nowhere more so than in disadvantaged communities. A number of community and neighborhood parks ranging from about 2 acres to 8 acres in extent are available throughout the City, providing various types of recreational and gathering facilities, including playgrounds, barbecue areas, dining areas, baseball and soccer fields, and basketball courts, as well as a community center, teen center, wading pool, and skateboard park. The City also has mini-parks, generally less than 1 acre in size, that serve their immediately surrounding neighborhoods with green space, picnic tables, and play structures.

However, city parks offer a different user experience and serve different functions than accessible areas of natural open space. Although the western San Joaquin Valley is largely a rural landscape, the closest parklands

Base Map Source: GoogleEarth (imagery date 07/18/2019, downloaded 5/14/2020)

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Figure 2-1. Regional Setting

Newman Community Conservation Area Master Plan
City of Newman

offering any type of natural open space experience range from about 4 to 17 miles away as the crow flies (Table 2-2, Figure 2-1), and none of them is specifically dedicated to nature-oriented recreation or education. Additionally, although the City has adopted a Non-Motorized Transportation Plan (City of Newman 2013) and is working to expand and improve bicycle and pedestrian opportunities, the Newman area still lacks regional trail systems that offer extended walking and bicycling opportunities.

In this context, the need for the NCCA is clear: in addition to providing long-term environmental benefit, it will fill an important gap in the recreational resources available to residents of the City and surrounding vicinity, and provide opportunities for nature education that currently do not exist in the area. Both the NEWS project and the MDTW project are also planned to serve as "living labs" encouraging active involvement by area students and fostering interest in continuing STEM (science, technology, engineering, and mathematics) education.

Table 2-2. Open Space Parklands in Newman Area and Beyond

Facility	Offers…	Distance from City* (Miles)
National Wildlife Refuges		
San Luis National Wildlife Refuge	Hiking, hunting, fishing, wildlife viewing, visitor center, public events	11
Merced National Wildlife Refuge	Hiking, hunting, wildlife viewing, visitor facilities, field trip programs	24
National Parks		
Pinnacles National Park	Hiking, camping, nature watching	60
Yosemite National Park	Camping (including group campsites, horse campsites, RV camping, backcountry camping), hiking, backpacking; extensive facilities and programs available	90
State Wildlife Areas		
North Grasslands Wildlife Area	Fishing, hunting, wildlife viewing	China Island Unit: 4 Gadwall Unit: 23 Salt Slough Unit: 14
West Hilmar Wildlife Area	Hunting, wildlife viewing	6
Volta Wildlife Area	Hunting, wildlife viewing; pedestrian access only, except for permitted hunters during waterfowl season	14
Los Banos Wildlife Area	Wildlife viewing, fishing, hunting	17
State Parks		
George J. Hatfield State Recreation Area	Boating, fishing, hiking, geocaching, picnic areas, family and group campsites, primitive camping, RV sites	4.5
Great Valley Grasslands State Park	Boating, boat ramps, fishing, wildlife viewing	9
San Luis Reservoir State Park	Boating, boat ramps, family and group campsites, primitive camping, RV sites with hookups, RV dump station, fishing, swimming, surfing/windsurfing, hiking, horseback riding, geocaching, picnic areas, exhibits and programs, guided tours, off-highway vehicle use	17
McConnell State Recreation Area	Fishing, camping, picnic area, play areas	19
Pacheco State Park	Primitive camping, hiking, horseback riding, geocaching, picnic areas, interpretive exhibits and programs, guided tours	20
Turlock Lake State Recreation Area	Boating, swimming, fishing, camping, RV camping	32

Facility	Offers…	Distance from City* (Miles)
County of Stanislaus Parks**		
Frank Raines Off-Highway Vehicle Park	Off-highway vehicle recreation, biking, hiking, mudding, deer and wild pig hunting, picnic tables and shelters, barbecues, playground, sports field, volleyball court, horseshoe pit, recreation hall	19
Modesto Reservoir Regional Park	Boating, swimming, fishing, waterskiing, jet skiing, bird watching, waterfowl hunting, camping, picnic shelters, barbecues, archery range, radio-controlled model airplane field	31
La Grange Regional Park	Off-roading, mudding, motocross, camping, picnic tables, playground	38
Woodward Reservoir Regional Park	Boating, boat launches, swimming, fishing, water/jet skiing, waterfowl hunting, camping, picnic shelters, barbecues, volleyball court	38

* Distances measured "as the crow flies"; roadway mileages are higher
** County of Merced has no open space parks in City vicinity

Regulatory Context

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that projects proposed or funded by state and local government agencies undergo review to identify their effects on the environment prior to approval, unless they fit into one of the categories of projects that qualify for exemption, either because they have been identified as having no significant effects or because they have been specifically exempted by the Legislature (California Public Resources Code §21001.1; *CEQA Guidelines* §15260, §15300).[1] The goals of the CEQA process are to ensure that the significant impacts of a proposed project are disclosed to the public, that ways of avoiding or reducing environmental damage are identified and incorporated into the project, and that public participation in the planning process is enhanced (*CEQA Guidelines* §15002).

The NCCA projects are not expected to qualify for exemption from CEQA review, although they would result in substantial positive outcomes (as well as short-term adverse impacts) and are expected to result in a net benefit for both the natural environment and the community. As a result, concurrent with the development of this Master Plan, the City is embarking on the CEQA process, and anticipates circulation of the CEQA document in early 2021.

None of the projects planned for the NCCA is expected to result in environmental impacts that cannot be mitigated below the level of significance; the appropriate CEQA document is therefore expected to be an initial study and mitigated negative declaration (IS/MND) rather than an environmental impact report (EIR). To increase cost and schedule efficiency, the City tentatively plans to analyze all of the projects in a single document. This combined coverage will also have the benefit of bringing all four of these separate but related

[1] CEQA review requirements are the same for public and private projects; a key intent of the statute is to ensure that public projects are subject to the same "level of review and consideration" as private projects that require approvals from public agencies (California Public Resources Code §21001.1).

and complementary projects before the public and other agencies for review and comment at the same, providing a more comprehensive picture of the projects, their impacts, and their benefits.

The IS/MND prepared for the NCCA projects will in effect be a programmatic IS/MND document, since it will analyze multiple projects that together form a program of undertakings to realize the vision of this Master Plan. However, unlike many programmatic CEQA documents—and particularly documents analyzing the impacts of planning documents, which are by nature general and visionary in nature—it will analyze at least two of the NCCA projects "to the project level." This will enable prompt implementation following adoption of the MND, with no further CEQA review required unless conditions, or the projects themselves, change significantly.

The projects planned for project-level analysis are the NEWS project and the wetland project, which have been planned in the most detail to date. It may also be possible to analyze the Newman Nature Park to the project level. The MDTW project, which is in the preliminary planning stages, will be analyzed to the program level, with project-level detail provided where available. As planning proceeds and more detail on the MDTW project becomes available, the City will likely need to conduct a second round of CEQA review for the MDTW project before approving it to proceed. This may take the form of an internal addendum or a tiered document that incorporates and builds on the analysis already circulated, or it may be a stand-alone document, depending on how much background conditions and the nature of the project itself have evolved since the first round of analysis.

Other Regulations & Requirements

A number of other laws and regulations have the potential to apply to the NCCA projects because of existing environmental values in the Plan Area (described in Chapter 3). They are summarized in Table 2-3.

Table 2-3. Other Regulations Applicable to NCCA Projects

Regulation	Under the Jurisdiction of…	Scope and Requirements
Federal Clean Water Act, Section 404	U.S. Army Corps of Engineers (Corps)	Regulates the placement of "dredged and fill materials" into waters of the United States, including wetlands. In practice, because the terms *dredged and fill* are interpreted very broadly, requires Corps permit authorization for a wide range of activities entailing disturbance or permanent impact below the ordinary high water mark (OHWM) in fresh water and below the mean higher high tide (MHHT) line in tidally influenced waters
Federal Clean Water Act, Section 401	RWQCB	Requires projects that must obtain certain other federal permits, including CWA Section 404 authorization from the Corps, to obtain certification from the RWQCB that the proposed activities would not degrade the quality of the receiving waters, or RWQCB concurrence that certification can be waived
Federal Clean Water Act, Section 402[a] (National Pollutant Discharge Elimination System)	RWQCB	Regulates discharge of stormwater and other runoff from construction sites and other localized ("point") sources. In California, requires construction projects with a disturbance footprint of 1 acre or more to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit), which entails preparation by qualified personnel of a Storm Water Pollution Prevention Plan (SWPPP) reflective of site conditions and the sensitivity (risk level) of receiving waters
California Fish and Game Code Sections 1600 *ff.*	California Department of Fish and Wildlife (DFW)	Regulates activities affecting the geomorphology and function of California's rivers, streams, and lakes. Requires DFW approval for activities that would

Regulation	Under the Jurisdiction of…	Scope and Requirements
		• divert or obstruct the natural flow of a river, stream, or lake • modify the bed, channel, or bank of a river, stream, or lake • use material from the bed, channel, or bank of a river, stream, or lake • place debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake
Federal Endangered Species Act	U.S. Fish and Wildlife Service (USFWS)	Among other provisions, regulates activities affecting plant and wildlife species listed by USFWS or the National Marine Fisheries Service as Threatened or Endangered, and their habitat. Requires USFWS or National Marine Fisheries Service authorization for activities affected listed species or their habitat
California Endangered Species Act	DFW	Among other provisions, regulates activities affecting plant and wildlife species listed by the State of California as Threatened or Endangered, and their habitat. Requires DFW authorization for activities affecting listed species or their habitat

In addition to the resource agency authorizations listed in Table 2-3, the NCCA projects are expected to require building permits and grading authorization from the County of Merced (County). Extension of water service outside City limits to support limited uses at the NCCA will require authorization from the Merced County Local Agency Formation Commission (LAFCo).

At the City level, this Master Plan and the NCCA projects will need to be approved by City Council because the Plan Area is outside City limits and outside the City's defined planning area (Figure 1-1). Structures, such as those in the community area planned as part of the Newman Nature Park, will require City building permits. Approvals for grading and other project features will be issued based on review of project plans and specifications.

National Environmental Policy Act

Much like CEQA at the state and local level, the National Environmental Policy Act (NEPA) requires that projects proposed, funded, or authorized by federal agencies undergo environmental review prior to the federal agency taking action. Issuance of permits—such as those required under CWA Section 404—by federal agencies qualifies as a federal "action" subject to NEPA review. For permits that are issued at a programmatic or nationwide level, NEPA review also occurs at the program or national level, and separate, project-specific review is typically not required. Consequently, if the NCCA projects can obtain federal—specifically, Corps—permit coverage under any of several potentially applicable Nationwide Permits, NEPA review is unlikely to be needed. If, however, the Corps determines that Individual (project-specific) Permits are warranted, NEPA review will become necessary. In this case, the CEQA document will be expanded to become a "joint" document addressing both CEQA and NEPA requirements. The potential need for NEPA review is expected to be resolved through agency dialogue soon after the completion of this Master Plan.

Planning History

The use of natural processes for stormwater and wastewater treatment has become increasingly visible in recent decades, and City staff—inspired by successful projects such as the Arcata Marsh, where constructed marshlands have been providing tertiary treatment for wastewater since the late 1980s—have long held the vision that such applications would one day serve the Newman community. The parcels that ultimately became the Plan Area were considered particularly appealing because of their location adjacent to the stormwater pump

station that delivers runoff from the majority of the City to the Miller Ditch. With this in mind, staff informally approached the owner of the Plan Area parcels in the early 2010s to indicate interest in purchasing the property for a constructed stormwater treatment wetland should the owner ever wish to sell them, and when the parcels became available, the City was quick to take advantage of the opportunity. Staff also realized that the Plan Area parcels were large enough to host additional complementary projects and supported remnant habitat features that would be conducive to additional restoration, enabling development of a complex of projects that could ultimately meet multiple community needs.

Site Selection

As identified above, the NCCA site was selected with the vision that would become the NEWS project in mind—and because it offered opportunities for additional compatible projects that would provide further community benefits consistent with City planning priorities. Three primary factors drove the selection of the Plan Area parcels:

- proximity to the City's existing stormwater pump station at the northwest corner of Canal School Road and Inyo Avenue, which delivers stormwater from approximately two-thirds of the City, including its densest and most industrialized areas, to the Miller Ditch (Figure 1-3)
- location immediately adjacent to the route of a planned Class I bicycle path (Figure 1-6, Figure 4-4)
- opportunities to enhance and restore existing wetlands, which are currently in a disturbed and degraded state (see Chapter 3 for more information on existing site conditions)

Although the City owns extensive lands to the east, surrounding the WWTP (Figure 1-5), siting the NCCA in closer proximity to the WWTP was ruled out because

(1) it would require installation of extended, large-diameter conveyance to deliver stormwater to the site for treatment, with corollary environmental and cost impacts, and

(2) locating the NCCA farther from the City proper would make it more difficult to reach by foot or bicycle and would undermine its success in achieving the City's public accessibility objectives

Project Planning

Led by Public Works and the City Manager with assistance from the Community Development Department's planning staff, project planning moved ahead with the understanding that the two NCCA Plan Area parcels would support multiple complementary projects. In 2018 – 2019, the City retained consultants to assist with project planning, including Darla Elswick Consulting, RICK Engineering, and Kevin Merk Associates of San Luis Obispo for NEWS project planning, Vollmar Natural Lands Consulting of Berkeley and Sacramento for wetland project planning, RRM Design Group of San Luis Obispo for Newman Nature Park planning, and Redtail Consulting of Fremont for parcel-wide master planning, environmental review, and regulatory permitting support. The City also entered into a Memorandum of Understanding with UC Merced for co-development of the MDTW project. Although the four projects are planned to serve separate and distinct purposes, they are seen as complementary pieces of a larger planning vision, and will occupy the same context of opportunities and constraints. As a result, the City's consultants have largely operated as members of a single, cooperative team with extensive collaboration, information sharing, and mutual support facilitated by City staff.

A critical early step was to develop an understanding of the environmental opportunities and constraints presented by the Plan Area parcels, in order to

(1) understand exactly what would and would not be possible (and appropriate) within the Plan Area, and

(2) delineate the approximate footprint of each project so the projects would capitalize on the opportunities offered by the parcels, avoid challenges posed by existing constraints to the extent feasible, and minimize unnecessary environmental impacts

In spring 2019, Kevin Merk Associates conducted a preliminary biological constraints analysis for the Plan Area (Kevin Merk Associates 2019), funded by a SWRCB Proposition 1 Storm Water Grant Program Round 1 grant to the City for NEWS project planning, administered by the Council for Watershed Health. The engineering team also excavated test pits and conducted infiltration tests to evaluate soil properties, including permeability, on the Plan Area parcels (Technicon 2019). This was followed in late 2019 – early 2021 by several more detailed studies, including:

- topographic survey, needed to support engineering design
- a preliminary delineation of state- and federally jurisdictional habitat (wetlands and waters) (Vollmar Natural Lands Consulting 2021a)
- more detailed studies of the Plan Area's biological resources (Vollmar Natural Lands Consulting 2020a, 2021b)
- water quality and water budget studies for the Miller Ditch (Rodal Morales and Beutel 2020, Rodal Morales et al. 2020)

Additionally, in April 2020, the City contracted to have five piezometers installed to monitor shallow groundwater levels on the 78-acre parcel (ENGEO 2020). Results of the studies conducted to date are summarized in Chapter 3 (*Existing Conditions*). Further soil and infiltration testing was conducted during summer 2020 in conjunction with preliminary design of the wetland project (Vollmar Natural Lands Consulting 2020b). Based on the constraints and opportunities identified through these planning studies, Table 2-4 summarizes the rationale used to site each of the NCCA projects within the Plan Area.

Table 2-4. Project Siting and Footprint Considerations

Project	Key Constraints	Siting/Footprint*
NEWS project	• Maintain sufficient vertical separation between the bottom of the NEWS wetland basins and the shallow groundwater table • Avoid need for pumping to move stormwater between the NEWS project basins (requires proximity to inlet from Miller Ditch to provide efficient hydraulic gradient, due to nearly flat topography on Plan Area parcels) • Avoid central swale area on 78-acre parcel (discussed further in Chapter 3), which offers good habitat restoration opportunities	Northwest quadrant of 78-acre parcel; basin layout and depth optimized to enable treatment of runoff from design storm event (see discussion of NEWS project goals and objectives in Chapter 4) and maximize hydraulic function within limited footprint
Wetland project	• Minimize impacts on existing wetland features while capitalizing on opportunities for habitat enhancement, including central swale area and degraded ephemeral wetlands on 24-acre parcel	Central and east-central portion of 78-acre parcel, extending to 24-acre parcel
MDTW project	• Enable efficient delivery of water from Miller Ditch, without need for pumping • Avoid need for pumping to move water within project (requires proximity to Miller Ditch due to nearly flat topography on Plan Area parcels) • Avoid NEWS project footprint	Southwest quadrant of 78-acre parcel

Project	Key Constraints	Siting/Footprint*
	• Avoid central swale footprint on 78-acre parcel, which offers good habitat restoration opportunities	
Newman Nature Park	• Minimize impacts on existing wetland features • Avoid impacts on habitat created by other projects • Provide public access as appropriate throughout Plan Area, avoiding sensitive habitat areas	Community facilities area located in southeast corner of 78-acre parcel; trails in upland areas throughout 78-acre parcel

** Approximate project footprints are shown in Figure 1-2.*

Initial conceptual designs for the four NCCA projects were developed independently by the four consultant teams retained by the City. In late summer and early fall 2020, the City hosted a series of contactless virtual charrette sessions to enable interaction between the design teams. One of the key goals these sessions was to "dovetail" the footprints and features of the four projects in more detail, maximizing long-term benefits to habitat function and value across the NCCA site. The charrettes also took advantage of the new soil and hydrologic information collected in summer 2020. The charrette process resulted in modifications to the wetland and MDTW projects, which have been incorporated into this Master Plan. Charrettes will be ongoing as planning moves forward, to make sure the four projects continue to accommodate one another for best possible outcomes.

Stakeholder Involvement

Planning for the NCCA projects included early and comprehensive outreach to stakeholders. In addition to internal City finance and operations staff, key stakeholders were identified as including the following groups.

- Regulatory agencies that may have permit authority over the NCCA projects (see *Other Regulations & Requirements* above)
- The County of Merced, which has land use planning authority over the NCCA parcels since they are outside City limits
- CCID, which oversees provision of irrigation water via the Miller Ditch, and coordinates Miller Ditch operation and maintenance
- The Newman community at large

Table 2-5 summarizes stakeholder outreach conducted to date in the NCCA planning process, and the input received. In addition to the activities discussed in Table 2-5, in May 2020, the consultant team contacted California's Native American Heritage Commission for information on tribal contacts in the Newman area, who have been added to the list of stakeholders for future outreach. Additional community outreach focusing specifically on the Newman Nature Park is ongoing as of early 2021.

Table 2-5. Stakeholder Outreach

Group	Outreach Activities	Key Outcomes & Takeaways
CCID	• In spring 2019, the consultant team contacted CCID to confirm the potential to divert water from the Miller Ditch	• CCID confirmed that this was feasible within certain limitations that are not expected to affect project feasibility • CCID additionally clarified that the majority of the lands east of Canal School Road are outside their jurisdiction but cautioned that any downstream uses of Miller Ditch water are likely

Group	Outreach Activities	Key Outcomes & Takeaways
		well established and may need further investigation if the NCCA projects would reduce Miller Ditch flows downstream of the NCCA. If the City elects to divert treated water from the Plan Area for offsite beneficial uses (e.g., at the WWTP), this will be a topic for further dialogue to ensure that all users' needs can be balanced
Regulatory agencies	• In October 2019, during the pre-design phase, City and consultant team staff attended a pre-application meeting with Corps and RWQCB staff to discuss the NEWS project and briefly introduce the other NCCA projects • The consultant team conducted informal phone and email dialogue with Corps and RWQCB staff during spring 2020 to discuss the possibility of the NCCA projects (in particular, the NEWS and wetland projects) achieving "self-mitigating" status since they would restore and create significantly more aquatic habitat than they would impact • In early July 2020, City and consultant staff attended a virtual interagency task force meeting with Corps regulatory staff, Corps "Section 408" staff, and RWQCB staff in early to present the overall NCCA vision in more detail, update the agencies on additional technical studies and planning conducted since October 2019, and discuss permit requirements. USFWS and DFW staff typically attend these meetings but were not in attendance in July; the consultant team will follow up with them in coming weeks. NMFS staff indicated that they would not attend, likely because impacts on species under NMFS jurisdiction are expected to be beneficial and would only occur through the indirect San Joaquin River nexus	• At the October 2019 pre-application meeting, RWQCB staff expressed concern about the potential for infiltration from the NEWS project's wetland treatment basins to infiltrate into the subsurface and adversely affect the quality of shallow groundwater. This was addressed by design (ensuring basin depth is appropriate to maintain adequate separation between the basin invert and the groundwater table, and lining one of the basins where separation would be inadequate due to hydraulic constraints) • During informal phone conversations, Corps and RWQCB staff indicated that there was some potential for the NEWS and wetland projects to qualify as self-mitigating if specific conditions could be met. In particular, the habitat counted toward mitigation credit would need to be preserved in perpetuity under a conservation easement, which would typically be managed by an accredited third party. This may be feasible if the easement terms can be structured to permit normal operations; the City will continue to explore this • At the July 2020 meeting, RWQCB staff reminded the team that operation of the NEWS project (where periodic sediment removal is expected to be necessary) will need to be consistent with current state standards, and WDRs will be required for the NEWS project discharge to the Miller Ditch • Corps 408 staff confirmed the project team's understanding that 408 review will not be needed since no federal project works would be affected by the NCCA projects, and recommended that the team contact the Central Valley Flood Protection Board (CVFPB) to determine whether their authorization will be needed. The CVFPB and the Lower San Joaquin Levee District subsequently also confirmed that they do not have jurisdiction over the NCCA projects
County of Merced	• In early 2020, the City reached out to Merced County Planning staff for input into the development of the CEQA approach for the NCCA projects	• The County has expressed general support for the NCCA projects • Additional outreach will be conducted to clarify the County's approvals process

Group	Outreach Activities	Key Outcomes & Takeaways
Newman community at large	In 2019, following several staff presentations at City Council meetings, where residents had the opportunity to provide input on the NCCA concept and projects, the City conducted additional direct outreach to the community • City staff hosted tables at the April 2019 "Newman Together" community event and the September and October 2019 Newman Harvest Markets. All three events were widely attended, and materials were provided in Spanish and English to increase the opportunity for residents to comment. At each event, community members were surveyed concerning their preferences for the NCCA parcels, the City's intent to develop a conservation area and natural park, and specific parkland features • Also in 2019, the City and consultant staff held a collaborative community design charrette to solicit input on project preferences In early 2021, the City began a series of virtual meetings focusing specifically on community desires for the Newman Nature Park • The first meeting, held in early February via a public Zoom call, was facilitated to provide opportunities for community members to build on previous outreach, assist the City in visioning the Nature, and develop more detail around specific features desired at the Nature Park • The second meeting, in mid-February, was framed as a virtual focus group design charette. Following an introduction to bring new participants up to date, attendees were invited to join facilitated small-group discussions using the "break-out room" tool in Zoom. Using Jamboard, Google's interactive whiteboard system, small-group participants discussed options and chose locations within the Nature Park footprint for the features and amenities previously identified by the community. Each break-out group then had an opportunity to present their concept to the group as a whole for voting • As of this writing (February 2021), outreach is ongoing	• Overall, the community members surveyed at City Council meetings and the 2019 events communicated that they liked and supported the NCCA concept. The community expressed strong preferences for the following features: - birdwatching areas - jogging/walking/bicycle paths - opportunities to attend nature-themed learning events - improved opportunities for school-age children to interact with nature All of these features were incorporated into the NCCA vision • At the first virtual meeting in 2021, community members expressed a preference for an overall "natural" style at the Park, and overwhelmingly selected *Environment* as their preferred Park theme Among the features identified as desirable were trails and boardwalks (including bicycle trails), educational exhibits, outdoor classrooms, rest areas along trails, picnic areas, bird watching areas, a garden, and a fishing pond Some of the features identified by the community will likely not be appropriate at the Nature Park but will remain on the City's radar for future projects. These include vending machines, a BMX track, a dog park area, a fountain-type water feature, and bocce ball courts. The majority of attendees identified that they would bike to the Nature Park if a safe route were available • The second 2021 virtual meeting resulted in three separate community-generated layouts for the Nature Park, each including comments on specific features and preferences. These will provide a basis for further discussion and will continue to inform City planning for the Park

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Chapter 3

Existing Conditions in Plan Area

Land Use

Land Use Designation & Zoning

The Plan Area comprises Assessor's Parcel Numbers (APNs) 054-050-019 and -020 (78-acre parcel at the southeast corner of Inyo Avenue and Canal School Road) and APN 054-05-010 (24-acre parcel northeast of Brazo Road). The Plan Area parcels are located in Merced County immediately southeast of the Stanislaus County–Merced County boundary. They are immediately outside and adjacent to City limits and the City's Primary Sphere of Influence, but are within the Planning Area defined in the current General Plan (City of Newman 2007) (Figure 1-1). As a result, the Plan Area is subject to both City and County of Merced (hereafter, County) general plan land use designations, but is zoned only by the County, as shown in Table 3-1.

Table 3-1. City and County Land Use Designations for Plan Area Parcels

General Plan Land Use Designation		Zoning
City	County	County
Agriculture	Agriculture	A-1 General Agriculture

Sources: City of Newman 2007, 2017; County of Merced 2013, County of Merced 2020

The County's A-1 (General Agriculture) zone is generally intended to provide for areas of intensive farming that require higher quality soils, water availability, and relatively flat topography, and for agricultural commercial/ industrial uses that depend on proximity to urban areas or location in sparsely populated low-traffic areas (County of Merced Unified Development Ordinance 18:2:18.10). A wide range of uses are permissible (allowed by right based on zoning) or conditionally permissible (permissible with County approval) in A-1 zoned areas. Both public parks and recreation areas and wildlife management areas are permissible. The County zoning code does not specifically address public facilities or stormwater treatment on agricultural parcels.

Although the Plan Area parcels are designated and zoned for agricultural use, as City-owned land not under cultivation at the present time, neither of the parcels is currently under Williamson Act contract.

Historic & Current Land Uses

Like the surrounding area, where cultivation for a variety of row and orchard crops has been widespread and intensive throughout the last several decades, the 78-acre parcel has a history of agricultural use. Site topography and historic aerial photographs indicate that at one time it was graded for flood irrigation supported

by a system of ditches, and it was previously cultivated for row crops, but has been fallow since the 1990s. The 24-acre parcel appears not to have been cultivated. In recent years, both of the Plan Area parcels have primarily been used for low-intensity grazing (Pinnell pers. comms., GoogleEarth 2020, Vollmar Natural Lands Consulting 2021a).

Physiography & Hydrology

Surface Drainage

The Plan Area parcels lie at an elevation of approximately 75 – 80 feet above mean sea level and are gently rolling to nearly flat, with a maximum difference in elevation across each parcel of less than 10 feet.

Per the U.S. Geological Survey's hydrologic unit classification, the Plan Area is located in the Bennett Valley – San Joaquin River watershed (see U.S. Geological Survey 2020).

Based on review of archival aerial photographs and current conditions in the region, the two parcels were historically part of the large floodplain and tributary complex draining generally eastward to the San Joaquin River (Pinnell pers. comms., Vollmar Natural Lands Consulting 2021b). Regionally and in the site vicinity, this system has been substantially disrupted and replaced by agricultural uses, and the Plan Area parcels now occupy a complex surface water drainage context that includes a network of agricultural canals and ditches as well as the Newman Wasteway, which ultimately discharges to the San Joaquin River to the east.

As identified above, the majority of the 78-acre parcel was previously graded to enable irrigation and cultivation. The 24-acre parcel does not appear to have been substantially graded, and although they are in a disturbed condition (particularly the 78-acre parcel), neither parcel appears to have been subject to the deep ripping typical of agricultural lands in the Plan Area vicinity (Vollmar Natural Lands Consulting 2021a, 2021b). Both parcels support a conspicuous channel-like feature that appears to represent a substantially disturbed remnant tributary of the San Joaquin River, labeled as the *central swale* on Figure 1-2. This remnant channel no longer supports through-going flow; it is blocked by berms at both ends, has been extensively modified by shallow grading for agriculture, and is disconnected from the River by intervening cultivated lands. Berming along the banks has also reduced its original extent and further modified its hydrology although it is locally open to overland flow input on both the 78-acre and 24-acre parcels (Vollmar Natural Lands Consulting 2021a).

Three Drainage Management Areas (DMAs) have been defined in the vicinity of the Plan Area, based on topography and existing conveyance features, including agricultural ditches and the City's stormwater infrastructure (Figure 3-1):

- the urban City area
- agricultural fields to the north
- agricultural fields to the south

The majority of the urban City area, and the agricultural fields to the north, drain to the existing City stormwater pump station at the northwest corner of Canal School Road and Inyo Avenue. The agricultural fields to the south drain to the CCID's Miller Ditch, which borders the Plan Area parcels to the west and north (RICK Engineering 2019) and empties into the Newman Wasteway east of the 24-acre parcel, with excess flow from large storm events diverted via an overflow pipeline to a separate outfall to the north along the Wasteway. The Newman Wasteway in turn discharges to the San Joaquin River south of the City's WWTP and Hills Ferry Road (Figure 1-1).

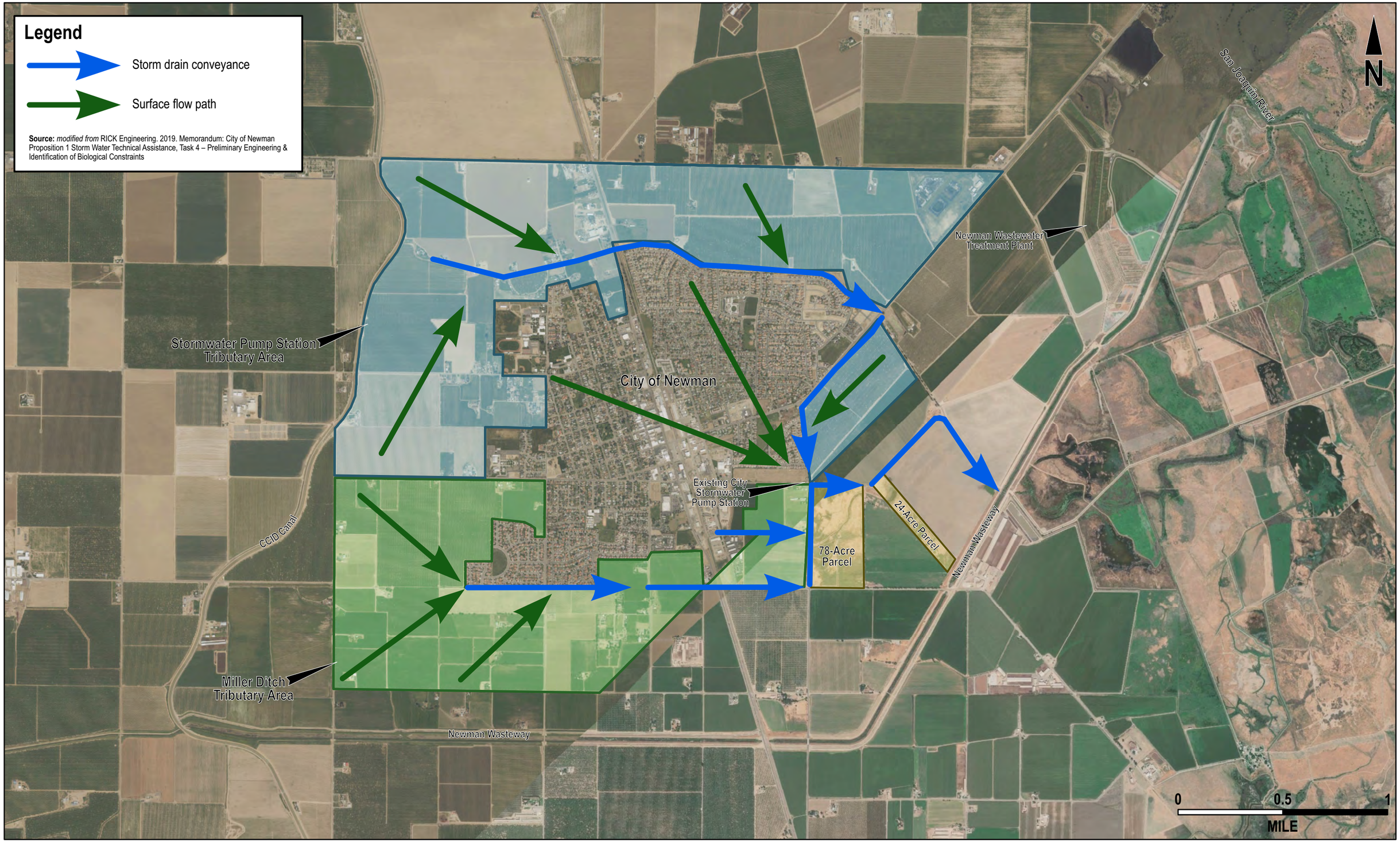

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Figure 3-1. Drainage in Plan Area Vicinity
Newman Community Conservation Area Master Plan
City of Newman

The Miller Ditch is a constructed feature that conveys flows from several sources. During the spring and summer, supply from the CCID canal west of the City is diverted into the Miller Ditch for irrigation use; several agricultural users both up- and downstream of the Plan Area have established agreements with the CCID for use of supply from the Miller Ditch (Beutel pers. comm., Landon pers. comm.). The Miller Ditch also receives agricultural tailwater and some overland runoff. As a result, flow in the Ditch is generally year-round, although data collected to date suggest that both flow volumes and water quality vary seasonally (Beutel pers. comm., Rodal Morales and Beutel 2020).

More specifically, flow and water quality monitoring conducted between September 2019 and May 2020 by the UC Merced Environmental Systems Graduate Group showed three regimes of flow and water quality in the Miller Ditch. In general, during the summer irrigation season, flows are comparatively high and are dominated by imported (CCID) water low in salinity and nitrate. In the fall, after irrigation flows are discontinued, overall flow volumes decrease and are dominated by shallow groundwater high in salinity and nitrate but low in phosphorus. During the winter, flows are low to moderate with somewhat elevated salinity, suggesting a mixture of freshwater rainfall input and more saline shallow groundwater. Additionally, comparison of data from monitoring stations up- and downstream of the existing stormwater pump station outfall at the northwest corner of the 78-acre parcel suggests that incoming stormwater flows from the pump station contribute elevated levels of suspended solids to Miller Ditch flows. Further monitoring will be needed to more fully assess these interpretations (Rodal Morales and Beutel 2020).

Shallow Groundwater

Like the City itself, the Plan Area overlies the Delta-Mendota Groundwater Subbasin of the San Joaquin River Groundwater Basin. The primary water bearing formation in the Delta-Mendota Subbasin—like the other subbasins along the west side of the San Joaquin Valley—is the Tulare Formation (California Department of Water Resources 2015) of probable Pliocene – Pleistocene age (Lettis 1982). Within the Tulare Formation, an upper unconfined aquifer and a lower confined aquifer are separated by a regionally extensive aquitard, the Corcoran Clay. Regional groundwater flow in the subbasin is generally toward the east (California Department of Water Resources 2015, City of Newman 2016, San Joaquin River Exchange Contractors GSP Group 2019).

In April 2020, the City contracted for the installation of five piezometers to monitor groundwater levels in shallow subsurface materials on the 78-acre parcel. Their locations are shown on Figure 3-2. Table 3-2 shows depths to groundwater as measured approximately one week after piezometer installation, allowing time for water levels to stabilize.

Table 3-2. Depth to Shallow Groundwater, 78-Acre Parcel

Location	Approximate Groundwater Elevation (Feet, NAVD88)	Approximate Depth to Groundwater from Surface (Feet)
Piezometer 1 (1-PZ1)	70.1	8.1
Piezometer 2 (1-PZ2)	70.1	10.1
Piezometer 3 (1-PZ3)	73.2	7.1
Piezometer 4 (1-PZ4)	71.6	8.5
Piezometer 5 (1-PZ5)	73.6	6.6

Source: ENGEO 2020

A test pit dug in May 2019 in the east-central portion of the 78-acre parcel—near the location of Piezometer 4 (1-PZ4 on Figure 3-2)—encountered groundwater at a depth of 6.5 feet below ground surface (Technicon 2019, 2020), following an unusually wet winter with late rains.

Testing conducted in May 2019 suggests that infiltration rates on the 78-acre parcel range from 3.8 gallons/square foot/day at the parcel's northeast corner to as much as 34.1 gallons/square foot/day in the central portion of the NEWS project footprint and 41.1 gallons/square foot/day near the NEWS project's southeast boundary. Similar testing in the central portion of the 24-acre parcel showed an infiltration rate of 1.1 gallons/square foot/day (Technicon 2019). Additional infiltration testing was conducted in late summer 2020 in support of wetland project design and yielded similar results, with measured infiltration rates ranging from as low as 1.1 gallons/square foot/day to a maximum of 41.1 gallons/square foot/day, with lower rates along the central swale on the 78-acre parcel and in the less-disturbed wetlands on the 24-acre parcel, and higher rates in leveled areas outside the central swale on the 78-acre parcel (Vollmar Natural Lands Consulting 2020).

An existing well is located near the northwest corner of the 78-acre parcel. Very little information is available on the well, but Department of Water Resources (DWR) records indicate that it was drilled in late 1992 or early 1993. It has a 6-inch casing diameter, was completed to a depth of 185 feet, and is screened from 150 to 170 feet below ground surface (California Department of Water Resources n.d.), and thus is probably producing from the upper unconfined aquifer. In recent years, it has been used for cattle watering (Souza pers. comm.).

Because the Plan Area parcels—unlike surrounding acreage—have not been deep-ripped, the Plan Area was originally thought to preserve intact Northern Claypan, an indurated clay layer that significantly reduces downward percolation of surface water and creates perched groundwater conditions in the shallow subsurface (Vollmar Natural Lands Consulting 2021a). Further soil testing performed in summer 2020 has shown, however, that although subsurface clays are locally present, there is no regional claypan on the plan area parcels (Vollmar Natural Lands Consulting 2020). Design of the wetland project—described further in Chapter 4—has been adjusted to take maximum advantage of existing soil conditions and shallow hydrology in the Plan Area.

Soils

The Plan Area and surrounding vicinity are situated on soils assigned to the Pedcat, Britto, and Dosamigos series (Figure 3-3). These are saline, clay-rich, loamy soils of alluvial fans, fan aprons, and basin floors, formed in alluvium derived from sedimentary rock. Drainage is poor, such that soils may remain seasonally saturated, and pedogenic calcium carbonate and/or gypsum are present in varying percentages. Soil profiles are locally affected by leveling for agriculture (Natural Resources Conservation Service 2019).

Table 3-3 provides an overview of key characteristics by soil series. As shown on Figure 3-3, the Plan Area is largely underlain by Pedcat clay loam (leveled), with the exception of the central swale, which is underlain by Britto clay loam (leveled).

Table 3-3. Soils of Plan Area and Vicinity

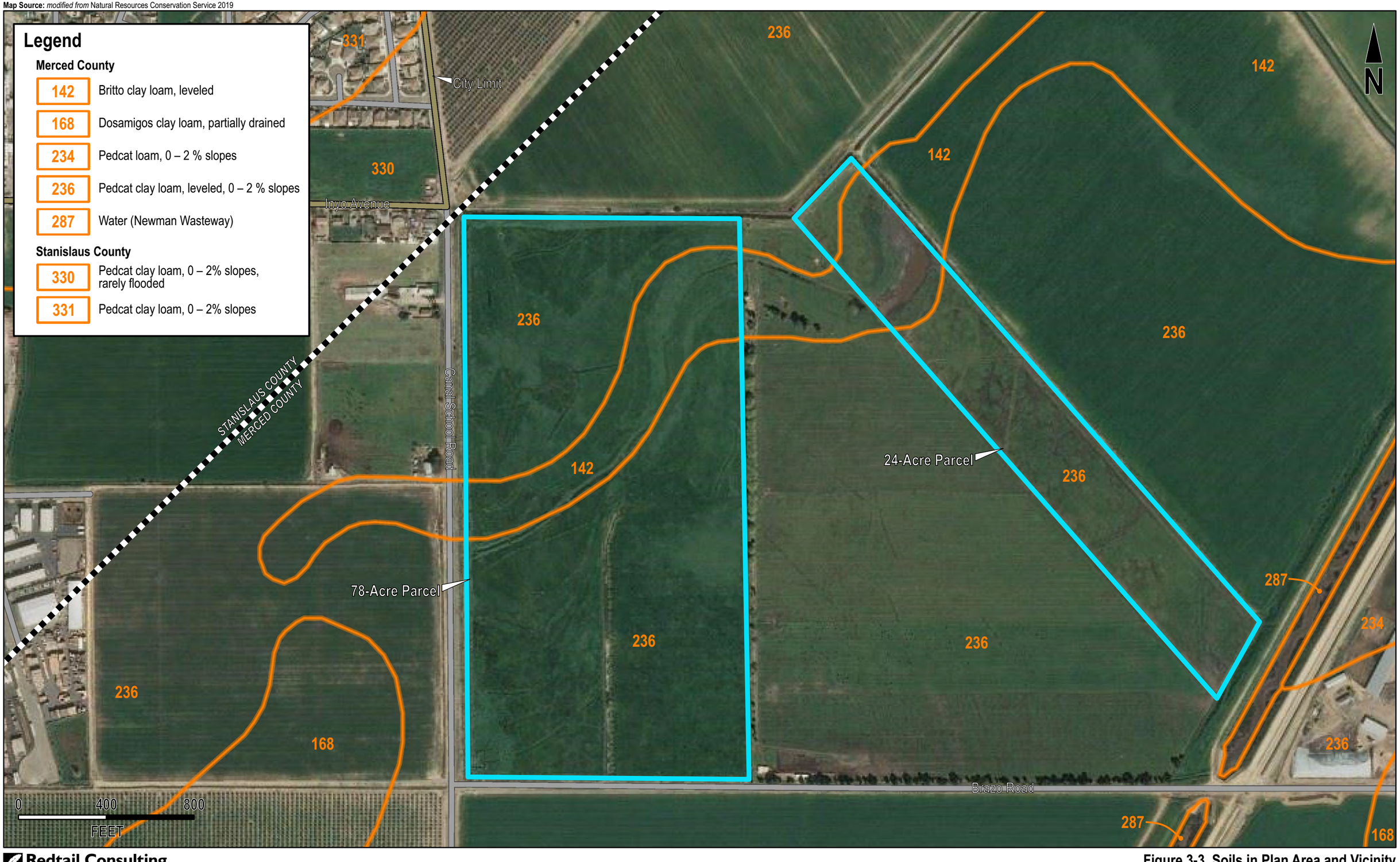
Soil	Landform	Typical Profile*	Drainage	Salinity
Merced County				
Britto clay loam, leveled	Rims on basin floors	0 – 5: clay loam 5 – 22: clay loam 22 – 62: sandy clay loam *Up to 5% $CaCO_3$**, 10% $CaSO_4 \cdot 2H_2O$****	Very poor	Moderate – strong

Source: *after* ENGEO 2020; aerial photograph from GoogleEarth (imagery date 07/18/2019, downloaded 03/16/2020)

Redtail Consulting
Environment & Community

Figure 3-2. Piezometer Locations
Newman Community Conservation Area Master Plan
City of Newman

Map Source: *modified from* Natural Resources Conservation Service 2019



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Environment & Community

Figure 3-3. Soils in Plan Area and Vicinity
Newman Community Conservation Area Master Plan
City of Newman

Soil	Landform	Typical Profile*	Drainage	Salinity
Dosamigos clay loam, partially drained	Alluvial fans	0 – 5: clay loam 5 – 29: clay loam 29 – 62: clay loam *Up to 35% $CaCO_3$, 10% $CaSO_4 \cdot 2H_2O$*	Somewhat poor	Very slight – strong
Pedcat loam, 0 – 2% slopes	Fan aprons	0 – 5: loam 5 – 23: clay 23 – 29: clay 29 – 60: stratified sandy clay loam to clay *Up to 3% $CaCO_3$*	Poor	Moderate – strong
Pedcat clay loam, leveled, 0 – 2 % slopes	Fan aprons	0 – 5: clay loam 5 – 23: clay 23 – 29: clay 29 – 60: stratified sandy clay loam to clay	Poor	Moderate – strong
Stanislaus County				
Pedcat clay loam, 0 – 2% slopes	Alluvial fans	0 – 7: clay loam 7 – 25: clay 25 – 51: clay loam 51 – 60: stratified sandy clay loam to clay *Up to 15% $CaCO_3$*	Poor	Moderate – strong
Pedcat clay loam, 0 – 2% slopes, rarely flooded	Alluvial fans	0 – 7: clay loam 7 – 25: clay 25 – 51: clay loam 51 – 60: stratified sandy clay loam to clay *Up to 15% $CaCO_3$*	Poor	Moderate – strong

* Depths in inches below ground surface
** Calcium carbonate
*** Gypsum

Source: Natural Resources Conservation Service 2019

Biological Resources & Jurisdictional Habitat

Habitat Conditions

The Plan Area currently supports a mosaic of disturbed upland and wetland habitats, as well as remnant and currently functional agricultural ditches that also offer wetland value. Although vernal pools occur in the region and likely were present historically in the Plan Area, none of the Plan Area wetlands supports a majority of vernal pool indicator species at present, based on biological surveys conducted during winter 2019 – 2020. In recent decades, wetland extent has been influenced, and the condition of some wetlands—particularly on the 24-acre parcel—degraded by flood irrigation to improve summer grazing conditions (Vollmar Natural Lands Consulting 2020, 2021a, 2021b).

The table below summarizes wetland acreages; their distribution is shown on Figures 3-4 and 3-5.

Table 3-4. Potential Jurisdictional Habitat in Plan Area

Habitat Type	Total Extent	Presumed Jurisdiction		
		Corps	DFW	RWQCB
Emergent wetland	0.142	—	—	0.142
Seasonal wetland, central swale	1.396	0.064	0.064	1.396

Habitat Type	Total Extent	Presumed Jurisdiction		
		Corps	DFW	RWQCB
Other seasonal wetland	7.979	2.155	0.886	7.979
Ditch	3.704	3.704	3.704	3.704
Total extent of wetland habitat:	*13.221*	*5.923*	*4.654*	*13.221*

Source: Poisson pers. comm.

Seasonal wetlands on the Plan area parcels support a mixture of native and non-native species, including native Mexican rush (*Juncus mexicanus*) and non-native Mediterranean barley (*Hordeum marinum*), Italian rye grass (*Festuca perennis*), rabbit's foot grass (*Polypogon monspeliensis*), curly dock (*Rumex crispus*), and annual blue grass (*Poa annua*). Emergent wetland supports native common tule (*Schoenoplectus acutus occidentalis*), broad-leaved cattail (*Typha latifolia*), water-pepper (*Persicaria hydropiper*), and knotgrass (*Paspalum distichum*), interspersed with the same native and non-native species found in the seasonal wetlands (Vollmar Natural Lands Consulting 2021a). Based on their distribution and geometry, and the Plan Area's history of agricultural use, wetlands in the Plan Area are thought to represent a combination of heavily disturbed remnant natural features and anthropogenic features created by agricultural grading (Vollmar Natural Lands Consulting 2021b).

Upland habitat on the Plan Area parcels consists primarily of grasslands dominated by non-native species typical of ruderal uplands in the region, although a few small, localized stands of native grassland are present. Non-native grasses found on the parcels include ripgut brome (*Bromus diandrus*), soft chess (*B. hordeaceus*) slender wild oat (*Avena barbata*), foxtail barley (*H. murinum*), and Bermuda grass (*Cynodon dactylon*). Associated non-native forbs include white clover (*Trifolium repens*), bur-clover (*Medicago polymorpha*), bindweed (*Convolvulus arvensis*), summer mustard (*Hirschfeldia incana*), English plantain (*Plantago lanceolata*), white horehound (*Marrubium vulgare*), milk thistle (*Silybum marianum*), black mustard (*Brassica nigra*), and wild geranium (*Geranium dissectum*). Native grassland areas support beardless wild rye (*Elymus triticoides*) and meadow barley (*H. brachyantherum* ssp. *brachyantherum*). Mexican rush also occurs sporadically in upland habitats across both parcels (Vollmar Natural Lands Consulting 2021a).

A number of large mature willows (*Salix* spp.), Mexican fan palms (*Washingtonia robusta*), a mid-sized walnut tree (*Juglans* sp.), and smaller cultivated fruit trees are present immediately outside the east boundary of the 78-acre parcel, visible in Figure 1-2 and other figures with an aerial photograph base.

Additionally, both parcels exhibit numerous large and small mammal burrows, likely the work of California ground squirrel (*Otospermophilus beecheyi*) and pocket gopher (*Thomomys bottae*). Upland habitat on the 78-acre parcel supports several large California ground squirrel burrow complexes, and numerous additional ground squirrel burrows are present within berms and levees. Smaller gopher burrows are concentrated in wetland and grassland habitats. Several California ground squirrel individuals were observed during site visits conducted in March 2020 (Vollmar Natural Lands Consulting 2021a).

Special-Status Species

A number of special-status species have the potential to be present on the Plan Area parcels, including plants as well as wildlife. The Plan Area is not located within designated critical habitat for any listed species (Vollmar Natural Lands Consulting 2021a).

Table 3-5 lists the special-status plants with potential to occur in the Plan Area. None of the species considered potentially present is state- or federally listed; they qualify for special status due to their inclusion in the

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Legend

Symbols

- Miller Ditch (approximate; not surveyed)
- Miller Ditch culvert (approximate; not surveyed)

Potential Jurisdictional Features (Federal and State)

- Ditch
- Seasonal wetland swale
- Seasonal wetland

Potential Jurisdictional Features (State)

- Ditch
- Seasonal wetland swale
- Seasonal wetland
- Emergent wetland

Vollmar NATURAL LANDS CONSULTING

Source: *modified from* Vollmar Natural Lands Consulting 2020b

Redtail Consulting
Environment & Community

Figure 3-4. Potential Jurisdictional Waters, 78-Acre Parcel
Newman Community Conservation Area Master Plan
City of Newman

Redtail Consulting
Environment & Community

Figure 3-5. Potential Jurisdictional Waters, 24-Acre Parcel
Newman Community Conservation Area Master Plan
City of Newman

California Native Plant Society's rare plant inventory. Additional special-status plants are known from the region, but are believed to be absent from the Plan Area due to unsuitability of habitat and/or distance from the species' primary range. Protocol-level surveys of the Plan Area parcels for special-status plants were conducted in spring – summer 2020. Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) (CRPR 4.2) was observed on both the 78-acre parcel and the 24-acre parcel. None of the other species listed in Table 3-5 was found to be present. However, presence and local population extent can vary from year to year, and caution with regard to the other five species is likely still warranted.

Table 3-5. Special-Status Plants Potentially Present in Plan Area

Species	Rank*	Habitat	Potential to Occur in Plan Area
Heartscale *Atriplex cordulata* var. *cordulata* (Annual herb)	1B.2	Saline or alkaline chenopod scrub, meadows and seeps, valley and foothill grasslands, on sandy substrates, at elevations up to 70 meters above sea level	Wetlands in Plan Area offer suitable habitat. Closest documented occurrence is 5 miles away
Crownscale *Atriplex coronata* var. *coronata* (Annual herb)	4.2	Alkaline chenopod scrub, valley and foothill grasslands, vernal pools, commonly on clay substrates, at elevations up to 200 meters above sea level	Wetlands in Plan Area offer suitable habitat
Lesser saltscale *Atriplex minuscula* (Annual herb)	1B.1	Alkaline chenopod scrub, playas, valley and foothill grasslands with sandy substrates, at elevations of 15 – 45 meters above sea level	Wetland and mesic uplands in Plan Area offer suitable habitat
Vernal pool smallscale *Atriplex persistens* (Annual herb)	1B.2	Alkaline vernal pools, at elevations less 115 meters above sea level	Wetlands in Plan Area offer suitable habitat. Closest documented occurrence is 3.3 miles away
Parry's rough tarplant *Centromadia parryi* ssp. *rudis* (Annual herb)	4.2	Alkaline, vernally mesic seeps, roadsides, valley and foothill grasslands, vernal pools, at elevations up to 100 meters above sea level	Wetland and mesic uplands in Plan Area offer suitable habitat
San Joaquin spearscale *Extriplex joaquiniana* (Annual herb)	1B.2	Alkaline chenopod scrub, meadows and seeps, playas, valley and foothill grasslands, at elevations up to 350 meters above sea level	Plan Area offers suitable habitat. Closest documented occurrence is 4 miles away

* Refers to California Native Plant Society's California Rare Plant Ranks and California threat level codes

Key to California Rare Plant Ranks

CRPR 1A = Plants presumed extirpated in California and either rare or extinct elsewhere
CRPR 1B = Plants rare, threatened, or endangered in California and elsewhere
CRPR 2B = Plants rare, threatened, or endangered in California but more common elsewhere
CRPR 3 = More information is needed about plant
CRPR 4 = Plants of limited distribution ("watch list")

Key to California Threat Level Codes

1 = seriously threatened in California
2 = fairly threatened in California
3 = not very threatened in California

Source: Vollmar Natural Lands Consulting 2021a

Special-status wildlife species that may occur in the Plan Area are identified in Table 3-6 on the next page. Numerous additional special-status species—including Valley elberberry longhorn beetle (*Desmocerus californicus dimorphus*), several amphibians, and a number of special-status bird, bat, and other small mammal

species—are known from the region but are not expected to use the Plan Area, due to unsuitability of habitat and/or distance from the locations of documented occurrences (Vollmar Natural Lands Consulting 2021a). Protocol-level surveys for large branchiopods—Conservancy fairy shrimp (*Branchinecta conservatio*), longhorn fairy shrimp (*B. longiantenna*), vernal pool fairy shrimp (*B. lynchi*), and vernal pool tadpole shrimp (*Lepidurus packardi*)—were conducted during winter 2019 – 2020 and these species were found to be absent from the Plan Area (Vollmar Natural Lands Consulting 2021a). California tiger salamander (*Ambystoma californiense*) (CTS) (state and federally listed as Threatened) is also expected to be absent. Although the Plan Area's uplands offer potential refugial habitat for the species, the Plan Area does not offer suitable breeding habitat, is more than 3.6 miles (the maximum distance CTS have been documented as traveling overland) away from the closest known CTS occurrence, and is surrounded by an extensive buffer of unsuitable agricultural lands (Vollmar Natural Lands Consulting 2021a).

Table 3-6. Special-Status Wildlife Potentially Present in Plan Area

Species	Status	Habitat Requirements	Potential to Occur in Plan Area
Amphibians and Reptiles			
Northwestern pond turtle *Actinemys marmorata*	SSC	Permanent and intermittent waters of rivers, creeks, small lakes and ponds, marshes, unlined irrigation canals, and reservoirs	**Low potential.** Irrigation ditches in Plan Area provide marginal habitat, and closest documented occurrence is 2 miles away, but species is highly mobile and could use Plan Area parcels for dispersal when moving between areas of better habitat
Western spadefoot *Spea hammondii*	SSC	Grasslands with shallow temporary pools offer optimal breeding habitat. Adults remain in underground burrows during most of the year	**Low potential.** Seasonal wetlands in Plan Area provide marginal breeding habitat due to very shallow water and fairly short ponding duration. Adjacent annual grassland uplands could provide suitable refugia during dry season, but closest documented occurrence is 6.7 miles away. Species is unlikely to be present but cannot be conclusively ruled out
Giant garter snake *Thamnophis gigas*	FT/ST/SSC	Primarily observed in marshes, sloughs, drainage canals, and irrigation ditches, especially around rice fields; occasionally found in slow-moving creeks. Prefers locations with vegetation close to the water for basking	**Low potential.** Species has been thoroughly studied and there is only one known breeding population in the San Joaquin Valley. Plan Area ditches that offer aquatic habitat connecting to Newman Wasteway and ultimately the San Joaquin River provide potentially suitable habitat. Closest documented occurrence is 2 miles away, is from 1976, and is imprecisely located, but species' presence cannot be conclusively ruled out
Birds			
Tricolored Blackbird *Agelaius tricolor*	SC/SSC (nesting)	Forages in pastures, agricultural fields, rice fields, and feedlots; nests in freshwater marshes with tules or cattails, or in dense thickets of willow, thistle, wild rose, or blackberry in close proximity to open water	**Low potential.** Species occurs year-round in area; closest documented occurrence is 0.6 mile away. Suitable foraging habitat is present in and around the Plan Area but the Plan Area does not provide nesting habitat; the perennial marsh in the central swale is too small and degraded and lacks the density the species requires
Burrowing Owl *Athene cunicularia*	SSC	Found in open, treeless areas with low, sparse vegetation, such as grasslands, deserts, pastures, agricultural fields, and levee embankments. Nests in small mammal burrows	**Potential.** Plan Area provides grassland habitat with small mammal burrows and offers suitable breeding, foraging, and refuge habitat. Closest documented occurrence is 11.7 miles away but species is mobile and may use the Plan Area

Species	Status	Habitat Requirements	Potential to Occur in Plan Area
Swainson's Hawk *Buteo swainsoni*	ST (nesting)	Forages in open grasslands, prairies, and agricultural fields; nests adjacent to riparian habitat	**Potential.** Large trees suitable for nesting are present adjacent to boundaries of Plan Area and suitable foraging habitat is available in and around the Plan Area. Species is known to nest in the region during spring and summer and has been observed foraging onsite
Northern Harrier *Circus hudsonius*	SSC (nesting)	Frequents meadows, grasslands, open rangelands, desert sinks, and fresh- and saltwater emergent wetlands; seldom found in wooded areas. Typically found in flat or hummocky open areas with tall, dense grasses, shrubs, and sedges for nesting, cover, and feeding	**Low potential.** Plan Area provides suitable nesting and foraging habitat in freshwater emergent wetlands and dense grasslands. Closest documented occurrence is 13.5 miles away, but species is mobile and may be present
Loggerhead Shrike *Lanius ludovicianus*	SSC (nesting)	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Nests in thorny vegetation, trees, shrubs, brush piles, or tumbleweeds	**Potential.** Plan Area's open habitat and fencing provide suitable foraging and resting habitat and species has been observed onsite
Yellow-billed Magpie *Pica nuttalli*	BCC (nesting)	Prefers open oak and riparian woodland or farm and ranchland with tall trees in the vicinity of grassland, pasture, and cropland	**Potential.** Grassland in the Plan Area and adjacent trees provide suitable habitat
Mammals			
American badger *Taxidea taxus*	SSC	Prefers open areas and may also frequent brushlands with little groundcover. When inactive, dens underground	**Very low potential; likely absent.** Plan Area habitat is marginal and no dens or other signs of the species were observed during the 2019 – 2020 biological surveys. Closest documented occurrence is 6.8 miles away. Species is not expected to be present
San Joaquin kit fox *Vulpes macrotis mutica*	FE/ST	Annual grassland, scrub, subshrub land. Dens in friable soils or enlarges smaller holes created by other animals	**Low potential.** Suitable grassland habitat is present throughout the Plan Area and the species' prey base of small mammals is present, but habitat in the Plan Area is largely disconnected from other suitable habitat in the area, no dens were observed in the Plan Area during the 2019 – 2020 biological surveys, and closest documented occurrence is 3.6 miles away. Species is unlikely to use the Plan Area for breeding but may pass through or hunt on the Plan Area parcels.

Key to Status Abbreviations:
FT = federally listed as Threatened
FE = federally listed as Endangered
BCC = USFWS Bird of Conservation Concern
ST = state-listed as Threatened
SC = candidate for state listing
SSC = state Species of Special Concern

Source: Vollmar Natural Lands Consulting 2021a

Measures to protect sensitive habitats and special-status species in the Plan Area during construction and long-term O&M are laid out in Chapter 8.

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Chapter 4

Vision, Goals, & Objectives

Vision

Habitat Restoration & Creation

As identified in Chapter 1, the NCCA is envisioned as supporting three habitat-related projects, including restoration of wetland and associated habitats and creation of two constructed stormwater and tailwater treatment wetlands, which would be operated and maintained for water quality benefit but would also offer a level of habitat function and value (Figure 1-2).

The habitat-related projects include the following.

- The **NEWS project,** an approximately 21-acre constructed wetland complex located in the northwest quadrant of the 78-acre parcel, which will use natural physical, biological, and biochemical processes to treat stormwater and dry season runoff from the City and surrounding agricultural lands prior to discharge to the Newman Wasteway and San Joaquin River. Because of the need to operate and maintain the constructed wetland treatment complex, the NEWS project will also include unpaved access roadways occupying high-ground embankments that separate the wetland treatment cells; these will be opened to public access for walking, jogging, and bicycling and other non-vehicular nature-oriented recreation once the NEWS project is operational (Figure 4-1)
- The **wetland project,** an approximately 11-acre seasonal wetland, riparian, and grassland restoration project located in the central and east portions of the 78-acre parcel and extending to the central and south portions of the 24-acre parcel, emphasizing natural sequestration of greenhouse gases (GHGs) (Figure 4-2)
- The **MDTW project,** an additional ~16-acre constructed wetland project located in the southwest quadrant of the 78-acre parcel and planned in collaboration with the Environmental Systems Graduate Group in the UC Merced Department of Civil and Environmental Engineering that will treat water from the Miller Ditch, with a focus on removing agricultural pollutants. Like the NEWS project, the MDTW project is also expected to include access roadways that serve a dual purpose as trails enabling non-vehicular access and nature-oriented recreation by the general public (Figure 4-3)

Both the NEWS project and the MDTW project will serve as a "living laboratories" providing hands-on learning opportunities for local students, including the MDTW students involved in project design and operations and K–12 students from area schools.

Together, to the extent that current site constraints permit, the three projects are intended to restore a habitat mosaic consistent with the historical pre-disturbance condition of the Plan Area and its surroundings. The project concepts will also be developed to minimize the loss of existing habitat that currently offers value and to capitalize as much as possible on opportunities offered by remnant wetland and other features. Although archival aerial photographs suggest that the parcel did not historically support perennial ponding, perennial ponding was likely present in other nearby portions of the tributary system (Pinnell pers. comm.), and the year-round presence of water would provide valuable opportunities for waterfowl and other migratory birds, further enhanced by a planting palette that includes numerous native trees and shrubs. In addition, to the extent feasible, the projects will be developed to be self-mitigating.

The projects will also offer several opportunities to better integrate surface water hydrology throughout the parcel. For instance, treated water from the MDTW project is envisioned as discharging to the central swale on the 78-acre parcel, where it will support emergent marsh and riparian habitat restored under the wetland project. At some point in the future, it may be possible for the City to purchase all or part of the intervening parcel and reconnect the central swale between the 78- and 24-acre parcels, further restoring this disturbed remnant tributary channel.

With this in mind, the location, extent, and elements of each project are being developed based on opportunities offered by existing site conditions and features, as follows.

- The location of the NEWS project on the northern portion of the parcel was selected based on proximity to the City's existing stormwater pump station at the northwest corner of Inyo Avenue and Canal School Road, and the Miller Ditch along the west and north margins of the parcel. This location will maximize hydraulic efficiency and minimize the difficulty—and the corollary impacts—of delivering untreated runoff to the project. The NEWS project footprint currently supports low-quality seasonal wetlands and disturbed uplands that will be largely replaced by constructed emergent wetlands bordered by appropriate native tree and shrub plantings

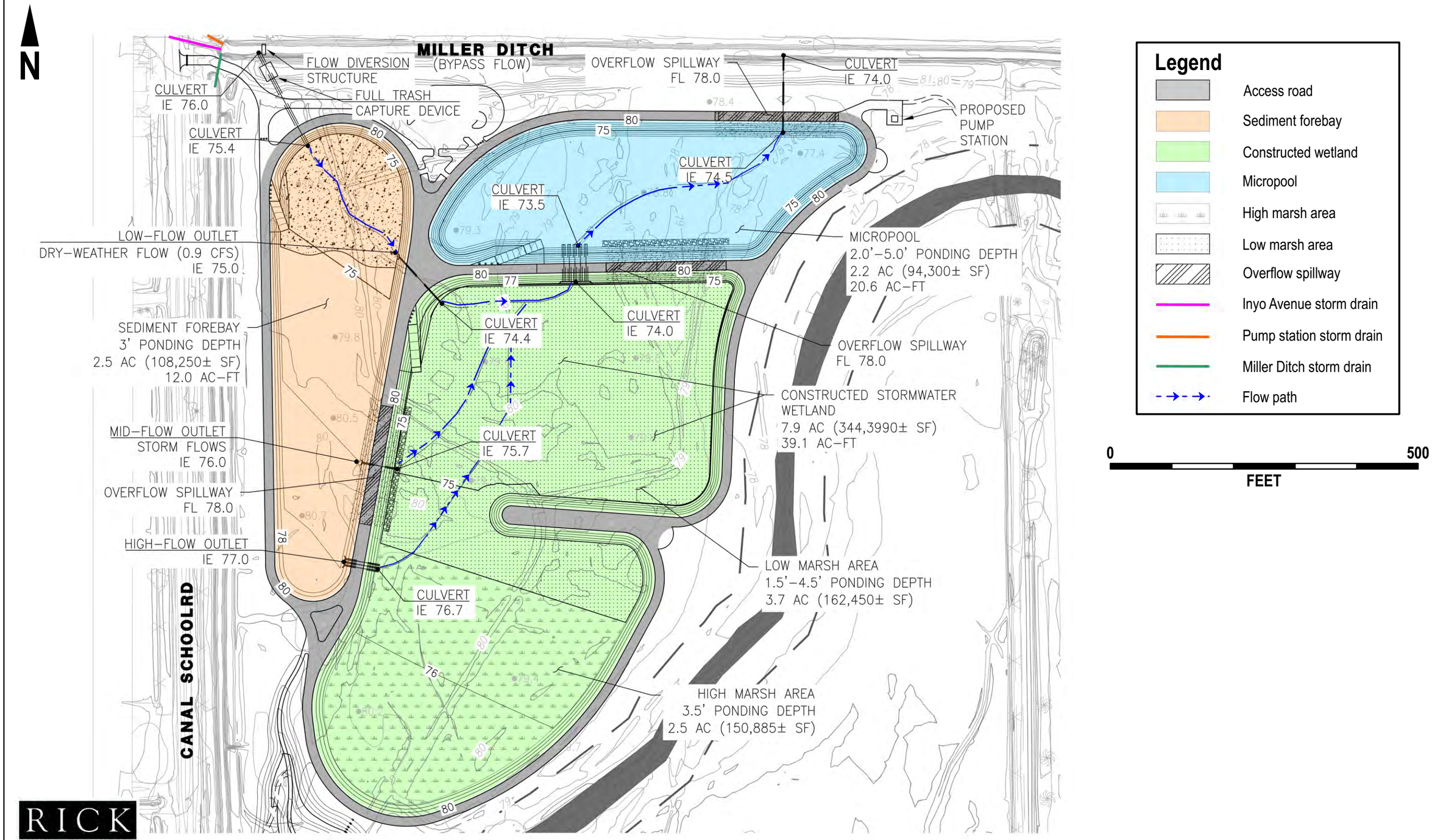
- The wetland project will occupy the central and east-central portions of the 78-acre parcel and extend to the 24-acre parcel, where it will capitalize on opportunities to enhance and expand emergent marsh in the central swale, replace previously cultivated and disturbed uplands with native perennial grassland and seasonal wetlands, and restore degraded seasonal wetlands to their historic ephemeral (vernal pool) condition. It will also plant native trees along the margin of the central swale, which is envisioned as a quasi-riparian corridor; that is, the swale will provide standing water, and will be bordered by native riparian tree plantings, but will not support through-going flow since there is at present no means for flow to exit the parcel, which is bounded on the downstream (east) side by actively cultivated agricultural lands

- The MDTW project is planned for the southwest quadrant of the 78-acre parcel, where it can draw untreated agricultural runoff from the Miller Ditch with minimal additional disturbance to the site and surrounds. This area has most recently been used for livestock corrals and related ranch infrastructure but does preserve small low-quality seasonal wetlands as well as features thought to be former irrigation ditches, now disconnected from through-going flow. These will be expanded and replaced by a series of constructed perennial wetlands designed to provide polishing treatment

Public Access, Education, & Recreation

To increase community benefits from the habitat creation and restoration projects, the NCCA will also provide a suite of recreational and education-oriented improvements—the Newman Nature Park—in addition to the

Source: *modified from* RICK Engineering. 2020. Wetland System Routing Schematic, Newman Environmental Wetland System, City of Newman, CA (03/16/2020), scale: 1:1,800



RICK ENGINEERING COMPANY
San Luis Obispo

Redtail Consulting
Environment & Community

Figure 4-1. NEWS Project Concept
Newman Community Conservation Area Master Plan
City of Newman

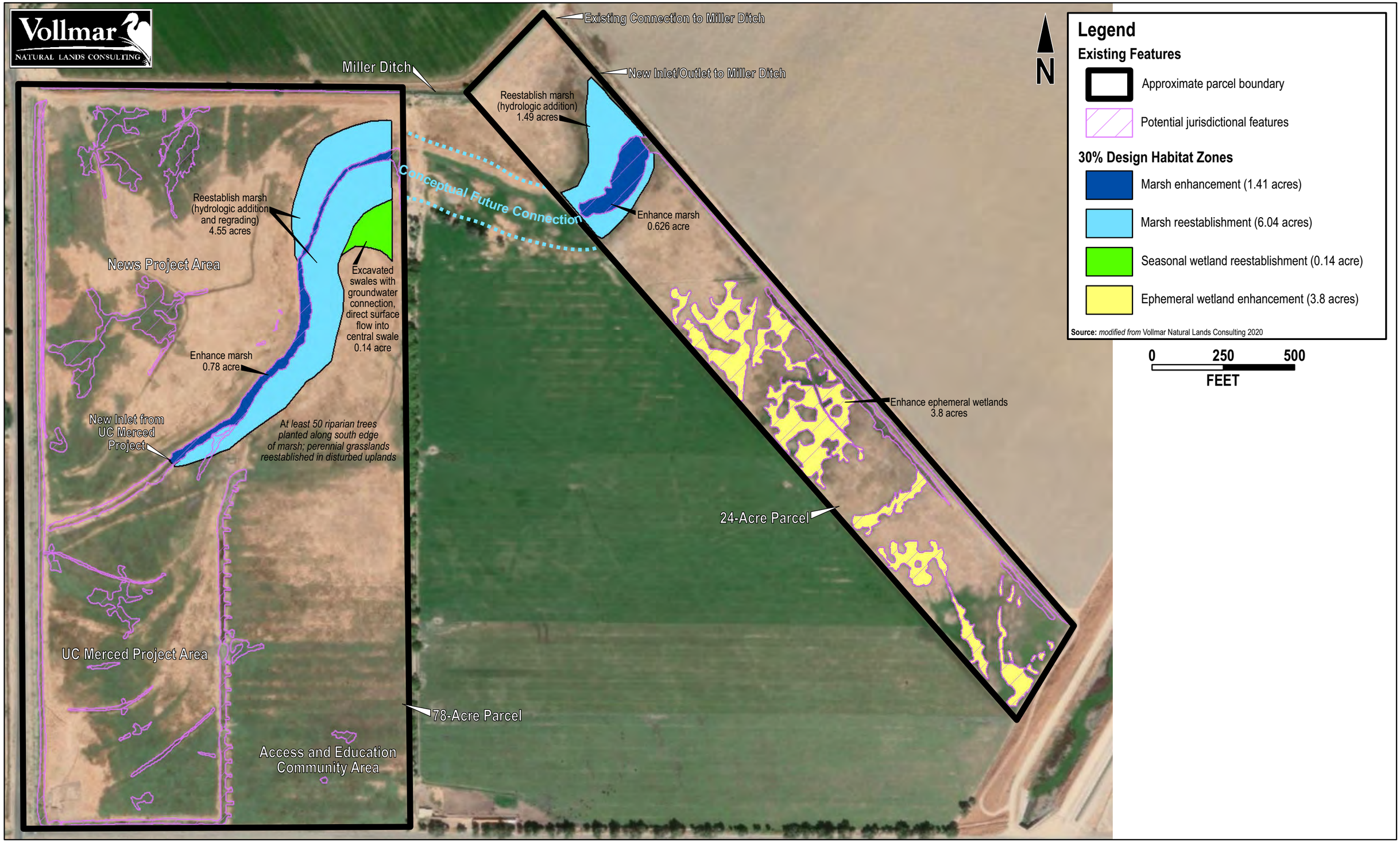


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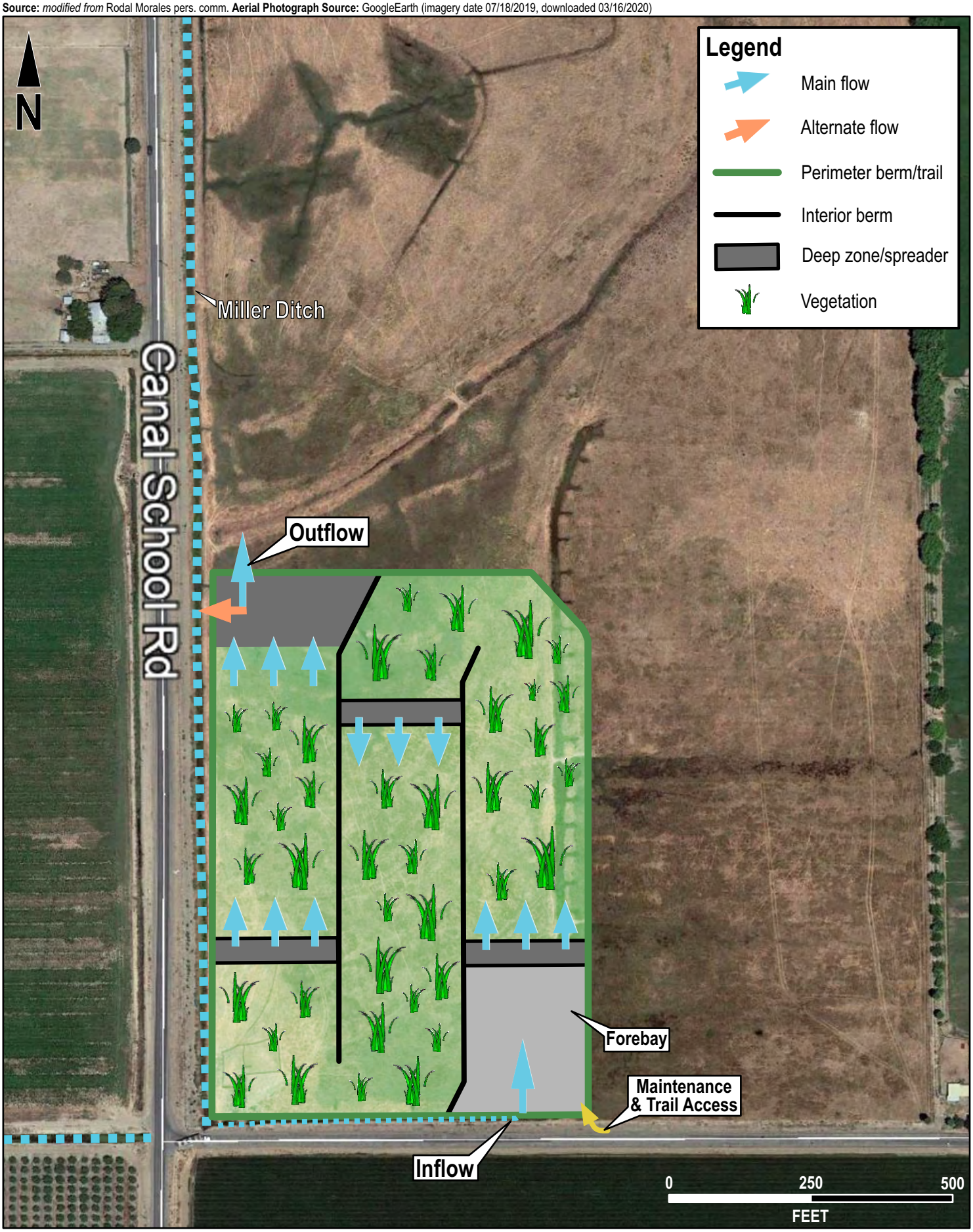
Figure 4-2. Wetland Project 30% Design
Newman Community Conservation Area Master Plan
City of Newman

Source: *modified from* Rodal Morales pers. comm. **Aerial Photograph Source:** GoogleEarth (imagery date 07/18/2019, downloaded 03/16/2020)



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Environment & Community

Figure 4-3. MDTW Project Concept
Newman Community Conservation Area Master Plan
City of Newman

access/trails that will be constructed under the NEWS and MDTW projects (Figure 4-4). The Newman Nature Park is planned to include

- an unpaved multi-use trail network, potentially including a perimeter trail and/or main trail loop and connecting trails sited appropriately through the parcel interior, with interpretive signage and shaded stations for rest and nature viewing
- restrooms and a hydration station
- parking for vehicles and bicycles accessing the NCCA
- amenities to enable nature-oriented community education such as outdoor classroom areas and possibly also a plaza for community gatherings
- a low-impact development stormwater capture cistern and vegetated swales
- a native plant and rainwise garden demonstration area

It may also include demonstration areas for native plant gardening, composting, rainwise and other sustainability techniques, and facilities such as nature-themed play structures, picnic facilities, and a shade structure.

Most of the Nature Park community facilities will be clustered in the southeasternmost portion of the 78-acre parcel, where the existing level of disturbance is the high and habitat creation and restoration opportunities have been evaluated as less optimal. Trails will occupy suitable high ground and boardwalks throughout the 78-acre parcel and will ultimately serve to tie the three habitat areas together, giving the NCCA a sense of unity. Interpretive signage will be located as appropriate along the trails, and will include relevant information on local natural resources and hydrology and on the Newman area's Native American heritage. It is the City's intent to work collaboratively with local tribal representatives—including representatives of the North Valley Yokuts Tribe and Amah Mutsun Tribal Band—in developing signage that represents their history, culture, and resource use. All signage will be bilingual in Spanish and English.

The opportunities provided by the Newman Nature Park—especially in conjunction with the other three NCCA projects—would be the first of their kind in the Newman area, which currently lacks nature-oriented open-space recreational opportunities, as discussed in Chapter 2.

Goals & Objectives

NCCA Program Goal & Objectives

The City's overarching goal for the NCCA is to create a community amenity that supports improved water and air quality, GHG sequestration, and habitat resources while offering site-appropriate recreational and educational opportunities as well as economic benefits for residents of the City and surrounding area.

The following sections identify goals and objectives for each of the projects under the program. Programmatic parcel-wide objectives comprise the objectives of the individual projects, all of which individually support the City's programmatic goal for the NCCA.

Goals & Objectives by Project

NEWS Project

The goal of the NEWS project is to construct, operate, and maintain a wetland system consistent with historic habitats in the surrounding area, in order to

- reduce the discharge of urban and agricultural storm and dry weather runoff pollutants to the Newman Wasteway and San Joaquin River via physical, biological, and biochemical marshland processes
- support the City's vision to manage stormwater as an ecological and water resource asset
- benefit the community of Newman and the surrounding area by providing appropriate public access to encourage natural environment experiences
- provide a "living lab" for K–12 and college/university students in the Newman area and beyond
- offer operational flexibility to support downstream objectives for stormwater and agricultural runoff management

Specific objectives are to

- develop an approximately 21-acre constructed wetland system comprising a trash rack, sediment settlement forebay, and vegetated clarification ponds, with unpaved access suitable for operations and maintenance as well as non-vehicular public use such as walking, jogging, bicycling, birding, and watershed education
- treat urban and agricultural stormwater and dry weather runoff from 2,421 acres in and around the City, diverted from the City storm drain system downstream of the pump station at Canal School Road and Inyo Avenue
- provide sufficient capacity to capture and treat the urban water quality design event that carries the greatest pollutant loading to the Newman Wasteway and San Joaquin River (the 85th percentile, 24-hour storm event)
- plant at least 100 trees and shrubs of suitable native species on high ground bordering the ponds

Wetland Project

The goal of the wetland project is to restore a mosaic of wetland, riparian woodland, and native perennial grassland habitat, in order to

- sequester GHGs and other pollutants
- restore and preserve rare habitat types for the benefit of plants and wildlife
- contribute to public nature viewing and educational amenities for the City and surrounding area

Specific objectives are to

- reestablish, rehabilitate, or enhance at least 10 acres of wetland habitat
- plant and establish at least 50 trees of native species suitable to the site
- restore at least 1 acre of native perennial bunchgrass habitat

Aerial Photograph Source: GoogleEarth (imagery date 07/18/2019, downloaded 02/09/2021)

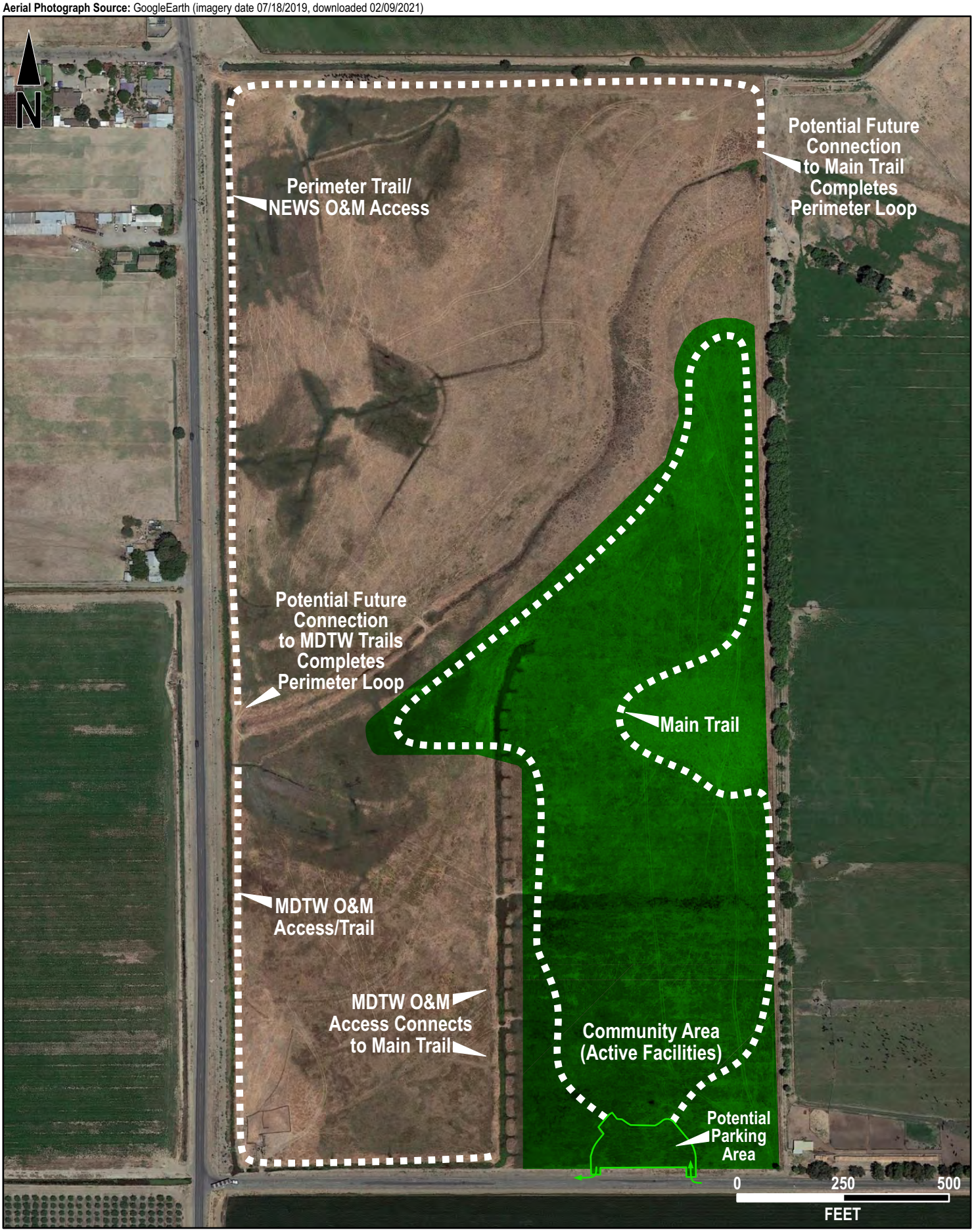

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Figure 4-4. Newman Nature Park Concept
Newman Community Conservation Area Master Plan
City of Newman

MDTW Project

The goal of the MDTW project is to create and enhance wetland habitat using CCID agricultural supply and agricultural tailwater, in order to

- treat flow from the Miller Ditch (including agricultural tailwater) in support of downstream reuse
- create hands-on learning opportunities in the planning, development, execution, and operation of constructed wetland water treatment projects for students in the Environmental Engineering program at UC Merced
- improve the ecological function and value of the 78-acre parcel
- contribute to public nature viewing and educational amenities for the City and surrounding area

Specific objectives include

- enhancing and creating up to 16 acres of perennial or near-perennial freshwater surface-flow wetland in multiple cells designed to provide polishing treatment
- providing unpaved access suitable for operations and maintenance as well as non-vehicular public use such as walking, jogging, bicycling, birding, and watershed education

Newman Nature Park

The Newman Nature Park is planned to provide a local opportunity for open-space recreation offering multiple social, economic, and environmental benefits to residents of the City and surrounding area. It is envisioned as expanding and diversifying the non-vehicular recreational access offered by the NEWS and MDTW projects.

Goals of the Newman Nature Park include

- providing the community with opportunities to connect with nature through walking, bicycling, and other passive recreation accessible to a diverse range of visitors, including families, seniors, youth groups, and those with disabilities
- promoting mental and physical health through access to, and interaction with, the natural environment
- providing the City's disadvantaged youth with opportunities for outdoor experiences and a connection to nature
- fostering learning opportunities for K–12 and college/university students
- showcasing sustainable water and land resource management practices

Specific objectives—which were developed in consideration of preliminary community outreach and will be refined and finalized based on continuing dialogue with the community—include

- constructing a network of new accessible (ADA-compliant) trails suitable for non-vehicular passive recreation such as jogging, walking, bicycling, birding, and wildlife observation, potentially including a perimeter trail and/or main trail loop and connecting trails sited appropriately throughout the parcel
- providing seating and shade along the trails for rest, nature viewing, and contemplation areas; incorporating bilingual (English/Spanish) interpretive signs to enhance the trail and park experience for a variety of users, including children, those with disabilities, and seniors

- developing opportunities for nature-oriented public education, such as outdoor learning areas, and potentially including a community plaza gathering area
- showcasing the use of permeable surface media, runoff capture, bioswales, and other low-impact development (LID) measures as well as solar-powered lighting where appropriate
- providing restrooms, a handwashing station, and a hydration station, as well as storage for maintenance and educational materials
- providing ample off-street visitor parking, including ADA stalls and bicycle parking and potentially including a bus drop-off to facilitate group visits

The Newman Nature Park may also offer demonstration areas for native plant gardening, composting, rainwise and other sustainability techniques that can be incorporated at area homes and businesses.

Related Projects

As Chapter 1 details, development of the NCCA will dovetail with projects moving forward under other related but separate City planning efforts. This section discusses the two reasonably foreseeable projects with the closest relationship, or potential relationship, with the NCCA projects:

- multi-use trail proposed to extend south from the City center along Canal School Road
- planned improvements at the WWTP, described in detail in Chapter 1

Class I Multi-Use Trail Project

Consistent with the General Plan (City of Newman 2007) and the more recently adopted NMTP (City of Newman 2013), the City is actively working to improve opportunities for pedestrian and bicycle transit throughout the City and its Sphere of Influence. Figure 4-5 shows the City's planned network of bicycle and pedestrian paths as envisioned in the General Plan. This includes a combination of fully separated Class I multi-use trails accommodating both bicyclists and pedestrians and Class II lanes suitable for use by bicyclists but not pedestrians.

One of the highest priority projects for bicycle and pedestrian transit is the route proposed to extend along Canal School Road from Driskell Avenue (Figure 4-5). As discussed in Chapter 1, this was originally planned as a Class I separated multi-use path (City of Newman 2007) and was revisioned as a Class II bicycle lane in the NMTP (City of Newman 2013) due to potential concerns about right-of-way width. The City recently reevaluated and has concluded that construction of a Class I path will be feasible without acquisition of additional right-of-way, and intends to proceed with the project as a Class I path.

To the north, the new Canal School Road multi-use path would connect with existing Class II bicycle lanes along Driskell Avenue, giving access to the downtown area and connecting to points further north via additional Class II lanes on cross streets and the through-going bicycle route planned along N Street. To the south, the Class I trail would extend as far as Brazo Road, where it would continue west along Brazo Road as part of the City limits Class I perimeter trail, and south along Canal School Road to Sanches Road as a Class II bicycle lane.

The new Class I trail would provide direct bicycle access to the Plan Area from points throughout the City, linking the developed portions of the City with Plan Area amenities. Provision of a Class I multi-use trail rather than a Class II bicycle lane will maximize non-motorized access from the City to the Plan Area, and multi-use

Map Source: modified from City of Newman 2007

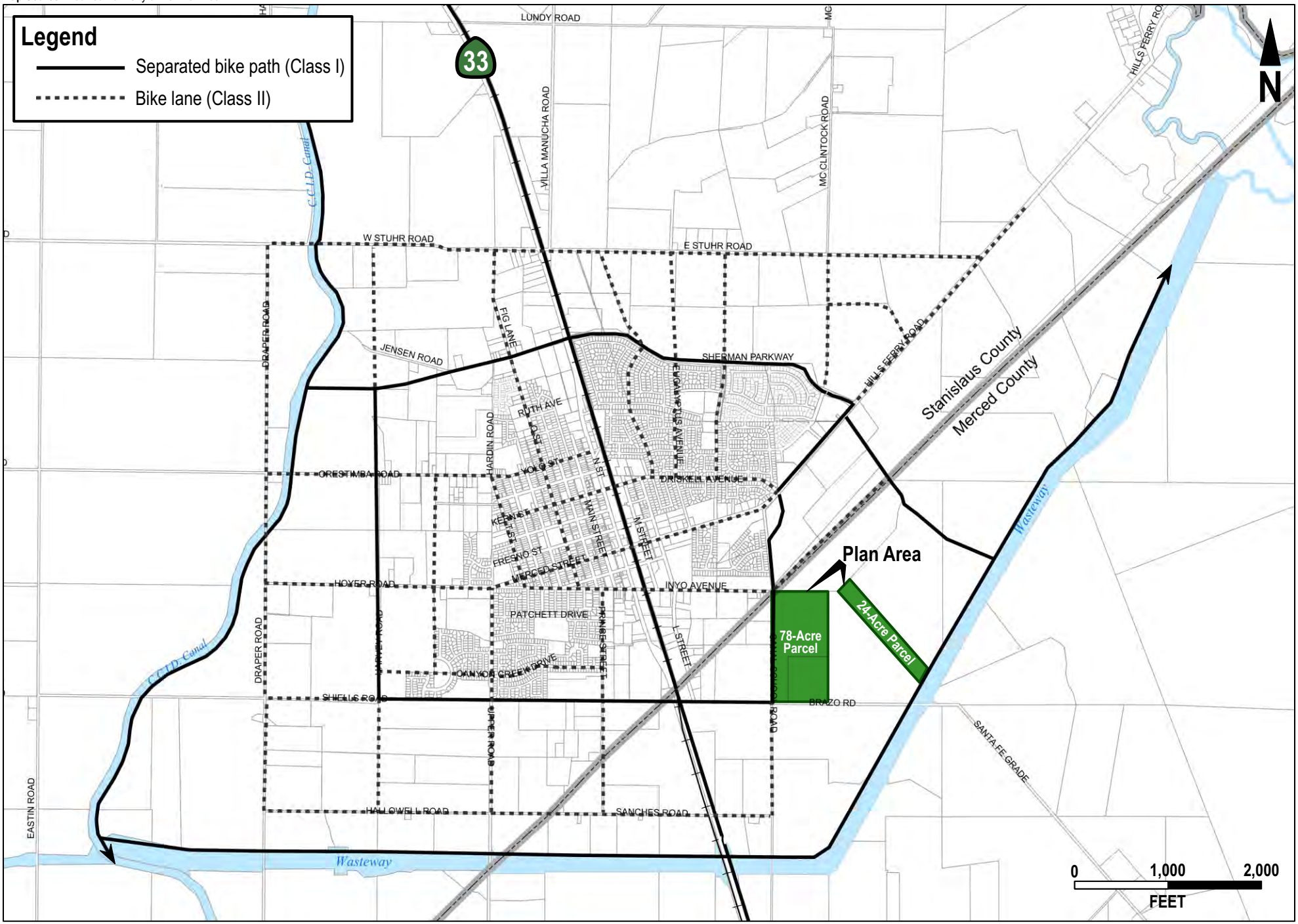

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Figure 4-5. Bicycle Network Plan, Showing Plan Area Connectivity
Newman Community Conservation Area Master Plan
City of Newman

trails within the Plan Area itself are envisioned as extending bicycling and walking opportunities beyond what will become available within the urbanized City into a more natural setting.

WWTP Improvements

As described in Chapter 1, the City is embarking on a program to expand and upgrade its WWTP. The first phase of improvements is expected to be complete by mid-2022 and will increase the WWTP's ADWF capacity from 1.25 to 1.5 MGD. A second phase of improvements will be implemented incrementally as the City grows, bringing the WWTP's capacity to 2.4 MGD when completed.

One of the key issues addressed by the WWTP upgrades is excessive salinity and high-strength organic content in treated effluent, which is discharged by irrigation use on cultivated LAAs. The planned WWTP improvements provide for progressive blending of treated effluent with higher-quality water prior to land application. Blending was originally proposed to rely on groundwater in Phase I, with increased use of groundwater, possibly augmented by CCID surface water, in Phase II. As mentioned in Chapter 1, an alternative possibility is to use treated water discharges from the NEWS and/or MDTW projects for blending with WWTP effluent. This would have the advantage of decreasing the need for groundwater use and reducing pressures on the groundwater basin—but would reduce the NCCA projects' ability to ameliorate water quality in the Newman Wasteway, San Joaquin River, and downstream receiving waters, all of which have been identified as impaired for multiple parameters (State Water Resources Control Board 2016) (see Table 1-3).

In determining downstream uses of NCCA discharges, the City intends to work with the RWQCB and other resource agencies to maximize overall environmental benefits, and will select the approach that is identified as offering the optimum balance of environmental benefit, benefit to the community, and cost-effectiveness. Thus, while this Master Plan offers the potential for an alternative approach to improve WWTP effluent quality, it is not the intent of this Plan to dictate downstream use of NCCA discharges.

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Chapter 5

Implementation

Implementation Timing & Priorities

It is the City's intent to implement the NCCA projects and realize their benefits as quickly as possible. Since these are major capital projects that will require substantial funding (discussed further in Chapter 6), implementation timing will be constrained to some extent by the availability of both internal and external funds to support bid-ready design, environmental review and clearances, construction, the post-construction monitoring and maintenance that will likely be required for at least some of the projects under the conditions of regulatory permits, and long-term O&M.

That said, the City has already been successful in obtaining grant funding for the wetland project from DFW's Wetlands Restoration for Greenhouse Gas Reduction Program. This will enable the wetland project to move ahead to construction as soon as design and environmental review are completed. As discussed in Chapter 2, the IS/MND for the NCCA projects is expected to be on the street for public review in early 2021, enabling completion of the CEQA process by spring 2021 and issuance of resource agency permits for at least the wetland project by early summer 2021. Construction of the wetland project is expected to begin no later than late summer 2021 and be completed by fall 2022.

The NEWS project is expected to be next in line. Design for the NEWS project is at the 60% milestone as of the preparation of this Master Plan and bid-ready construction documents are expected to be complete by late 2021. In June 2020, the City submitted an application to the SWRCB's Proposition 1 Storm Water Grant Program for implementation funding; funding was awarded in February 2021. This will almost certainly position the NEWS project as the next project to be constructed.

Substantial progress has also been made on conceptual design of the Newman Nature Park. Although community outreach is ongoing as of February 2021 and the project will likely continue to evolve, it is expected to follow the NEWS project to implementation, as funding becomes available. It is the City's intent to apply for funding for this project in the next cycle (Round Four) of the state Department of Parks and Recreation's (DPR's) Proposition 68 Statewide Park Development and Community Revitalization Program, which has a deadline in spring 2021.

Development of the MDTW project will proceed more slowly, since it depends on the availability of student participants and their faculty advisor(s) and will thus be tied in some degree to the academic calendar as well as funding availability. The MDTW project is anticipated to be the last project completed at the NCCA.

Responsibility, Oversight, & Staffing

Public Works is taking the lead in planning, developing, and implementing the NCCA projects, with substantial input from the Community Development Department and the City Manager. Community Development will have significant input into the environmental reviews and clearances for each of the projects. Public Works will then oversee project construction, post-construction monitoring and maintenance, and long-term O&M.

Staffing for design, environmental review, and post-construction monitoring will likely continue to rely on contracted expert consultants overseen by Public Works and Community Development. Construction will be executed through the City's standard contract process for capital projects.

Once the habitat-related projects are in the ground they are expected to require maintenance and monitoring as a condition of resource agency permits. Maintenance during the post-construction and long-term O&M phases may be provided by Public Works with assistance and input from contracted consultants familiar with local and site ecology, or may be covered through outside contracting. Monitoring will be conducted by contracted biological/ecological consultants. If long-term O&M responsibility shifts to Public Works staff, the City may need to make additional part- or full-time hires; O&M plans—to be incorporated as Attachments—will be developed as step-down plans from this Master Plan, and this will determine O&M staffing requirements by project. In addition, the City has been exploring the possibility of collaboration with local job training programs and schools to expand staffing for the NCCA, as Chapter 7 discusses in more detail.

References Cited in this Chapter

None.

Chapter 6

Funding Strategy

As major capital undertakings, the projects envisioned in this Master Plan will be costly to implement, and will also require an ongoing investment in O&M, potentially including expanded staffing as discussed in Chapter 5. As a result, a combination of internal City funds and external funding will likely be needed to bring the NCCA projects to fruition. Internal City funding sources include the City's Capital Project Fund, the Public Works Department's operating budget (a portion of which comes out of the City's General Fund), and revenue from various City fees. Potential external funding sources include various grant programs, infrastructure financing plans, and public-private partnerships, among others.

Funding Needs Overview

Total project costs over the long term will reflect four project phases: development, construction, post-construction monitoring and maintenance, and O&M. *Development costs* include engineering design and environmental review and clearance costs. *Construction costs* include construction labor and materials as well as the cost of implementing environmental measures such as surveys and monitoring for special-status species and monitoring of SWPPP erosion and runoff controls. *Post-construction monitoring and maintenance* refers to the monitoring and corrective action expected to be required as regulatory permit conditions to ensure vegetation establishment in restored and created habitat. *O&M costs* will include the staffing—existing and new—and equipment, materials, and supplies needed to operate, maintain, and repair NCCA projects and facilities over the long term.

Anticipated sources of City funding by project phase are as follows.

- **Development.** The City is seeking grant funding to support project development, and will provide matching funds from its Capital Project Funds budget; potential grant sources and the present status of grant applications are discussed further below
- **Construction.** Project construction will likely also be funded by a combination of external (grant or other) monies and City capital projects funding
- **Post-construction monitoring and maintenance.** The types of grant vehicles most appropriate for the habitat-related NCCA projects (discussed further below) typically provide some funding for the establishment period, but may not cover the entirety of a standard 5-year monitoring and maintenance period required to see the projects through to achievement of their success standards under regulatory permit conditions. Matching funds, and funds to complete a 5-year monitoring cycle, are expected to

come from the City's capital projects budget, potentially augmented by external (non-grant funds); possibilities are discussed below

- **Long-term O&M.** Over the longer term, once the post-construction monitoring and maintenance period is past, O&M responsibility for the NEWS and MDTW projects will either transition to Public Works staff or will continue to be handled through outside contracts, as discussed in Chapter 5. Similarly, once operational, O&M for the Newman Nature Park amenities will be carried out by Public Works. O&M needs are expected to be minimal for the wetland project once it is established, but minor activities such as trash removal and invasive species control will probably be needed, and will also fall under the Public Works rubric. As a result, long-term O&M funding is expected to come primarily if not exclusively from the Public Works Department's operating budget. Sources of additional funding are discussed in the following sections.

Funding Sources

Grant Funding

Grant Funding in Progress

The early stages of NCCA planning identified several grant vehicles as good fits for the NCCA projects, and the City has applied for funding under these programs:

- Proposition 1 Storm Water Grant Program, administered by the SWRCB
- Wetlands Restoration for Greenhouse Gas Reduction Grant Program, administered by DFW
- Climate Adaptation and Resiliency Program funding, administered by the California Wildlife Conservation Board
- Recreational Trails and Greenways Grant Program (Proposition 68 grants), administered by the California Natural Resources Agency (NRA)

The City submitted an application for Recreational Trails and Greenways Grant Program funding for the Newman Nature Park in late 2019, and was informed in early 2020 that the application was not successful; the program had just under $28 million in funding available and had received grant applications totaling about $288 million. As of mid-2020, proposals are no longer being accepted for this program (California Department of Natural Resources 2020), so it is not discussed further.[1] The other three programs are described in more detail in the following sections.

Proposition 1 Storm Water Grant Program

Proposition 1 (AB 1471), passed in 2014, authorized more than $7 billion in general obligation bonds to fund a wide range of water-related projects. The SWRCB alone administers 5 separate programs funded by Proposition 1 bonds, including the Storm Water Grant Program (State Water Resources Control Board 2020).

The Storm Water Grant Program is intended to fund multi-benefit stormwater management projects, including stormwater treatment facilities, green infrastructure, and rain- and stormwater capture projects. Funds are available to public agencies, 501[c][3] nonprofit organizations, federally recognized Tribes and Tribes listed on

[1] Additional Proposition 68 funding is available through other programs, including DPR's Statewide Park Development and Community Revitalization Program, which is discussed in Table 6-1.

the California Native American Heritage Commission's Tribal Consultation List, mutual water companies, and GSAs formed in accordance with the Sustainable Groundwater Management Act. Grant awardees are required to provide a 50% cost match, although disadvantaged communities may apply for a reduction of the match requirement (State Water Resources Control Board 2020).

The Proposition 1 Stormwater Grant Program originally provided for both planning and implementation grants, each to be awarded in two rounds. To date, some $10 million in planning grants has been awarded, and planning grants are no longer available. Round 1 implementation grants totaled about $80 million, and this grant cycle is also closed (State Water Resources Control Board 2020). The solicitation period for Round 2 implementation grants opened in April 2020, and in June 2020 the City submitted an application to fund NEWS project implementation. As identified in Chapter 5, funding in the amount of $6.4M was awarded in February 2021.

Wetlands Restoration for Greenhouse Gas Reduction Grant Program

The Wetlands Restoration for GHG Reduction Program is part of the California Climate Investments Program, a statewide initiative that reinvests the state's portion of cap-and-trade funds generated under the Global Warming Solutions Act of 2006 (AB32) in a range of climate-related endeavors (California Department of Fish and Wildlife 2020, California Climate Investments 2020). The goal of the Wetlands Restoration for GHG Reduction Program is to restore or enhance wetlands and watershed ecosystems to increase carbon sequestration, benefitting the state's human, wildlife, and fish populations (California Department of Fish and Wildlife 2020). To date, some $15 million in grants has been awarded under this program, including an award of $610,000 to the City in late 2019 for the wetland project.

Climate Adaptation and Resiliency Program

The Climate Adaptation and Resiliency Program (CARP) was established by 2017's AB109, which amended the 2017 state budget to provide a total $20 million to the Wildlife Conservation Board (WCB) for local assistance. Funds are payable from the state's Greenhouse Gas Reduction Fund; as such, CARP is also part of the Climate Investments Program, briefly discussed above (California Wildlife Conservation Board 2020a). Funds are available to local governments, park and open space districts, resource conservation districts, private landowners, and nonprofit organizations. Cost sharing is viewed favorably and may be provided by the applicant or by other sources such as private donors and nonprofit organizations (California Wildlife Conservation Board 2020b).

CARP currently provides funding for acquisition of conservation easements, project planning (including design and environmental review), and technical assistance such as the development of tools to guide ecosystem management under changing climate conditions. Preference is given to projects that can demonstrate readiness for implementation within 3 years. There is no limit on the amount of funding that can be requested, but WCB cautions that "the most competitive" funding requests are in the range of $300,000 – $1 million for acquisition of conservation easements and $100,000 – $300,000 for planning and technical assistance projects (California Wildlife Conservation Board 2020b).

In late spring 2020, the City submitted an application for CARP funding to support detailed GHG monitoring required under the terms of the recently awarded Wetlands Restoration for GHG Reduction Program grant that will support the wetland project.

Additional Grant Programs

In addition to the programs discussed above, a number of other programs may offer funding opportunities for the NCCA projects. They are listed and briefly described in Table 6-1, and will be explored in more depth as planning moves ahead.

Table 6-1. Additional Grant Programs

Program	Agency	Types of Projects Funded	Potentially Eligible NCCA Projects
California Conservation Corps programs	CCC*	The CCC administers grant programs under Proposition 1, Proposition 68, the state's Active Transportation Program, and the state Greenhouse Gas Reduction Fund Forest Health Program. The first three in particular may be appropriate to provide funding for collaborative efforts with the CCC in support of NCCA O&M and potential future NCCA improvements	All projects
Clean Water State Revolving Fund Program	SWRCB	Program offers grants and long-term below market rate loans for a wide variety of water quality projects. Eligible projects include nonpoint source projects, stormwater projects, and water reuse projects	NEWS project, MDTW project
Habitat Enhancement and Restoration Program	WCB	Program supports a wide variety of projects, including habitat restoration, wildlife corridor improvements, and fisheries enhancements. Pre-applications are accepted on a continuous basis; projects must receive a recommendation from DFW in order to move ahead	NEWS project, MDTW Project
Inland Wetlands Conservation Program	WCB	Program supports the Central Valley Joint Venture in its mission to protect, restore, and enhance wetlands and associated habitats to increase populations of waterfowl, shorebirds, riparian-dependent songbirds, and waterbirds. Eligible activities include restoration of public or private lands and enhancement of existing degraded habitat	NEWS project, MDTW Project
Nonpoint Source Pollution Control Grant Program	SWRCB	Program supports projects that install treatments or management practices to reduce and mitigate effects of nonpoint source pollutants—such as sediment, pesticides, and nutrients—to waters of the state. Projects must be completed within 3 years of award. Preference is given to projects that address identified waterbody impairments	MDTW project
Proposition 68 Rural Recreation, Tourism and Economic Enrichment Investment Program	DPR	Projects must include at least one recreation feature. Program funds a wide variety of projects, including visitor and interpretive structures, wildlife viewing structures, open space for public recreation use, and trails for non-motorized recreational use. Projects must be located in a county with a population of less than 500,000 *and* in a city, town, or unincorporated area with a population of less than 50,000	Newman Nature Park
Proposition 68 Statewide Park Development and Community Revitalization Program	DPR	Program supports new recreation opportunities in underserved communities, and is now entering its fourth round of awards, with approximately $395M in funding available. Grants range from $200,000 to $8.5M. Matching funds are not required. Eligible	Newman Nature Park

Program	Agency	Types of Projects Funded	Potentially Eligible NCCA Projects
		projects include creation of new parks and renovation or expansion or existing facilities; relevant facility types specifically called out in program application guidelines include community and demonstration gardens, jogging and walking loops, non-motorized trails, and open space and natural areas for public recreation use, along with supporting amenities such as plazas, public art, parking areas, and restrooms As identified in Chapter 5, the City intends to apply for funding under this program in spring 2021	
Proposition 84 San Joaquin River Water Quality Grant Program	DWR	Program provides funds for implementation of projects that will improve water quality in the San Joaquin River and the Sacramento – San Joaquin Delta, targeting subsurface agricultural drainage from the west side of the San Joaquin Valley	MDTW project

* California Conservation Corps
** California Department of Parks and Recreation

Infrastructure Financing Plans

Considering the NCCA as not "just" an environmental and community benefit but as a key part of the City's infrastructure expands the possibilities for approaches to fund the NCCA projects.

Infrastructure has traditionally been regarded as comprising constructed physical assets that support private business development, such as transportation and transit networks, energy production facilities and energy distribution networks, telecommunications systems, water, sewer, and wastewater systems, and solid waste management facilities. An alternative approach broadens the definition to include infrastructure that is essential for social function and quality of life, such as schools, universities, libraries, hospitals, administrative facilities, and parks and other recreational facilities (International City/County Management Association and Government Finance Officers Association 2017). In both contexts, the NCCA will become an important part of the City's infrastructure, and NCCA funding can be considered in the context of overall approaches to local jurisdiction infrastructure funding.

Infrastructure in the United States is funded by a combination of public and private monies, and federal, state, and local governments all play a role in infrastructure investment. The federal government takes sole responsibility for passenger railroads and funds a substantial proportion of aviation and water transportation as well as water resources–related infrastructure such as dams and levees. State and local governments are the primary provider of highways, roads, transit systems, and potable and wastewater systems (International City/County Management Association and Government Finance Officers Association 2017). Parklands, parks, and recreational facilities other than commercially operated amusement parks are funded at the federal, state, and local levels. Conservation lands—which arguably fall under the second, broader definition of infrastructure—can be funded in a variety of ways, which may include federal, state, and local capital funds, federal and state grant funding (discussed above), and private donations and public-private partnerships (discussed briefly below).

Infrastructure can be funded on a capital (cash or assets) basis or on a debt (financing) basis. Debt funding options include traditional bond financing and private bank loans (International City/County Management

Association and Government Finance Officers Association 2017), both of which will bear exploration for NCCA funding.

Additionally, because of the NCCA's unique focus on environmental benefit combined with community recreational and education benefits, non-traditional debt avenues such as green bonds and social impact bonds may offer additional sources of debt financing. Green bonds are a recently developed type of fixed-income instrument specifically earmarked for environmental and climate-related projects (Investopedia 2020). Among their advantages are the potential to attract new capital market investors interested in environmental projects (International City/County Management Association and Government Finance Officers Association 2017). Social impact bonds, as the name implies, are aimed at societal needs. Both repayment of principal and rate of return are typically contingent on success in achieving the agreed-upon goals of the bond program. Like green bonds, social impact bonds offer the potential to attract new investment to the infrastructure sector, including nonprofits, philanthropic organizations, and corporations (International City/County Management Association and Government Finance Officers Association 2017).

Public-Private Partnerships

Public-private partnerships may offer an additional source of funding, particularly as the NCCA becomes more established and visible in the community. Private partners could include local or regional for-profit corporations as well as nonprofits, particularly those with an environmental, social benefits, or—because of the City's status as a majority-minority, severely disadvantaged community—equity-related mission. Funds could potentially address all project phases, from development through long-term O&M. Properly developed partnerships could also offer substantial positive visibility for the funding entities. The City intends to explore possibilities as NCCA planning proceeds.

Additional Funding Sources

Additional sources of long-term funding for NCCA project O&M could include the following, which are commonly used to support parklands and other similar amenities.

- Approval of a new storm drainage fee
- Addition to monthly City sewer rates
- Addition to development fees
- Formation of a special assessment district enabling the City to assess an additional local tax on assessed property values for NCCA funding

Special assessment districts are typically created through ballot measures, and therefore would require approval by a majority of City voters, preventing the City from leveeing direct costs from the community without the community's consent. If this approach is under consideration, it should be delayed until the NCCA is well enough established that the community has had an opportunity to experience what if offers and make an informed judgment about costs vs. benefits.

User fees could also be charged for park amenities, either in the form of admission charges for certain uses, or rental fees for private use of NCCA facilities. If user fees are considered, it will be important to the City to develop options that provide a meaningful contribution to NCCA funding while ensuring that the NCCA remains welcoming and accessible to all members of the community, consistent with the goals and objectives laid out in Chapter 4 of this Master Plan.

Finally, since the NCCA is intended to benefit the community at large it may be possible to include an increment for NCCA funding in the development impact fees levied as part of the approvals process for larger planned developments.

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Chapter 7

Future Opportunities

Development of this Master Plan was driven by an expansive and optimistic view of opportunities for the future. These include opportunities for environmental benefit beyond the immediate Plan Area, as well as economic, recreational, and educational opportunities for residents of the City and surrounding area. There are also opportunities for regional collaboration and benefit.

Environmental Opportunities

As discussed in Chapters 1 and 4, a key outcome of the NEWS project will be to treat a large proportion of the City's stormwater runoff, which is currently discharged untreated into the San Joaquin River via the Newman Wasteway. Potential uses for treated water supplied by the NEWS project include

- discharge to the Newman Wasteway and San Joaquin River, benefiting water quality in these two impaired water bodies and downstream receiving waters
- reuse at the WWTP to dilute effluent discharged to LAAs, benefiting the quality of water infiltrating into the shallow subsurface

Additional opportunities for downstream use of treated water may be identified in the future as the City continues to explore expansion of water reuse in the Newman area.

Additionally, as discussed in Chapter 1, the City's current General Plan (City of Newman 2007) commits the City to support local and regional efforts to restore and maintain wildlife habitat, including collaboration with other agencies to develop a Habitat Management Plan (HMP) (General Plan Goal NR-3; see Table 1-1). There may be opportunities for mutual support here, in particular as uses for the 24-acre parcel are further clarified. For instance, the wetland project and the portions of the 24-acre parcel not included in the wetland project could provide a cornerstone for the habitat set-asides used to compensate for projects authorized under a future HMP. The City intends to continue to explore this possibility as planning proceeds.

Community Opportunities

Community opportunities include economic, educational, and volunteer opportunities—and, as the following sections describe, some of these opportunities will overlap with one another due to the holistic nature of the NCCA projects.

Economic Opportunities

As discussed in Chapter 5, the NCCA projects will generate short-term employment opportunities during construction, which are expected to be filled by a predominantly local labor force. The NCCA projects may also create longer term employment opportunities associated with the need for ongoing O&M. Hiring for new permanent staff positions supporting the NCCA will prioritize local residents, consistent with the City's ongoing commitment to "hire local" to the extent possible.

The City is also in the process of developing a contract with the HOST House and Naomi's House projects in Patterson, which provide services and resources to area homeless and working poor citizens. The contract will lay out a "jobs for training" exchange program that provides skills and experience in exchange for labor, under certain conditions. Staffing needs for the NCCA may open opportunities for job training under this contract.

Additionally, the City has been exploring the possibility of developing a collaboration with the California Conservation Corps (CCC) to employ CCC Corpsmembers while providing them training, experience, and exposure to natural resources management, habitat creation/restoration, City public works operations, and local agency culture. The CCC's mandated focus on conservation makes it a natural fit for undertakings such as the NCCA projects; the CCC has determined that it would be feasible for them to assist and has expressed interest in developing the relationship. Corpsmembers could be employed during both construction and operational phases of the projects. City staff would be needed to train and supervise Corpsmember employees, potentially generating additional permanent employment within Public Works or other City departments.

Educational & Volunteer Opportunities

Both the NEWS and MDTW projects are intended to serve as "living labs" offering K – 12, community college, and university students in the Newman area and beyond direct exposure to natural resources and processes. The Newman Nature Park will offer similar opportunities related to topics such as conservation, sustainable water management, native plant gardening, and other topics. The City will be reaching out to local K – 12 teachers to develop collaborative educational and student involvement programs. One possibility would be for local classes to "adopt" a portion of a project—for instance, assisting with planting and maintenance of demonstration gardens or developing rainwise gardening or rainwater capture exhibits. This would be a good fit for local high school or junior college agriculture classes but could likely also involve K – 12 students with the right teacher involvement.

The NCCA projects may also provide opportunities for internships or summer employment for students at a number of area junior colleges and universities, including Merced Community College (with campuses in Merced and Los Banos), Modesto Junior College, and the California State University campuses in Stanislaus, Sacramento, and Fresno as well as UC Merced. The City intends to begin informal outreach to area colleges and universities in the near future, to provide information on the potential for partnerships, gage interest levels, and solicit input on potential opportunities for students.

As Chapter 4 describes, the NCCA will provide "passive" education to the community at large through interpretive signage and demonstration areas. The community plaza and classroom areas will also provide a space for active community education on a range of nature- and conservation-oriented topics. Programs and classes could be offered directly by the City through the City's Recreation Department, which already offers sports programs for youth and adults. Adding new programs or classes to the Recreation Department roster would also offer opportunities for new short-term contract hiring, as instructors—presumably from within the City itself or from nearby commutable locations in the surrounding area—are brought on board to develop and deliver educational content. Educational programs could also be developed in conjunction with local civic

organizations such as the Newman 4-H, the Boy Scouts and Girl Scouts, the Newman Historical Society, the Newman Garden Club, and others. The classrooms and plaza may also provide a venue for outdoor exhibits of nature- and local history–oriented art, either through the Recreation Department or in partnership with the West Side Art Association, and for cultural events in partnership with local Native American tribal entities. There may also be opportunities to coordinate programs with the City's existing stormwater partnership community outreach and water conservation outreach.

Finally, there is significant potential to develop volunteer programs enlisting interested area residents in program development, planting and demonstration area programs, and plant cultivation, and possibly other aspects of NCCA operations. This would have educational benefits both for participants and for the community at large, and would also benefit community building and civic pride, as area residents become increasingly involved in this unique resource.

Regional Opportunities

As the first facility of its kind in the western San Joaquin Valley, the NCCA is expected to become a recreational and ecotourism magnet drawing visitors from well beyond the immediate Newman area. This will extend the NCCA's recreational and educational benefits beyond the City itself, and has the potential to benefit the City economy by bringing new visitors to area restaurants and shopping.

Reference Cited in this Chapter

City of Newman. 2007. Newman 2030 General Plan. Available: http://www.cityofnewman.com/docman/community-development-department/36-general-plan-final-version/file.html. Downloaded: November 2019.

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Chapter 8

Protecting Plan Area Resources

Development of this Master Plan reflects the City's long-term commitment to enhancing and protecting the Plan Area's natural resources for the benefit of the environment and the community. This chapter describes

- the City's plans for long-term protection of the Plan Area as a habitat and recreational resource
- the avoidance and minimization measures (AMMs) the City has adopted to prevent and reduce adverse effects on sensitive habitats and special-status species during construction, operation, maintenance, and enjoyment of the NCCA projects

Preservation of Restored & Created Habitat

The City is committed to long-term preservation of habitat restored and created at the NCCA. The terms of such preservation are still being defined, however, and will likely differ from project to project. The conditions of the DFW grant that will fund the wetland project require that enhanced and created habitat be protected for a minimum of 50 years. Similar multi-decade terms are envisioned as a minimum for the other projects, and—as discussed in Table 2-5—if self-mitigating status is sought for the NEWS and/or wetland projects, in-perpetuity preservation of at least some of the created and restored habitat will be required. For the NEWS and MDTW projects, habitat preservation will also need to be balanced against the demand for routine O&M to ensure that the treatment wetlands continue to function as designed, providing the target level of water quality benefit. This will be a key topic for discussion with resource agency staff as planning moves ahead.

Avoidance & Minimization Measures

The following sections describe a suite of AMMs that will be implemented to reduce the potential for adverse effects on sensitive habitats, water bodies, and the special-status plants and wildlife that may be present in the Plan Area. AMMs will apply to initial construction of the NCCA projects, and will continue to be in effect for future maintenance or repair activities that have the potential to disturb habitat or otherwise affect special-status species. As step-down O&M plans are developed for the individual NCCA projects, they will incorporate these AMMs, with additional detail as appropriate to facilitate straightforward and effective implementation on a project-specific basis. New AMMs may also need to be developed as the details of project O&M come into clearer focus.

The AMMs presented below are based on current (2020) habitat conditions on the Plan Area parcels. The NEWS, wetland, and MDTW projects will modify Plan Area habitat substantially, and conditions may continue to evolve as the projects become increasingly established over time. In addition, O&M for the three habitat

projects, and the introduction of recreational and educational access, will increase human presence and activity in the Plan Area over the long term. As a result, there may be changes in the types of AMMs that are needed—some AMMs may become less relevant, some may need to be amplified, and new measures may become appropriate. With this in mind, AMM-1 provides for routine re-evaluation to verify Plan Area conditions and support review and—if needed—updates to the AMMs to enable adaptive management throughout the lifespan of the NCCA projects.

Additionally, it should be noted that the AMMs are intended to dovetail with the requirements of resource agency permits authorizing the NCCA projects. In particular, in the years immediately following completion of each project, permit terms and conditions may require more frequent and intensive monitoring of restored and created habitat. In that case, the permit terms and conditions for each project will temporarily supersede or augment the Plan Area–wide AMMs within that project's footprint; elsewhere in the Plan Area, the AMMs will continue to apply in their most current form.

Many of the AMMs laid out here require the assistance of a qualified biologist. At the outset, it is the City's intent to develop an on-call relationship with a biologist or biologists who can provide this support on an as-needed basis. Over time, it may be possible to train City staff to take over some of the qualified biologist's responsibilities, in order to streamline implementation and reduce costs. Responsibilities initially transferred to City staff could include inspection of fencing and water quality protection measures. Over time, it may be warranted for the City to hire staff with biology qualifications who could also bring re-evaluation and survey responsibilities inhouse. Long-term options for AMM implementation staffing will be explored in more detail in the first few years following development of the first NCCA project.

AMM-1. Routine Reassessment & AMM Updates

At the completion of each NCCA project, GIS-based habitat mapping for the Plan Area parcels will be updated to document changes in habitat distribution as a result of the project.

Over the long term, the Plan Area parcels will be reevaluated for habitat conditions and potential special-status species use every other year. Reevaluation will also include updating maps delineating populations of rare plant species (i.e., plants assigned a California Rare Plant Rank by the California Native Plant Society and plants state- or federally listed as Threatened or Endangered). The evaluation will be conducted by a qualified biologist/ecologist who has experience with wetland and upland habitats in the west-central San Joaquin Valley, will cover both Plan Area parcels in their entirety, and will include, at a minimum, the following activities.

- Assessment of habitat distribution to determine whether the most recent habitat and rare plant mapping is still accurately representative of conditions on the Plan Area parcels
- California Rapid Assessment Method (CRAM) assessment of wetland health and performance

Results will be documented in an NCCA Habitat Assessment Report for City records. The Habitat Assessment Report will also identify the date of the next routine re-survey, enabling survey frequency to be adjusted (increased or decreased) if appropriate based on the rate and nature of change in conditions on the Plan Area parcels. In addition, depending on the extent and nature of changes in Plan Area conditions and the City's planned activities during the next few years, the Survey Report may recommend more detailed reassessment, potentially including re-mapping of habitat, updated delineation of state and federally jurisdictional habitat (wetlands and waters of the United States and State of California), and/or focused surveys for special-status plant and/or wildlife species.

In addition to documenting current Plan Area Conditions, the Habitat Assessment Report will include an evaluation of the AMMs in place at the time of the reassessment, and will identify any needed changes to the AMMs, potentially including modification or discontinuation of existing AMMs and/or establishment of new AMMs. Changes to AMMs will only be instituted in the interests of better preserving and protecting habitat values on the Plan Area parcels, in balance with appropriate O&M and recreational/educational access. If adverse changes in habitat conditions or the status of rare plant populations are identified, the Habitat Assessment Report will also include recommendations for corrective action(s).

The City will maintain Habitat Assessment Reports and other relevant documentation such as habitat and jurisdictional delineation mapping and special-status species sighting reports (see AMM-6) on file for ongoing reference in managing the NCCA. If corrective actions are identified as necessary, the City will be responsible for ensuring that they are promptly implemented by qualified personnel.

AMM-2. Appropriate Long-Term Public Access

All public access, including access roadways opened for public trail use, will incorporate appropriate measures to prevent accidental incursions—and discourage intentional access—into sensitive habitat. Measures will be designed for aesthetic consistency with their natural surroundings, such that they foster a positive and welcoming user experience while protecting sensitive resources to the extent possible. Measures may include carefully selected trail routing as well as split-rail or other suitable fencing, strategically located plantings, and the use of elevated boardwalks. Signage will also be used to inform the public of sensitive resources and foster appreciation for the need to protect them. All signage will be bilingual in English and Spanish to reflect the City's diverse population. Wildlife-proof trash and recycling receptacles will be provided at regular intervals along all trails to discourage littering.

AMM-3. Worker Awareness Training

All construction personnel will be required to attend environmental awareness training before beginning work. All O&M staff and any future interns, student employees, and volunteers will also receive environmental awareness training as part of their routine City training. Training will be provided bilingually in English and Spanish if appropriate.

Training will be delivered by a qualified biologist/ecologist and will provide information on the sensitive habitats within the Plan Area (based on the most recent surveys of the Plan Area per AMM-1), the special-status species that are known or potentially present, and measures required to protect water quality and sensitive habitats under AMM-4.

For each special-status species, training will include information on listing status, habitat preferences, distinguishing physical characteristics, causes of decline, and measures required to protect the species within the Plan Area. Training will include a hard copy handout that summarizes information presented in the training and includes photographs of habitat resources and species to facilitate identification in the field by construction and O&M personnel.

AMM-4. Wetland & Water Quality Protection

Best management practices will be implemented for all ground-disturbing activities to prevent siltation and contaminated runoff to wetlands and water bodies within and adjacent to the Plan Area. During construction, this may take the form of a SWPPP prepared and implemented by appropriately qualified/certified personnel. For O&M activities that involve ground disturbance, similar measures will be implemented by City staff. BMPs

will also be implemented for all O&M activities that require handling of fuels, lubricants, paints, solvents, and other substances with the potential to degrade water quality.

BMPs will include, but will not necessarily be limited to, the following.

- Before work begins, a qualified biologist/ecologist will delineate sensitive areas to be avoided, using pin flags, temporary construction fencing, or another appropriate low-impact medium. No entry (personnel, equipment, or materials) will be permitted into delineated avoidance areas
- If excavation or ground disturbance is necessary, runoff control measures such as straw wattles, filter rolls, filter fences, or silt fences will be installed to contain disturbed soil materials. Runoff control will be in place prior to groundbreaking. If straw wattles are used, they will consist of certified sterile, weed-free rice straw or similar, suitable for use in sensitive habitat. If filter fences or mesh are used, they will consist of materials, and employ a design, approved by DFW and USFWS as safe for amphibians and reptiles
- If ground disturbance occurs in a vegetated area, the disturbed area will be reseeded immediately following the completion of repairs, using a certified weed-free native species seed mix appropriate to the location and approved by a qualified biologist/ecologist
- Excavated materials will be stockpiled away from sensitive habitat, in areas that are relatively level, and relatively free of vegetation. Stockpiles will be located as far as reasonably feasible from the limits of sensitive habitat, and runoff control measures as described above will be used to prevent delivery of sediment to wetlands and ditches. If wattles are used, they will consist of certified sterile, weed-free materials, as identified above. Any excavated materials not reused on site will be promptly removed to appropriate permanent disposal locations following the completion of work
- All diesel- and gasoline-powered construction equipment and tools, including generator units, will be inspected for leaks and damage prior to mobilization
- Fueling, lubrication, and maintenance of vehicles and equipment will be conducted as far as reasonably feasible from wetlands and waterbodies, and will take place offsite if possible. Equipment staging will also be located as far as reasonably feasible from wetlands and water bodies. If onsite fueling, maintenance, or repairs are required, containment measures such as drip pans will be required
- To the maximum extent possible, materials staging will also be restricted to paved, surfaced, or upland areas away from wetlands and watercourses
- During all work, appropriate types and quantities of materials will be maintained onsite to contain any spills or releases of materials and prevent them from entering sensitive habitat and jurisdictional waters
- In the event of a spill, appropriate spill response procedures will be initiated as soon as the incident is discovered. If contractor staff are involved, the contractor will be required to notify City staff as soon as feasible, and in no case more than 24 hours after the occurrence; a designated City contact will be specified in the project construction documents for this purpose. If there is any potential for the spill to enter jurisdictional waters, the City will notify the RWQCB
- Food waste will be appropriately contained and disposed, and trash generated during construction and O&M activities will be promptly and properly removed from the site

AMM-5. Special-Status Plant Protection

Before any work begins at the NCCA site, existing occurrences of rare plant taxa (as defined in AMM-1) will be delineated on GIS-based maps for future reference, based on the results of protocol-level peak blooming period surveys.[1] Mapping will be regularly updated as part of the routine re-surveys required under AMM-1.

Work will be planned to avoid delineated rare plant occurrences to the extent feasible. Prior to the start of construction and O&M work in the vicinity of delineated occurrences of rare plants, a qualified biologist/ecologist will define the current extent of the occurrence in the field using pin flags, temporary construction fencing, or another appropriate low-impact medium. The delineated avoidance area will include a setback buffer appropriate to the species involved and the nature of the work planned. No entry, staging, or other activity within delineated avoidance areas will be permitted.

If an occurrence of rare plants cannot be entirely avoided, the following additional measures will apply.

(1) Plants that can be avoided will be demarcated by an exclusion area as described above

(2) If possible, work will be scheduled for timeframes when the special-status taxa occurring in the work area are senescent and/or after seed has set

(3) If an individual or group of individuals must be removed, one of two options may be employed, followed by monitoring, and, if needed, further corrective action to ensure that over the long term no net loss of the species occurs

   i. Seeds from the affected species may be collected from existing onsite populations or from another population within the Bennett Valley – San Joaquin River watershed and distributed in the work area following completion of work, or, if the work area cannot be reseeded, in another appropriate location within the Plan Area. Appropriate locations will be identified based on currently prevailing soil characteristics, site hydrology, and overall habitat conditions at the time of the restoration

   ii. A nursery with experience growing special-status plants of the western San Joaquin Valley region may be contracted to grow seedlings of the species from locally native seeds (collected from the work area or from another population in the Bennett Valley – San Joaquin River watershed). Seedlings may be planted in the work area following completion of work, or, if this is not possible, may be planted in another appropriate location within the Plan Area. As identified in (i) above, appropriate locations will be identified based on currently prevailing soil characteristics, site hydrology, and overall habitat conditions at the time of the restoration

Note that seeds derived from plants in the Bennett Valley – San Joaquin River watershed may be available from local nurseries, and local nurseries may also be able to propagate seeds from adults grown from locally native collected seeds. In this case, seeds do not need to be collected from the work area.

Prior to impacts and reseeding or replanting, a qualified biologist/ecologist will develop a monitoring and corrective action plan for the revegetated area. The plan will include at least the following components.

- Interim and final success criteria for the revegetated area. The goal will be to match or exceed pre-disturbance population levels in the Plan Area over the long term. Due to normal variations in

[1] Initial mapping was completed in 2020.

population from year to year, average population data for annual taxa can be calculated from several years of data collected

- Procedures for annual monitoring for a minimum of 3 years or until final success criteria are met
- Low-disturbance methods for as-needed invasive species control within the replanted area, suitable to site conditions and the rare plant species involved
- Corrective actions (additional seeding or planting) in the event interim success criteria are not met

The City will be responsible for ensuring that the monitoring plan is implemented by qualified personnel, and that any corrective action identified as necessary is properly carried out.

AMM-6. Special-Status Wildlife Protection (General)

In the event of a known or potential sighting of special-status wildlife in or near any construction or O&M work area, the following requirements will apply.

- Personnel will avoid the animal and will immediately notify designated City staff and the City's on-call biologist, who will advise them on how to proceed; if warranted (depending on the species involved), the biologist will consult with resource agency (DFW and/or USFWS) staff for guidance
- The biologist will respond onsite to relocate the animal or assist in implementing other protective measures, guided by agency input
- If the sighting is confirmed by the biologist, the species and location will be reported to DFW for inclusion in the California Natural Diversity Database (CNDDB). The biologist will be responsible for making the report
- The biologist will also provide a brief memorandum documenting the sighting and any follow-up actions, including CNDDB documentation, for City records

AMM-7. Western Spadefoot Protection

To the extent feasible, construction and O&M activities will be conducted during the dry season (May – October), or will avoid entry into and disturbance of ponded features.

If work within or in proximity to ponded features occurs during the rainy season, a qualified biologist will delineate areas to be avoided to prevent impacts on breeding special-status amphibians, using pin flags, temporary construction fencing, or another appropriate low-impact medium. No entry (personnel, equipment, or materials) will be permitted into delineated avoidance areas.

If work would impact areas with burrows, a qualified biologist will evaluate the burrows to determine whether they are suitable for use by western spadefoot, and will scope any suitable burrows. If any western spadefoot individuals are found within burrows to be impacted, they will be safely excavated from the burrow by hand or small excavator, either by the biologist or under biologist oversight, and will be relocated to a suitable burrow location outside the disturbance area and far enough away that they would not be expected to return.

AMM-8. Giant Garter Snake Protection

To the extent feasible, all construction and O&M activities will avoid impacting or working within 200 feet of the drainage ditches in the Study Area. Once the NEWS and MDTW projects become operational, the same

precautions will apply to created water bodies. Appropriate silt fencing, flagging, and/or other measures will be employed to protect the drainage ditches and other aquatic habitat from direct and indirect impacts, as described in AMM-4.

If work within 200 feet of suitable habitat for giant garter snake is necessary (e.g., for NEWS and MDTW project O&M), the following additional measures will be required.

(1) If possible, work within 200 feet of suitable habitat will be conducted between May 1 and October 1, when the species is more active and mortality is less likely

(2) At all times of year, prior to work within 200 feet of suitable habitat, before work begins, a qualified biologist will conduct a pre-construction survey of the work area (including access and staging) for giant garter snake. If the species is present, the biologist will notify the City and work will be delayed until the biologist can consult USFWS regarding next steps. Work will not proceed until USFWS has recommended appropriate next steps and these have been implemented. Once work has begun, if activity is suspended for 2 weeks or more, the survey—and, if needed, follow-up—will be repeated

AMM-9. Northwestern Pond Turtle Protection

Prior to the start of construction or O&M activities, a qualified biologist will conduct a pedestrian preconstruction survey for northwestern pond turtle. The survey will be conducted no more than 24 hours prior to start of work, and will include walking the work area limits and interior and investigating all areas that could be used by the species. If northwestern pond turtle individuals are found, the biologist will relocate them to suitable habitat outside the disturbance area and far enough away that they would not be expected to return.

AMM-10. Nesting Bird Protection

To the extent feasible, construction will be scheduled outside the February 1 – September 15 nesting season. O&M activities reasonably expected to generate substantial sustained disturbance above Plan Area baseline levels and O&M activities that would involve ground disturbance or vegetation removal or trimming will also be scheduled outside the nesting period if possible.

If the types of activities identified above would commence during the nesting season, a qualified biologist will conduct a preconstruction survey for nesting birds. The survey will be conducted within 2 weeks of the start of work, and will cover the entire work footprint, including access and staging, plus a 500-foot-wide buffer. If active nests are found within the survey area, a no-disturbance zone will be established around the nest for the duration of the nesting season, or until the biologist determines that the young have fledged and left the nest, or that the nest has been abandoned. No entry into the no-disturbance zone will be permitted. The no-disturbance zone will be delineated in the field by or under the supervision of the biologist, using temporary construction fencing or another suitable low-impact medium. The width of the no-disturbance zone will be determined by the biologist, based on

- the location of the nest and the amount of vegetative and other screening between the nest and areas where work will take place
- noise and human disturbance levels at the site at the time of the survey and the noise and disturbance expected during the work
- the sensitivity of the species involved and behaviors of the nesting birds, and, if appropriate,
- other site- or species-specific factors

If special-status species are involved, the biologist will consult with the appropriate resource agency(ies) (DFW and/or USFWS) in determining the width of the no-disturbance zone.

If work during the nesting season is suspended for more than 1 week and then recommences, an additional survey will be conducted before work is reinitiated, and the same no-disturbance zone requirements will apply in the event active nests are found.

AMM-11. Western Burrowing Owl Protection

If construction will take place during the western burrowing owl breeding season (February 1 – August 31), protocol-level preconstruction surveys will be conducted for this species. O&M activities reasonably expected to generate substantial sustained disturbance above Plan Area baseline levels and O&M activities that would involve ground disturbance will also be subject to this requirement.

Surveys will be conducted by a qualified biologist and will follow the methodology described in DFW's current Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game 2012, or future reports that supersede the 2012 version). Four surveys will be conducted within 2 hours of sunrise or sunset, with the final survey occurring 24 hours prior to the start of construction activities. If active nest burrows are found, the no-disturbance zone requirements described in AMM-10 will apply. If work during the burrowing owl nesting season is suspended for more than 1 week and then recommences, an additional survey will be conducted before work is reinitiated, and the same no-disturbance zone requirements will apply in the event active nests are found.

Reference Cited in this Chapter

California Department of Fish and Game. 2012. Staff Report on Burrowing Owl Mitigation. Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline=true. Accessed: May 2020.

Acronyms & Abbreviations

ADWF	average dry-weather flow
AMM	avoidance and minimization measure
APN	assessor's parcel number
BMP	best management practice
CARP	Climate Adaptation and Resiliency Program (part of California Climate Investments program)
CCC	California Conservation Corps
CCID	Central California Irrigation District
CEQA	California Environmental Quality Act
City	City of Newman
Corps	U.S. Army Corps of Engineers
County	County of Merced
CRAM	California Rapid Assessment Method
CTS	California tiger salamander
CVFPB	Central Valley Flood Protection Board
CWA	Clean Water Act
DMA	Drainage Management Area
DPR	California Department of Parks and Recreation
DWR	State Department of Water Resources
DFW	California Department of Fish and Wildlife
EIR	Environmental Impact Report
EPA	federal Environmental Protection Agency
General Permit	statewide general permit authorizing discharges from small municipal separate storm sewer systems
GHGs	greenhouse gases
gpm	gallons per minute
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HMP	Habitat Management Plan
I	Interstate
IPM	Integrated Pest Management
ILRP	Irrigated Lands Regulatory Program
IS/MND	Initial Study and Mitigated Negative Declaration
LAA	land application area
LAFCo	Local Agency Formation Commission
MDTW	Miller Ditch Treatment Wetland
MG	million gallons
MGD	million gallons per day
MHHT	mean higher high tide
MS4	municipal separate storm sewer system
NEPA	National Environmental Policy Act
NCCA	Newman Community Conservation Area (Plan Area)
NEWS	Newman Environment Wetland System
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRA	California Natural Resources Agency
NRCS	Natural Resources Conservation Service
O&M	operations and maintenance
OHWM	ordinary high water mark
RWQCB	Regional Water Quality Control Board
SDAC	Severely Disadvantaged Community
SGMA	Sustainable Groundwater Management Act
SJREC	San Joaquin River Exchange Contractors
SR	State Route
STEM	science, technology, engineering, and mathematics
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TMDL	total maximum daily load
UC Merced	University of California, Merced
UWMP	Urban Water Management Plan
USFWS	U.S. Fish and Wildlife Service
WCB	California Wildlife Conservation Board
WDRs	Waste Discharge Requirements
WQOs	Water Quality Objectives
WWTP	City of Newman Wastewater Treatment Plant

Attachments

Newman Environmental Wetland System
Wetland Project
Central Swale
Newman Nature Park
Miller Ditch Treatment Wetland
Canal School Rd
Wetland Project
Wetland Project
Wetland Project
Brazo Rd

Appendix B

Biological Resource Evaluation

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Biological Resource Evaluation

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1.0 INTRODUCTION

This report presents the methods and results of a biological habitat evaluation conducted by Vollmar Natural Lands Consulting, Inc. (VNLC) within two parcels and a small section of Miller Ditch (Study Area) owned by the City of Newman (City) (**Figure 1**). These parcels represent the site of the planned Newman Community Conservation Area ('NCCA'). The NCCA will support four separate and independent, but complementary projects. These will include habitat restoration and creation projects, a multi-use trail system, and other amenities that will provide public access, nature viewing, and nature- and conservation-oriented education benefits to the community.

The NCCA is planned to occupy two parcels acquired by the City in 2014 for this specific purpose: a 78-acre parcel located at the southeast corner of Canal School Road and Inyo Avenue and a 24-acre parcel located nearby, northeast of Brazo Road. A program of four separate but complementary projects is envisioned at the NCCA:

- In the northwest portion of the 78-acre parcel, the Newman Environmental Wetland System **(NEWS project)**, an approximately 21-acre constructed wetland complex that will treat stormwater and dry season runoff from the City and surrounding agricultural lands prior to discharge to the Newman Wasteway and, ultimately, the San Joaquin River
- In the central and east portions of the 78-acre parcel, extending to the central and south portions of the 24-acre parcel, an approximately 11-acre seasonal wetland, riparian, and grassland restoration project **(wetland project)** emphasizing natural sequestration of greenhouse gases (GHGs)
- In the southwest portion of the 78-acre parcel, an additional approximately 16-acre constructed wetland project that is being planned in collaboration with the Environmental Systems Graduate Group at the University of California, Merced (UC Merced) Department of Civil and Environmental Engineering to treat water from the Miller Ditch, with a focus on removing agricultural pollutants **(Miller Ditch Treatment Wetland project)** (MDTW, MDTW project)
- In the east and southeast portions of the 78-acre parcel, the **Newman Nature Park,** which is being planned with community input and may include a wide range of facilities such as a community gathering plaza, outdoor classroom areas, a nature-themed play area, and native plant, rainwise garden, and low-impact development demonstration areas, as well as an unpaved trail network and interpretive signage extending throughout the 78-acre parcel to enable appropriate public recreational access and, ultimately, tie all of the projects together

This habitat evaluation was conducted to identify and characterize existing conditions as well as assess the potential for special-status species, sensitive habitats, and jurisdictional features to occur within the Study Area.

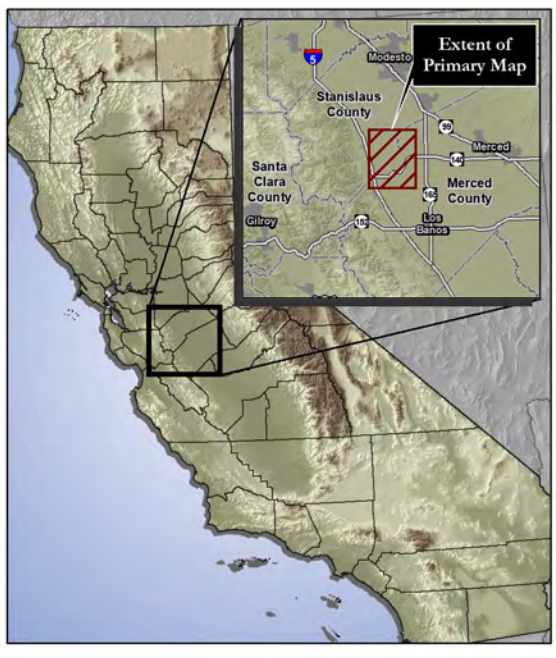
Crows Landing
West Hilmar Wildlife Area
George J. Hatfield State Recreation Area
33
North Grasslands Wildlife Area
Newman
140
Great Valley Grasslands State Park
San Luis National Wildlife Refuge
5
STANISLAUS COUNTY
MERCED COUNTY
Bureau of Reclamation
Gustine
33
Simon Neuman Preserve
Vollmar NATURAL LANDS CONSULTING

Legend

- Study Area
- County Boundary
- Urban Area
- Public Land
- Highway

FIGURE 1
Regional Vicinity Map

Newman Community Conservation Area
Merced County, California



N
W E
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1:75,000

(1 in. = approx. 1.2 mi at tabloid layout)

0 1.25 2.5 5 Km

0 0.5 1 2 Mi

Data Sources: EW, 2016 | USGS, Various Years GAP Project, 1998 | USDA NAIP, 2018 US HUD, 2018 | CERES, 2012
GIS/Cartography by: K. Chinn, May 2020
Map File: Vicinity_445_B-P_2020-0601.mxd

1.1 Special-status Species

Based on habitat requirements and regional distribution, four State or Federal Threatened (ST, FT) or Endangered (SE, FE) wildlife species have potential or low potential to occur within the Study Area (also see **Section 5.1.1** and **Appendix B**):

- Swainson's Hawk (*Buteo swainsoni)* – ST;
- Tricolored Blackbird (*Agelaius tricolor*) – ST, State Species of Special Concern (SSC);
- San Joaquin kit fox (*Vulpes macrotis mutica*) – FE, ST; and
- Giant garter snake (*Thamnophis gigas*) – FT, ST, SSC.

In addition, seven non-listed special-status animals have potential or low potential to occur within the Study Area (see **Section 5.1.2** and **Appendix B**):

- Northwestern pond turtle (*Actinemys marmorata*) – SSC;
- Western spadefoot (*Spea hammondii*) – SSC;
- Burrowing Owl (*Athene cunicularia*) – SSC;
- Northern Harrier (*Circus hudsonius*) – SSC;
- Yellow-billed Magpie (*Pica nuttalli*) –Federal Bird of Conservation Concern (BCC);
- Loggerhead Shrike (*Lanius ludovicianus*) – SSC; and
- American badger (*Taxidea taxus*) – SSC.

Five State or Federal Threatened or Endangered wildlife species with potentially suitable habitat present within the Study Area have been excluded from this report based on recent survey findings. Conservancy fairy shrimp (*Branchinecta conservatio*) (FE), longhorn fairy shrimp (*B. longiantenna*) (FE), vernal pool fairy shrimp (*B. lynchi*) (FT), and vernal pool tadpole shrimp (*Lepidurus packardi*) (FE) were excluded based on the results of protocol-level wet season and dry season surveys conducted in the winter of 2019 (**Appendix D**, City of Newman Project Site 2019-2020 90-Day Report). California tiger salamander (FT, ST) was excluded based on lack of suitable breeding habitat within the Study Area, as documented during the protocol-level surveys (ponding duration in all wetlands onsite was too short to support breeding). Although the grassland and burrows onsite could provide suitable refugial habitat for California tiger salamander, the site is surrounded by an extensive buffer of unsuitable habitat (agricultural fields). Additionally, the nearest documented occurrence is 3.6 miles away which is farther than California tiger salamander are known to travel overland (USFWS 2017). See **Appendix B** for more information on these species and habitat requirements.

There is suitable habitat and potential to occur within the Study Area for six non-listed plant species with California Rare Plant Rank (CRPR) designations by the California Native Plant Society (CNPS) (see **Section 5.1.4** and **Appendix B**). CNPS protocol-level plant surveys commenced in spring 2020 and finished in July 2020. The following six species have suitable habitat and potential to occur:

- Crownscale (*Atriplex coronata* var. *coronata*) – CRPR 4.2;
- Heartscale (*Atriplex cordulata var. cordulata*) – CRPR 1B.2;
- Vernal pool smallscale (*Atriplex persistens*) – CRPR 1B.2;
- Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) – CRPR 4.2;
- Lesser saltscale (*Atriplex minuscula*) – CRPR 1B.1; and
- San Joaquin spearscale (*Extriplex joaquinana*) – CRPR 1B.2.

Although there is suitable or marginal habitat within the Study Area for one State-listed plant species and 12 non-listed plant species, they have been excluded from this report based on recent protocol-level survey findings. According to survey results, these 13 species have not been observed and thus are presumed absent from the site: Delta button-celery (*Eryngium racemosum*) (SE, CRPR 1B.1), alkali milk-vetch (*Astragalus tener* var. *tener*) (CRPR 1B.2), crownscale (*Atriplex depressa*) (CRPR 1B.2), spiny-sepaled button-celery (*Eryngium spinosepalum*) (CRPR 1B.2), diamond-petaled California poppy (*Eschscholzia rhombipetala*) (CRPR 1B.1), vernal barley (*Hordeum intercedens*) (CRPR 3.2), Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*) (CRPR 1B.1), little mousetail (*Myosurus minimus* ssp. *apus*) (CRPR 3.1), shining navarretia (*Navarretia nigelliformis* ssp. *radians*) (CRPR 1B.2), prostrate vernal pool navarretia (*Navarretia prostrata*) (CRPR 1B.1), California alkali grass (*Puccinellia simplex*) (CRPR 1B.2), Sanford's arrowhead (*Sagittaria sanfordii*) (CRPR 1B.2), and Slender-leaved pondweed (*Stuckenia filiformis* ssp. *alpina*) (CRPR 2B.2).

The project site could also support nesting and migrating birds protected by the Migratory Bird Treaty Act (see **Section 5.1.3**) and California Fish and Game Code 3503.

1.2 Critical Habitat

The site is not located within any designated critical habitat.

1.3 Potential Impacts to Additional Resources

There are a series of large, mature willow trees (*Salix* sp.), Mexican fan palms (*Washingtonia robusta*), small cultivated fruit trees, and a mid-sized walnut tree (*Juglans hindsii*) directly outside the boundaries of the Study Area which may provide valuable nesting bird and raptor habitat, and may be protected under local ordinances. There are 12.183 acres of potential jurisdictional Waters of the Unites States and of the State of California within in the Study Area, including 0.142-acre of Coastal and Valley Freshwater Marsh, a CDFW Sensitive Natural Community. There are numerous large and small mammal burrows, most likely California ground squirrel (*Otospermophilus beecheyi*) and gopher, that are present in the Study Area. The burrows may provide valuable refugial habitat for listed wildlife species.

2.0 PROJECT LOCATION

The Study Area is located in Merced County immediately southeast of the Stanislaus County–Merced County border, east of State Highway 33 and just outside the southeastern border of the City of Newman (**Figure 1**). The Assessor's Parcel Numbers (APN) for the 78-acre parcel are 054-050-019 and 054-050-020, and the APN for the 24-acre parcel is 054-050-010. The Study Area is within the Orestimba Landgrant, and mapped within the Newman 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle (**Figure 2**). The 24-acre parcel also falls within the Gustine 7.5-minute USGS quadrangle.

The Study Area can be accessed from I-5 heading south by exiting at Crows Landing, then turning left (east) onto Fink Road, after 4 miles turning right (southeast) onto State Highway 33, and after 6 miles turning left (east) onto Inyo Avenue. Inyo Avenue becomes East Inyo Avenue, which dead ends at Canal School Road at the northwestern corner of the 78-acre parcel. The western border of the 78-acre parcel continues south to the intersection of Canal School Road and Brazo Road. A privately-owned parcel separates the 78-acre parcel and the 24-acre parcel. The 24-acre parcel can be accessed by walking east along the levee that runs along the northern edge of the 78-acre parcel.

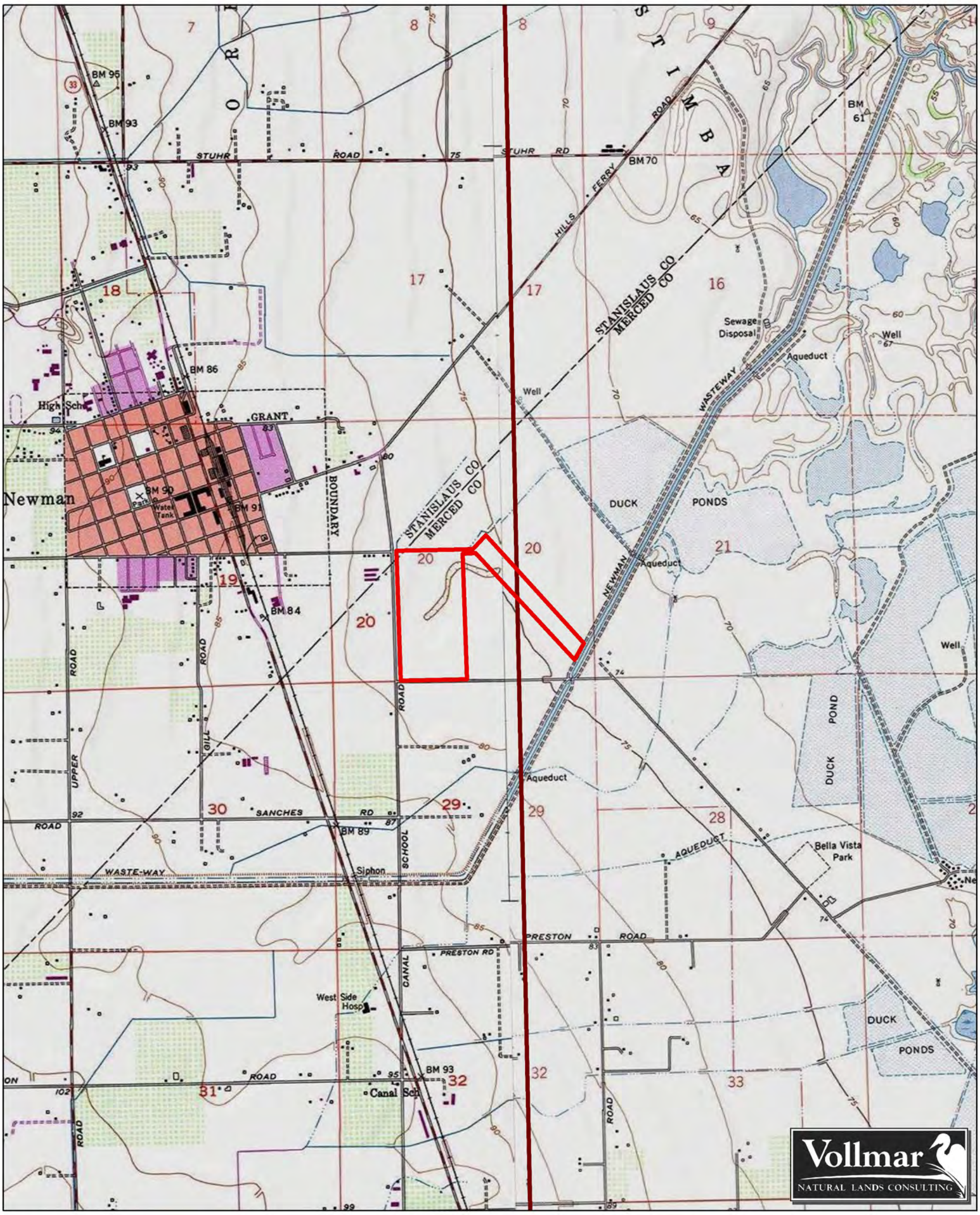
3.0 METHODS

3.1 Preliminary Review

Prior to the site visit, VNLC biologists reviewed the most recent version of the California Natural Diversity Database (CNDDB 2020) to identify special-status plant and wildlife observations in the project vicinity. Additionally, the U.S. Fish and Wildlife Service (USFWS) Information Planning and Consultation System (IPaC) (USFWS 2020) was also reviewed to help evaluate the potential for federally listed species to occur in the study area. A nine-quad search for rare and listed plants was conducted through the CNPS online Inventory of Rare and Endangered Plants (CNPS 2020). The species potentially present in the quadrant containing the project site are listed in **Appendix B**. The site's aerial imagery, project description, and general regional conditions were also reviewed prior to the site visit.

3.2 Site Visit

The biological habitat evaluation was conducted by Jake Schweitzer, VNLC Senior Ecologist, and Misaki Yonashiro, VNLC Staff Ecologist. The ecologists conducted a site visit and reconnaissance-level survey on March 10, 2020. They walked the project site to gain complete visual coverage, and recorded all observed flora and wildlife species, general conditions, and notable habitat features. A search was conducted for jurisdictional features (wetlands and other waters, etc.), sensitive habitats (native grasslands, etc.), and habitat potential for special-status species (nesting potential, burrows or dens, etc.). Photographs showing representative site conditions were recorded as well; these are included in **Appendix A**.



Legend

- Study Area
- USGS 1:24k Quad Boundary

FIGURE 2
USGS Topographic Map

Newman Community Conservation Area
Merced County, California

N
W E
S

1:24,000

(1 in. = approx. 0.4 mi at tabloid layout)

0 0.25 0.5 1 Km

0 0.25 0.5 1 Mi

Sources: Vollmar Consulting, 2019 | National Geographic, 2013
USGS, Gustine and Newman Quads, 1983
Map Produced By: E. Smith, K. Chinn, May 2020
Map File: Vicinity_DRG_445_B-P_2020-0601

4.0 EXISTING CONDITIONS

Historically, the Study Area was part of the large floodplain and tributary complex draining generally eastward to the San Joaquin River. Based on a review of historic aerial photographs, the tributary was hydrologically cut off from the San Joaquin River during the 20th century by berms, ditches and roads. Flooding from the river has been reduced by dams and diversions of water via a vast network of irrigation canals.

While land use in the vicinity of the Study Area currently consists primarily of urban development and intensive agricultural modification, the Study Area is substantially less modified compared to the surrounding land use. In recent years, the Study Area has primarily functioned as rangeland for cattle grazing. Although the Study Area has been altered, it still supports remnant wetland features. Due to a long history of ditching and irrigating, the historic extent of the wetlands is largely unknown. Current features, such as a depressional swale that bisects the site, are likely a combination of heavily altered natural features and anthropogenic features from previous land uses. Depressional areas still support wetland features, indicating that the soils within the Study Area have not been deep-ripped, and the underlying semi-impermeable layer is likely intact. The Study Area is underlain by intact Northern Claypan, which is an indurated clay layer that significantly reduces the downward percolation of surface water and causes water to perch near the ground surface. The presence of this aquitard can result in the formation of vernal pools and other seasonal wetlands, though wetlands on site are degraded and do not currently support a predominance of vernal pool indicator species.

The Study Area encompasses two separate parcels, a 24-acre parcel and a 78-acre parcel, plus a section of Miller Ditch (along the northern 78-acre parcel border) which will be impacted as part of the NEWS Project (**Section 1.0**). The acreage of the Study Area in total is approximately 105 acres (**Figure 3**). The Central California Irrigation District's (CCID's) Miller Ditch is a constructed feature that receives water from another nearby CCID canal (to the west) and sheet flow from adjacent lands. Miller Ditch generally flows in an easterly direction, connecting to the Newman Wasteway, which then flows northeast into the San Joaquin River, a Traditional Navigable Water.

Most of the 78-acre parcel was historically graded into terraces or gently-angled pastures to facilitate irrigation and cultivation at one time, but the parcel has been fallowed since at least the late 1990s, and now is primarily used for cattle grazing. As with the 24-acre parcel, the surface hydrology of this area was further modified by the addition of summer irrigation. The 78-acre parcel likely once supported a mosaic of perennial grasslands, vernal pools, alkali seasonal wetlands, and potentially a portion of a tributary of the San Joaquin River. These various historic hydromodifications have changed the extent of wetlands, as well as their hydrology and the associated plant communities.

Photo 1
Photo 14
Photo 3
Photo 11
E Inyo Ave
Photo 4
Photo 10
Photo 9
Photo 12
Photo 8
Photo 6
Photo 5
Photo 13
Trees provide potential nesting habitat for raptors
Photo 7
Brazo Rd
Photo 2
Canal School Rd

Vollmar NATURAL LANDS CONSULTING

Data Sources: EW, 2016 | USGS, Various Years
GAP Project, 1998 | USDA, 2009 | VNLC, 2019-2020
GIS/Cartography by: K. Chinn, July 2020
Map File: Habitat_445_B-P_2020-0719_BE.mxd

Legend

- Study Area
- Non-Native Annual Grassland
- Native Grass (Beardless wild rye) Population
- Rare Plant (Parry's rough tarplant) Population (greater than ~100 sq ft)
- Rare Plant (Parry's rough tarplant) Population (less than or equal to ~100 sq ft)

Potential Jurisdictional Features

- Ditch
- Seasonal Wetland Swale
- Seasonal Wetland
- Emergent Wetland
- Ground Squirrel or Gopher Burrow
- Tree
- Photo Point

FIGURE 3
Site Habitat Map
Newman Community Conservation Area
Merced County, California

N W E S

1:5,100
(1 in. = 425 ft. at tabloid layout)

0 75 150 300 Meters
0 250 500 1,000 Feet

The 24-acre parcel is comprised of severely degraded wetlands, including a large alkali seasonal wetland on Britto soils, as well as upland areas. This parcel has not been intensively cultivated, but has been overgrazed by cattle and received unseasonable irrigation water during the summer via drainage from the adjoining agricultural property.

The Study Area consists of approximately 0.142 acre of emergent wetland, 7.979 acres of seasonal wetlands, 1.396 acres of seasonal wetland swales, and 3.704 acres of ditches. A mosaic of native and non-native plant species was observed in the potential jurisdictional and wetland habitats, with dominant species differing according to the wetland hydrology. The more widespread seasonal wetlands include native Mexican rush (*Juncus mexicanus*) as well as non-native Mediterranean barley (*Hordeum marinum*), Italian rye grass (*Festuca perennis*), rabbitfoot grass (*Polypogon monspeliensis*), curly dock (*Rumex crispus*), and annual blue grass (*Poa annua*). The emergent wetland feature includes a mix of native marsh species and mostly non-native seasonal wetland species. Marsh species include common tule (*Schoenoplectus acutus occidentalis*), broad-leaved cattail (*Typha latifolia*), waterpepper (*Persicaria hydropiper*), and knot grass (*Paspalum distichum*). These are interspersed with the seasonal wetland species indicated above.

The upland grassland habitats on the site were dominated by non-native, weedy species typical of disturbed upland habitats, though localized stands of native grasslands were present. The most commonly observed grasses observed on the site included ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), slender wild oat (*Avena barbata*), foxtail barley (*Hordeum murinum*), and Bermuda grass (*Cynodon dactylon*). There are scattered stands of the native beardless wild rye (*Elymus triticoides*) as well as meadow barley (*Hordeum brachyantherum* ssp. *brachyantherum*). Mexican rush is scattered throughout the uplands as well as the wetland habitats. All of these native graminoids are indicative of high clay content in the soils, and/or the altered hydrology of the site, which is enhanced by irrigation runoff on the eastern parcel. Associated forb species observed were primarily introduced species such as white clover (*Trifolium repens*), bur-clover (*Medicago polymorpha*), bindweed (*Convolvulus arvensis*), summer mustard (*Hirschfeldia incana*), English plantain (*Plantago lanceolata*), white horehound (*Marrubium vulgare*), milk thistle (*Silybum marianum*), black mustard (*Brassica nigra*), and wild geranium (*Geranium dissectum*). For a full inventory of all plant species observed onsite, see **Appendix C**.

5.0 RESULTS AND AVOIDANCE MEASURES

This section provides background information and lists recommended avoidance and/or minimization measures to reduce the potential for the project to impact special-status species and sensitive habitats within the Study Area. Only listed species and/or special-status species with the greatest potential to occur within the Study Area are addressed here. Some species, specifically four large branchiopod species (*Branchinecta* sp.) and California tiger salamander (*Ambystoma californiense*), had potential to occur within the Study Area, but have been ruled out by the results of protocol-level surveys and hydrology data collected in the winter of 2019-2020. These species are not discussed below, but are listed and discussed in **Appendix B**.

5.1 Special-status Species

Special-status animal species targeted and analyzed in this report include those listed by the USFWS and/or California Department of Fish and Wildlife (CDFW) as threatened or endangered, as well as those proposed for listing or that are candidates for listing as threatened or endangered. The listing of "Endangered, Rare, or Threatened" is defined in Section 15380 of the *California Environmental Quality Act* (*CEQA*) *Guidelines*. Section 15380(b) states that a species of animal or plant is "endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. A species is "rare" when either "(A) although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or (B) the species is likely to become endangered within the foreseeable future throughout all or a portion of its range and may be considered 'threatened' as that term is used in the Federal Endangered Species Act" (ESA).

Animal species are designated as "Species of Special Concern" or "Fully Protected" by the CDFW. Although these species have no legal status under the California Endangered Species Act (CESA), the CDFW recommends their protection as their populations are generally declining and they could be listed as threatened or endangered (under CESA) in the future. "Fully Protected" species generally may not be taken or possessed at any time. The CDFW may only authorize take for necessary scientific research and may authorize live capture and relocation of "fully protected" birds to protect livestock.

Birds are designated by the USFWS as "Birds of Conservation Concern." Although these species have no legal status under ESA, the USFWS recommends their protection as their populations are generally declining, and they could be listed as threatened or endangered (under ESA) in the future.

Special-status plants include species that are designated rare, threatened, or endangered as well as candidate species for listing by the USFWS. Special-status plants also include species considered rare or endangered under the conditions of Section 15380 of the CEQA Guidelines, such as those plant species identified by the CNPS as California Rare Plant Rank (CRPR) 1A, 1B, and 2 in the

Inventory of Rare and Endangered Vascular Plants of California. Finally, special-status plants may include other species that are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included as CRPR Lists 3 and 4 in the CNPS Inventory.

For the purposes of this report, 'sensitive plant communities' include those designated as such by the CDFW, either in the CNDDB, the list of California Sensitive Natural Communities (CDFW 2019), or as sensitive alliances classified in the Manual of California Vegetation (MCV) (Sawyer et al. 2009). Alliances included within the MCV that are designated as global or state rank ("G" or "S") 1-3 are considered "rare or threatened" at the global and/or state level, and are therefore considered sensitive.

In addition, wetland and riparian habitats, regardless of MCV status, are considered sensitive. Wetlands, streams, and permanent and intermittent drainages are subject to the jurisdiction of the U.S. Army Corps of Engineers (ACOE) under Section 404 of the Federal Clean Water Act (CWA). The CDFW also generally has jurisdiction over these resources, together with other aquatic features that provide an existing fish and wildlife resource pursuant to Sections 1602- 1603 of the California Fish and Game Code. The CDFW asserts jurisdiction to the outer edge of vegetation associated with a riparian corridor. The Regional Water Quality Control Board (RWQCB) also generally has jurisdiction over streams and wetlands. Any grading, excavation, or filling of jurisdictional drainage corridors or wetlands would require a Section 404 permit and will require mitigation.

Figure 4 shows the distribution of special-status species documented in CNDDB in the surrounding area. These and other special-status species known from the project region are listed in **Table 1 and 2 of Appendix B**, along with their regulatory status, habitat requirements, and an evaluation of their potential to occur on or near the Study Area.

5.1.1 Federal or State Listed Wildlife Species

There are four Federal or State listed wildlife species with potential or low potential to occur with the Study Area: Swainson's Hawk, Tricolored Blackbird, San Joaquin Kit Fox, and giant garter snake. These four species are discussed in detail below.

Swainson's Hawk (*Buteo swainsoni*) – State Threatened

Swainson's Hawk (nesting) is listed as State Threatened, as well as a USFWS Bird of Conservation Concern and considered sensitive by the BLM and has potential to nest within the Study Area. Swainson's Hawks are migratory birds and can be found breeding throughout western North America before migrating south as far as Argentina. Swainson's Hawk population numbers have dropped within California significantly within the last 100 years, and California listed the species as threatened in 1983 (CDFW 2011). One of the biggest threats they face is habitat loss due to various factors such as conversion of foraging and breeding habitat to agricultural or urban development, climate change and pesticide poisoning (TCLO 2013). Swainson's Hawks are

known to inhabit open habitats, such as open grassland, open meadows, prairies, and other habitat that allows foraging for prey from above. However, due to extensive habitat loss, they are primarily found within large, open agricultural fields. They will often nest in stands of trees or other vegetation adjacent to the open grassland habitat they use for foraging. Swainson's Hawk was observed foraging directly above the Study Area during a site visit in July 2020.

Potential Project Impacts

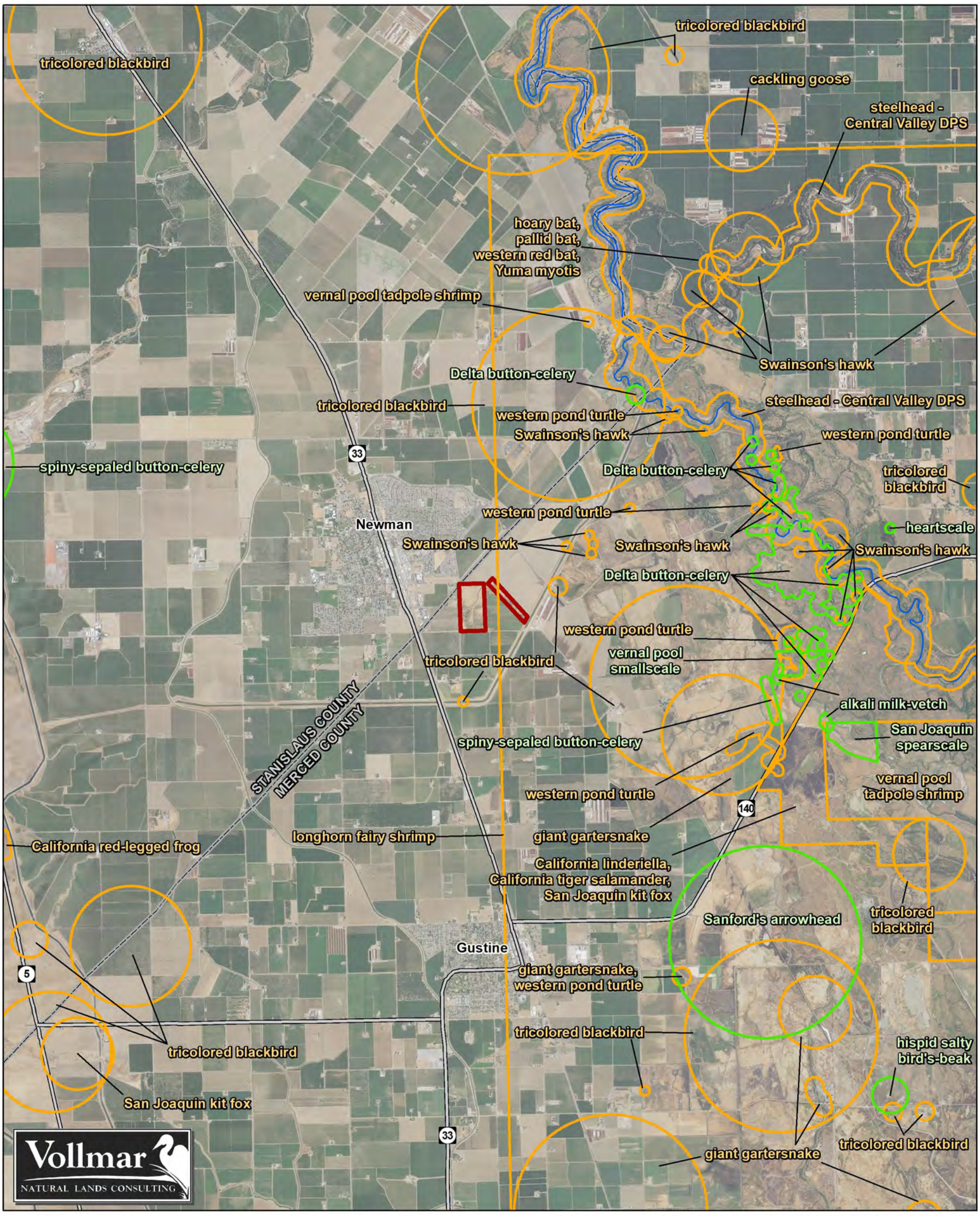
The Study Area provides both foraging and potential nesting habitat for Swainson's Hawk, due to the presence of large, mature trees adjacent to the eastern boundary of the 78-acre parcel, and open grassland with surrounding agricultural fields. Should project activities occur during nesting season and Swainson's Hawks are nesting in the trees adjacent to the project site, the project could result in the abandonment of a nest and possibly eggs or nestlings.

Tricolored Blackbird (*Agelaius tricolor*) – State Threatened, State Species of Special Concern

The Tricolored Blackbird (nesting colony) is listed as State Threatened, CDFW Species of Special Concern, USFWS Bird of Conservation Concern, and as sensitive by the BLM. A member of the blackbird and oriole family, the male Tricolored Blackbird is distinguished from the common red-winged blackbird by its red shoulder patch bordered in white. These birds forage in flocks, mostly on the ground, but occasionally in shrubs and trees. During summer months, they feed on a variety of insects including caterpillars, beetles, and grasshoppers. In fall and winter, they eat the seeds of grasses, weeds, and waste grain (Kaufman 2005). The nesting behavior of the Tricolored Blackbird is highly social. They form the largest colonies of any North American land bird, forming breeding groups of tens of thousands of individuals (Cook 2005). The birds in these colonies pack their nests closely together in dense cattail or bulrush marshes. The density of these colonies is more densely packed than those of the red-winged blackbird, with nests found only one to two feet apart. Breeding takes place from mid-March through July (Kaufman 2005).

Unlike the red-winged blackbird, which is abundant throughout the continent, the Tricolored Blackbird has a very small range in the Pacific states. Tricolored Blackbird populations have seriously declined in recent decades due to habitat destruction. It is speculated that its habit of nesting in dense colonies make the Tricolored Blackbird more susceptible to population decline (Cook 2005).

Tricolored Blackbirds are most often found in large freshwater marshes, especially those which are saturated with cattails and tule (*Schoenoplectus* spp.). They tend to nest in areas with protective, spiny vegetation and high abundances of insect prey, and form the largest nesting colonies of any bird in North America. They prefer areas with adequate foraging area and areas which provide sufficient insect prey within a short radius of the colony (Shuford et al. 2008). The closest known occurrence of the Tricolored Blackbird relative to the Study Area is less than one mile (**Figure 4**).



Legend

- Study Area
- County Boundary
- Special-Status Plant
- Special-Status Animal
- San Joaquin River
- Highway

FIGURE 4
Regional Special-Status Species Map

Newman Community Conservation Area
Merced County, California

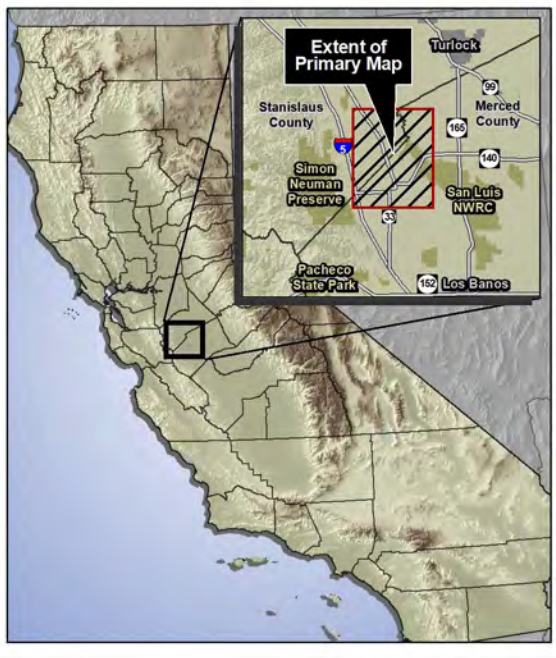
N
W E
S

1:65,000

(1 inch = 1.0 mile at Tabloid Layout)

0 0.5 1 2 Km

0 0.5 1 2 Mi



Data Sources: EW, 2016 | USGS, Various Years
GAP Project, 1998 | USDA, 2009 | VNLC, 2019
GIS/Cartography by: K. Chinn, April 2020
Map File: CNDDB_BE_445_B-P_2020-0601.mxd

Potential Project Impacts

The Study Area provides potential foraging habitat for Tricolored Blackbird, but does not provide suitable nesting habitat. The emergent wetland feature on site is too small, lacks required density, and is severely degraded, and therefore does not provide potential nesting habitat. Due to the lack of suitable nesting habitat, the project is unlikely to have any significant effects on nesting Tricolored Blackbirds and therefore no mitigation measures are recommended.

San Joaquin kit fox (*Vulpes macrotis mutica*) – Federal Endangered, State Threatened

The San Joaquin kit fox (SJKF) is a member of the Canidae family, and is the smallest fox in North America measuring an average of 20 inches in length and weighing about 5 lbs. They are slight, solitary foxes with long legs and a tan to buffy gray coat. They are easily recognized for their especially long ears, which are proportionately the longest of any canid in North America (Eder 2005).

SJKF prefer habitats of open or low vegetation with loose soils. In the northern portion of their range, they occupy grazed grasslands and, to a lesser extent, valley oak woodlands. In the southern and central portion of the Central Valley, SJKF are found in valley sink scrub, valley saltbrush scrub, upper Sonoran subshrub scrub and annual grassland. SJKF are also found in grazed grasslands including areas adjacent to tilled or fallow fields, and suburban settings (USFWS 1998). SJKF is an important predator of small rodents. Their primary prey species include kangaroo rats, pocket mice, and rabbits. They are also known to feed on reptiles, ground-nesting birds, and insects (Eder 2005).

The SJKF requires underground dens to raise pups, avoid predators (Golightly and Ohmart 1984), regulate temperature, and avoid other adverse environmental conditions. In the northern portion of their range, burrowing mammals, primarily California ground squirrels provide these holes. Dens are usually located on loose-textured soils on slopes of less than 40 degrees (O'Farrell 1980). Natal pupping dens are generally found on slopes of less than 6 degrees (O'Farrell and McCue 1981). Kit foxes breed from late December to March (Egoscue 1956, Morrell 1972, Zoellick et al. 1987). Home range size can vary but generally are 1-2 sq. kilometer in size depending on resource availability. Dispersal distances vary considerably. A six-year study at Elk Hills Petroleum Preserves in California showed that pups dispersed an average distance of 5.0 miles (Scrivner et. al. 1987, USFWS 1998).

Historically, SJKF occurred extensively throughout California's Central Valley and parts of the Salinas and Santa Clara valleys. They currently inhabit some areas of suitable habitat on the San Joaquin Valley floor and in the surrounding foothills of the coastal ranges, Sierra Nevada, and Tehachapi Mountains, from southern Kern County north to Contra Costa, Alameda, and San Joaquin Counties on the west, and some of the larger scattered islands of natural land on the Valley floor in Kern, Tulare, Kings, Fresno, Madera, and Merced Counties (USFWS 1998). The transformation of the Central Valley from open grasslands to farmland, orchards and residential

areas has greatly impacted SJKF populations as it has become more difficult for them to find food and mates. The extensive use of rat poison has also affected SJKF populations. The federal government has recently made a decision to limit the use of these poisons outdoors (EPA 2015). The closest known occurrence of San Joaquin kit fox relative to the Study Area is approximately 3.6 miles (**Figure 4**).

Potential Project Impacts

Though the Study Area contains grassland and small mammal burrows, no SJKF dens were observed during the field survey. The Study Area is surrounded by agricultural fields and is largely disconnected from suitable habitat. SJKF are unlikely to use the project site for anything other than passing through or hunting. Therefore, project activities are unlikely to impact the SJKF, and no mitigation measures are recommended.

Giant garter snake (*Thamnophis gigas*) – Federal Threatened, State Threatened, State Species of Special Concern

As its name would suggest, the Giant garter snake (GGS) is the largest of the garter snakes. Adults are approximately 36-65 inches in length. It is brown or olive to black in color, with a yellow dorsal stripe and one stripe down each side of its body (Nafis 2020). The historical range for this species is from Kern County to Butte County along the Central Valley; however this range has diminished over time. Currently, the GGS can be found from Glenn County to the Southern portion of San Francisco and from Merced County to Fresno County (Nafis 2020). The GGS is mostly found in marshes, irrigation ditches, drainage systems, and rice fields and slow-moving creeks. This highly aquatic species prefers warm weather (daylight, warm nights) for activity. Its diet consists of fish, frogs and tadpoles as its historical prey has been driven from its range (Nafis 2020).

Giant garter snake is considered federally threatened due to loss of habitat in the San Joaquin Valley and introduction of predatory fish (Nafis 2020). The closest documented occurrence of giant garter snake is approximately 2.1 miles away from the Study Area; however, this documentation is a non-precise location from 1976 and is likely no longer extant (**Figure 4**).

Potential Project Impacts

The drainage ditches containing aquatic habitat along the western and northern portions of the Study Area may provide suitable habitat for GGS. However, GGS has been well studied and there is only one known breeding population in the San Joaquin Valley. There is very low potential for GGS to occur within the Study Area, however, a small portion of Miller Ditch is expected to be impacted during construction. Therefore, avoidance measures for GGS are recommended.

5.1.2 Non-listed Special-Status Wildlife Species

Seven other special-status species have some potential to occur within the Study Area: northwestern pond turtle, western spadefoot, Burrowing Owl, Northern Harrier, Yellow-billed

Magpie, Loggerhead Shrike, and American badger. These species are not federally or state listed as endangered or threatened. However, their designation as special-status species by CDFW or USFWS warrants consideration, and avoidance and mitigation measures are recommended.

Northwestern pond turtle (*Actinemys marmorata*) – State Species of Special Concern

The northwestern pond turtle, the only turtle native to California, is a small turtle which is generally brown, olive brown or dark brown. Its shell is often marked with a network of spots, lines, or dashes of brown or black that radiate from growth centers of shields. The legs and head usually have black spots and can show cream or yellow coloring.

These turtles often bask outside of the water, but quickly re-enter if they are threatened. Habitats include aquatic environments ranging in elevation from sea level to 6,500 ft. They are found in rivers, streams, lakes, ponds wetlands, reservoirs, and brackish estuarine waters (Holland 1994; Jennings and Hayes 1994). They prefer habitats with areas for cover (vegetation, logs) and basking sites (rocks and other substrates) (Holland 1994). Summer droughts and cold winters are survived by aestivating or burying in loose soil or mud.

Northwestern pond turtles are omnivores, with the potential to be opportunistic predators and scavengers (Holland 1985a, 1985b, Bury 1986). Their diet primarily consists of crustaceans, midges, dragonflies, beetles, and caddisflies. They are also known to eat mammal, bird, reptile, amphibian, and fish carrion. They have been observed foraging on willow and alder catkins, and on ditch grass inflorescences (Holland 1991).

Northwestern pond turtles begin to breed between 10 and 14 years of age. Females leave drying creeks from May to July to oviposit in sunny upland habitats, including grazed pastures. Clutch size ranges from one to 13 eggs, and incubation lasts 80-100 days. Nest predation rates are high and complete failure of nests is common.

The northwestern pond turtle is declining in most of its range. It is almost extinct in the San Joaquin Valley and has seen extensive habitat loss, in part due to predation as well as competition from introduced animals, including exotic pet turtles that have been released into the wild (Zeiner and Laudenslayer 1990). The nearest documented occurrence of northwestern pond turtle is approximately two miles from the Study Area (**Figure 4**).

Potential Project Impacts

The irrigation ditches bordering the western and northern boundaries of the Study Area provide marginal habitat for pond turtles. However, the species is highly mobile and may disperse through dry areas when moving between larger pools or ponds. Therefore, it is possible that individual turtles may be present during construction activities, and could be harmed if not avoided or mitigated.

Western spadefoot (*Spea hammondii*) – State Species of Special Concern

The Western Spadefoot (WS) is a Spadefoot Toad belonging to the family Pelobatidae. WS is a medium-sized toad varying in color from greenish, cream or gray-brown above. They often have four irregular, light-colored stripes on the back along with dark blotches. Their eyes are wide-set with no cranial boss between them. Hind legs each have a glossy black, wedge-shaped spade (Stebbins 2012).

WS inhabit a variety of different habitats including washes, floodplains of rivers, alluvial fans, playas, alkali flats. They are primarily a species of the lowlands, but they also appear in valley and foothill grasslands, open chaparral, and pine-oak woodlands. WS prefers areas of open vegetation and short grasses, where soil is sandy or gravelly (Stebbins 2012). Their diet consists of a variety of invertebrates, including adult beetles, larval and adult moths, crickets, flies, ants, spiders, and earthworms. Tadpoles feed on planktonic organisms, algae, small invertebrates, dead aquatic larvae of amphibians, and may exhibit cannibalism (Bragg 1964).

WS require rain pools which do not contain bullfrogs, fish, or crayfish for breeding. Breeding sites include vernal pools and other temporary rain pools, cattle tanks, and pools of intermittent streams. Typically the pools are turbid with little or no cover. Adults remain in underground burrows for most of the year, and move to breeding pools after heavy rains, typically in February and March. Interestingly, WS is an opportunistic breeder, meaning it is physiologically capable of breeding at any time if conditions are favorable (Ervin and Cass 2007). WS breeding usually occurs 1-2 days after heavy rains. Development is rapid with egg to transformation occurring in 8-16 days (Stebbins 2012). Temporary breeding pools must last for at least 30 days for successful transformation of larvae. Recently metamorphosed individuals seek refuge in the immediate vicinities of breeding pools for up to several days after transformation. They have been witnessed hiding in drying mud cracks and beneath boards and other surface objects (Weintraub 1980).

Dry periods are spent in self-made burrows or those made by gophers, ground squirrels or kangaroo rats. WS are nocturnal, with the majority of their activity occurring at night and during spring and summer rains. To burrow, WS push soil aside with their spades as the hind feet move alternately in a circular fashion (Stebbins 2012).

WS is endemic to California and northern Baja California. It ranges from northern California south throughout the Central Valley and its foothills. Its range then extends west into the southern California coastal area and into northwest Baja. Much of the WS habitat has been lost in the Central Valley due to urban and agricultural development on land that previously supported seasonal rain pools. An estimated 80% of its former habitat in southern California has been lost due to development (Stebbins 2003). The closest known occurrence western spadefoot relative to the Study Area is approximately 6.7 miles (**Figure 4**).

Potential Project Impacts

The majority of the seasonal wetlands onsite do not provide breeding habitat, as they were not observed to pond during the regular surveys conducted in 2019-2020. However, some wetland features did pond for periods of up to 4 weeks, and could provide marginal breeding habitat for western spadefoot. The adjacent upland grasslands may provide suitable refuge habitat during the dry season. Due to the far distance to a known occurrence (over 6 miles) and the fact that the Study Area is surrounded by cultivated fields and development, it is unlikely that a western spadefoot would be present onsite. However, it is possible due to the presence of burrows and breeding habitat. If not avoided or mitigated, individual WS may be harmed by project activities.

Burrowing Owl (*Athene cunicularia*) – State Species of Special Concern

The Burrowing Owl is a state species of special concern. There are 22 subspecies of Burrowing Owl, one of which, the Western Burrowing, is found in the southern half of California year-round. The species as a whole occupies areas in Mexico, the Caribbean, Central America, and the North-East, central and southern portions of South America (Urban Bird Foundation 2008).

Burrowing Owls live in habitats characterized by their open range, short grasses, and plethora of burrowing mammals whose burrows the owls use as nest (TCLO 2015). These habitats include grasslands, deserts, farmland, golf courses and rangeland (Urban Bird Foundation 2008). The species mainly feeds on small mammals and insects and will occasionally hunt an amphibian or reptile. The biggest threats to Burrowing Owls is the destruction of their habitat caused by ground squirrel and prairie dog population management and urban development (ibid). The closest documented occurrence of Burrowing Owl is 11.7 miles from the Study Area.

Potential Project Impacts

The grassland habitat with numerous California ground squirrel burrow complexes within the Study Area provide suitable foraging, breeding and refugial habitat for burrowing owls. If project activities commence during burrowing owl breeding season, nesting owls could be harmed.

Northern Harrier (*Circus hudsonius*) – State Species of Special Concern

The Northern Harrier is a state species of special concern. It inhabits a multitude of habitats, from annual grassland to alpine meadows, and breeds in the Sierra Nevada and Central Valley. Suitable habitat for the species includes meadows, open rangelands, grasslands, fresh and saltwater emergent wetlands, and desert sinks. Northern Harriers are mostly observed in hummocky or flat, open areas of dense grasses, shrubs, and edges for foraging, nesting and cover. The California population of Northern Harrier has decreased in the last few decades but observed as locally abundant in areas where suitable habitat exists free of disturbance. Decline of Northern Harriers is majorly due to destruction of native grassland, moist meadows, wetlands, and burning and plowing of nesting areas (Polite 1988). The closest known occurrence of Northern Harrier in proximity to the Study Area is approximately 13.5 miles (**Figure 4**).

Potential Project Impacts

The Study Area provides suitable nesting and foraging habitat for Northern Harriers. The 78-acre parcel in particular contains open areas of tall, dense grasses that provide foraging, cover and nesting habitat. If project activities commence during nesting raptor season (typically January 15 to September 15), individual nesting Northern Harriers could be harmed.

Yellow-billed Magpie (*Pica nuttalli*) – USFWS Bird of Conservation Concern

The Yellow-Billed Magpie inhabits the Central Valley yearlong, as well as the coastal mountain ranges between Santa Barbara County and San Francisco Bay (Green 1988). They also breed locally on the coast of Monterey County (Green 1988). The species inhabits various habitats, including valley foothill hardwood, valley foothill riparian, foothill hardwood-conifer, cropland, pasture, orchard vineyard, and urban habitats (Green 1988). Cover is provided by riparian woodland, oak savannah and croplands and pastures with trees (Green 1988).

Potential Project Impacts

The Study Area provides suitable nesting habitat for the Yellow-billed Magpie due to the presence of pasture and grassland habitat in and in the vicinity of the Study Area, with adjacent tall trees. If project activities commence during nesting bird season (typically February through September), individual nesting magpies could be harmed.

Loggerhead Shrike (*Lanius ludovicianus*) – State Species of Special Concern

The Loggerhead Shrike is a resident and winter visitor throughout the foothills and lowlands of California (Granholm 1988). They inhabit open habitats with fences, posts, trees, scattered shrubs, utility lines, or other such perches (Granholm 1988). The Loggerhead Shrike is most common in valley foothill hardwood-conifer, open-canopied valley foothill hardwood, pinyon-juniper, valley foothill riparian, desert riparian, and Joshua tree habitats (Granholm 1988). They rarely occur in heavily urbanized areas, but are often observed in open cropland (Granholm 1988). The Loggerhead Shrike was observed directly adjacent to the Study Area during the March site visit.

Potential Project Impacts

The Study Area provides suitable nesting habitat for Loggerhead Shrike due to the grasslands and cultivated fields within and surrounding site. If project activities commence during nesting bird season (typically February through September), individual nesting Loggerhead Shrike could be harmed.

American badger (*Taxidea taxus*) – State Species of Special Concern

A member of the weasel family, Mustelidae, the American badger is a heavy bodied, short-legged, grayish mammal that features a white medial stripe from its nose over the top of the head and down its back. The species occurs in a variety of open, arid habitats throughout much of western North America, but are most commonly associated with grasslands, savannas, and open scrub along low to moderate slopes (Stephenson and Calcarone 1999). In California, the species is an uncommon,

permanent resident throughout most of the state, with the exception of the North Coast area (Grinnell et al. 1937). Badgers require friable soils for digging burrows and their presence can often be determined by the presence of burrows with large openings. A Badger den may approach 30 ft. in length and have a 1 ft. diameter. A sizeable pile of excavated earth can often be found to one side of the burrow entrance.

Badgers are carnivorous and feed primarily on small rodents but also consume reptiles, insects, birds and bird eggs, and carrion (Ahlborn 2005). Their stout bodies, powerful forelimbs, and long curved claws allow badgers to capture their prey in burrows. When not actively foraging, individuals tend to retreat to their den/burrow. Individuals, especially males, are known to occupy relatively large home ranges, from approximately 480 to nearly 3,000 acres (Quinn 2008). The species is considered ferocious and has relatively few predators, though coyotes and golden eagles are known to occasionally prey upon them. Badgers are solitary except during breeding the between July and August. Interestingly, embryos do not begin to grow until December or February. In March, females will give birth to 1-5 babies in underground nests lined with grass.

American Badgers are listed as a species of special concern by the CDFW due to population decline. The primary threat to the American badger is habitat conversion, as much of its habitat has been lost to agriculture and urban development. Other threats include heavy traffic volume (which leads to road kills), indiscriminate trapping and poisoning, and a reduction in prey base as a result of rodent control (Ahlborn 2005). The species has experienced significant population declines over the past century, particularly in southern California (Williams 1986). The nearest documented occurrence of American badger in proximity to the Study Area is approximately 4.9 miles away (**Figure 4**).

Potential Project Impacts

The Study Area contains marginal suitable habitat for American Badger, as it is surrounded by cultivated fields and no dens or signs of the species were observed during the field survey. Therefore, project activities are unlikely to affect the species, and no mitigation measures are recommended.

5.1.3 Migratory and Nesting Birds

The Migratory Bird Treaty Act (16 U.S.C. 704) and the California Fish and Game Code (Section 3503) prohibits the take of migratory birds, or disturbance to the active nests of most native birds. Several migratory birds have potential to occur within the regional vicinity of the project area. These include the Common Yellowthroat (*Geothlypis trichas sinuosa*), Nuttall's Woodpecker (*Picoides nuttallii*), Song Sparrow (*Melospiza melodia*), Spotted Towhee (*Pipilo maculatus clementae*), Tricolored Blackbird, Long-billed Curlew, and Yellow-billed Magpie (*Pica nuttalli*).

Multiple bird species were observed on or adjacent to the Study Area during the field visit, including Red-tailed Hawk (*Buteo jamaicensis*), Red-winged Blackbird (*Agelaius phoeniceus*)

Wilson's Snipe (*Gallinago delicata*), Mourning Dove (*Zenaida macroura*), European Starling (*Sturnus vulgaris*), Killdeer (*Charadrius vociferous*), Loggerhead Shrike (*Lanius ludovicianus*), Western Meadowlark (*Sturnella neglecta*), Cattle Egret (*Bubulcus ibis*), and Turkey Vulture (*Cathartes aura*).

Additionally, due to the presence of large trees and signs of small mammal activity, raptors are likely to use the site for foraging and nesting. Nesting raptors (and most other nesting birds) are protected under the California Fish and Game Code 3503.

Potential Project Impacts

If project activities commence during nesting bird season, individual nesting birds could be harmed.

5.1.4 Special-Status Plant Species and Sensitive Plant Communities

The alkali seasonal wetland within the Study Area has potential to support several special-status plants known from the region (**Figure 4**). There is suitable habitat for six species with special-status designation, though none are state or federally listed species (**Appendix B, Table 2**). CNPS protocol-level plant surveys commenced in spring 2020 within the Study Area and finished in July 2020. The species potentially present within the Study Area are:

- Crownscale (*Atriplex coronata* var. *coronata*) – CRPR 4.2;
- Heartscale (*Atriplex cordulata var. cordulata*) – CRPR 1B.2;
- Vernal pool smallscale (*Atriplex persistens*) – CRPR 1B.2;
- Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) – CRPR 4.2;
- Lesser saltscale (*Atriplex minuscula*) – CRPR 1B.1; and
- San Joaquin spearscale (*Extriplex joaquinana*) – CRPR 1B.2.

During protocol-level rare plant surveys conducted in spring and early summer 2020, Parry's rough tarplant was detected in both the 78-acre and 24-acre parcels (see **Figure 3**). For more details regarding the plant species habitat descriptions and potential to occur in the Study Area, see **Table 2** in **Appendix B**.

The Study Area encompasses 0.142 acres of Coastal and Valley Freshwater Marsh, a CDFW Sensitive Natural Community. This sensitive natural community is ranked as G3 S2.1, meaning it is globally vulnerable, and imperiled within the state. This habitat is present in the northeast corner of the 78-acre parcel. It is within an anthropogenic channel, so it is inherently in a somewhat disturbed condition. Despite its condition, it is a sensitive natural community and potentially jurisdictional wetland, so project impacts to the feature should be avoided. If impacts are proposed to this habitat feature, avoidance and mitigation measures are recommended, as described below in Measure 14, Section 5.2 Wetlands or Waters of the U.S.

5.2 Wetlands or Waters of the U.S.

VNLC ecologists conducted a preliminary wetland delineation of the Study Area on October 14, 2019. VNLC ecologists visited the Study Area a second time on March 10, 2020 in order to obtain additional vegetation and habitat information during the growing season. Additional rounds of surveys were conducted on December 17, 28, and 30, 2020 following a request for additional information from ACOE. The delineation identified a total of approximately 13.221 acres of features within the Study Area, of which approximately 5.923 acres are potential ACOE jurisdictional Waters, approximately 4.654 acres are potential CDFW jurisdictional features, and approximately 13.221 acres are potential RWQCB jurisdictional. As of February 2021, the delineation has not yet been verified by the ACOE. Representative photographs of site habitats and features are provided in **Appendix A**.

5.3 Avoidance and Minimization Measures

Table 2-15 presents a suite of AMMs—originally laid out in the NCCA Master Plan (City of Newman 2020, Appendix A to this Initial Study)—that will be implemented to reduce the potential for adverse effects on sensitive habitats, water bodies, and the special-status plants and wildlife that may be present on the NCCA parcels. The AMMs will apply to initial construction of the NCCA projects and will be incorporated into the construction documents for each of the NCCA projects to ensure that requirements and limitations are clear and binding for contractor staff. The AMMs will also apply to installation of the water service extension to serve the NEWS project and Newman Nature Park.

Additionally, the AMMs will continue to be in effect for future maintenance or repair activities that have the potential to disturb habitat or otherwise affect special-status species, and as individual O&M plans are developed for the each of the NCCA projects, they will incorporate the AMMs, with additional detail as appropriate to facilitate straightforward and effective implementation on a project-specific basis. New AMMs may also need to be developed as the details of project O&M are further developed.

The AMMs presented below are based on current (2020) habitat conditions on the NCCA parcels. The NEWS, wetland, and MDTW projects would modify habitat on the parcels substantially, and conditions may continue to evolve as the projects become increasingly established over time. In addition, O&M activities and the introduction of recreational and educational access would increase human presence and activity at the NCCA site over the long term. As a result, there may be changes in the types of AMMs that are needed—some AMMs may become less relevant, some may need to be amplified, and new measures may become appropriate. With this in mind, AMM-1 provides for routine re-evaluation to verify site conditions and support review and—if needed—updates to the AMMs to enable adaptive management throughout the lifespan of the NCCA projects.

Additionally, it should be noted that the AMMs are intended to dovetail with the requirements of resource agency permits authorizing the NCCA projects. In particular, in the years immediately

following completion of each project, permit terms and conditions may require more frequent and intensive monitoring of restored and created habitat. In that case, the permit terms and conditions for each project will temporarily supersede the NCCA-wide AMMs within that project's footprint; elsewhere at the NCCA, the AMMs will continue to apply in their most current form.

Table 1. Avoidance and Minimization Measures for NCCA Project Construction, Operations, and Maintenance

Measure	Requirements
AMM-1. Routine Reassessment & AMM Updates	At the completion of each NCCA project, GIS-based habitat mapping for the Plan Area parcels[1] will be updated to document changes in habitat distribution as a result of the project. Over the long term, the Plan Area parcels will be reevaluated for habitat conditions and potential special-status species use every other year. The evaluation will be conducted by a qualified biologist/ecologist who has experience with wetland and upland habitats in the west-central San Joaquin Valley, will cover both Plan Area parcels in their entirety, and will include, at a minimum, the following activities. • Assessment of habitat distribution to determine whether the most recent habitat mapping is still accurately representative of conditions on the Plan Area parcels • California Rapid Assessment Method (CRAM) assessment of wetland health and performance Results will be documented in an NCCA Habitat Assessment Report for City records. The Habitat Assessment Report will also identify the date of the next routine re-survey, enabling survey frequency to be adjusted (increased or decreased) if appropriate based on the rate and nature of change in conditions on the Plan Area parcels. In addition, depending on the extent and nature of changes in Plan Area conditions and the City's planned activities during the next few years, the Survey Report may recommend more detailed reassessment, potentially including re-mapping of habitat, updated delineation of state and federally jurisdictional habitat (wetlands and waters of the United States and State of California), and/or focused surveys for special-status species. In addition to documenting current Plan Area Conditions, the Habitat Assessment Report will include an evaluation of the AMMs in place at the time of the reassessment, and will identify any needed changes to the AMMs, potentially including modification or discontinuation of existing AMMs and/or establishment of new AMMs. Changes to AMMs will only be instituted in the interests of better preserving and protecting habitat values on the Plan Area parcels, in balance with appropriate O&M and recreational/educational access. The City will maintain Habitat Assessment Reports and other relevant documentation such as habitat and jurisdictional delineation mapping and special-status species sighting reports (see AMM-6) on file for ongoing reference in managing the NCCA.
AMM-2. Appropriate Long-Term Public Access	All public access, including access roadways opened for public trail use, will incorporate appropriate measures to prevent accidental incursions—and discourage intentional access—into sensitive habitat. Measures will be designed for aesthetic consistency with their natural surroundings, such that they foster a positive and welcoming user experience while protecting sensitive resources to the extent

[1] Throughout Table 2-15, *Plan Area parcels* refers to the 78-acre and 24-acre parcels that together make up the NCCA site.

Measure	Requirements
	possible. Measures may include carefully selected trail routing as well as split-rail or other suitable fencing, strategically located plantings, and the use of elevated boardwalks. Signage will also be used to inform the public of sensitive resources and foster appreciation for the need to protect them. All signage will be bilingual in English and Spanish to reflect the City's diverse population. Wildlife-proof trash and recycling receptacles will be provided at regular intervals along all trails to discourage littering.
AMM-3. Worker Awareness Training	All construction personnel will be required to attend environmental awareness training before beginning work. All O&M staff and any future interns, student employees, and volunteers will also receive environmental awareness training as part of their routine City training. Training will be provided bilingually in English and Spanish if appropriate. Training will be delivered by a qualified biologist/ecologist and will provide information on the sensitive habitats within the Plan Area (based on the most recent surveys of the Plan Area per AMM-1), the special-status species that are known or potentially present, and measures required to protect water quality and sensitive habitats under AMM-4. For each special-status species, training will include information on listing status, habitat preferences, distinguishing physical characteristics, causes of decline, and measures required to protect the species within the Plan Area. Training will include a hard copy handout that summarizes information presented in the training and includes photographs of habitat resources and species to facilitate identification in the field by construction and O&M personnel.
AMM-4. Wetland & Water Quality Protection	Best management practices will be implemented for all ground-disturbing activities to prevent siltation and contaminated runoff to wetlands and water bodies within and adjacent to the Plan Area. During construction, this may take the form of a SWPPP prepared and implemented by appropriately qualified/certified personnel. For O&M activities that involve ground disturbance, similar measures will be implemented by City staff. BMPs will also be implemented for all O&M activities that require handling of fuels, lubricants, paints, solvents, and other substances with the potential to degrade water quality. BMPs will include, but will not necessarily be limited to, the following. • Before work begins, a qualified biologist/ecologist will delineate sensitive areas to be avoided, using pin flags, temporary construction fencing, or another appropriate low-impact medium. No entry (personnel, equipment, or materials) will be permitted into delineated avoidance areas • If excavation or ground disturbance is necessary, runoff control measures such as straw wattles, filter rolls, filter fences, or silt fences will be installed to contain disturbed soil materials. Runoff control will be in place prior to groundbreaking. If straw wattles are used, they will consist of certified sterile, weed-free rice straw or similar, suitable for use in sensitive habitat. If filter fences or mesh are used, they will consist of materials, and employ a design, approved by DFW and USFWS as safe for amphibians and reptiles • If ground disturbance occurs in a vegetated area, the disturbed area will be reseeded immediately following the completion of repairs, using a certified weed-free native species seed mix appropriate to the location and approved by a qualified biologist/ecologist

Measure	Requirements
	• Excavated materials will be stockpiled away from sensitive habitat, in areas that are relatively level, and relatively free of vegetation. Stockpiles will be located as far as reasonably feasible from the limits of sensitive habitat, and runoff control measures as described above will be used to prevent delivery of sediment to wetlands and ditches. If wattles are used, they will consist of certified sterile, weed-free materials, as identified above. Any excavated materials not reused on site will be promptly removed to appropriate permanent disposal locations following the completion of work • All diesel- and gasoline-powered construction equipment and tools, including generator units, will be inspected for leaks and damage prior to mobilization • Fueling, lubrication, and maintenance of vehicles and equipment will be conducted as far as reasonably feasible from wetlands and waterbodies, and will take place offsite if possible. Equipment staging will also be located as far as reasonably feasible from wetlands and water bodies. If onsite fueling, maintenance, or repairs are required, containment measures such as drip pans will be required • To the maximum extent possible, materials staging will also be restricted to paved, surfaced, or upland areas away from wetlands and watercourses • During all work, appropriate types and quantities of materials will be maintained onsite to contain any spills or releases of materials and prevent them from entering sensitive habitat and jurisdictional waters • In the event of a spill, appropriate spill response procedures will be initiated as soon as the incident is discovered. If contractor staff are involved, the contractor will be required to notify City staff as soon as feasible, and in no case more than 24 hours after the occurrence; a designated City contact will be specified in the project construction documents for this purpose. If there is any potential for the spill to enter jurisdictional waters, the City will notify the RWQCB • Food waste will be appropriately contained and disposed, and trash generated during construction and O&M activities will be promptly and properly removed from the site
AMM-5. Special-Status Plant Protection	Populations of CRPR 1B and CRPR 2 taxa will be delineated on GIS-based maps for future reference, based on the results of protocol-level peak blooming period surveys.[2] Prior to the start of construction and O&M work in the vicinity of delineated populations of CRPR 1B and CRPR 2 taxa, a qualified biologist/ecologist will define the current extent of the population in the field using pin flags, temporary construction fencing, or another appropriate low-impact medium. Work will avoid delineated CRPR 1B and 2 populations to the extent feasible. If a population of CRPR 1B or CRPR 2 plants cannot be entirely avoided, the following additional measures will apply. (1) If possible, work will be scheduled for timeframes when the special-status taxa occurring in the work area are senescent and/or after seed has set (2) If an individual or population must be removed, one of two options may be employed, followed by monitoring, and, if needed, further corrective action to ensure that no net loss of the species occurs

[2] Initial mapping of extant populations was completed in 2020.

Measure	Requirements
	i. Seeds from the affected species may be collected from existing onsite populations or from another population within the Bennett Valley – San Joaquin River watershed and distributed in the work area following completion of work, or, if the work area cannot be reseeded, in another appropriate location within the Plan Area ii. A nursery with experience growing special-status plants of the western San Joaquin Valley region may be contracted to grow seedlings of the species from locally native seeds (collected from the work area or from another population in the Bennett Valley – San Joaquin River watershed). Seedlings may be planted in the work area following completion of work, or, if this is not possible, may be planted in another appropriate location within the Plan Area Note that seeds derived from plants in the Bennett Valley – San Joaquin River watershed may be available from local nurseries, and local nurseries may also be able to propagate seeds from adults grown from locally native collected seeds. In this case, seeds do not need to be collected from the work area. Prior to impacts and reseeding or replanting, a qualified biologist/ecologist will develop a monitoring plan for the revegetated area. The monitoring plan will include at least the following components. • Interim and final success criteria for the revegetated area. The goal will be to match pre-disturbance population levels in the Plan Area over the long term. Due to normal variations in population from year to year, average population data for annual taxa can be calculated from several years of data collected. • Procedures for annual monitoring for a minimum of 3 years or until final success criteria are met • Corrective actions (additional seeding or planting) in the event interim success criteria are not met The City will ensure that the monitoring plan is implemented by qualified personnel, and that any corrective action identified as necessary is properly carried out.
AMM-6. Special-Status Wildlife Protection (General)	In the event of a known or potential sighting of special-status wildlife in or near any construction or O&M work area, the following requirements will apply. • Personnel will avoid the animal and will immediately notify designated City staff and the City's on-call biologist, who will advise them on how to proceed; if warranted (depending on the species involved), the biologist will consult with resource agency (DFW and/or USFWS) staff for guidance • The biologist will respond onsite to relocate the animal or assist in implementing other protective measures, guided by agency input • If the sighting is confirmed by the biologist, the species and location will be reported to DFW for inclusion in the California Natural Diversity Database (CNDDB). The biologist will be responsible for making the report The biologist will also provide a brief memorandum documenting the sighting and any follow-up actions, including CNDDB documentation, for City records.
AMM-7. Western Spadefoot Protection	To the extent feasible, construction and O&M activities will be conducted during the dry season (May – October), or will avoid entry into and disturbance of ponded features. If work within or in proximity to ponded features occurs during the rainy season, a qualified biologist will delineate areas to be avoided to prevent impacts on breeding

Measure	Requirements
	special-status amphibians, using pin flags, temporary construction fencing, or another appropriate low-impact medium. No entry (personnel, equipment, or materials) will be permitted into delineated avoidance areas. If work would impact areas with burrows, a qualified biologist will evaluate the burrows to determine whether they are suitable for use by western spadefoot, and will scope any suitable burrows. If any western spadefoot individuals are found within burrows to be impacted, they will be safely excavated from the burrow by hand or small excavator, either by the biologist or under biologist oversight, and will be relocated to a suitable burrow location outside the disturbance area and far enough away that they would not be expected to return.
AMM-8. Giant Garter Snake Protection	To the extent feasible, all construction and O&M activities will avoid impacting or working within 200 feet of the drainage ditches in the Study Area. Once the NEWS and MDTW projects become operational, the same precautions will apply to created water bodies. Appropriate silt fencing, flagging, and/or other measures will be employed to protect the drainage ditches and other aquatic habitat from direct and indirect impacts, as described in AMM-4. If work within 200 feet of suitable habitat for giant garter snake is necessary (e.g., for NEWS and MDTW project O&M), the following additional measures will be required. (1) If possible, work within 200 feet of suitable habitat will be conducted between May 1 and October 1, when the species is more active and mortality is less likely (2) At all times of year, prior to work within 200 feet of suitable habitat, before work begins, a qualified biologist will conduct a pre-construction survey of the work area (including access and staging) for giant garter snake. If the species is present, the biologist will notify the City and work will be delayed until the biologist can consult USFWS regarding next steps. Work will not proceed until USFWS has recommended appropriate next steps and these have been implemented. Once work has begun, if activity is suspended for 2 weeks or more, the survey—and, if needed, follow-up—will be repeated
AMM-9. Northwestern Pond Turtle Protection	Prior to the start of construction or O&M activities, a qualified biologist will conduct a pedestrian preconstruction survey for northwestern pond turtle. The survey will be conducted no more than 24 hours prior to start of work, and will include walking the work area limits and interior and investigating all areas that could be used by the species. If northwestern pond turtle individuals are found, the biologist will relocate them to suitable habitat outside the disturbance area and far enough away that they would not be expected to return.
AMM-10. Nesting Bird Protection	To the extent feasible, construction will be scheduled outside the February 1 – September 15 nesting season. O&M activities reasonably expected to generate substantial sustained disturbance above Plan Area baseline levels and O&M activities that would involve ground disturbance or vegetation removal or trimming will also be scheduled outside the nesting period if possible. If the types of activities identified above would commence during the nesting season, a qualified biologist will conduct a preconstruction survey for nesting birds. The survey will be conducted within 2 weeks of the start of work, and will cover the entire work footprint, including access and staging, plus a 500-foot-wide buffer. If active nests are found within the survey area, a no-disturbance zone will be established around the nest for the duration of the nesting season, or until the biologist determines that the young have fledged and left the nest, or that the nest has been

Measure	Requirements
	abandoned. No entry into the no-disturbance zone will be permitted. The no-disturbance zone will be delineated in the field by or under the supervision of the biologist, using temporary construction fencing or another suitable low-impact medium. The width of the no-disturbance zone will be determined by the biologist, based on • the location of the nest and the amount of vegetative and other screening between the nest and areas where work will take place • noise and human disturbance levels at the site at the time of the survey and the noise and disturbance expected during the work • the sensitivity of the species involved and behaviors of the nesting birds, and, if appropriate, • other site- or species-specific factors If special-status species are involved, the biologist will consult with the appropriate resource agency(ies) (DFW and/or USFWS) in determining the width of the no-disturbance zone. If work during the nesting season is suspended for more than 1 week and then recommences, an additional survey will be conducted before work is reinitiated, and the same no-disturbance zone requirements will apply in the event active nests are found.
AMM-11. Western Burrowing Owl Protection	If construction will take place during the western burrowing owl breeding season (February 1 – August 31), protocol-level preconstruction surveys will be conducted for this species. O&M activities reasonably expected to generate substantial sustained disturbance above Plan Area baseline levels and O&M activities that would involve ground disturbance will also be subject to this requirement. Surveys will be conducted by a qualified biologist and will follow the methodology described in DFW's current Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game 2012, or future reports that supersede the 2012 version). Four surveys will be conducted within 2 hours of sunrise or sunset, with the final survey occurring 24 hours prior to the start of construction activities. If active nest burrows are found, the no-disturbance zone requirements described in AMM-10 will apply. If work during the burrowing owl nesting season is suspended for more than 1 week and then recommences, an additional survey will be conducted before work is reinitiated, and the same no-disturbance zone requirements will apply in the event active nests are found.

Source: City of Newman 2020

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APPENDIX A
REPRESENTATIVE SITE PHOTOGRAPHS

Photo 1. Overview of 24-acre Parcel, facing south (3/26/20)

Photo 2. Overview of 78-acre Parcel, facing north (3/26/20)

Photo 3. Burrows in 78-acre Parcel (3/26/20)

Photo 4. Ditch in 78-acre Parcel, facing south (3/26/20)

Photo 5. Large trees adjacent to 78-acre Parcel, facing south (3/26/20)

Photo 6. Burrows in 24-acre Parcel (3/26/20)

Photo 7. Ditch in 78-acre Parcel, facing south (3/26/20)

Photo 8. Ditch in 24-acre Parcel (3/26/20)

Photo 9. Emergent wetland in 78-acre Parcel, facing west (3/26/20)

Photo 10. Seasonal wetland swale in 78-acre Parcel, facing southwest (3/26/20)

Photo 11. Seasonal wetland in 78-acre Parcel, facing south (3/26/20)

Photo 12. Seasonal wetland in 24-acre Parcel, facing east (3/26/20)

Photo 13. Seasonal wetland in 24-acre Parcel, facing northwest (3/26/20)

Photo 14. Miller Ditch north of 78-acre Parcel, facing east (3/26/20)

APPENDIX B

SPECIAL-STATUS SPECIES IN PROJECT REGION

TABLE 1. Special-Status Animal Species Documented within the Vicinity of the Study Area

Species highlighted in gray have potential or low potential to occur onsite.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Amphibians			
California tiger salamander *Ambystoma californiense*	FT, ST	Grasslands and low foothills, with vernal pools for breeding.	**Not expected.** Although the grassland and burrows onsite could provide suitable refugial habitat, the site is surrounded by unsuitable habitat (agricultural fields) and there is no breeding habitat onsite as the wetlands do not pond long enough. The nearest documented occurrence is 3.6 miles away which is farther than CTS are known to travel overland.
Foothill yellow-legged frog *Rana boylii*	SC, SSC	Rocky streams in a variety of habitats.	**Not expected.** Site does not contain rocky streams. Nearest documented occurrence is 12.8 miles away.
California red-legged frog *Rana draytonii*	FT, SSC	Quiet pools of freshwater streams, and occasionally ponds.	**Not expected.** Site does not contain streams. Nearest documented occurrence is 6.43 miles away.
Red-bellied newt *Taricha rivularis*	SSC	During dry season, underground within root channels, primarily in redwood forest but also can be found in mixed conifer and other kinds of woodland habitats. Wet season migrates to streams for breeding and larval development.	**Not expected**. Site does not contain forest habitat or streams.
Western spadefoot *Spea hammondii*	SSC	Grasslands with shallow temporary pools are optimal habitats for the western spadefoot. Adults remain in underground burrows during most of the year.	**Low potential.** Select seasonal wetlands onsite provide marginal breeding habitat. Adjacent uplands composed of annual grasses could provide suitable refuge during dry season. Nearest documented occurrence is 6.7 miles away.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Birds			
Golden Eagle *Aquila chrysaetos*	FP	Open and semi-open country with native vegetation, primarily in mountains, canyonlands, cliffs, and bluffs. Nest on cliffs and steep areas in grassland, chaparral, shrubland, and forest.	**Not expected.** Site does not support suitable habitat. Nearest documented occurrence is over 20 miles away.
Swainson's Hawk *Buteo swainsoni*	ST (nesting)	Forages in open grasslands and prairies. Nests adjacent to riparian habitats.	**Potential.** Large trees suitable for nesting habitat were observed just outside the boundary of the Study Area. The species is known to occur in the region on a seasonal basis (spring through summer for breeding) and may forage onsite. Nearest documented occurrence is 1 mile away.
Northern Harrier *Circus hudsonius*	SSC (nesting)	Frequents meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands; seldom found in wooded areas. Mostly found in flat, or hummocky, open areas of tall, dense grasses, moist or dry shrubs, and edges for nesting, cover, and feeding.	**Low potential.** Site supports marginal quality nesting habitat. Grasslands and freshwater emergent wetlands and open areas of dense grasses provide foraging habitat. Nearest documented occurrence is 13.5 miles away.
Bald Eagle *Haliaeetus leucocephalus*	SE, FP	Requires large, old-growth trees or snags in remote, mixed stands near water.	**Not expected.** Site does not support suitable nesting or foraging habitat.
Least Bittern *Ixobrychus exilis*	SSC	Uses dense, emergent vegetation for cover and nesting, and feeds in such vegetation, as well as in small openings. Often feeds along the edge of emergent vegetation, on the open-water side.	**Not expected.** Dense stands of vegetation needed for cover and nesting not observed at the Study Area.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Yellow-billed Magpie *Pica nuttalli*	BCC (nesting)	Prefers open oak and riparian woodland, and farm and ranchland with tall trees in the vicinity of grassland, pasture, and cropland.	**Potential.** Grassland and adjacent trees provide suitable habitat.
Tricolored Blackbird *Agelaius tricolor*	SC, SSC (nesting)	Forages in a variety of habitats including pastures, agricultural fields, rice fields, and feedlots; nests in freshwater marshes with tules or cattails, or in other dense thickets of willow, thistle, blackberry, or wild rose in close proximity to open water; occurs year-round in this area.	**Low potential.** Site does not provide suitable nesting habitat; there is suitable foraging habitat present within and surrounding the Study Area. Nearest documented occurrence is 0.6 miles away.
Loggerhead Shrike *Lanius ludovicianus*	SSC (nesting)	Common resident and winter visitor in lowlands and foothills of California. Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Nests in thorny vegetation, trees, shrubs, brush piles or tumbleweeds.	**Potential.** Open habitat with trees and fencing around the Study Area provides foraging and nesting habitat. A Loggerhead Shrike was documented in the Study Area during the March 2020 site visit.
Burrowing Owl *Athene cunicularia*	SSC	Open, treeless areas with low, sparse vegetation in grasslands, deserts, pastures, agricultural fields, and more. Associated with mammal burrows, where they also nest.	**Potential.** Grassland habitat with small mammal burrows, including ground squirrel complexes, were observed onsite and could support foraging and breeding activities. Nearest documented occurrence is 11.7 miles away.
Least Bell's Vireo *Vireo bellii pusillus*	FE, SE	Nests and forages almost exclusively in riparian woodlands.	**Not expected.** Riparian woodland habitat needed for nesting and foraging not provided at Study Area. Nearest documented occurrence is almost 20 miles away.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Mollusks and Crustaceans			
Conservancy fairy shrimp *Branchinecta conservatio*	FE	Large, cool-water vernal pools with moderately turbid water.	**Not expected**. Site does not support vernal pool habitat, and protocol wet and dry season large branchiopod surveys were conducted in the seasonal wetlands on site. No cysts or individuals were observed (see **Appendix D**).
Longhorn fairy shrimp *Branchinecta longiantenna*	FE	Inhabits clear to rather turbid vernal pools. These include clear-water depressions in sandstone outcroppings near Tracy, grass-bottomed pools in Merced County and claypan pools around Soda Lake in San Luis Obispo County.	**Not expected.** Seasonally ponded water including long-lived puddles could potentially provide suitable habitat for this species. However, protocol wet and dry season large branchiopod surveys were conducted in the seasonal wetlands on site. No cysts or individuals were observed (see **Appendix D**).
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	Occur primarily in vernal pools, seasonal wetlands, and stagnant ditches that fill with water during fall and winter rains and dry up in spring and summer.	**Not expected.** Seasonally ponded water including long-lived puddles could potentially provide suitable habitat for this species. However, protocol wet and dry season large branchiopod surveys were conducted in the seasonal wetlands on site. No cysts or individuals were observed (see **Appendix D**).
Vernal pool tadpole shrimp *Lepidurus packardi*	FE	Habitats where vernal pool tadpole shrimps have been observed range in size from small, clear, well-vegetated vernal pools to highly turbid, alkali scald pools to large winter lakes	**Not expected.** Seasonally ponded water including long-lived puddles could potentially provide suitable habitat for this species. However, protocol wet and dry season large branchiopod surveys were conducted in the seasonal wetlands on site. No cysts or individuals were observed (see **Appendix D**).

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Fish			
Riffle sculpin *Cottus gulosus*	SSC	Live in permanent, cool, headwater streams where riffles and rocky substrates predominate	**Not expected.** No streams in Study Area.
Sacramento hitch *Lavinia exilicauda exilicauda*	SSC	Inhabit warm, lowland, waters including clear streams, turbid sloughs, lakes and reservoirs.	**Not expected.** No streams or rivers in Study Area.
San Joaquin roach *Lavinia symmetricus ssp. 1*	SSC	Capable of adapting to varying habitats from coastal streams to mountain foothill streams.	**Not expected.** No streams in Study Area.
Hardhead *Mylopharodon conocephalus*	SSC	Often found at low to mid-elevations in relatively undisturbed habitats of larger streams.	**Not expected.** No streams in Study Area.
Delta smelt *Hypomesus transpacicus*	FT, SE	Endemic to the northeastern San Francisco Estuary and Delta.	**Not expected.** Study Area is not connected to the Delta or northeastern San Francisco Estuary.
Sacramento splittail *Pogonichthys macrolepidotus*	SSC	Occupy estuaries.	**Not expected.** Study Area does not include estuarine habitat.
Kern brook lamprey *Entosphenus hubbsi*	SSC	Occupy silty backwaters of large rivers in foothill regions.	**Not expected.** No streams or rivers in Study Area. Drainage ditches onsite do not provide suitable habitat.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Steelhead - Central Valley DPS *Oncorhynchus mykiss irideus pop. 11*	FT, SSC	Adults spawn in freshwater streams with clear, well-oxygenated, cool water and clean gravel substrate. Also require instream cover and streamside vegetation.	**Not expected.** USFWS has critical habitat identified in San Joaquin River, but no riverine features in the Study Area. Nearest documented occurrence is 2.92 miles away.
Chinook salmon - Central Valley fall / late fall-run ESU *Oncorhynchus tshawytscha pop. 13*	SSC	Streams, rivers, estuaries, ocean.	**Not expected.** No streams or rivers in Study Area.
Insects			
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	Found nearly always on or close to the host plant, red or blue elderberry. Usually occurs in elderberry stands along rivers and streams.	**Not expected.** No elderberry shrubs observed in the Study Area.
Mammals			
San Joaquin kit fox *Vulpes macrotis mutica*	FE, ST	Annual grassland and scrub and subshrub land. Live in dens in friable soils or enlarge smaller holes created by other animals.	**Low potential.** No dens have been observed onsite, and soils are clay, not friable. However, suitable grassland foraging habitat is present throughout the site and prey base consisting of ground squirrels and other small mammals is present. Nearest documented occurrence is 3.6 miles away.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Fresno kangaroo rat *Dipodomys nitratoides exilis*	FE	Endemic to the bottomlands of the San Joaquin Valley. Occurs in alkali grasslands and saltbrush scrub.	**Not expected.** No suitable saltbrush scrub observed, but grassland habitat is present. No recorded occurrences in CNDDB within 5 miles of the Study Area, and it is unlikely to occur onsite based on lack of suitable habitat and highly restricted range. Nearest documented occurrence is almost 60 miles away.
San Joaquin Pocket Mouse *Perognathus inornatus*	BLM:S	Occurs in dry, open grasslands or scrub areas on fine-textured soils between 350 and 600 m (1,100 and 2,000 ft) in the Central and Salinas valleys.	**Not expected.** Study area provides marginal habitat, but is outside elevation range.
American badger *Taxidea taxus*	SSC	Prefers open areas and may also frequent brushlands with little groundcover. When inactive, occupies underground burrow.	**Low potential.** No dens were observed during field survey, and nearest documented occurrence is 6.8 miles away.
Pallid bat *Antrozous pallidus*	SSC	Forages in a variety of habitats. Roosts in rocky outcrops, buildings, and hollow trees.	**Not expected.** No suitable roost sites were observed in the Study Area. Nearest documented occurrence is 4.88 miles away.
Western red bat *Lasiurus blossevillii*	SSC	Roosts in forest or woodland habitats, especially near riparian areas.	**Not expected.** No suitable roost sites were observed in the Study Area. Nearest documented occurrence is 4.88 miles away.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Yuma myotis *Myotis yumanensis*	BLM:S	Found in a wide variety of upland and lowland habitats, including riparian, desert scrub, moist woodlands, and forests, usually near open water. Warm-season roosts are in caves, cliff crevices, bridges, buildings, tunnels, and abandoned cliff swallow nests and cavities and nooks in large live trees near water.	**Not expected.** No suitable roost sites were observed in the Study Area. Nearest documented occurrence is 4.88 miles away.
Reptiles			
San Joaquin coachwhip *Masticophis flagellum ruddocki*	SSC	Occurs in open, dry, treeless areas with little or no cover, including valley grassland and saltbush scrub. Takes refuge in rodent burrows, under shaded vegetation, and under surface objects.	**Not expected.** Grassland habitat onsite is marginal and nearest documented occurrence is almost 20 miles away.
Northwestern pond turtle *Actinemys marmorata*	SSC	Permanent and intermittent waters of rivers, creeks, small lakes and ponds, marshes, unlined irrigation canals, and reservoirs.	**Low potential.** Irrigation ditches in Study Area provide marginal habitat, and nearest documented occurrence is 2 miles away.
Giant garter snake *Thamnophis gigas*	FT, ST, SSC	Found primarily in marshes, sloughs, drainage canals, and irrigation ditches, especially around rice fields, and occasionally in slow-moving creeks. Prefers locations with vegetation close to the water for basking.	**Low potential.** Could occur in large perimeter irrigation ditches with aquatic habitat that are connected to Newman Wasteway and ultimately San Joaquin corridor. Nearest documented occurrence is 2 miles away, but is a record from 1976 at a non-precise location. GGS have been well studied and there is only one known breeding population in the San Joaquin Valley.

Species	Status	Description of Habitat Requirements	Potential to Occur on Project Site
Blunt-nosed leopard lizard *Gambelia silus*	FE	Occurs in semiarid grasslands, alkali flats and washes.	**Not expected.** Site does not contain semiarid grassland habitat, and is outside of known range of the species. Nearest documented occurrence is over 20 miles away.
Coast horned lizard *Phrynosoma blainvillii*	SSC	Inhabits open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains. Found in grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose soil. Often found in lowlands along sandy washes with scattered shrubs and along dirt roads, and near ant hills.	**Not expected.** The Study Area provides isolated habitat with unsuitable soils (clay, not friable). The nearest documented occurrence is over 20 miles away.

Notes:

FT – Federal Threatened; FE – Federal Endangered; ST – State Threatened; SE – State Endangered; SC – State Candidate; SSC – CDFW Species of Special Concern; FP – CDFW Fully Protected; BLM: S – Bureau of Land Management: Sensitive; USFWS: BCC – United States Fish and Wildlife Service: Birds of Conservation Concern

APPENDIX C

OBSERVED PLANT SPECIES INVENTORY

APPENDIX C. Observed Plant Species Inventory within the Newman Community Conservation Area, 2019-2020. Compiled by Vollmar Natural Lands Consulting.

Family Name	Scientific Name	Common Name	Origin	Cal-IPC Rank[1]	Wetland Indicator Status[2]
Araceae (Arum Family)	*Lemna gibba*	Swollen Duckweed	Native	N/A	OBL
Asteraceae (Aster Family)	*Carduus pycnocephalus* ssp. *pycnocephalus*	Italian Thistle	Naturalized	Moderate	NL
Asteraceae (Aster Family)	*Carduus tenuiflorus*	Slenderflower Thistle	Naturalized	Limited	NL
Asteraceae (Aster Family)	*Centromadia parry* ssp. *rudis*	Parry's Rough Tarplant	Native	N/A	FACW
Asteraceae (Aster Family)	*Centromadia pungens*	Common Tarweed	Native	N/A	FAC
Asteraceae (Aster Family)	*Cirsium vulgare*	Bull Thistle	Naturalized	Moderate	FACU
Asteraceae (Aster Family)	*Erigeron canadensis*	Horseweed	Native	N/A	FACU
Asteraceae (Aster Family)	*Helminthotheca echioides*	Bristly Ox-Tongue	Naturalized	Limited	FAC
Asteraceae (Aster Family)	*Heterotheca grandiflora*	Telegraph Weed	Native	N/A	NL
Asteraceae (Aster Family)	*Hypochaeris glabra*	Smooth Cat's-Ear	Naturalized	Limited	NL
Asteraceae (Aster Family)	*Lactuca serriola*	Prickly Lettuce	Naturalized	N/A	FACU
Asteraceae (Aster Family)	*Pseudognaphalium beneolens*	Cudweed	Native	N/A	NL
Asteraceae (Aster Family)	*Pseudognaphalium luteoalbum*	Jersey Cudweed	Naturalized	N/A	FAC
Asteraceae (Aster Family)	*Senecio vulgaris*	Common Groundsel	Naturalized	N/A	FACU
Asteraceae (Aster Family)	*Silybum marianum*	Milk Thistle	Naturalized	Limited	NL
Asteraceae (Aster Family)	*Sonchus asper* ssp. *asper*	Prickly Sow Thistle	Naturalized	N/A	FAC

Family Name	Scientific Name	Common Name	Origin	Cal-IPC Rank[1]	Wetland Indicator Status[2]
Asteraceae (Aster Family)	*Sonchus oleraceus*	Common Sow Thistle	Naturalized	N/A	UPL
Asteraceae (Aster Family)	*Xanthium spinosum*	Spiny Cocklebur	Naturalized	N/A	FACU
Boraginaceae (Borage Family)	*Amsinckia intermedia*	Common Fiddleneck	Native	N/A	NL
Boraginaceae (Borage Family)	*Amsinckia menziesii*	Small-Flowered Fiddleneck	Native	N/A	NL
Boraginaceae (Borage Family)	*Phacelia lemmonii*	Lemmon's Phacelia	Native	N/A	FACU
Brassicaceae (Mustard Family)	*Brassica nigra*	Black Mustard	Naturalized	Moderate	NL
Brassicaceae (Mustard Family)	*Capsella bursa-pastoris*	Shepherd's Purse	Naturalized	N/A	FACU
Brassicaceae (Mustard Family)	*Lepidium dictyotum*	Alkali Pepperweed	Native	N/A	FAC
Brassicaceae (Mustard Family)	*Lepidium didymum*	Lesser Swine Cress	Naturalized	N/A	NL
Brassicaceae (Mustard Family)	*Lepidium draba*	Heart-Podded Hoary Cress	Naturalized	Moderate	NL
Brassicaceae (Mustard Family)	*Lepidium latifolium*	Perennial Pepperweed	Naturalized	High	FAC
Brassicaceae (Mustard Family)	*Rorippa palustris* ssp. *palustris*	Bog Yellowcress	Native	N/A	OBL
Brassicaceae (Mustard Family)	*Sisymbrium altissimum*	Tumble Mustard	Naturalized	N/A	FACU
Caryophyllaceae (Pink Family)	*Cerastium glomeratum*	Sticky Mouse-Ear Chickweed	Naturalized	N/A	UPL
Caryophyllaceae (Pink Family)	*Spergularia marina*	Saltmarsh Sand-Spurrey	Native	N/A	OBL
Caryophyllaceae (Pink Family)	*Spergularia rubra*	Red Sand-Spurrey	Naturalized	N/A	FAC
Chenopodiaceae (Goosefoot Family)	*Atriplex prostrata*	Fat-Hen	Naturalized	N/A	FACW
Chenopodiaceae (Goosefoot Family)	*Atriplex suberecta*	Sprawling Saltbush	Naturalized	N/A	FACU

Family Name	Scientific Name	Common Name	Origin	Cal-IPC Rank[1]	Wetland Indicator Status[2]
Convolvulaceae (Morning-glory Family)	*Convolvulus arvensis*	Bindweed	Naturalized	N/A	NL
Convolvulaceae (Morning-glory Family)	*Cressa truxillensis*	Alkali Weed	Native	N/A	FACW
Crassulaceae (Stonecrop Family)	*Crassula aquatica*	Water Pygmyweed	Native	N/A	OBL
Cyperaceae (Sedge Family)	*Cyperus eragrostis*	Tall Flatsedge	Native	N/A	FACW
Cyperaceae (Sedge Family)	*Schoenoplectus acutus* var. *occidentalis*	Common Tule	Native	N/A	OBL
Fabaceae (Pea Family)	*Lotus corniculatus*	Bird's-Foot Trefoil	Naturalized	N/A	FAC
Fabaceae (Pea Family)	*Medicago polymorpha*	California Burclover	Naturalized	Limited	FACU
Fabaceae (Pea Family)	*Medicago sativa*	Alfalfa	Naturalized	N/A	UPL
Fabaceae (Pea Family)	*Melilotus indicus*	Sourclover	Naturalized	N/A	FACU
Fabaceae (Pea Family)	*Trifolium depauperatum* var. *depauperatum*	Dwarf Sack Clover	Native	N/A	FAC
Fabaceae (Pea Family)	*Trifolium dubium*	Little Hop Clover	Naturalized	N/A	UPL
Fabaceae (Pea Family)	*Trifolium repens*	White Clover	Naturalized	N/A	FACU
Fabaceae (Pea Family)	*Trifolium subterraneum*	Subterranean Clover	Naturalized	N/A	NL
Fabaceae (Pea Family)	*Vicia sativa ssp. nigra*	Narrow-Leaved Vetch	Naturalized	N/A	FACU
Frankeniaceae (Frankenia Family)	*Frankenia salina*	Alkali Heath	Native	N/A	FACW
Geraniaceae (Geranium Family)	*Erodium cicutarium*	Redstem Filaree	Naturalized	Limited	NL
Geraniaceae (Geranium Family)	*Erodium moschatum*	Greenstem Filaree	Naturalized	N/A	NL
Geraniaceae (Geranium Family)	*Geranium dissectum*	Cutleaf Geranium	Naturalized	Limited	NL

Family Name	Scientific Name	Common Name	Origin	Cal-IPC Rank[1]	Wetland Indicator Status[2]
Juncaceae (Rush Family)	*Juncus bufonius* var. *bufonius*	Toad Rush	Native	N/A	FACW
Juncaceae (Rush Family)	*Juncus bufonius* var. *occidentalis*	Western Toad Rush	Native	N/A	FACW
Juncaceae (Rush Family)	*Juncus mexicanus*	Mexican Rush	Native	N/A	FACW
Juncaginaceae (Arrow-grass Family)	*Triglochin scilloides*	Flowering-Quillwort	Native	N/A	OBL
Lamiaceae (Mint Family)	*Marrubium vulgare*	Horehound	Naturalized	Limited	FACU
Lythraceae (Loosestrife Family)	*Lythrum hyssopifolia*	Hyssop Loosestrife	Naturalized	Limited	OBL
Malvaceae (Mallow Family)	*Malva neglecta*	Common Mallow	Naturalized	N/A	NL
Malvaceae (Mallow Family)	*Malva parviflora*	Cheeseweed	Naturalized	N/A	NL
Marsileaceae (Water-clover Family)	*Marsilea vestita* ssp. *vestita*	Hairy Water Clover	Native	N/A	OBL
Onagraceae (Evening Primrose Family)	*Epilobium brachycarpum*	Tall Annual Willowherb	Native	N/A	NL
Plantaginaceae (Plantain Family)	*Plantago lanceolata*	English Plantain	Naturalized	Limited	FAC
Plantaginaceae (Plantain Family)	*Veronica peregrina* ssp. *xalapensis*	Purslane Speedwell	Native	N/A	FAC
Plantaginaceae (Plantain Family)	*Veronica persica*	Persian Speedwell	Naturalized	N/A	NL
Poaceae (Grass Family)	*Alopecurus saccatus*	Pacific Foxtail	Native	N/A	OBL
Poaceae (Grass Family)	*Avena fatua*	Wild Oat	Naturalized	Moderate	NL
Poaceae (Grass Family)	*Bromus diandrus*	Ripgut Grass	Naturalized	Moderate	NL
Poaceae (Grass Family)	*Bromus hordeaceus*	Soft Chess	Naturalized	Limited	FACU

Family Name	Scientific Name	Common Name	Origin	Cal-IPC Rank[1]	Wetland Indicator Status[2]
Poaceae (Grass Family)	*Cynodon dactylon*	Bermuda Grass	Naturalized	Moderate	FACU
Poaceae (Grass Family)	*Distichlis spicata*	Salt Grass	Native	N/A	FAC
Poaceae (Grass Family)	*Elymus triticoides*	Beardless Wild Rye	Native	N/A	NL
Poaceae (Grass Family)	*Festuca bromoides*	Brome Fescue	Naturalized	N/A	NL
Poaceae (Grass Family)	*Festuca myuros*	Rattail Sixweeks Grass	Naturalized	Moderate	NL
Poaceae (Grass Family)	*Festuca perennis*	Rye Grass	Naturalized	Moderate	FAC
Poaceae (Grass Family)	*Festuca pratensis*	Meadow Fescue	Naturalized	N/A	NL
Poaceae (Grass Family)	*Glyceria declinata*	Low Manna Grass	Naturalized	Moderate	FACW
Poaceae (Grass Family)	*Hordeum brachyantherum* ssp. *brachyantherum*	Northern Barley	Native	N/A	FACW
Poaceae (Grass Family)	*Hordeum marinum* ssp. *gussoneanum*	Mediterranean Barley	Naturalized	Moderate	FAC
Poaceae (Grass Family)	*Hordeum murinum* ssp. *leporinum*	Hare Barley	Naturalized	Moderate	FACU
Poaceae (Grass Family)	*Leptochloa fusca* ssp. *uninervia*	Mexican Sprangletop	Native	N/A	NL
Poaceae (Grass Family)	*Parapholis incurva*	Curved Sicklegrass	Naturalized	N/A	FACU
Poaceae (Grass Family)	*Paspalum distichum*	Knot Grass	Native	N/A	FACW
Poaceae (Grass Family)	*Phalaris paradoxa*	Hood Canary Grass	Naturalized	N/A	FAC
Poaceae (Grass Family)	*Poa annua*	Annual Blue Grass	Naturalized	N/A	FAC
Poaceae (Grass Family)	*Polypogon monspeliensis*	Annual Beard Grass	Naturalized	Limited	FACW
Polygonaceae (Buckwheat Family)	*Persicaria punctata*	Dotted Smartweed	Native	N/A	OBL

Family Name	Scientific Name	Common Name	Origin	Cal-IPC Rank[1]	Wetland Indicator Status[2]
Polygonaceae (Buckwheat Family)	*Polygonum aviculare* ssp. *aviculare*	Knot Weed	Naturalized	N/A	FAC
Polygonaceae (Buckwheat Family)	*Polygonum ramosissimum* ssp. *ramosissimum*	Yellow Knotweed	Native	N/A	FAC
Polygonaceae (Buckwheat Family)	*Rumex conglomeratus*	Clustered Dock	Naturalized	N/A	FACW
Polygonaceae (Buckwheat Family)	*Rumex crispus*	Curly Dock	Naturalized	Limited	FAC
Polygonaceae (Buckwheat Family)	*Rumex dentatus*	Toothed Dock	Naturalized	N/A	FACW
Ranunculaceae (Buttercup Family)	*Ranunculus muricatus*	Spinyfruit Buttercup	Naturalized	N/A	FACW
Ranunculaceae (Buttercup Family)	*Ranunculus sceleratus* var. *sceleratus*	Cursed Buttercup	Naturalized	N/A	OBL
Typhaceae (Cat-tail Family)	*Typha latifolia*	Broad-Leaved Cattail	Native	N/A	OBL
Urticaceae (Nettle Family)	*Urtica urens*	Dwarf Nettle	Naturalized	N/A	NL

Notes: Nomenclature corresponds to Jepson Manual, Second Edition (Baldwin et al. 2012) and Jepson Online Interchange (2019).

[1]Cal-IPC Rank according to the California Invasive Plant Inventory (Cal-IPC 2020):

High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate – These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

[2]Wetland Indicator Status categories according to the ACOE National Wetland Plant List Version 3.2 (Lichvar, R.W. et al. 2016):

OBL = obligate wetland; >99% probability of occurring in a wetland

FACW = facultative wetland; 67%-99% probability of occurring in a wetland

FAC = facultative; 33%-67% probability of occurring in a wetland

FACU = facultative upland; 1%-33% probability of occurring in a wetland

UPL = obligate upland; <1% probability of occurring in a wetland

NL = not listed (plants not listed in Lichvar et al. [2016], including some known to occur occasionally or primarily in wetlands)

APPENDIX D

CITY OF NEWMAN PROJECT SITE

2019-2020 90-DAY REPORT

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CITY OF NEWMAN PROJECT SITE
2019-2020 90-DAY REPORT

Permit # TE-035336-6.2
USFWS Tracking #2020-TA-0135

Listed Large Branchiopods

Prepared for:

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June 2020
J-445-3

INTRODUCTION

This report presents the methods and results of protocol level large branchiopod surveys conducted during the dry (November 2019) and wet season (December 2019-April 2020) at the City of Newman Project site (Project), located in Merced County, California. The Project site consists of a 78-acre and 24-acre parcel, which are owned and managed by the City of Newman (**Figure 1**).

Wet season surveys were conducted by Vollmar Natural Lands Consulting (VNLC) lead biologists Jake Schweitzer, Eric Smith, and Cassie Pinnell, with assistance from Madeline Dills and Henry Hwang. Dry season soil sample collection for cyst analysis was conducted by Eric Smith. VNLC lead biologists are permitted under a Section 10(a)(1)(A) recovery permit for conducting listed large branchiopod surveys (**Permit #TE-035336-6.2**). Soil samples collected by VNLC were processed and analyzed by Dr. Brent Helm of Helm Biological Consulting (HBC) as authorized by the USFWS under recovery permit **#TE-795930-10.2**. Survey authorization was obtained on October 21, 2019 from Samantha Lantz of the USFWS Sacramento Field Office.

A Biological Resource Constraints Summary prepared by Kevin Merk Associates, LLC (June 2019) identified four large branchiopod species as having potential to occur on the Project site. These include the non-listed California fairy shrimp (*Linderiella occidentalis*), as well as three federally listed species, the longhorn fairy shrimp (*Branchinecta longiantenna*), vernal pool fairy shrimp (*Branchinecta lynchi*), and vernal pool tadpole shrimp (*Lepidurus packardi*). No large branchiopod species were detected during either of the dry and wet season surveys conducted by VNLC from November 2019-April 2020.

METHODS

Methods followed USFWS *Survey Guidelines for Listed Large Branchiopods* (USFWS 2017) for both dry and wet season sampling.

Dry Season Sampling
VNLC Ecologist Eric Smith collected dry soil samples for cyst analysis on November 20, 2019. A hand spade was used to collect intact samples from the top 1-3 cm of soil. Samples were collected from 15 features throughout the Project site in the lowest topographic area of each feature. The number of samples taken at each feature was proportional to the size of the feature, with a maximum of 100 ml of soil collected per sample. If multiple samples were collected from the same feature, they were stored in the same storage container; containers were marked with the collection date, location of the feature, and name of the collector/Permittee. Samples containing any residual moisture were allowed to dry completely.

The collected soils were then delivered to HBC for subsequent processing and analysis. In HBC's laboratory, a brine solution was prepared by mixing table salt (NaCl) with lukewarm tap water in a large container. The collected soil material was placed in the brine solution. The soil material was then gently worked by hand to breakdown any persistent soil structure. The organic material rising to the top of the brine solution was skimmed off and placed in a 600-micron diameter pore-size sieve stacked atop a 75-micron diameter pore-size sieve. The soil material was processed through the top sieve by flushing it with lukewarm tap water while gently rubbing it with a soft-

bristle brush. The soil retained from the 75-micron diameter pore size sieve was then removed and thinly (≈1.0 mm) spread into plastic petri dishes.

The contents of each petri dish were examined under a 10 to 252-power zoom binocular microscope. A minimum of 0.5-hour was spent searching the contents of each petri dish for large branchiopod cysts (embryonic eggs). Dr. Helm's large branchiopod cyst reference collection and scanning electron micrographs of cysts (Belk 1989, Brendock *et al*. 2008, Gilchrist 1978, Hill and Shepard 1998, Mura 1991, and Rabet 2010) were used to identify and compare any cysts observed within the soil samples. This processing method (described above) favors the detection of cysts belonging to the genera *Branchinecta*, *Lepidurus*, and *Streptocephalus* since these three genera have species that are federally listed. Evidence of other aquatic macroinvertebrates encountered was also noted on the laboratory data sheet.

Wet Season Sampling

VNLC conducted protocol-level large branchiopod surveys in a total of 11 features including one emergent wetland, one seasonal wetland swale, and nine seasonal wetlands across the Project site from December 2019 through April 2020. A total of seven surveys were conducted. Beginning in December 2019, VNLC biologists conducted weekly large branchiopod surveys on the following dates: December 27, 2019; January 6, 2020; January 16, 2020; and January 27, 2020. Due to drought conditions and the abrupt dry-down of water features on the Project site, wet season surveys were suspended in early February. Surveys resumed in late March as precipitation returned and wetland features re-ponded within the Project site. VNLC biologists conducted three large branchiopod surveys on the following dates: March 27, 2020; April 6, 2020; and April 16, 2020. As of April 20, 2020, VNLC biologists documented that all water features on the Project site had dried down. Consequently all large branchiopod surveys were halted.

For each sampled feature, surveys were conducted by first visually inspecting the water column for large branchiopods, then dip-netting using a fine mesh net with a 12-inch square aperture. Nets were moved through the water in 1-meter long sweeps spread throughout each feature and covering the entire water column. All aquatic invertebrates captured in the sample were recorded to the most relevant taxonomic level. Biologists also recorded the maximum current water depth in inches at each inundated feature, along with the feature's temperature in degrees Celsius. All features that held water were sampled during each survey round.

RESULTS

No large branchiopods were documented within the Project site during the protocol-level wet and dry season surveys. All features sampled by VNLC biologists during the 2019-2020 wet season are shown on **Figure 2**. **Table 1** lists all invertebrate taxa documented in each feature sampled by VNLC biologists. **Table 2** contains depth and temperature data recorded at each of the sampled features for all seven rounds of surveys. Representative photos are presented in **Appendix A**. HBC's full report documenting the methods and results of soil cyst analysis are presented in **Appendix B**.

SIGNATURE

"I certify that the information in this survey report and attached exhibits fully and accurately represents my work."

June 9, 2020

Permittee's Signature (Cassie Pinnell) Date

Table 1. 2019-2020 Wet Season Survey Results at the City of Newman Project Site, Merced County, CA. Data Compiled by Vollmar Consulting, 2020. UTM Zone 10N.

Feature ID[1]	UTM Northing	UTM Easting	Large Branchiopods[2]				Ostracoda	Copepoda		Cladocera	Coleoptera		Hemiptera		Chironomidae	Diptera (land)	Planorbidae	Microturbellaria	Arachnida	Ephemeroptera	Gambusia
			LIOC	BRLO	BRLY	LEPA		Calanoida	Cyclopoida		Dytiscidae	Hydrophilidae	Notonectidae	Corixidae							
EW 01	4131152	676889					X	X	X	X	X	X	X	X	X	X	X	X		X	X
SW 17	4130612	676603									X	X									
SW 18	4130568	676626							X		X	X		X					X		
SW 19	4130536	676628							X					X		X		X	X		
SW 20	4130545	676643							X		X	X		X					X		
SW 21	4130470	676649							X		X	X				X		X			
SW 27	4131144	677139											X	X							
SW 29	4130979	677255					X	X	X		X	X	X	X				X	X		
SW 33	4130882	677345												X							
SW 45	4130923	677394							X	X	X			X	X						
SWS 04	4130526	676675					X		X		X			X		X		X			

Notes:
X= Present

[1] Feature ID Codes:
EW = Emergent Wetland
SW = Seasonal Wetland
SWS = Seasonal Wetland Swale

[2] Large Branchiopod Acronyms:
LIOC= *Linderiella occidentalis*, California fairy shrimp
BRLO= *Branchinecta longiantenna*, longhorn fairy shrimp
BRLY= *Branchinecta lynchi*, vernal pool fairy shrimp
LEPA = *Lepidurus packardi*, vernal pool tadpole shrimp

Table 2. Depth and Temperature Data for Sampled Features During 2019-2020 Wet Season Surveys at the City of Newman Project Site, Merced County, CA. Data Compiled by Vollmar Consulting, 2020.

Feature ID	Round 1 12/27/2019		Round 2 1/06/2020		Round 3 1/16/20		Round 4 1/27/20		Round 5 3/27/20		Round 6 4/06/20		Round 7 (4/16/20)		Round 8 (4/20/20)	
	Max. Depth (in.)	Temp. (C°)	Max. Depth (in.)	Temp. (C°)	Max. Depth (in.)	Temp. (C°)	Max. Depth (in.)	Temp. (C°)	Max. Depth (in.)	Temp. (C°)	Max. Depth (in.)	Temp. (C°)	Max. Depth (in.)	Temp. (C°)	Max. Depth (in.)	Temp. (C°)
EW 01	4	-	4	-	8	9	0	-	0	-	8	13	14	19	0	-
SW 17	0	-	0	-	0	-	0	-	0	-	9	13	0	-	0	-
SW 18	0	-	0	-	0	-	0	-	0	-	9	13	0	-	0	-
SW 19	0	-	0	-	0	-	0	-	0	-	7	12	0	-	0	-
SW 20	0	-	0	-	0	-	0	-	0	-	5.5	13	0	-	0	-
SW 21	0	-	0	-	0	-	0	-	0	-	7	13	0	-	0	-
SW 27	3	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-
SW 29	3	-	0	-	2	10	0	-	0	-	0	-	0	-	0	-
SW 33	0	-	0	-	0	-	0	-	2	17	0	-	0	-	0	-
SW 45	2	-	3	-	2	10	0	-	0	-	0	-	0	-	0	-
SWS 04	0	-	0	-	0	-	0	-	0	-	10	13	0	-	0	-

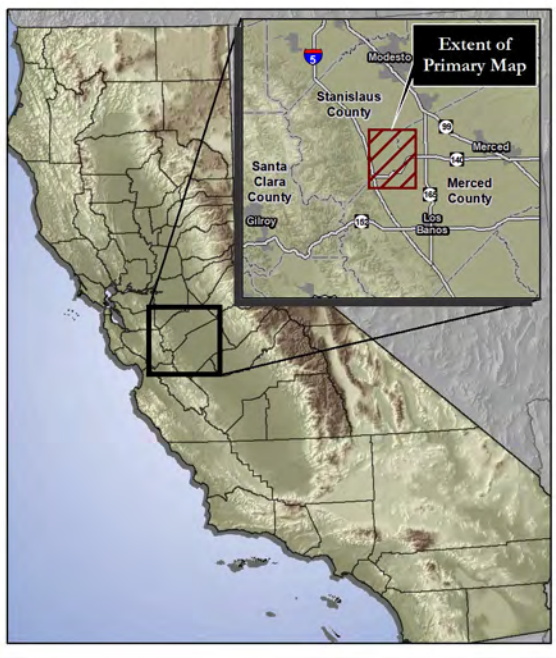
Crows Landing
West Hilmar Wildlife Area
George J. Hatfield State Recreation Area
33
North Grasslands Wildlife Area
Newman
140
Great Valley Grasslands State Park
San Luis National Wildlife Refuge
5
STANISLAUS COUNTY
MERCED COUNTY
Bureau of Reclamation
Gustine
33
Simon Neuman Preserve
Vollmar NATURAL LANDS CONSULTING

Legend

- Study Area
- County Boundary
- Urban Area
- Public Land
- Highway

FIGURE 1
Regional Vicinity Map

Newman Community Conservation Area
Merced County, California



N
W E
S

1:75,000

(1 in. = approx. 1.2 mi at tabloid layout)

0 1.25 2.5 5 Km

0 0.5 1 2 Mi

Data Sources: EW, 2016 | USGS, Various Years GAP Project, 1998 | USDA NAIP, 2018 US HUD, 2018 | CERES, 2012
GIS/Cartography by: K. Chinn, May 2020
Map File: Vicinity_445_B-P_2020-0601.mxd

Legend

- Study Area
- Feature Sampled for Large Branchiopods
- Dry During All Survey Rounds

FIGURE 2
Large Branchiopod Wet Season Sampling

Newman Community Conservation Area
Merced County, California

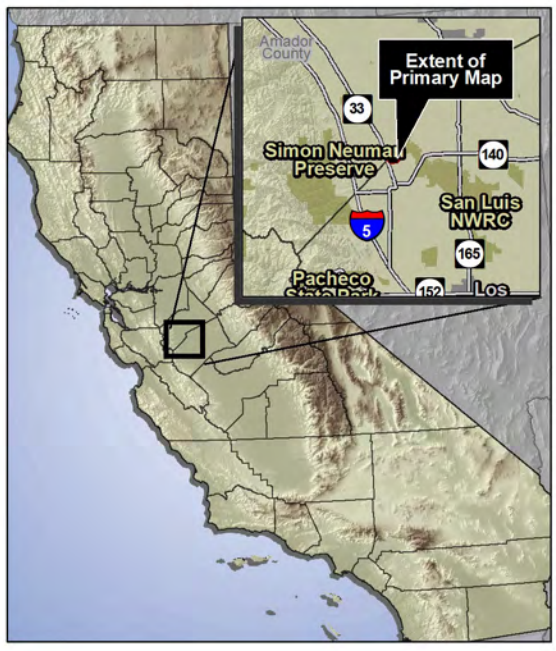
N W E S

1:5,100

(1 in. = 425 ft. at tabloid layout)

0 75 150 300 Meters

0 125 250 500 Feet



Data Sources: EW, 2016 | USGS, Various Years
GAP Project, 1998 | USDA, 2009 | VNLC, 2019-2020
GIS/Cartography by: M. Dills, K. Chinn, June 2020
Map File: WetSurveys_445_B-P_2020-0607.mxd

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Rabet, N. 2010. Revision of the egg morphology of *Eulimnadia* (Crustacea, Branchiopoda, Spinicaudata). Zoosystema 32 (3): 373-391.

U.S. Department of the Interior, U.S. Fish and Wildlife Service (USFWS). 2017. Survey guidelines for the listed large branchiopods. 24 pp. Dated: 31 May 2015 (Revised November 13, 2017).

APPENDIX A

REPRESENTATIVE PHOTOGRAPHS

Photo 1: Dry emergent wetland and general study area setting, facing northeast (1/27/20)

Photo 2: EW 01, facing east (4/06/20)

Photo 3: SW 29, facing northwest (4/06/20)

Photo 4: SW 21, facing southeast (1/27/20)

Photo 5: SW 21, facing southwest (1/27/20)

Photo 6: SW 27, facing south (1/27/20)

APPENDIX B

DRY SOIL ANALYSIS FOR THE DETECTION OF FEDERALLY-LISTED LARGE BRANCHIOPODS

HELM BIOLOGICAL CONSULTING

DRY SOIL ANALYSIS
FOR THE
DETECTION OF
FEDERALLY-LISTED LARGE BRANCHIOPODS
AT THE
NEWMAN WETLAND RESTORATION PROJECT,
MERCED COUNTY, CALIFORNIA

Prepared for:

VOLLMAR NATURAL
LANDS CONSULTING
1720 Solano Avenue
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(916) 758-6928

Prepared by:

HELM BIOLOGICAL CONSULTING
4600 Karchner Road
Sheridan, CA 95681
***Contact*: Dr. Brent Helm**
(530) 633-0220

January 2020

HELM
BIOLOGICAL CONSULTING
A Tansley Team Division
4600 Karchner Rd, Sheridan, CA 95681

DRY SOIL ANALYSIS FOR THE DETECTION OF FEDERALLY-LISTED LARGE BRANCHIOPODS AT THE NEWMAN WETLAND RESTORATION PROJECT, MERCED COUNTY, CALIFORNIA

INTRODUCTION

Helm Biological Consulting (HBC), a division of Tansley Team, Inc., was contracted by Vollmar Natural Lands Consulting (VNLC) to perform an analysis of soils collected from dry seasonally inundated depressions (hereafter "basins") at Newman Wetland Restoration Project (hereafter "Project"), for the presence of large branchiopods (fairy shrimp, tadpole shrimp) that are listed as threatened or endangered under the federal Endangered Species Act (e.g., vernal pool fairy shrimp [*Branchinecta lynchi*] and the vernal pool tadpole shrimp [*Lepidurus packardi*]).

The Project is located immediately east of Canal School Road, north of Braza Road, near the City of Newman in Merced County, California (Figure 1). Additionally, the Project is located in Section 20, Township 7 South, Range 9 East, and Mt. Diablo Base & Meridian (MDB&M) of the Fresno, Mendota, and Merced U.S. Geological Survey 100k quadrangle map. The Project's approximate center coordinates (World Geodetic System 1984 [WGS84]) are: 37.310811°, -121.003549°.

The remainder of this report discusses the methods and results of the soil examinations to determine the presence of federally-listed large branchiopods at the Project.

"We certify that the information in this survey report and attached exhibits fully and accurately represents our work."

Brent P. Helm Signature _____ Date 01-28-2020
(TE-795930-10.2)

Sean M. O'Brien Signature _____ Date 01-28-2020
(TE-795930-10.2)

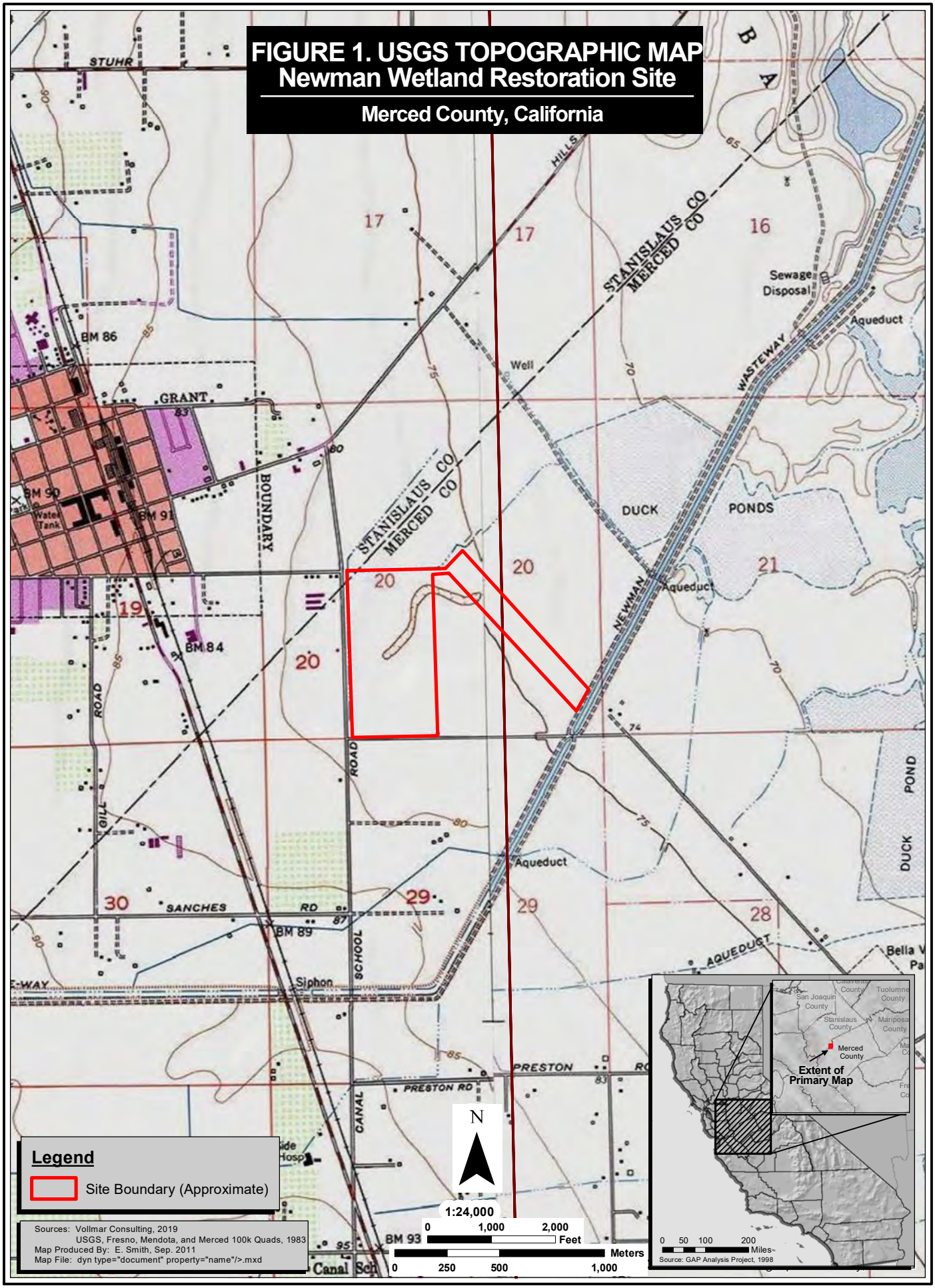
FIGURE 1. USGS TOPOGRAPHIC MAP
Newman Wetland Restoration Site
Merced County, California
STUHR
GRANT
BM 86
BM 90
Water Tank
BM 91
BM 84
BM 89
BOUNDARY
ROAD
GILL
SANCHES
RD
SCHOOL
PRESTON
PRESTON RD
CANAL
STANISLAUS CO
MERCED CO
HILLS
Well
Sewage Disposal
Aqueduct
WASTEWAY
DUCK
PONDS
NEWMAN
AQUEDUCT
Siphon
BM 93
Canal
17
16
20
21
19
30
29
28
N
1:24,000
0 1,000 2,000 Feet
0 250 500 1,000 Meters
Legend
Site Boundary (Approximate)
Sources: Vollmar Consulting, 2019
USGS, Fresno, Mendota, and Merced 100k Quads, 1983
Map Produced By: E. Smith, Sep. 2011
Map File: dyn type="document" property="name"/>.mxd
San Joaquin County
Stanislaus County
Merced County
Mariposa County
Tuolumne County
Extent of Primary Map
0 50 100 200 Miles
Source: GAP Analysis Project, 1998

METHODS

Methods followed U.S. Fish and Wildlife Service's (USFWS 2017) *Survey Guidelines for Listed Large Branchiopods* for dry-season sampling and consisted of first soil collection and then soil processing and analysis as described below.

SOIL COLLECTION

Dry soils were collected on November 20, 2019 by Eric Smith of VNLC as authorized by USFWS under permit number TE-035336-5 of Section 10(a)(1)(A) of the federal Endangered Species Act (ESA), 16 U.S.C. 1531 et seq., and its implementing regulations (Appendix A). The collected soils were delivered to HBC for subsequent processing and analysis as described below.

SOIL PROCESSING AND ANALYSIS

Soil samples obtained from VNLC were processed and analyzed by Dr. Brent Helm of HBC as authorized by the USFWS under recovery permit number TE-795930-10.2 of Section 10(a)(1)(A) of the federal ESA, 16 U.S.C. 1531 et seq., and its implementing regulations (Appendix A). In HBC's laboratory, a brine solution was prepared by mixing table salt (NaCl) with lukewarm tap water in a large container. The collected soil material was placed in the brine solution. The soil material was then gently worked by hand to breakdown any persistent soil structure. The organic material rising to the top of the brine solution was skimmed off and placed in a 600-micron diameter pore-size sieve stacked atop a 75-micron diameter pore-size sieve. The soil material was processed through the top sieve by flushing it with lukewarm tap water while gently rubbing it with a soft-bristle brush. The soil retained from the 75-micron diameter pore size sieve was then removed and thinly (≈1.0 mm) spread into plastic petri dishes.

The contents of each petri dish were examined under a 10 to 252-power zoom binocular microscope. A minimum of 0.5-hour was spent searching the contents of each petri dish for large branchiopod cysts (embryonic eggs). Dr. Helm's large branchiopod cyst reference collection and scanning electron micrographs of cysts (Belk 1989, Brendock *et al*. 2008, Gilchrist 1978, Hill and Shepard 1998, Mura 1991, and Rabet 2010) were used to identify and compare any cysts observed within the soil samples. This processing method (described above) favors the detection of cysts belonging to the genera *Branchinecta*, *Lepidurus*, and *Streptocephalus* since these three genera have species that are federally listed. Evidence of other aquatic macroinvertebrates encountered was also noted on the laboratory data sheet.

RESULTS

SOIL COLLECTION

Soil samples were collected from a total of 15 basins at the Project by VNLC (Exhibit A).

SOIL PROCESSING AND ANALYSIS

All of the soils collected by VNLC were processed and analyzed for evidence of large branchiopods. No evidence of federally-listed large branchiopods (i.e., cysts belonging to the genus *Branchinecta* or *Lepidurus* or carapaces of *Lepidurus*) were observed in the soils collected (Table 1). Representative photographs of the basins sampled are provided in Appendix B.

Table 1. Results of Soil Examinations (2020) from the Newman Wetland Restoration Project

Basin No.	Invertebrates Present (X)			
	Insects Exo-skeletons	Cladocera Ephippia	Ostracod Cysts/ Carapaces	Collembola
01	X	X		X
02	X	X		
03	X	X		
04	X	X		
05	X	X		
06	X	X	X	
07	X	X		
08	X	X		
09	X	X		
10	X	X		
11	X	X		X
12	X	X	X	
13	X	X		
14	X	X		
15	X	X	X	

LITERATURE CITED

Belk, D. 1989. Identification of species in the Conchostraca genus *Eulimnadia* by egg shell morphology. Journal of Crustacean Biology. 9(1): 115-125.

Brendock, L., D. C. Rogers, J. Olesen, S. Weeks, and W. R. Hoch. 2008. Global diversity of large branchiopods (Crustacea: Branchiopoda) in freshwater. Hydrobiologia. 595: 167-176.

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Hill, R. E., and W. D. Shepard. 1998. Observation on the identification of California anostracan cysts. Hydrobiologia 359: 113-123.

Mura, G. 1991. SEM morphology of resting eggs in the species of the genus *Branchinecta* from North America. J. Crust. Biol. 11: 432-436.

Rabet, N. 2010. Revision of the egg morphology of *Eulimnadia* (Crustacea, Branchiopoda, Spinicaudata). Zoosystema 32 (3): 373-391.

U.S. Department of the Interior, U.S. Fish and Wildlife Service (USFWS). 2017. Survey guidelines for the listed large branchiopods. 24 pp. Dated: 31 May 2015 (Revised November 13, 2017).

HELM
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EXHIBIT A.
LARGE BRANCHIOPOD DRY SAMPLES
NEWMAN WETLAND RESTORATION PROJECT
STANISLAUS AND MERCED COUNTIES, CALIFORNIA

Exhibit A
Large Branchiopod Dry Samples

Newman Wetland Restoration Project
Stanislaus and Merced Counties, California

Legend

- Parcel Boundary (~103 acres)

Potential Jurisdictional Features

- Perennial Marsh
- Seasonal Wetland
- Ditch
- Collection Point (1-15)

N

W E

S

1:5,100

(1 in. = 250 ft. at tabloid layout)

0 50 100 200 Meters

0 125 250 500 Feet

Data Sources: EW, 2016 | USGS, Various Years
GAP Project, 1998 | USDA, 2009 | VNLC, 2019
GIS/Cartography by: M. Dills, K. Chinn, Oct. 2019
Map File: DS_445_B-P_2020-0124.mxd

Vollmar NATURAL LANDS CONSULTING

APPENDIX A.
USFWS AUTHORIZATION

Survey Authorization Request, Newman Wetland Restoration Project

Lantz, Samantha <samantha_lantz@fws.gov>

Mon 10/21/2019 7:43 AM

To: Eric Smith <esmith@vollmarconsulting.com>
Cc: Sarah Markegard <sarah_markegard@fws.gov>; Patricia Cole <patricia_cole@fws.gov>; Cassie Pinnell <cpinnell@vollmarconsulting.com>

Eric,

By this email message you are authorized to conduct surveys for federally-listed branchiopods at the Newman Wetland Restoration Site in Merced County, per the conditions of recovery permit TE-035336-5 and as specified in your email request dated October 10, 2019.

Surveys may be conducted within all seasonally inundated wetlands on-site that may provide suitable habitat. Remember to carry a copy of your permit while doing the work, and to follow the terms and conditions of the permit and the USFWS Survey Protocols for listed branchiopods, including the reporting requirements. In your report, please include which surveys were authorized, the names of all persons involved in the surveys, their recovery permit numbers, if applicable, and the date of this authorization, to help ensure that we correctly record the fulfillment of the reporting requirement under this authorization. Please let us know if the surveys are not performed as authorized, or if they are done by a different permittee under a separate authorization. This authorization does not include access to the property which must be arranged with the landowner or manager. **Please send electronic copies of the report(s) to myself and Patricia Cole (cc'd). We ask that you use UTM coordinates for all spatial data and that you use Service reference number 2020-TA-0135 in future correspondence for these surveys.**

To ensure the accuracy and data integrity of your project, it is requested that you provide spatial information (boundaries, study areas, parcels, point locations, etc.) in the form of an ESRI shape file with projection, a GPS file with projection, or locations in an Excel spreadsheet with projection information. The preferred projection is NAD83; the Sacramento Fish and Wildlife Office (SFWO) standard. FGDC compliant metadata must accompany each file. Please include any USFWS File Numbers associated with the data in your documentation. For additional information regarding metadata standards refer to http://www.fgdc.gov. For more information regarding spatial data please contact: Cheryl L. Hickam, GIS Branch Chief, U.S. Fish and Wildlife Service, 2800 Cottage Way, Suite W-2605, Sacramento, Ca 95825-1846, office: 916-414-6708.

Best,

Sam

Samantha Lantz, Ph.D.
Fish and Wildlife Biologist
USFWS, Sacramento Field Office
Listing and Recovery Division
2800 Cottage Way W-2605
Sacramento, CA 95825-1888
Phone: 916-414-6526

APPENDIX B.
REPRESENTATIVE PHOTOGRAPHS

Photograph of Basin 1 taken by VNLC on November 20, 2019.

Photograph of Basin 2 taken by VNLC on November 20, 2019.

Photograph of Basin 3 taken by VNLC on November 20, 2019.

Photograph of Basin 4 taken by VNLC on November 20, 2019.

Photograph of Basin 5 taken by VNLC on November 20, 2019.

Photograph of Basin 6 taken by VNLC on November 20, 2019.

Photograph of Basin 7 taken by VNLC on November 20, 2019.

Photograph of Basin 8 taken by VNLC on November 20, 2019.

Photograph of Basin 9 taken by VNLC on November 20, 2019.

Photograph of Basin 10 taken by VNLC on November 20, 2019.

Photograph of Basin 11 taken by VNLC on November 20, 2019.

Photograph of Basin 12 taken by VNLC on November 20, 2019.

Photograph of Basin 13 taken by VNLC on November 20, 2019.

Photograph of Basin 14 taken by VNLC on November 20, 2019.

Photograph of Basin 15 taken by VNLC on November 20, 2019.

Appendix C

Air Quality & GHG Modeling Results

TAMURA ENVIRONMENTAL

TO: Anna Buising, PhD, PG, Redtail Consulting
FROM: Todd Tamura, QEP
RE: Air Emissions Estimates for Newman Community Conservation Area (NCCA) Master Plan projects
DATE: March 10, 2021

This memo includes the following:

1. A description of how air emissions for the four distinct NCCA Master Plan restoration projects were estimated;
2. Discussion of Results/comparisons to applicable emissions thresholds;
3. A short contextual calculation of GHG emissions that is referenced in the IS/MND and brief calculation of emissions associated with Mitigation Measures involving hazardous waste hauling; and
4. Analytical details/QA.

The total acreage of the parcels is 102 acres—most but not all of which would be worked by one of the four projects. While there are city park aspects (such as potential play areas, shade structures, and picnic areas in the NNP project, and trails around the 78-acre site) and education aspects (such as a potential outdoor classroom area, wildlife and native plant demonstration gardens, a rainwater harvesting and reuse demonstration area, and composting and greywater demonstration areas), much of the acreage would be wetlands not directly accessible by the public. As shown in Tables 3-19 and 3-22 of the IS/MND the traffic analysis provided identifies that for all four NCCA Master Plan projects combined, approximate visitor projections are for 45 one-way trips (< 50 miles) per day for local residents (only one of which would involve a heavy-duty vehicle with more than 8 occupants) and 125 one-way trips (75 miles per trip) per day for regional visitors (with roughly five bus trips per day); trips for operations and maintenance are negligible in comparison.

Given the size and scale of the project, there is a reasonable argument that no quantification of emissions is necessary. SJV APCD issued guidance in November 2020 identifying that certain sizes of projects—including city parks of less than 256 acres (and generating an average of less than 20 daily one-way 50-mile trips for HHDTs[1] and less than 1,100 average daily one-way trips for non-HHDTs) and educational facilities with less than 1,000 students (and generating an average of less than 15 daily one-way 50-mile trips for HHDTs and less than 1,000 average daily one-way trips for non-HHDTs)—"are excluded from quantifying criteria pollutant emissions for CEQA purposes" because "it is reasonable to conclude that a project would not exceed applicable thresholds of significance".[2] However, out of an abundance of caution—and

[1] Heavy heavy-duty trucks.
[2] SJV APCD, "Small Project Analysis Levels (SPAL)", November 13, 2020.

recognizing that during construction there would be considerably more HHDT truck trips than what is identified in the District guidance—we have completed an emissions analysis anyway.

1. Emissions Estimation

In this CEQA analysis, we calculated emissions based on the most conservative assumptions, in part to also help incorporate any potential minor project changes. For example, in cases where the construction estimator estimated "2-4" piece of a certain type of construction equipment, we assumed 4; in cases where the estimator estimated "20-40" days, we assumed 40; etc.

A popular tool used for emissions estimation for land use developments is the California Emissions Estimator Model (CalEEMod®)[3] developed for the California Air Pollution Control Officers Association (CAPCOA). It incorporates estimates of several different types of emissions (including but not limited to fugitive dust from dirt handling, evaporative emissions from paving, etc.) and accordingly that tool was used for this study. However, it is recognized that (a) the model output does not document the equations used, and (b) for on-road mobile sources, the algorithms are outdated (based on EMFAC2014, whereas the California Air Resources Board (CARB)'s EMFAC2017 has an easy-to-use up-to-date tool for calculating emissions.[4]

Accordingly, after using CalEEMod,® key emissions (from construction equipment and haul trucks) were checked using (a) a calculation spreadsheet which executes the equations for off-road equipment emissions identified in CalEEMod® documentation (and shows results for each phase of construction), and (b) CARB's EMFAC tool for calculating emissions from on-road vehicles. (The latter was also applied to operational traffic trips estimated for the NCCA estimated by KD Anderson & Associates.)

a. CalEEMod® Inputs

There are several inputs to CalEEMod®, which are identified in the attached output files for the model, but below is a summary of key project-specific inputs with regard to (a) grading, which can potentially be a key source of fugitive dust (particulate matter); (b) "off-road" construction equipment, (c) haul trucks, and (d) operational traffic, which are the predominant sources of NO_x, CO, and GHGs during construction and operation; and (e) schedule. CalEEMod® was run for all of the projects except the MDTW project (which as described in Section 2 of the IS/MND is assumed to be similar to the NEWS project, except that the acreage is roughly 15.8/21 = 75% of the NEWS project and therefore annual emissions were assumed to be approximately 75% of those of the NEWS project; max. hourly emissions were assumed to be the same as for the NEWS project).

[3] The latest version of this model is version 2016.3.2, and it is available from http://www.caleemod.com/.
[4] CARB, EMFAC Scenario Analysis, https://arb.ca.gov/emfac/scenario-analysis/generate-template, accessed December 2020. The tool provides results from EMFAC2017 v1.0.3.

i. Site acreage

Project	Land Use Type/Subtype[a]	Site Acreage
NEWS	Recreational/City Park	21
Wetland	Recreational/City Park	11
NNP	Recreational/City Park[b]	25
Water service extension	Parking/Other Asphalt Surfaces	0.2[c]

[a]CalEEMod® allows seven primary land use types—Commercial, Educational, Industrial, Parking, Recreational, Residential, and Retail—and 63 subtypes.

[b]While the NNP project has an "education" component to it, the CalEEMod® subtypes for the "education" type were entities like elementary schools, high schools, colleges, churches, etc. Given the scale and outdoor nature of this project, the "City Park" subtype is more appropriate.

[c]Acreage based on a 2-foot width multiplied by the length indicated by the longer of the two options (Option 2, roughly 4,000 feet) = 8,000 square feet ≈ 0.18 acres

ii. Off-road construction equipment

For the NEWS project, project-specific estimates of construction equipment numbers and makes/models were estimated in Table 2-8 of the Initial Study. Attachment A to this memo provides pictures and horsepower ratings for that equipment. For the wetlands project and NNP project, construction equipment numbers and types were available (Initial Study Tables 2-10, 2-12), but not make/model numbers. For equipment types that were in the NEWS project, the same horsepower ratings were used; for other equipment, CalEEMod® type-specific default horsepower ratings were used.

iii. Construction haul truck trips

Except where noted otherwise, the following information is from Section 2 of the IS/MND:

NEWS project	
Clearing and grubbing/grading	120 trucks (240 trips)/day (offhaul-excavated matl.)
Access/Trail finishing	158 trucks (316 trips) total (inhaul of aggregate)
Concrete pad construction	120 trucks (240 trips) total (inhaul of concrete)
Finishing/stabilization (planting etc.)	9-11 trucks (18-22 trips) with 53' flatbeds[5]
Wetlands project	
Grading	55 trucks (110 trips) total (offhaul-marsh reest.) due to soil balancing on-site
Civil construction	
Live plant material collection	
Planting	
Inoculum collection	
Inoculum spreading	1 truck (2 trips) total

[5] Per Tim Pruss (Rick Engineering), e-mail to Tom Martin (Rick Engineering), Dec. 4, 2020.

NNP project	
Clearing and grubbing	None[6]
Grading	None[6]
Access/circulation and utilities	3,000 cy total (fill-plaza/parking)[6]
Site improvements and furnishings	(negligible)
Planting	(negligible)
Pipeline	
Trenching	10 trips total (CalEEMod® default)
Paving	60 trips total (CalEEMod® default)

For purposes of estimation, it was estimated that clearing/grubbing greenwaste would be trucked to Modesto (36 miles away), cut/fill material would be going to/coming from somewhere within the City's sphere of influence (maximum 5.2 miles away), and aggregate/concrete would come from up to 35 miles away. CalEEMod® mitigation for fugitive dust was applied; however, CalEEMod® does not have a means of quantifying emissions reductions associated with all of the specific District requirements, and therefore fugitive dust emissions are overestimated relative to the case where the impacts of those regulations were quantified.

iv. Transportation Mitigation (on-road parking)

Assuming NEWS is constructed before NNP, the NEWS project will incorporate improvements to the north shoulder (only) of Inyo Avenue (approximately 750 feet by 10 feet) to provide for safe accommodation of overflow parking. The should will be graded if necessary and will be graveled and/or paved for parking.

As part of the NNP, the City will provide improvements to the shoulders of Brazo Road (approximately 500 feet by 8 feet) to provide for safe accommodation of overflow parking.

Separate CalEEMod runs were done for this on-street/shoulder grading/paving. Though not all of the area may be paved—i.e., some parking may only be gravel—it was conservatively assumed that it would all be paved.

b. Off-Road Construction Equipment emissions by spreadsheet

Off-road construction equipment is the largest source of emissions—i.e., NO_x emissions—from construction and can sometimes deserve a more detailed/auditable calculation. Accordingly, spreadsheets were used to implement and document the CalEEMod® formulas and parameters. As was the case with the CalEEMod® runs, in general, in cases where the contractor identified specific makes and models of equipment for the NEWS project, the corresponding horsepower was identified for all of the NCCA projects rather than the CalEEMod® defaults, but where no specific horsepower information was provided, the CalEEMod® default horsepower was used. Emissions from equipment get cleaner every year; 2021 was conservatively assumed as the modeling year, given that some of the construction could start as early as 2021.

[6] Per M. Mills (RMM Design Group), e-mail to A. Buising, Nov. 24, 2020 (estimate of 1,500-3,000 cy divided by 10 cy per truck)

c. On-Road Vehicle emissions by CARB EMFAC2017

CARB's EMFAC "Scenario Analysis" was used to calculate emissions from both haul trucks used during construction and operational vehicle traffic. For the haul trucks (which are the most significant source of on-road vehicle emissions during construction; i.e., the occasional worker pickup is negligible by comparison), the EMFAC scenario was set up for 4,800 vehicle-miles traveled per day, and calculated annual-average daily emissions based on vehicle information (i.e., vehicle age distributions and vehicle type distributions) representative of Stanislaus County.[7] Gross vehicle weight rating (GVWR) for the 16-cy haul trucks was estimated as being in the T7 EMFAC category and the VMT was assigned to T7 CAIRP and T7 non-CAIRP[8] construction trucks proportional to EMFAC's estimates of the relative VMT estimated for each of these categories in the County (approximately 29% CAIRP/71% non-CAIRP). As with off-road equipment, emissions from the on-road vehicle fleet get cleaner every year; 2021 was conservatively assumed as the modeling year.

For the operational traffic, VMT were provided by K.D. Anderson & Associates in terms of passenger vehicle and bus trips of various lengths (Initial Study Tables 3-20, 3-23). EMFAC output identifying the distribution of passenger vehicle VMT (across light-duty cars, trucks of various sizes, medium-duty SUVs, etc.) was used to distribute the passenger vehicle trips (local users and regional users from the general public) and to also calculate results specific to the buses (research students).

2. Discussion of Results/Comparisons to Applicable Emissions Thresholds

The District's CEQA Significance Thresholds and the less-stringent Federal General Conformity thresholds are based on an annual timeframe (tons per year). Although four projects will be approved independently, the analysis conservatively considered them in combination, taking into account the scheduling of the various construction activities. Although construction schedules can be subject to some changes, the overall expectation is as follows:

(1) As identified in Table 2-11, the wetlands project would start in 2021, and complete earthwork (i.e., all phases except inoculum collection/spreading) that same year. Inoculum collection/spreading would occur during the dry season of 2022.
(2) The NEWS project is expected to break ground in 2021. While some of the earliest phases—i.e., clearing/grubbing and grading phases, and possibly access/trail finishing—would be completed in 2022, others would not occur until 2022 and possibly as late as 2023.
(3) If it is funded in 2021, the NNP project would likely break ground in 2023 and would be completed in 2024, with earthwork possible in both years. If funding is not obtained in 2021, the NNP project would likely be delayed by a year or more
(4) The MDTW project is not expected to begin until 2024 or later, since a funding source has not been identified and it is still in the conceptual stages.

[7] Assuming Merced County instead of Stanislaus County makes no difference in haul truck emissions and negligible difference in operational emissions (<10%).
[8] California International Registration Plan

Based on this scheduling, the following were considered to be the worst-case scenarios with regard to emissions occurring within a single year:

- Wetlands and NEWS projects (and water extension) occurring entirely within the same year
- NNP and MDTW projects (and water extension) occurring entirely within the same year

Tables of annual emissions from the worst-case construction scenarios and operational emissions are provided below, along with comparisons to the relevant SJV CEQA Significance Thresholds and General Conformity thresholds – it can be seen that even the sums of a worst-case construction year's emissions (or even the total of all the construction emissions) with the operational emissions are well below the relevant thresholds.

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	Total CO2	CH4	CO2e
	tons/yr						MT/yr		
Worst-Case Construction Scenario 1 (2021)									
Wetland	0.07	0.76	0.51	1.33E-03	0.043	0.029	118	0.0345	119
NEWS	0.22	2.44	1.12	5.27E-03	0.233	0.109	524	0.0897	526
Inyo Ave. parking	0.00	0.02	0.02	3.91E-05	0.002	0.001	3	0.000809	3
Water Service Ext.	0.02	0.21	0.21	4.70E-04	0.013	0.010	41	7.94E-03	41
Total tons/yr, 2021:	0.3	3.4	1.9	0.01	0.3	0.1			
Worst-Case Construction Scenario 2 (2023)									
NNP	0.24	2.44	2.32	5.00E-03	0.168	0.101	441	0.1382	444
Brazo Rd. parking	0.001	0.01	0.01	2.09E-05	0.001	0.001	2	0.000431	2
Water Service Ext.	0.02	0.21	0.21	4.70E-04	0.013	0.010	41	0.00794	41
MDTW	0.17	1.83	0.84	0.003951	0.175	0.081	393	0.067275	394
Total tons/yr, 2023:	0.4	4.5	3.4	0.01	0.4	0.2			
	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	Total CO2	CH4	CO2e
Operational	0.8	1.6	5.7	0.01	0.5	0.1	1,472	0.09	1,475
SJV Significance Thresholds	**10**	**10**	**100**	**27**	**15**	**15**			
General Conformity Thresholds	**10**	**10**	**100**	**100**	**100**	**100**			

In addition to CEQA thresholds of significance for emissions, some projects are required to conduct dispersion modeling of emissions to estimate impacts on the nearest receptors and compare to CEQA ambient air thresholds of significance. However, SJV APCD has a policy[9] that if emissions of criteria pollutants within ¼ mile of the site are below 100 lb/day, dispersion modeling is not required. Potential daily on-site emissions for the worst-case construction scenarios (i.e., assuming the worst-case construction phases for each project – generally grading), are shown in the tables below:

[9] SJVAPCD, "Project Ambient Air Quality Analysis Applicability Determination under CEQA", APR-2030, June 12, 2018.

Mitigated Construction On-Site (worst-case phase for each project)						
	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
	lb/day					
NEWS grading-pond	5.5	51	25	0.09	2.4	1.8
NEWS Inyo Ave parking	0.5	5	6	0.01	0.8	0.5
Wetland-grading	3.2	38	20	0.05	1.4	1.4
NNP-grading	2.9	33	28	0.06	1.4	1.2
NNP Brazo Rd parking	0.3	3	3	0.01	0.4	0.3
MDTW	5.5	51	25	0.09	2.4	1.8
Water Service Ext.	1.5	14	14	0.03	0.71	0.67

This shows that emissions from each project are well below the 100 lb/day threshold. The water service extension could occur as part of either the NEWS project or the NNP project; however, when emissions from the water service extension are combined with emissions from either of those projects, the emissions are still below the 100 lb/day threshold. (Waiving the dispersion modeling analysis is also reasonable given that the emissions for these projects will be spread over relatively large areas and most of the work will be occurring at a good distance from the nearest receptors.)

3. Contextual Calculation of GHG Emissions/Potential Mitigation Emissions

For GHG, given the lack of significance thresholds for temporary construction activities (and the lack of well-justified thresholds for annual operational emissions), we provide the following additional information for a GHG source that people are more likely to have some familiarity with: a single semi-tractor trailer truck travels an average of roughly 63,000 miles per year and consumes approximately 10,000 gallons of diesel fuel per year.[10] The corresponding CO_2 emissions from that truck are therefore (10,000 gal/yr) × (0.138 mmBtu/gal) × (74 kg CO_2/mmBtu) × (MT/1000 kg) = 102 MT CO_2/yr.[11]

If at some point in the future, hazardous waste were to be discovered at the site, mitigation identified in the IS/MND identifies that such waste could need to be hauled to an appropriate Class I hazardous waste disposal site—i.e., Kettleman Hills or Buttonwillow, roughly 150-200 miles away. There would be emissions associated with the hauling of that waste. Assuming 16-cubic yard haul trucks (EMFAC class T7), the emissions associated with a single 400-mile roundtrip would be as shown below. These are not substantive compared to the overall operational emissions.

[10] These are national averages based on the Federal Highway Administration's "Annual Vehicle Distance Traveled in Miles and Related Data – 2018(1) by Highway Category and Vehicle Type" for combination trucks, available at https://www.fhwa.dot.gov/policyinformation/statistics/2018/pdf/vm1.pdf.

[11] The mmBtu/gal factors and kg CO2/mmBtu factors in this equation are from EPA's "Default CO_2 Emission Factors and High Heat Values for Various Types of Fuel", Table C-1 in EPA Regulations on Mandatory Greenhouse Gas Reporting, 40 CFR 98, Subpart C (values for "Distillate Fuel Oil No. 2"). Total CO_2e (i.e., including CH_4 and N_2O emissions) would only be slightly (< 0.5%) higher than the CO_2 emissions alone.

ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
0.32 lb	5.9 lb	1.2 lb	0.016 lb	0.07 lb	0.07 lb	1645 lb
0.00016 tons	0.003 tons	0.0006 tons	8×10^{-6} tons	4×10^{-5} tons	4×10^{-5} tons	0.75 MT

4. Analytical Details/QA

The initial step in the analysis involved running CalEEMod®. Annual emissions results from just that model are shown below:

Annual CalEEMod® Results

2.1 Overall Construction

Mitigated Construction (total, including on-site and off-site, all years)

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	Total CO2	CH4	N2O	CO2e
	tons/yr						MT/yr			
NEWS	0.22	3.39	1.24	9.18E-03	0.226	0.102	867	0.0897	0	869
Inyo Ave. parking	0.00	0.02	0.02	3.91E-05	0.002	0.001	3	0.000809	0	3
Wetland	0.07	0.75	0.51	1.32E-03	0.042	0.029	117	0.0345	0	117
NNP	0.24	2.54	2.33	5.35E-03	0.102	0.193	474	0.1382	0	477
Brazo Rd. parking	0.00	0.01	0.01	2.09E-05	0.001	0.001	2	4.31E-04	0	2
MDTW	0.17	2.54	0.93	0.006885	0.169	0.076	650	0.067275	0	652
Water Service Ext.	0.02	0.21	0.21	4.70E-04	0.013	0.010	41	7.94E-03	0	41

2.2 Overall Operational

Mitigated Operational (Total)

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	Total CO2	CH4	N2O	CO2e
	tons/yr						MT/yr			
NEWS	0.0552	0.321	0.4976	1.87E-03	0.1379	0.0381	198	0.0317	2.40E-04	199
Wetland	5.75E-03	0.00E+00	1.30E-04	0.00E+00	0.0771	0.0189	13	1.20E-02	1.20E-04	14
NNP	0.0613	0.2693	0.39	1.53E-03	0.1136	0.0313	151	0.0161	9.00E-05	151
MDTW	0.0552	0.321	0.4976	0.00187	0.1379	0.0381	198	0.0317	0.00024	199
Water Service Ext.	5.60E-04	0	0	0.00E+00	0	0.00E+00	0	0	0.00E+00	0

Clearly, emissions from construction are substantially higher than emissions from operation.

Quality assurance of daily construction equipment emissions was conducted using the spreadsheet tool described previously for the highest-emitting construction phases:

(lb/day)	CalEEMod®	Spreadsheet
NEWS grading – berm construction	41.9	41.9
NEWS grading – pond and berm finishing	51.4	51.4
NEWS access/trail finishing	32.4	32.4
Wetland grading	37.8	37.8
NNP grading	32.6	32.6

For off-site haul truck emissions, emissions for the NEWS, wetland, and NNP projects—i.e., the projects where VMT estimates were provided by project personnel rather than CalEEMod® defaults—were calculated using EMFAC and these results were compared to the CalEEMod®

results. EMFAC predicted somewhat higher emissions for the haul trucks (partly as a result of QA of the truck trip distances), and these adjustments were made in the final table of results shown in Section 3 of the IS/MND. Since EMFAC results were higher, the estimates of construction emissions for these projects were adjusted upwards accordingly.

For operational emissions, emissions from the combined projects were also calculated using EMFAC based on the traffic data provided by K.D. Anderson & Associates, and yielded somewhat higher results than CalEEMod®; accordingly, the latter were replaced by the former:

2.2 Overall Operational
Mitigated Operational (Total)

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	Total CO2	CH4	N2O	CO2e
	tons/yr						MT/yr			
NEWS	0.0552	0.321	0.4976	1.87E-03	0.1379	0.0381	198	0.0317	2.40E-04	199
Wetland	5.75E-03	0.00E+00	1.30E-04	0.00E+00	0.0771	0.0189	13	1.20E-02	1.20E-04	14
NNP	0.0613	0.2693	0.39	1.53E-03	0.1136	0.0313	151	0.0161	9.00E-05	151
MDTW	0.0552	0.321	0.4976	0.00187	0.1379	0.0381	198	0.0317	0.00024	199
Water Service Ext.	5.60E-04	0	0	0.00E+00	0	0.00E+00	0	0	0.00E+00	0
All projects	0.18	0.91	1.39	0.01	0.47	0.13	560	0.09	0.00	563
Revised exhaust emis based on KDA/EMFAC	0.76	1.58	5.72	0.01	0.48	0.14	1,472	0.09		1474.71

Attachment A: Specified Construction Equipment
Attachment B: CalEEMod® Output Files
Attachment C: Spreadsheet calculations of off-road emissions
Attachment D: EMFAC/spreadsheet calculations of on-road emissions from haul trucks and operational traffic

Attachment A.
Appendix A-Listed Off-road Construction Equipment

Model	Type	Actual HP	(Default CalEEMod® Type HP)
Tiger TM72	Tractors/ Loaders/ Backhoes	155	97
CAT 326	Excavators	201	158
CAT 262D3	Skid Steer Loader	74	65

Model	Type	Actual HP	(Default CalEEMod® Type HP)
CAT D6	Crawler Tractor	215	212
CAT 966	Rubber Tired Loader	276	203
CAT CP563	Roller	157	80

Model	Type	Actual HP	(Default CalEEMod® Type HP)
CAT 24	Grader	535	187
CAT CS563	Roller	157	80
CAT 930	Rubber Tired Loader	168	203
Finn T60	Other General Industrial Equipment	24	88

Redtail- NEWS Project

Merced County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	21.00	Acre	21.00	914,760.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Redtail- NEWS Project - Merced County, Annual

Project Characteristics -

Land Use -

Construction Phase - Total days based on Section 2 of restoration proposal

Off-road Equipment - Based on model specs

Off-road Equipment - Based on Model Specs

Off-road Equipment -

Off-road Equipment - Based on model specs

Off-road Equipment - Based on model specs

Off-road Equipment - Based on model specs

Off-road Equipment - Based on model Specs

Trips and VMT - Based on Section 2 construction estimates

Grading - Max graded land acreage

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	35.00	13.00
tblConstructionPhase	NumDays	35.00	30.00
tblConstructionPhase	NumDays	35.00	10.00
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	10.00	30.00
tblGrading	AcresOfGrading	26.00	0.00
tblGrading	AcresOfGrading	90.00	13.00
tblGrading	AcresOfGrading	20.00	8.00
tblGrading	MaterialImported	0.00	2,528.00
tblOffRoadEquipment	HorsePower	187.00	535.00
tblOffRoadEquipment	HorsePower	187.00	535.00
tblOffRoadEquipment	HorsePower	97.00	150.00

tblOffRoadEquipment	HorsePower	97.00	168.00
tblOffRoadEquipment	HorsePower	212.00	215.00
tblOffRoadEquipment	HorsePower	212.00	215.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	88.00	24.00
tblOffRoadEquipment	HorsePower	80.00	157.00
tblOffRoadEquipment	HorsePower	80.00	157.00
tblOffRoadEquipment	HorsePower	203.00	277.00
tblOffRoadEquipment	HorsePower	203.00	277.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	36.00
tblTripsAndVMT	HaulingTripLength	20.00	5.20
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,200.00
tblTripsAndVMT	HaulingTripNumber	0.00	3,120.00
tblTripsAndVMT	HaulingTripNumber	0.00	7,200.00

tblTripsAndVMT	HaulingTripNumber	316.00	158.00
tblTripsAndVMT	HaulingTripNumber	0.00	240.00
tblTripsAndVMT	HaulingTripNumber	0.00	120.00
tblTripsAndVMT	HaulingTripNumber	0.00	22.00
tblTripsAndVMT	WorkerTripNumber	25.00	10.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2243	3.3863	1.2427	9.1800e-003	0.1632	0.0627	0.2258	0.0429	0.0589	0.1018	0.0000	866.7606	866.7606	0.0897	0.0000	869.0021
Maximum	**0.2243**	**3.3863**	**1.2427**	**9.1800e-003**	**0.1632**	**0.0627**	**0.2258**	**0.0429**	**0.0589**	**0.1018**	**0.0000**	**866.7606**	**866.7606**	**0.0897**	**0.0000**	**869.0021**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2243	3.3863	1.2427	9.1800e-003	0.1632	0.0627	0.2258	0.0429	0.0589	0.1018	0.0000	866.7603	866.7603	0.0897	0.0000	869.0017
Maximum	**0.2243**	**3.3863**	**1.2427**	**9.1800e-003**	**0.1632**	**0.0627**	**0.2258**	**0.0429**	**0.0589**	**0.1018**	**0.0000**	**866.7603**	**866.7603**	**0.0897**	**0.0000**	**869.0017**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-1-2021	5-31-2021	2.6156	2.6156
2	6-1-2021	8-31-2021	0.6339	0.6339
3	9-1-2021	9-30-2021	0.0769	0.0769
		Highest	2.6156	2.6156

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.6200e-003	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.8000e-004	3.8000e-004	0.0000	0.0000	4.0000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0465	0.3210	0.4974	1.8700e-003	0.1363	1.6700e-003	0.1379	0.0365	1.5700e-003	0.0381	0.0000	172.1341	172.1341	8.7900e-003	0.0000	172.3539
Waste						0.0000	0.0000		0.0000	0.0000	0.3674	0.0000	0.3674	0.0217	0.0000	0.9103
Water						0.0000	0.0000		0.0000	0.0000	0.0000	25.4763	25.4763	1.1500e-003	2.4000e-004	25.5761
Total	**0.0552**	**0.3210**	**0.4976**	**1.8700e-003**	**0.1363**	**1.6700e-003**	**0.1379**	**0.0365**	**1.5700e-003**	**0.0381**	**0.3674**	**197.6107**	**197.9781**	**0.0317**	**2.4000e-004**	**198.8407**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.6200e-003	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.8000e-004	3.8000e-004	0.0000	0.0000	4.0000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0465	0.3210	0.4974	1.8700e-003	0.1363	1.6700e-003	0.1379	0.0365	1.5700e-003	0.0381	0.0000	172.1341	172.1341	8.7900e-003	0.0000	172.3539
Waste						0.0000	0.0000		0.0000	0.0000	0.3674	0.0000	0.3674	0.0217	0.0000	0.9103
Water						0.0000	0.0000		0.0000	0.0000	0.0000	25.4763	25.4763	1.1500e-003	2.4000e-004	25.5761
Total	**0.0552**	**0.3210**	**0.4976**	**1.8700e-003**	**0.1363**	**1.6700e-003**	**0.1379**	**0.0365**	**1.5700e-003**	**0.0381**	**0.3674**	**197.6107**	**197.9781**	**0.0317**	**2.4000e-004**	**198.8407**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Clearing and Grubbing	Site Preparation	3/1/2021	3/12/2021	5	10	
2	Grading- Berm Construction	Grading	4/13/2021	4/29/2021	5	13	
3	Grading- Pond and Berm Finishing	Grading	4/27/2021	6/7/2021	5	30	
4	Access/Trail Finishing	Grading	6/8/2021	6/21/2021	5	10	
5	Construction of Concrete Pad	Paving	6/24/2021	9/15/2021	5	60	
6	Culvert Installation	Site Preparation	9/16/2021	10/13/2021	5	20	
7	Finishing/Stabalization	Site Preparation	10/14/2021	11/24/2021	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Clearing and Grubbing	Excavators	4	8.00	201	0.38
Clearing and Grubbing	Skid Steer Loaders	4	8.00	74	0.37
Clearing and Grubbing	Tractors/Loaders/Backhoes	2	8.00	150	0.37
Grading- Berm Construction	Crawler Tractors	4	8.00	215	0.43
Grading- Berm Construction	Rollers	2	8.00	157	0.38
Grading- Berm Construction	Rubber Tired Loaders	2	8.00	277	0.36
Grading- Pond and Berm Finishing	Crawler Tractors	4	8.00	215	0.43
Grading- Pond and Berm Finishing	Graders	2	8.00	535	0.41
Grading- Pond and Berm Finishing	Rubber Tired Loaders	2	8.00	277	0.36
Access/Trail Finishing	Graders	4	8.00	535	0.41
Access/Trail Finishing	Rollers	2	8.00	157	0.38
Construction of Concrete Pad	Cement and Mortar Mixers	1	8.00	9	0.56
Culvert Installation	Excavators	2	8.00	201	0.38
Culvert Installation	Tractors/Loaders/Backhoes	2	8.00	168	0.37
Finishing/Stabalization	Excavators	2	8.00	201	0.38
Finishing/Stabalization	Other General Industrial Equipment	2	8.00	24	0.34

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Clearing and Grubbing	10	10.00	0.00	1,200.00	16.80	6.60	36.00	LD_Mix	HDT_Mix	HHDT
Grading- Berm Construction	8	20.00	0.00	3,120.00	16.80	6.60	5.20	LD_Mix	HDT_Mix	HHDT
Grading- Pond and Berm Finishing	8	20.00	0.00	7,200.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT
Access/Trail Finishing	6	10.00	0.00	158.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT
Construction of Concrete Pad	1	3.00	0.00	240.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT
Culvert Installation	4	10.00	0.00	120.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT
Finishing/Stabalization	4	10.00	0.00	22.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Clearing and Grubbing - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.2700e-003	0.0890	0.0916	2.3000e-004		3.3600e-003	3.3600e-003		3.0900e-003	3.0900e-003	0.0000	19.8183	19.8183	6.4100e-003	0.0000	19.9786
Total	**8.2700e-003**	**0.0890**	**0.0916**	**2.3000e-004**	**0.0000**	**3.3600e-003**	**3.3600e-003**	**0.0000**	**3.0900e-003**	**3.0900e-003**	**0.0000**	**19.8183**	**19.8183**	**6.4100e-003**	**0.0000**	**19.9786**

3.2 Clearing and Grubbing - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.2800e-003	0.2291	0.0383	7.9000e-004	0.0185	8.7000e-004	0.0193	5.0700e-003	8.4000e-004	5.9100e-003	0.0000	75.2570	75.2570	3.2800e-003	0.0000	75.3390
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	2.1000e-004	2.2000e-003	1.0000e-005	6.2000e-004	0.0000	6.2000e-004	1.6000e-004	0.0000	1.7000e-004	0.0000	0.5423	0.5423	2.0000e-005	0.0000	0.5427
Total	**7.5700e-003**	**0.2293**	**0.0405**	**8.0000e-004**	**0.0191**	**8.7000e-004**	**0.0199**	**5.2300e-003**	**8.4000e-004**	**6.0800e-003**	**0.0000**	**75.7993**	**75.7993**	**3.3000e-003**	**0.0000**	**75.8817**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.2700e-003	0.0890	0.0916	2.3000e-004		3.3600e-003	3.3600e-003		3.0900e-003	3.0900e-003	0.0000	19.8183	19.8183	6.4100e-003	0.0000	19.9785
Total	**8.2700e-003**	**0.0890**	**0.0916**	**2.3000e-004**	**0.0000**	**3.3600e-003**	**3.3600e-003**	**0.0000**	**3.0900e-003**	**3.0900e-003**	**0.0000**	**19.8183**	**19.8183**	**6.4100e-003**	**0.0000**	**19.9785**

3.2 Clearing and Grubbing - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.2800e-003	0.2291	0.0383	7.9000e-004	0.0185	8.7000e-004	0.0193	5.0700e-003	8.4000e-004	5.9100e-003	0.0000	75.2570	75.2570	3.2800e-003	0.0000	75.3390
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	2.1000e-004	2.2000e-003	1.0000e-005	6.2000e-004	0.0000	6.2000e-004	1.6000e-004	0.0000	1.7000e-004	0.0000	0.5423	0.5423	2.0000e-005	0.0000	0.5427
Total	**7.5700e-003**	**0.2293**	**0.0405**	**8.0000e-004**	**0.0191**	**8.7000e-004**	**0.0199**	**5.2300e-003**	**8.4000e-004**	**6.0800e-003**	**0.0000**	**75.7993**	**75.7993**	**3.3000e-003**	**0.0000**	**75.8817**

3.3 Grading- Berm Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0232	0.2724	0.1392	3.8000e-004		0.0105	0.0105		9.6300e-003	9.6300e-003	0.0000	33.7509	33.7509	0.0109	0.0000	34.0238
Total	**0.0232**	**0.2724**	**0.1392**	**3.8000e-004**	**0.0000**	**0.0105**	**0.0105**	**0.0000**	**9.6300e-003**	**9.6300e-003**	**0.0000**	**33.7509**	**33.7509**	**0.0109**	**0.0000**	**34.0238**

3.3 Grading- Berm Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.4100e-003	0.2208	0.0270	4.7000e-004	6.9600e-003	4.1000e-004	7.3700e-003	1.9200e-003	3.9000e-004	2.3100e-003	0.0000	45.0566	45.0566	7.5400e-003	0.0000	45.2452
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.5000e-004	5.5000e-004	5.7300e-003	2.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	1.4100	1.4100	4.0000e-005	0.0000	1.4110
Total	**6.1600e-003**	**0.2213**	**0.0327**	**4.9000e-004**	**8.5700e-003**	**4.2000e-004**	**8.9900e-003**	**2.3500e-003**	**4.0000e-004**	**2.7500e-003**	**0.0000**	**46.4666**	**46.4666**	**7.5800e-003**	**0.0000**	**46.6563**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0232	0.2724	0.1392	3.8000e-004		0.0105	0.0105		9.6300e-003	9.6300e-003	0.0000	33.7508	33.7508	0.0109	0.0000	34.0237
Total	**0.0232**	**0.2724**	**0.1392**	**3.8000e-004**	**0.0000**	**0.0105**	**0.0105**	**0.0000**	**9.6300e-003**	**9.6300e-003**	**0.0000**	**33.7508**	**33.7508**	**0.0109**	**0.0000**	**34.0237**

3.3 Grading- Berm Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.4100e-003	0.2208	0.0270	4.7000e-004	6.9600e-003	4.1000e-004	7.3700e-003	1.9200e-003	3.9000e-004	2.3100e-003	0.0000	45.0566	45.0566	7.5400e-003	0.0000	45.2452
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.5000e-004	5.5000e-004	5.7300e-003	2.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	1.4100	1.4100	4.0000e-005	0.0000	1.4110
Total	**6.1600e-003**	**0.2213**	**0.0327**	**4.9000e-004**	**8.5700e-003**	**4.2000e-004**	**8.9900e-003**	**2.3500e-003**	**4.0000e-004**	**2.7500e-003**	**0.0000**	**46.4666**	**46.4666**	**7.5800e-003**	**0.0000**	**46.6563**

3.4 Grading- Pond and Berm Finishing - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.8900e-003	0.0000	6.8900e-003	7.4000e-004	0.0000	7.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0826	0.7716	0.3689	1.3100e-003		0.0285	0.0285		0.0268	0.0268	0.0000	124.2057	124.2057	0.0237	0.0000	124.7972
Total	**0.0826**	**0.7716**	**0.3689**	**1.3100e-003**	**6.8900e-003**	**0.0285**	**0.0354**	**7.4000e-004**	**0.0268**	**0.0276**	**0.0000**	**124.2057**	**124.2057**	**0.0237**	**0.0000**	**124.7972**

3.4 Grading- Pond and Berm Finishing - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0427	1.3464	0.2241	4.6300e-003	0.1076	5.1000e-003	0.1127	0.0296	4.8800e-003	0.0345	0.0000	440.2574	440.2574	0.0196	0.0000	440.7475
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7400e-003	1.2800e-003	0.0132	4.0000e-005	3.7200e-003	3.0000e-005	3.7500e-003	9.9000e-004	3.0000e-005	1.0100e-003	0.0000	3.2538	3.2538	1.0000e-004	0.0000	3.2562
Total	**0.0444**	**1.3477**	**0.2373**	**4.6700e-003**	**0.1114**	**5.1300e-003**	**0.1165**	**0.0306**	**4.9100e-003**	**0.0355**	**0.0000**	**443.5113**	**443.5113**	**0.0197**	**0.0000**	**444.0038**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.8900e-003	0.0000	6.8900e-003	7.4000e-004	0.0000	7.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0826	0.7716	0.3689	1.3100e-003		0.0285	0.0285		0.0268	0.0268	0.0000	124.2056	124.2056	0.0237	0.0000	124.7971
Total	**0.0826**	**0.7716**	**0.3689**	**1.3100e-003**	**6.8900e-003**	**0.0285**	**0.0354**	**7.4000e-004**	**0.0268**	**0.0276**	**0.0000**	**124.2056**	**124.2056**	**0.0237**	**0.0000**	**124.7971**

3.4 Grading- Pond and Berm Finishing - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0427	1.3464	0.2241	4.6300e-003	0.1076	5.1000e-003	0.1127	0.0296	4.8800e-003	0.0345	0.0000	440.2574	440.2574	0.0196	0.0000	440.7475
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7400e-003	1.2800e-003	0.0132	4.0000e-005	3.7200e-003	3.0000e-005	3.7500e-003	9.9000e-004	3.0000e-005	1.0100e-003	0.0000	3.2538	3.2538	1.0000e-004	0.0000	3.2562
Total	**0.0444**	**1.3477**	**0.2373**	**4.6700e-003**	**0.1114**	**5.1300e-003**	**0.1165**	**0.0306**	**4.9100e-003**	**0.0355**	**0.0000**	**443.5113**	**443.5113**	**0.0197**	**0.0000**	**444.0038**

3.5 Access/Trail Finishing - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.3800e-003	0.0000	4.3800e-003	4.8000e-004	0.0000	4.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0255	0.1622	0.1242	4.4000e-004		5.9800e-003	5.9800e-003		5.8900e-003	5.8900e-003	0.0000	44.3954	44.3954	3.3500e-003	0.0000	44.4792
Total	**0.0255**	**0.1622**	**0.1242**	**4.4000e-004**	**4.3800e-003**	**5.9800e-003**	**0.0104**	**4.8000e-004**	**5.8900e-003**	**6.3700e-003**	**0.0000**	**44.3954**	**44.3954**	**3.3500e-003**	**0.0000**	**44.4792**

3.5 Access/Trail Finishing - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.4000e-004	0.0296	4.9200e-003	1.0000e-004	2.3600e-003	1.1000e-004	2.4700e-003	6.5000e-004	1.1000e-004	7.6000e-004	0.0000	9.6612	9.6612	4.3000e-004	0.0000	9.6720
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	2.1000e-004	2.2000e-003	1.0000e-005	6.2000e-004	0.0000	6.2000e-004	1.6000e-004	0.0000	1.7000e-004	0.0000	0.5423	0.5423	2.0000e-005	0.0000	0.5427
Total	**1.2300e-003**	**0.0298**	**7.1200e-003**	**1.1000e-004**	**2.9800e-003**	**1.1000e-004**	**3.0900e-003**	**8.1000e-004**	**1.1000e-004**	**9.3000e-004**	**0.0000**	**10.2035**	**10.2035**	**4.5000e-004**	**0.0000**	**10.2147**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.3800e-003	0.0000	4.3800e-003	4.8000e-004	0.0000	4.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0255	0.1622	0.1242	4.4000e-004		5.9800e-003	5.9800e-003		5.8900e-003	5.8900e-003	0.0000	44.3953	44.3953	3.3500e-003	0.0000	44.4791
Total	**0.0255**	**0.1622**	**0.1242**	**4.4000e-004**	**4.3800e-003**	**5.9800e-003**	**0.0104**	**4.8000e-004**	**5.8900e-003**	**6.3700e-003**	**0.0000**	**44.3953**	**44.3953**	**3.3500e-003**	**0.0000**	**44.4791**

3.5 Access/Trail Finishing - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.4000e-004	0.0296	4.9200e-003	1.0000e-004	2.3600e-003	1.1000e-004	2.4700e-003	6.5000e-004	1.1000e-004	7.6000e-004	0.0000	9.6612	9.6612	4.3000e-004	0.0000	9.6720
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	2.1000e-004	2.2000e-003	1.0000e-005	6.2000e-004	0.0000	6.2000e-004	1.6000e-004	0.0000	1.7000e-004	0.0000	0.5423	0.5423	2.0000e-005	0.0000	0.5427
Total	**1.2300e-003**	**0.0298**	**7.1200e-003**	**1.1000e-004**	**2.9800e-003**	**1.1000e-004**	**3.0900e-003**	**8.1000e-004**	**1.1000e-004**	**9.3000e-004**	**0.0000**	**10.2035**	**10.2035**	**4.5000e-004**	**0.0000**	**10.2147**

3.6 Construction of Concrete Pad - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.7600e-003	0.0111	9.2500e-003	2.0000e-005		4.3000e-004	4.3000e-004		4.3000e-004	4.3000e-004	0.0000	1.3748	1.3748	1.4000e-004	0.0000	1.3784
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.7600e-003**	**0.0111**	**9.2500e-003**	**2.0000e-005**		**4.3000e-004**	**4.3000e-004**		**4.3000e-004**	**4.3000e-004**	**0.0000**	**1.3748**	**1.3748**	**1.4000e-004**	**0.0000**	**1.3784**

3.6 Construction of Concrete Pad - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4200e-003	0.0449	7.4700e-003	1.5000e-004	3.5900e-003	1.7000e-004	3.7600e-003	9.9000e-004	1.6000e-004	1.1500e-003	0.0000	14.6753	14.6753	6.5000e-004	0.0000	14.6916
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.8000e-004	3.9700e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1200e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.9762	0.9762	3.0000e-005	0.0000	0.9769
Total	**1.9400e-003**	**0.0453**	**0.0114**	**1.6000e-004**	**4.7100e-003**	**1.8000e-004**	**4.8800e-003**	**1.2900e-003**	**1.7000e-004**	**1.4500e-003**	**0.0000**	**15.6514**	**15.6514**	**6.8000e-004**	**0.0000**	**15.6685**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.7600e-003	0.0111	9.2500e-003	2.0000e-005		4.3000e-004	4.3000e-004		4.3000e-004	4.3000e-004	0.0000	1.3748	1.3748	1.4000e-004	0.0000	1.3784
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.7600e-003**	**0.0111**	**9.2500e-003**	**2.0000e-005**		**4.3000e-004**	**4.3000e-004**		**4.3000e-004**	**4.3000e-004**	**0.0000**	**1.3748**	**1.3748**	**1.4000e-004**	**0.0000**	**1.3784**

3.6 Construction of Concrete Pad - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4200e-003	0.0449	7.4700e-003	1.5000e-004	3.5900e-003	1.7000e-004	3.7600e-003	9.9000e-004	1.6000e-004	1.1500e-003	0.0000	14.6753	14.6753	6.5000e-004	0.0000	14.6916
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.8000e-004	3.9700e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1200e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.9762	0.9762	3.0000e-005	0.0000	0.9769
Total	**1.9400e-003**	**0.0453**	**0.0114**	**1.6000e-004**	**4.7100e-003**	**1.8000e-004**	**4.8800e-003**	**1.2900e-003**	**1.7000e-004**	**1.4500e-003**	**0.0000**	**15.6514**	**15.6514**	**6.8000e-004**	**0.0000**	**15.6685**

3.7 Culvert Installation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2300e-003	0.0912	0.0975	2.4000e-004		3.6900e-003	3.6900e-003		3.4000e-003	3.4000e-003	0.0000	20.8311	20.8311	6.7400e-003	0.0000	20.9995
Total	**9.2300e-003**	**0.0912**	**0.0975**	**2.4000e-004**	**0.0000**	**3.6900e-003**	**3.6900e-003**	**0.0000**	**3.4000e-003**	**3.4000e-003**	**0.0000**	**20.8311**	**20.8311**	**6.7400e-003**	**0.0000**	**20.9995**

3.7 Culvert Installation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.1000e-004	0.0224	3.7300e-003	8.0000e-005	1.7900e-003	8.0000e-005	1.8800e-003	4.9000e-004	8.0000e-005	5.7000e-004	0.0000	7.3376	7.3376	3.3000e-004	0.0000	7.3458
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	4.3000e-004	4.4100e-003	1.0000e-005	1.2400e-003	1.0000e-005	1.2500e-003	3.3000e-004	1.0000e-005	3.4000e-004	0.0000	1.0846	1.0846	3.0000e-005	0.0000	1.0854
Total	**1.2900e-003**	**0.0229**	**8.1400e-003**	**9.0000e-005**	**3.0300e-003**	**9.0000e-005**	**3.1300e-003**	**8.2000e-004**	**9.0000e-005**	**9.1000e-004**	**0.0000**	**8.4222**	**8.4222**	**3.6000e-004**	**0.0000**	**8.4312**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2300e-003	0.0912	0.0975	2.4000e-004		3.6900e-003	3.6900e-003		3.4000e-003	3.4000e-003	0.0000	20.8311	20.8311	6.7400e-003	0.0000	20.9995
Total	**9.2300e-003**	**0.0912**	**0.0975**	**2.4000e-004**	**0.0000**	**3.6900e-003**	**3.6900e-003**	**0.0000**	**3.4000e-003**	**3.4000e-003**	**0.0000**	**20.8311**	**20.8311**	**6.7400e-003**	**0.0000**	**20.9995**

3.7 Culvert Installation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.1000e-004	0.0224	3.7300e-003	8.0000e-005	1.7900e-003	8.0000e-005	1.8800e-003	4.9000e-004	8.0000e-005	5.7000e-004	0.0000	7.3376	7.3376	3.3000e-004	0.0000	7.3458
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	4.3000e-004	4.4100e-003	1.0000e-005	1.2400e-003	1.0000e-005	1.2500e-003	3.3000e-004	1.0000e-005	3.4000e-004	0.0000	1.0846	1.0846	3.0000e-005	0.0000	1.0854
Total	**1.2900e-003**	**0.0229**	**8.1400e-003**	**9.0000e-005**	**3.0300e-003**	**9.0000e-005**	**3.1300e-003**	**8.2000e-004**	**9.0000e-005**	**9.1000e-004**	**0.0000**	**8.4222**	**8.4222**	**3.6000e-004**	**0.0000**	**8.4312**

3.8 Finishing/Stabalization - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0102	0.0880	0.0675	2.2000e-004		3.3600e-003	3.3600e-003		3.0900e-003	3.0900e-003	0.0000	19.3580	19.3580	6.2600e-003	0.0000	19.5145
Total	**0.0102**	**0.0880**	**0.0675**	**2.2000e-004**	**0.0000**	**3.3600e-003**	**3.3600e-003**	**0.0000**	**3.0900e-003**	**3.0900e-003**	**0.0000**	**19.3580**	**19.3580**	**6.2600e-003**	**0.0000**	**19.5145**

3.8 Finishing/Stabalization - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	4.1100e-003	6.8000e-004	1.0000e-005	3.3000e-004	2.0000e-005	3.4000e-004	9.0000e-005	1.0000e-005	1.1000e-004	0.0000	1.3452	1.3452	6.0000e-005	0.0000	1.3467
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.7000e-004	6.4000e-004	6.6100e-003	2.0000e-005	1.8600e-003	1.0000e-005	1.8700e-003	4.9000e-004	1.0000e-005	5.1000e-004	0.0000	1.6269	1.6269	5.0000e-005	0.0000	1.6281
Total	**1.0000e-003**	**4.7500e-003**	**7.2900e-003**	**3.0000e-005**	**2.1900e-003**	**3.0000e-005**	**2.2100e-003**	**5.8000e-004**	**2.0000e-005**	**6.2000e-004**	**0.0000**	**2.9722**	**2.9722**	**1.1000e-004**	**0.0000**	**2.9749**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0102	0.0880	0.0675	2.2000e-004		3.3600e-003	3.3600e-003		3.0900e-003	3.0900e-003	0.0000	19.3580	19.3580	6.2600e-003	0.0000	19.5145
Total	**0.0102**	**0.0880**	**0.0675**	**2.2000e-004**	**0.0000**	**3.3600e-003**	**3.3600e-003**	**0.0000**	**3.0900e-003**	**3.0900e-003**	**0.0000**	**19.3580**	**19.3580**	**6.2600e-003**	**0.0000**	**19.5145**

3.8 Finishing/Stabalization - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	4.1100e-003	6.8000e-004	1.0000e-005	3.3000e-004	2.0000e-005	3.4000e-004	9.0000e-005	1.0000e-005	1.1000e-004	0.0000	1.3452	1.3452	6.0000e-005	0.0000	1.3467
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.7000e-004	6.4000e-004	6.6100e-003	2.0000e-005	1.8600e-003	1.0000e-005	1.8700e-003	4.9000e-004	1.0000e-005	5.1000e-004	0.0000	1.6269	1.6269	5.0000e-005	0.0000	1.6281
Total	**1.0000e-003**	**4.7500e-003**	**7.2900e-003**	**3.0000e-005**	**2.1900e-003**	**3.0000e-005**	**2.2100e-003**	**5.8000e-004**	**2.0000e-005**	**6.2000e-004**	**0.0000**	**2.9722**	**2.9722**	**1.1000e-004**	**0.0000**	**2.9749**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0465	0.3210	0.4974	1.8700e-003	0.1363	1.6700e-003	0.1379	0.0365	1.5700e-003	0.0381	0.0000	172.1341	172.1341	8.7900e-003	0.0000	172.3539
Unmitigated	0.0465	0.3210	0.4974	1.8700e-003	0.1363	1.6700e-003	0.1379	0.0365	1.5700e-003	0.0381	0.0000	172.1341	172.1341	8.7900e-003	0.0000	172.3539

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	39.69	477.75	351.54	362,088	362,088
Total	39.69	477.75	351.54	362,088	362,088

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.552050	0.036079	0.182449	0.124563	0.019215	0.004844	0.016098	0.055414	0.001187	0.001496	0.005121	0.000613	0.000871

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.6200e-003	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.8000e-004	3.8000e-004	0.0000	0.0000	4.0000e-004
Unmitigated	8.6200e-003	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.8000e-004	3.8000e-004	0.0000	0.0000	4.0000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	8.6000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.8000e-004	3.8000e-004	0.0000	0.0000	4.0000e-004
Total	**8.6200e-003**	**0.0000**	**1.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.8000e-004**	**3.8000e-004**	**0.0000**	**0.0000**	**4.0000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	8.6000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.8000e-004	3.8000e-004	0.0000	0.0000	4.0000e-004
Total	**8.6200e-003**	**0.0000**	**1.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.8000e-004**	**3.8000e-004**	**0.0000**	**0.0000**	**4.0000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	25.4763	1.1500e-003	2.4000e-004	25.5761
Unmitigated	25.4763	1.1500e-003	2.4000e-004	25.5761

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 25.0211	25.4763	1.1500e-003	2.4000e-004	25.5761
Total		**25.4763**	**1.1500e-003**	**2.4000e-004**	**25.5761**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 25.0211	25.4763	1.1500e-003	2.4000e-004	25.5761
Total		**25.4763**	**1.1500e-003**	**2.4000e-004**	**25.5761**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.3674	0.0217	0.0000	0.9103
Unmitigated	0.3674	0.0217	0.0000	0.9103

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.81	0.3674	0.0217	0.0000	0.9103
Total		**0.3674**	**0.0217**	**0.0000**	**0.9103**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.81	0.3674	0.0217	0.0000	0.9103
Total		**0.3674**	**0.0217**	**0.0000**	**0.9103**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Redtail- NEWS Project

Merced County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	21.00	Acre	21.00	914,760.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Redtail- NEWS Project - Merced County, Summer

Project Characteristics -

Land Use -

Construction Phase - Total days based on Section 2 of restoration proposal

Off-road Equipment - Based on model specs

Off-road Equipment - Based on Model Specs

Off-road Equipment -

Off-road Equipment - Based on model specs

Off-road Equipment - Based on model specs

Off-road Equipment - Based on model specs

Off-road Equipment - Based on model Specs

Trips and VMT - Based on Section 2 construction estimates

Grading - Max graded land acreage

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	35.00	13.00
tblConstructionPhase	NumDays	35.00	30.00
tblConstructionPhase	NumDays	35.00	10.00
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	10.00	30.00
tblGrading	AcresOfGrading	26.00	0.00
tblGrading	AcresOfGrading	90.00	13.00
tblGrading	AcresOfGrading	20.00	8.00
tblGrading	MaterialImported	0.00	2,528.00
tblOffRoadEquipment	HorsePower	187.00	535.00
tblOffRoadEquipment	HorsePower	187.00	535.00
tblOffRoadEquipment	HorsePower	97.00	150.00

tblOffRoadEquipment	HorsePower	97.00	168.00
tblOffRoadEquipment	HorsePower	212.00	215.00
tblOffRoadEquipment	HorsePower	212.00	215.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	88.00	24.00
tblOffRoadEquipment	HorsePower	80.00	157.00
tblOffRoadEquipment	HorsePower	80.00	157.00
tblOffRoadEquipment	HorsePower	203.00	277.00
tblOffRoadEquipment	HorsePower	203.00	277.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	36.00
tblTripsAndVMT	HaulingTripLength	20.00	5.20
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,200.00
tblTripsAndVMT	HaulingTripNumber	0.00	3,120.00
tblTripsAndVMT	HaulingTripNumber	0.00	7,200.00

tblTripsAndVMT	HaulingTripNumber	316.00	158.00
tblTripsAndVMT	HaulingTripNumber	0.00	240.00
tblTripsAndVMT	HaulingTripNumber	0.00	120.00
tblTripsAndVMT	HaulingTripNumber	0.00	22.00
tblTripsAndVMT	WorkerTripNumber	25.00	10.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	12.9587	214.6064	66.2373	0.5368	9.4300	3.9152	13.3452	2.5059	3.6562	6.1621	0.0000	55,751.5624	55,751.5624	6.1848	0.0000	55,906.1826
Maximum	**12.9587**	**214.6064**	**66.2373**	**0.5368**	**9.4300**	**3.9152**	**13.3452**	**2.5059**	**3.6562**	**6.1621**	**0.0000**	**55,751.5624**	**55,751.5624**	**6.1848**	**0.0000**	**55,906.1826**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	12.9587	214.6064	66.2373	0.5368	9.4300	3.9152	13.3452	2.5059	3.6562	6.1621	0.0000	55,751.5624	55,751.5624	6.1848	0.0000	55,906.1826
Maximum	**12.9587**	**214.6064**	**66.2373**	**0.5368**	**9.4300**	**3.9152**	**13.3452**	**2.5059**	**3.6562**	**6.1621**	**0.0000**	**55,751.5624**	**55,751.5624**	**6.1848**	**0.0000**	**55,906.1826**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Daily Max in Error (CalEEMod overlapped phases)
See individual phases for results

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0473	2.0000e-005	2.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.6000e-003	4.6000e-003	1.0000e-005		4.9000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.9928	5.6125	9.5112	0.0355	2.5081	0.0297	2.5378	0.6708	0.0279	0.6987		3,600.3752	3,600.3752	0.1722		3,604.6812
Total	**1.0401**	**5.6125**	**9.5133**	**0.0355**	**2.5081**	**0.0297**	**2.5378**	**0.6708**	**0.0279**	**0.6987**		**3,600.3798**	**3,600.3798**	**0.1723**	**0.0000**	**3,604.6861**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0473	2.0000e-005	2.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.6000e-003	4.6000e-003	1.0000e-005		4.9000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.9928	5.6125	9.5112	0.0355	2.5081	0.0297	2.5378	0.6708	0.0279	0.6987		3,600.3752	3,600.3752	0.1722		3,604.6812
Total	**1.0401**	**5.6125**	**9.5133**	**0.0355**	**2.5081**	**0.0297**	**2.5378**	**0.6708**	**0.0279**	**0.6987**		**3,600.3798**	**3,600.3798**	**0.1723**	**0.0000**	**3,604.6861**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Clearing and Grubbing	Site Preparation	3/1/2021	3/12/2021	5	10	
2	Grading- Berm Construction	Grading	4/13/2021	4/29/2021	5	13	
3	Grading- Pond and Berm Finishing	Grading	4/27/2021	6/7/2021	5	30	
4	Access/Trail Finishing	Grading	6/8/2021	6/21/2021	5	10	
5	Construction of Concrete Pad	Paving	6/24/2021	9/15/2021	5	60	
6	Culvert Installation	Site Preparation	9/16/2021	10/13/2021	5	20	
7	Finishing/Stabalization	Site Preparation	10/14/2021	11/24/2021	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Clearing and Grubbing	Excavators	4	8.00	201	0.38
Clearing and Grubbing	Skid Steer Loaders	4	8.00	74	0.37
Clearing and Grubbing	Tractors/Loaders/Backhoes	2	8.00	150	0.37
Grading- Berm Construction	Crawler Tractors	4	8.00	215	0.43
Grading- Berm Construction	Rollers	2	8.00	157	0.38
Grading- Berm Construction	Rubber Tired Loaders	2	8.00	277	0.36
Grading- Pond and Berm Finishing	Crawler Tractors	4	8.00	215	0.43
Grading- Pond and Berm Finishing	Graders	2	8.00	535	0.41
Grading- Pond and Berm Finishing	Rubber Tired Loaders	2	8.00	277	0.36
Access/Trail Finishing	Graders	4	8.00	535	0.41
Access/Trail Finishing	Rollers	2	8.00	157	0.38
Construction of Concrete Pad	Cement and Mortar Mixers	1	8.00	9	0.56
Culvert Installation	Excavators	2	8.00	201	0.38
Culvert Installation	Tractors/Loaders/Backhoes	2	8.00	168	0.37
Finishing/Stabalization	Excavators	2	8.00	201	0.38
Finishing/Stabalization	Other General Industrial Equipment	2	8.00	24	0.34

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Clearing and Grubbing	10	10.00	0.00	1,200.00	16.80	6.60	36.00	LD_Mix	HDT_Mix	HHDT
Grading- Berm Construction	8	20.00	0.00	3,120.00	16.80	6.60	5.20	LD_Mix	HDT_Mix	HHDT
Grading- Pond and Berm Finishing	8	20.00	0.00	7,200.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT
Access/Trail Finishing	6	10.00	0.00	158.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT
Construction of Concrete Pad	1	3.00	0.00	240.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT
Culvert Installation	4	10.00	0.00	120.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT
Finishing/Stabalization	4	10.00	0.00	22.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Clearing and Grubbing - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.6537	17.7983	18.3251	0.0451		0.6713	0.6713		0.6176	0.6176		4,369.1892	4,369.1892	1.4131		4,404.5163
Total	**1.6537**	**17.7983**	**18.3251**	**0.0451**	**0.0000**	**0.6713**	**0.6713**	**0.0000**	**0.6176**	**0.6176**		**4,369.1892**	**4,369.1892**	**1.4131**		**4,404.5163**

3.2 Clearing and Grubbing - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.4430	44.4816	7.4294	0.1591	3.7858	0.1737	3.9595	1.0384	0.1662	1.2046		16,686.9725	16,686.9725	0.6879		16,704.1695
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0639	0.0394	0.5187	1.3100e-003	0.1277	9.1000e-004	0.1286	0.0339	8.3000e-004	0.0347		130.8426	130.8426	3.9500e-003		130.9414
Total	**1.5069**	**44.5210**	**7.9481**	**0.1604**	**3.9135**	**0.1746**	**4.0882**	**1.0723**	**0.1670**	**1.2394**		**16,817.8151**	**16,817.8151**	**0.6918**		**16,835.1109**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.6537	17.7983	18.3251	0.0451		0.6713	0.6713		0.6176	0.6176	0.0000	4,369.1892	4,369.1892	1.4131		4,404.5163
Total	**1.6537**	**17.7983**	**18.3251**	**0.0451**	**0.0000**	**0.6713**	**0.6713**	**0.0000**	**0.6176**	**0.6176**	**0.0000**	**4,369.1892**	**4,369.1892**	**1.4131**		**4,404.5163**

3.2 Clearing and Grubbing - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.4430	44.4816	7.4294	0.1591	3.7858	0.1737	3.9595	1.0384	0.1662	1.2046		16,686.9725	16,686.9725	0.6879		16,704.1695
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0639	0.0394	0.5187	1.3100e-003	0.1277	9.1000e-004	0.1286	0.0339	8.3000e-004	0.0347		130.8426	130.8426	3.9500e-003		130.9414
Total	**1.5069**	**44.5210**	**7.9481**	**0.1604**	**3.9135**	**0.1746**	**4.0882**	**1.0723**	**0.1670**	**1.2394**		**16,817.8151**	**16,817.8151**	**0.6918**		**16,835.1109**

3.3 Grading- Berm Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	3.5704	41.9036	21.4140	0.0591		1.6110	1.6110		1.4821	1.4821		5,723.6877	5,723.6877	1.8512		5,769.9666
Total	**3.5704**	**41.9036**	**21.4140**	**0.0591**	**0.0000**	**1.6110**	**1.6110**	**0.0000**	**1.4821**	**1.4821**		**5,723.6877**	**5,723.6877**	**1.8512**		**5,769.9666**

3.3 Grading- Berm Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8053	33.9311	3.6573	0.0747	1.0981	0.0610	1.1591	0.3016	0.0584	0.3600		7,832.2775	7,832.2775	1.2087		7,862.4945
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1279	0.0788	1.0373	2.6300e-003	0.2555	1.8100e-003	0.2573	0.0678	1.6700e-003	0.0694		261.6851	261.6851	7.9100e-003		261.8828
Total	**0.9332**	**34.0099**	**4.6947**	**0.0773**	**1.3536**	**0.0628**	**1.4164**	**0.3693**	**0.0601**	**0.4294**		**8,093.9627**	**8,093.9627**	**1.2166**		**8,124.3774**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	3.5704	41.9036	21.4140	0.0591		1.6110	1.6110		1.4821	1.4821	0.0000	5,723.6877	5,723.6877	1.8512		5,769.9666
Total	**3.5704**	**41.9036**	**21.4140**	**0.0591**	**0.0000**	**1.6110**	**1.6110**	**0.0000**	**1.4821**	**1.4821**	**0.0000**	**5,723.6877**	**5,723.6877**	**1.8512**		**5,769.9666**

3.3 Grading- Berm Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8053	33.9311	3.6573	0.0747	1.0981	0.0610	1.1591	0.3016	0.0584	0.3600		7,832.2775	7,832.2775	1.2087		7,862.4945
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1279	0.0788	1.0373	2.6300e-003	0.2555	1.8100e-003	0.2573	0.0678	1.6700e-003	0.0694		261.6851	261.6851	7.9100e-003		261.8828
Total	**0.9332**	**34.0099**	**4.6947**	**0.0773**	**1.3536**	**0.0628**	**1.4164**	**0.3693**	**0.0601**	**0.4294**		**8,093.9627**	**8,093.9627**	**1.2166**		**8,124.3774**

3.4 Grading- Pond and Berm Finishing - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4596	0.0000	0.4596	0.0496	0.0000	0.0496			0.0000			0.0000
Off-Road	5.5088	51.4378	24.5962	0.0875		1.9014	1.9014		1.7889	1.7889		9,127.5568	9,127.5568	1.7388		9,171.0275
Total	**5.5088**	**51.4378**	**24.5962**	**0.0875**	**0.4596**	**1.9014**	**2.3610**	**0.0496**	**1.7889**	**1.8385**		**9,127.5568**	**9,127.5568**	**1.7388**		**9,171.0275**

3.4 Grading- Pond and Berm Finishing - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.8184	87.1764	14.4951	0.3103	7.3615	0.3382	7.6996	2.0192	0.3235	2.3428		32,544.6701	32,544.6701	1.3703		32,578.9284
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1279	0.0788	1.0373	2.6300e-003	0.2555	1.8100e-003	0.2573	0.0678	1.6700e-003	0.0694		261.6851	261.6851	7.9100e-003		261.8828
Total	**2.9463**	**87.2552**	**15.5324**	**0.3129**	**7.6169**	**0.3400**	**7.9569**	**2.0870**	**0.3252**	**2.4122**		**32,806.3552**	**32,806.3552**	**1.3782**		**32,840.8112**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4596	0.0000	0.4596	0.0496	0.0000	0.0496			0.0000			0.0000
Off-Road	5.5088	51.4378	24.5962	0.0875		1.9014	1.9014		1.7889	1.7889	0.0000	9,127.5568	9,127.5568	1.7388		9,171.0275
Total	**5.5088**	**51.4378**	**24.5962**	**0.0875**	**0.4596**	**1.9014**	**2.3610**	**0.0496**	**1.7889**	**1.8385**	**0.0000**	**9,127.5568**	**9,127.5568**	**1.7388**		**9,171.0275**

3.4 Grading- Pond and Berm Finishing - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.8184	87.1764	14.4951	0.3103	7.3615	0.3382	7.6996	2.0192	0.3235	2.3428		32,544.6701	32,544.6701	1.3703		32,578.9284
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1279	0.0788	1.0373	2.6300e-003	0.2555	1.8100e-003	0.2573	0.0678	1.6700e-003	0.0694		261.6851	261.6851	7.9100e-003		261.8828
Total	**2.9463**	**87.2552**	**15.5324**	**0.3129**	**7.6169**	**0.3400**	**7.9569**	**2.0870**	**0.3252**	**2.4122**		**32,806.3552**	**32,806.3552**	**1.3782**		**32,840.8112**

3.5 Access/Trail Finishing - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.8770	0.0000	0.8770	0.0959	0.0000	0.0959			0.0000			0.0000
Off-Road	5.0948	32.4332	24.8347	0.0876		1.1951	1.1951		1.1787	1.1787		9,787.5047	9,787.5047	0.7391		9,805.9811
Total	**5.0948**	**32.4332**	**24.8347**	**0.0876**	**0.8770**	**1.1951**	**2.0721**	**0.0959**	**1.1787**	**1.2747**		**9,787.5047**	**9,787.5047**	**0.7391**		**9,805.9811**

3.5 Access/Trail Finishing - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1856	5.7391	0.9543	0.0204	0.4846	0.0223	0.5069	0.1329	0.0213	0.1542		2,142.5241	2,142.5241	0.0902		2,144.7795
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0639	0.0394	0.5187	1.3100e-003	0.1277	9.1000e-004	0.1286	0.0339	8.3000e-004	0.0347		130.8426	130.8426	3.9500e-003		130.9414
Total	**0.2495**	**5.7785**	**1.4729**	**0.0217**	**0.6124**	**0.0232**	**0.6355**	**0.1668**	**0.0221**	**0.1889**		**2,273.3667**	**2,273.3667**	**0.0942**		**2,275.7209**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.8770	0.0000	0.8770	0.0959	0.0000	0.0959			0.0000			0.0000
Off-Road	5.0948	32.4332	24.8347	0.0876		1.1951	1.1951		1.1787	1.1787	0.0000	9,787.5047	9,787.5047	0.7391		9,805.9811
Total	**5.0948**	**32.4332**	**24.8347**	**0.0876**	**0.8770**	**1.1951**	**2.0721**	**0.0959**	**1.1787**	**1.2747**	**0.0000**	**9,787.5047**	**9,787.5047**	**0.7391**		**9,805.9811**

3.5 Access/Trail Finishing - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1856	5.7391	0.9543	0.0204	0.4846	0.0223	0.5069	0.1329	0.0213	0.1542		2,142.5241	2,142.5241	0.0902		2,144.7795
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0639	0.0394	0.5187	1.3100e-003	0.1277	9.1000e-004	0.1286	0.0339	8.3000e-004	0.0347		130.8426	130.8426	3.9500e-003		130.9414
Total	**0.2495**	**5.7785**	**1.4729**	**0.0217**	**0.6124**	**0.0232**	**0.6355**	**0.1668**	**0.0221**	**0.1889**		**2,273.3667**	**2,273.3667**	**0.0942**		**2,275.7209**

3.6 Construction of Concrete Pad - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0588	0.3682	0.3084	7.1000e-004		0.0143	0.0143		0.0143	0.0143		50.5163	50.5163	5.2400e-003		50.6474
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0588**	**0.3682**	**0.3084**	**7.1000e-004**		**0.0143**	**0.0143**		**0.0143**	**0.0143**		**50.5163**	**50.5163**	**5.2400e-003**		**50.6474**

3.6 Construction of Concrete Pad - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0470	1.4529	0.2416	5.1700e-003	0.1227	5.6400e-003	0.1283	0.0337	5.3900e-003	0.0391		542.4112	542.4112	0.0228		542.9821
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0192	0.0118	0.1556	3.9000e-004	0.0383	2.7000e-004	0.0386	0.0102	2.5000e-004	0.0104		39.2528	39.2528	1.1900e-003		39.2824
Total	**0.0662**	**1.4648**	**0.3972**	**5.5600e-003**	**0.1610**	**5.9100e-003**	**0.1669**	**0.0438**	**5.6400e-003**	**0.0495**		**581.6639**	**581.6639**	**0.0240**		**582.2646**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0588	0.3682	0.3084	7.1000e-004		0.0143	0.0143		0.0143	0.0143	0.0000	50.5163	50.5163	5.2400e-003		50.6474
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0588**	**0.3682**	**0.3084**	**7.1000e-004**		**0.0143**	**0.0143**		**0.0143**	**0.0143**	**0.0000**	**50.5163**	**50.5163**	**5.2400e-003**		**50.6474**

3.6 Construction of Concrete Pad - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0470	1.4529	0.2416	5.1700e-003	0.1227	5.6400e-003	0.1283	0.0337	5.3900e-003	0.0391		542.4112	542.4112	0.0228		542.9821
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0192	0.0118	0.1556	3.9000e-004	0.0383	2.7000e-004	0.0386	0.0102	2.5000e-004	0.0104		39.2528	39.2528	1.1900e-003		39.2824
Total	**0.0662**	**1.4648**	**0.3972**	**5.5600e-003**	**0.1610**	**5.9100e-003**	**0.1669**	**0.0438**	**5.6400e-003**	**0.0495**		**581.6639**	**581.6639**	**0.0240**		**582.2646**

3.7 Culvert Installation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.9232	9.1173	9.7491	0.0237		0.3691	0.3691		0.3395	0.3395		2,296.2337	2,296.2337	0.7427		2,314.7999
Total	**0.9232**	**9.1173**	**9.7491**	**0.0237**	**0.0000**	**0.3691**	**0.3691**	**0.0000**	**0.3395**	**0.3395**		**2,296.2337**	**2,296.2337**	**0.7427**		**2,314.7999**

3.7 Culvert Installation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0705	2.1794	0.3624	7.7600e-003	0.1840	8.4500e-003	0.1925	0.0505	8.0900e-003	0.0586		813.6168	813.6168	0.0343		814.4732
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0639	0.0394	0.5187	1.3100e-003	0.1277	9.1000e-004	0.1286	0.0339	8.3000e-004	0.0347		130.8426	130.8426	3.9500e-003		130.9414
Total	**0.1344**	**2.2188**	**0.8810**	**9.0700e-003**	**0.3118**	**9.3600e-003**	**0.3211**	**0.0844**	**8.9200e-003**	**0.0933**		**944.4593**	**944.4593**	**0.0382**		**945.4146**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.9232	9.1173	9.7491	0.0237		0.3691	0.3691		0.3395	0.3395	0.0000	2,296.2337	2,296.2337	0.7427		2,314.7999
Total	**0.9232**	**9.1173**	**9.7491**	**0.0237**	**0.0000**	**0.3691**	**0.3691**	**0.0000**	**0.3395**	**0.3395**	**0.0000**	**2,296.2337**	**2,296.2337**	**0.7427**		**2,314.7999**

3.7 Culvert Installation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0705	2.1794	0.3624	7.7600e-003	0.1840	8.4500e-003	0.1925	0.0505	8.0900e-003	0.0586		813.6168	813.6168	0.0343		814.4732
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0639	0.0394	0.5187	1.3100e-003	0.1277	9.1000e-004	0.1286	0.0339	8.3000e-004	0.0347		130.8426	130.8426	3.9500e-003		130.9414
Total	**0.1344**	**2.2188**	**0.8810**	**9.0700e-003**	**0.3118**	**9.3600e-003**	**0.3211**	**0.0844**	**8.9200e-003**	**0.0933**		**944.4593**	**944.4593**	**0.0382**		**945.4146**

3.8 Finishing/Stabalization - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6779	5.8694	4.5018	0.0147		0.2240	0.2240		0.2061	0.2061		1,422.5690	1,422.5690	0.4601		1,434.0712
Total	**0.6779**	**5.8694**	**4.5018**	**0.0147**	**0.0000**	**0.2240**	**0.2240**	**0.0000**	**0.2061**	**0.2061**		**1,422.5690**	**1,422.5690**	**0.4601**		**1,434.0712**

3.8 Finishing/Stabalization - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.6100e-003	0.2664	0.0443	9.5000e-004	0.0225	1.0300e-003	0.0235	6.1700e-003	9.9000e-004	7.1600e-003		99.4421	99.4421	4.1900e-003		99.5467
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0639	0.0394	0.5187	1.3100e-003	0.1277	9.1000e-004	0.1286	0.0339	8.3000e-004	0.0347		130.8426	130.8426	3.9500e-003		130.9414
Total	**0.0726**	**0.3058**	**0.5630**	**2.2600e-003**	**0.1502**	**1.9400e-003**	**0.1522**	**0.0400**	**1.8200e-003**	**0.0419**		**230.2846**	**230.2846**	**8.1400e-003**		**230.4882**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6779	5.8694	4.5018	0.0147		0.2240	0.2240		0.2061	0.2061	0.0000	1,422.5690	1,422.5690	0.4601		1,434.0712
Total	**0.6779**	**5.8694**	**4.5018**	**0.0147**	**0.0000**	**0.2240**	**0.2240**	**0.0000**	**0.2061**	**0.2061**	**0.0000**	**1,422.5690**	**1,422.5690**	**0.4601**		**1,434.0712**

3.8 Finishing/Stabalization - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.6100e-003	0.2664	0.0443	9.5000e-004	0.0225	1.0300e-003	0.0235	6.1700e-003	9.9000e-004	7.1600e-003		99.4421	99.4421	4.1900e-003		99.5467
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0639	0.0394	0.5187	1.3100e-003	0.1277	9.1000e-004	0.1286	0.0339	8.3000e-004	0.0347		130.8426	130.8426	3.9500e-003		130.9414
Total	**0.0726**	**0.3058**	**0.5630**	**2.2600e-003**	**0.1502**	**1.9400e-003**	**0.1522**	**0.0400**	**1.8200e-003**	**0.0419**		**230.2846**	**230.2846**	**8.1400e-003**		**230.4882**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.9928	5.6125	9.5112	0.0355	2.5081	0.0297	2.5378	0.6708	0.0279	0.6987		3,600.3752	3,600.3752	0.1722		3,604.6812
Unmitigated	0.9928	5.6125	9.5112	0.0355	2.5081	0.0297	2.5378	0.6708	0.0279	0.6987		3,600.3752	3,600.3752	0.1722		3,604.6812

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	39.69	477.75	351.54	362,088	362,088
Total	39.69	477.75	351.54	362,088	362,088

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.552050	0.036079	0.182449	0.124563	0.019215	0.004844	0.016098	0.055414	0.001187	0.001496	0.005121	0.000613	0.000871

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0473	2.0000e-005	2.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.6000e-003	4.6000e-003	1.0000e-005		4.9000e-003
Unmitigated	0.0473	2.0000e-005	2.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.6000e-003	4.6000e-003	1.0000e-005		4.9000e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0471					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.0000e-004	2.0000e-005	2.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.6000e-003	4.6000e-003	1.0000e-005		4.9000e-003
Total	**0.0473**	**2.0000e-005**	**2.1500e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**4.6000e-003**	**4.6000e-003**	**1.0000e-005**		**4.9000e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0471					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.0000e-004	2.0000e-005	2.1500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.6000e-003	4.6000e-003	1.0000e-005		4.9000e-003
Total	**0.0473**	**2.0000e-005**	**2.1500e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**4.6000e-003**	**4.6000e-003**	**1.0000e-005**		**4.9000e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Redtail- Wetlands Project

Merced County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	14.00	Acre	14.00	609,840.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Based on Section 2 report

Off-road Equipment - Based on model specs

Off-road Equipment - Based on model specs

Off-road Equipment - based on model specs

Off-road Equipment - Based on model specs

Trips and VMT - Estimations

Grading - Max acres graded

Redtail- Wetlands Project - Merced County, Annual

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	0.06	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.8440e-003	0.00
tblFleetMix	MCY	5.1210e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	8.7100e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.1870e-003	0.00
tblFleetMix	SBUS	6.1300e-004	0.00
tblFleetMix	UBUS	1.4960e-003	0.00
tblGrading	AcresOfGrading	90.00	14.00
tblGrading	MaterialExported	0.00	550.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	212.00	215.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	124.00	155.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	HorsePower	97.00	168.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	1.20	0.95
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00

tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripNumber	69.00	110.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblWater	OutdoorWaterUseRate	16,680,738.90	13,106,294.85

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0671	0.7543	0.5084	1.3200e-003	0.0139	0.0284	0.0423	2.5400e-003	0.0261	0.0287	0.0000	116.5038	116.5038	0.0345	0.0000	117.3673
Maximum	**0.0671**	**0.7543**	**0.5084**	**1.3200e-003**	**0.0139**	**0.0284**	**0.0423**	**2.5400e-003**	**0.0261**	**0.0287**	**0.0000**	**116.5038**	**116.5038**	**0.0345**	**0.0000**	**117.3673**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0671	0.7543	0.5084	1.3200e-003	0.0139	0.0284	0.0423	2.5400e-003	0.0261	0.0287	0.0000	116.5037	116.5037	0.0345	0.0000	117.3672
Maximum	**0.0671**	**0.7543**	**0.5084**	**1.3200e-003**	**0.0139**	**0.0284**	**0.0423**	**2.5400e-003**	**0.0261**	**0.0287**	**0.0000**	**116.5037**	**116.5037**	**0.0345**	**0.0000**	**117.3672**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
3	9-1-2021	9-30-2021	0.4558	0.4558
		Highest	0.4558	0.4558

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.7500e-003	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.7000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0771	0.0000	0.0771	0.0189	0.0000	0.0189	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.1928	0.0000	0.1928	0.0114	0.0000	0.4778
Water						0.0000	0.0000		0.0000	0.0000	0.0000	13.3447	13.3447	6.0000e-004	1.2000e-004	13.3970
Total	**5.7500e-003**	**0.0000**	**1.3000e-004**	**0.0000**	**0.0771**	**0.0000**	**0.0771**	**0.0189**	**0.0000**	**0.0189**	**0.1928**	**13.3450**	**13.5378**	**0.0120**	**1.2000e-004**	**13.8750**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.7500e-003	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.7000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0771	0.0000	0.0771	0.0189	0.0000	0.0189	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.1928	0.0000	0.1928	0.0114	0.0000	0.4778
Water						0.0000	0.0000		0.0000	0.0000	0.0000	13.3447	13.3447	6.0000e-004	1.2000e-004	13.3970
Total	**5.7500e-003**	**0.0000**	**1.3000e-004**	**0.0000**	**0.0771**	**0.0000**	**0.0771**	**0.0189**	**0.0000**	**0.0189**	**0.1928**	**13.3450**	**13.5378**	**0.0120**	**1.2000e-004**	**13.8750**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	9/1/2021	10/12/2021	5	30	
2	Civil Construction	Trenching	10/6/2021	11/16/2021	5	30	
3	Planting	Site Preparation	11/17/2021	11/30/2021	5	10	
4	Inoculum Collection	Site Preparation	12/1/2021	12/14/2021	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 14

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Crawler Tractors	2	8.00	215	0.43
Grading	Excavators	1	8.00	201	0.38
Grading	Scrapers	2	8.00	367	0.48
Civil Construction	Excavators	2	8.00	201	0.38
Civil Construction	Tractors/Loaders/Backhoes	2	8.00	168	0.37
Planting	Skid Steer Loaders	2	8.00	74	0.37
Inoculum Collection	Off-Highway Tractors	1	8.00	155	0.44

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	5	13.00	0.00	110.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT
Civil Construction	4	10.00	0.00	0.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT
Planting	2	5.00	0.00	0.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT
Inoculum Collection	1	3.00	0.00	2.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.4500e-003	0.0000	7.4500e-003	8.1000e-004	0.0000	8.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0479	0.5676	0.3065	7.9000e-004		0.0215	0.0215		0.0198	0.0198	0.0000	69.5850	69.5850	0.0225	0.0000	70.1477
Total	**0.0479**	**0.5676**	**0.3065**	**7.9000e-004**	**7.4500e-003**	**0.0215**	**0.0290**	**8.1000e-004**	**0.0198**	**0.0206**	**0.0000**	**69.5850**	**69.5850**	**0.0225**	**0.0000**	**70.1477**

3.2 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.5000e-004	0.0206	3.4200e-003	7.0000e-005	1.6400e-003	8.0000e-005	1.7200e-003	4.5000e-004	7.0000e-005	5.3000e-004	0.0000	6.7262	6.7262	3.0000e-004	0.0000	6.7336
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1300e-003	8.3000e-004	8.5900e-003	2.0000e-005	2.4200e-003	2.0000e-005	2.4400e-003	6.4000e-004	2.0000e-005	6.6000e-004	0.0000	2.1150	2.1150	6.0000e-005	0.0000	2.1166
Total	**1.7800e-003**	**0.0214**	**0.0120**	**9.0000e-005**	**4.0600e-003**	**1.0000e-004**	**4.1600e-003**	**1.0900e-003**	**9.0000e-005**	**1.1900e-003**	**0.0000**	**8.8411**	**8.8411**	**3.6000e-004**	**0.0000**	**8.8502**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.4500e-003	0.0000	7.4500e-003	8.1000e-004	0.0000	8.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0479	0.5676	0.3065	7.9000e-004		0.0215	0.0215		0.0198	0.0198	0.0000	69.5850	69.5850	0.0225	0.0000	70.1476
Total	**0.0479**	**0.5676**	**0.3065**	**7.9000e-004**	**7.4500e-003**	**0.0215**	**0.0290**	**8.1000e-004**	**0.0198**	**0.0206**	**0.0000**	**69.5850**	**69.5850**	**0.0225**	**0.0000**	**70.1476**

3.2 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.5000e-004	0.0206	3.4200e-003	7.0000e-005	1.6400e-003	8.0000e-005	1.7200e-003	4.5000e-004	7.0000e-005	5.3000e-004	0.0000	6.7262	6.7262	3.0000e-004	0.0000	6.7336
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1300e-003	8.3000e-004	8.5900e-003	2.0000e-005	2.4200e-003	2.0000e-005	2.4400e-003	6.4000e-004	2.0000e-005	6.6000e-004	0.0000	2.1150	2.1150	6.0000e-005	0.0000	2.1166
Total	**1.7800e-003**	**0.0214**	**0.0120**	**9.0000e-005**	**4.0600e-003**	**1.0000e-004**	**4.1600e-003**	**1.0900e-003**	**9.0000e-005**	**1.1900e-003**	**0.0000**	**8.8411**	**8.8411**	**3.6000e-004**	**0.0000**	**8.8502**

3.3 Civil Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0139	0.1368	0.1462	3.6000e-004		5.5400e-003	5.5400e-003		5.0900e-003	5.0900e-003	0.0000	31.2466	31.2466	0.0101	0.0000	31.4993
Total	**0.0139**	**0.1368**	**0.1462**	**3.6000e-004**		**5.5400e-003**	**5.5400e-003**		**5.0900e-003**	**5.0900e-003**	**0.0000**	**31.2466**	**31.2466**	**0.0101**	**0.0000**	**31.4993**

3.3 Civil Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.7000e-004	6.4000e-004	6.6100e-003	2.0000e-005	1.8600e-003	1.0000e-005	1.8700e-003	4.9000e-004	1.0000e-005	5.1000e-004	0.0000	1.6269	1.6269	5.0000e-005	0.0000	1.6281
Total	**8.7000e-004**	**6.4000e-004**	**6.6100e-003**	**2.0000e-005**	**1.8600e-003**	**1.0000e-005**	**1.8700e-003**	**4.9000e-004**	**1.0000e-005**	**5.1000e-004**	**0.0000**	**1.6269**	**1.6269**	**5.0000e-005**	**0.0000**	**1.6281**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0139	0.1368	0.1462	3.6000e-004		5.5400e-003	5.5400e-003		5.0900e-003	5.0900e-003	0.0000	31.2466	31.2466	0.0101	0.0000	31.4992
Total	**0.0139**	**0.1368**	**0.1462**	**3.6000e-004**		**5.5400e-003**	**5.5400e-003**		**5.0900e-003**	**5.0900e-003**	**0.0000**	**31.2466**	**31.2466**	**0.0101**	**0.0000**	**31.4992**

3.3 Civil Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.7000e-004	6.4000e-004	6.6100e-003	2.0000e-005	1.8600e-003	1.0000e-005	1.8700e-003	4.9000e-004	1.0000e-005	5.1000e-004	0.0000	1.6269	1.6269	5.0000e-005	0.0000	1.6281
Total	**8.7000e-004**	**6.4000e-004**	**6.6100e-003**	**2.0000e-005**	**1.8600e-003**	**1.0000e-005**	**1.8700e-003**	**4.9000e-004**	**1.0000e-005**	**5.1000e-004**	**0.0000**	**1.6269**	**1.6269**	**5.0000e-005**	**0.0000**	**1.6281**

3.4 Planting - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.6000e-004	0.0114	0.0158	2.0000e-005		4.6000e-004	4.6000e-004		4.3000e-004	4.3000e-004	0.0000	2.0676	2.0676	6.7000e-004	0.0000	2.0844
Total	**8.6000e-004**	**0.0114**	**0.0158**	**2.0000e-005**	**0.0000**	**4.6000e-004**	**4.6000e-004**	**0.0000**	**4.3000e-004**	**4.3000e-004**	**0.0000**	**2.0676**	**2.0676**	**6.7000e-004**	**0.0000**	**2.0844**

3.4 Planting - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.1000e-004	1.1000e-003	0.0000	3.1000e-004	0.0000	3.1000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2712	0.2712	1.0000e-005	0.0000	0.2714
Total	**1.4000e-004**	**1.1000e-004**	**1.1000e-003**	**0.0000**	**3.1000e-004**	**0.0000**	**3.1000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.2712**	**0.2712**	**1.0000e-005**	**0.0000**	**0.2714**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.6000e-004	0.0114	0.0158	2.0000e-005		4.6000e-004	4.6000e-004		4.3000e-004	4.3000e-004	0.0000	2.0676	2.0676	6.7000e-004	0.0000	2.0844
Total	**8.6000e-004**	**0.0114**	**0.0158**	**2.0000e-005**	**0.0000**	**4.6000e-004**	**4.6000e-004**	**0.0000**	**4.3000e-004**	**4.3000e-004**	**0.0000**	**2.0676**	**2.0676**	**6.7000e-004**	**0.0000**	**2.0844**

3.4 Planting - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.1000e-004	1.1000e-003	0.0000	3.1000e-004	0.0000	3.1000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2712	0.2712	1.0000e-005	0.0000	0.2714
Total	**1.4000e-004**	**1.1000e-004**	**1.1000e-003**	**0.0000**	**3.1000e-004**	**0.0000**	**3.1000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.2712**	**0.2712**	**1.0000e-005**	**0.0000**	**0.2714**

3.5 Inoculum Collection - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5600e-003	0.0160	0.0194	3.0000e-005		7.7000e-004	7.7000e-004		7.1000e-004	7.1000e-004	0.0000	2.5803	2.5803	8.3000e-004	0.0000	2.6011
Total	**1.5600e-003**	**0.0160**	**0.0194**	**3.0000e-005**	**0.0000**	**7.7000e-004**	**7.7000e-004**	**0.0000**	**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5803**	**2.5803**	**8.3000e-004**	**0.0000**	**2.6011**

3.5 Inoculum Collection - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.7000e-004	6.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1223	0.1223	1.0000e-005	0.0000	0.1224
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	6.0000e-005	6.6000e-004	0.0000	1.9000e-004	0.0000	1.9000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1627	0.1627	0.0000	0.0000	0.1628
Total	**1.0000e-004**	**4.3000e-004**	**7.2000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2850**	**0.2850**	**1.0000e-005**	**0.0000**	**0.2852**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5600e-003	0.0160	0.0194	3.0000e-005		7.7000e-004	7.7000e-004		7.1000e-004	7.1000e-004	0.0000	2.5803	2.5803	8.3000e-004	0.0000	2.6011
Total	**1.5600e-003**	**0.0160**	**0.0194**	**3.0000e-005**	**0.0000**	**7.7000e-004**	**7.7000e-004**	**0.0000**	**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5803**	**2.5803**	**8.3000e-004**	**0.0000**	**2.6011**

3.5 Inoculum Collection - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.7000e-004	6.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1223	0.1223	1.0000e-005	0.0000	0.1224
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	6.0000e-005	6.6000e-004	0.0000	1.9000e-004	0.0000	1.9000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1627	0.1627	0.0000	0.0000	0.1628
Total	**1.0000e-004**	**4.3000e-004**	**7.2000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2850**	**0.2850**	**1.0000e-005**	**0.0000**	**0.2852**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0771	0.0000	0.0771	0.0189	0.0000	0.0189	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0771	0.0000	0.0771	0.0189	0.0000	0.0189	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	26.46	318.50	234.36	241,392	241,392
Total	26.46	318.50	234.36	241,392	241,392

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.7500e-003	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.7000e-004
Unmitigated	5.7500e-003	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.7000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.7300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.7000e-004
Total	**5.7400e-003**	**0.0000**	**1.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.5000e-004**	**2.5000e-004**	**0.0000**	**0.0000**	**2.7000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.7300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.7000e-004
Total	**5.7400e-003**	**0.0000**	**1.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.5000e-004**	**2.5000e-004**	**0.0000**	**0.0000**	**2.7000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	13.3447	6.0000e-004	1.2000e-004	13.3970
Unmitigated	13.3447	6.0000e-004	1.2000e-004	13.3970

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 13.1063	13.3447	6.0000e-004	1.2000e-004	13.3970
Total		**13.3447**	**6.0000e-004**	**1.2000e-004**	**13.3970**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 13.1063	13.3447	6.0000e-004	1.2000e-004	13.3970
Total		**13.3447**	**6.0000e-004**	**1.2000e-004**	**13.3970**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.1928	0.0114	0.0000	0.4778
Unmitigated	0.1928	0.0114	0.0000	0.4778

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.95	0.1928	0.0114	0.0000	0.4778
Total		**0.1928**	**0.0114**	**0.0000**	**0.4778**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.95	0.1928	0.0114	0.0000	0.4778
Total		**0.1928**	**0.0114**	**0.0000**	**0.4778**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Redtail- Wetlands Project

Merced County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	14.00	Acre	14.00	609,840.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Based on Section 2 report

Off-road Equipment - Based on model specs

Off-road Equipment - Based on model specs

Off-road Equipment - based on model specs

Off-road Equipment - Based on model specs

Trips and VMT - Estimations

Grading - Max acres graded

Redtail- Wetlands Project - Merced County, Summer

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	0.06	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.8440e-003	0.00
tblFleetMix	MCY	5.1210e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	8.7100e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.1870e-003	0.00
tblFleetMix	SBUS	6.1300e-004	0.00
tblFleetMix	UBUS	1.4960e-003	0.00
tblGrading	AcresOfGrading	90.00	14.00
tblGrading	MaterialExported	0.00	550.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	212.00	215.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	124.00	155.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	HorsePower	97.00	168.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	1.20	0.95
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00

tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripNumber	69.00	110.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblWater	OutdoorWaterUseRate	16,680,738.90	13,106,294.85

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.3090	48.3764	31.5982	0.0843	0.9032	1.8112	2.7144	0.1625	1.6665	1.8290	0.0000	8,208.0071	8,208.0071	2.4265	0.0000	8,268.6703
Maximum	**4.3090**	**48.3764**	**31.5982**	**0.0843**	**0.9032**	**1.8112**	**2.7144**	**0.1625**	**1.6665**	**1.8290**	**0.0000**	**8,208.0071**	**8,208.0071**	**2.4265**	**0.0000**	**8,268.6703**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.3090	48.3764	31.5982	0.0843	0.9032	1.8112	2.7144	0.1625	1.6665	1.8290	0.0000	8,208.0071	8,208.0071	2.4265	0.0000	8,268.6703
Maximum	**4.3090**	**48.3764**	**31.5982**	**0.0843**	**0.9032**	**1.8112**	**2.7144**	**0.1625**	**1.6665**	**1.8290**	**0.0000**	**8,208.0071**	**8,208.0071**	**2.4265**	**0.0000**	**8,268.6703**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0316	1.0000e-005	1.4300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.0600e-003	3.0600e-003	1.0000e-005		3.2700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	1.4265	0.0000	1.4265	0.3501	0.0000	0.3501		0.0000	0.0000	0.0000		0.0000
Total	**0.0316**	**1.0000e-005**	**1.4300e-003**	**0.0000**	**1.4265**	**1.0000e-005**	**1.4265**	**0.3501**	**1.0000e-005**	**0.3502**		**3.0600e-003**	**3.0600e-003**	**1.0000e-005**	**0.0000**	**3.2700e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0316	1.0000e-005	1.4300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.0600e-003	3.0600e-003	1.0000e-005		3.2700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	1.4265	0.0000	1.4265	0.3501	0.0000	0.3501		0.0000	0.0000	0.0000		0.0000
Total	**0.0316**	**1.0000e-005**	**1.4300e-003**	**0.0000**	**1.4265**	**1.0000e-005**	**1.4265**	**0.3501**	**1.0000e-005**	**0.3502**		**3.0600e-003**	**3.0600e-003**	**1.0000e-005**	**0.0000**	**3.2700e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	9/1/2021	10/12/2021	5	30	
2	Civil Construction	Trenching	10/6/2021	11/16/2021	5	30	
3	Planting	Site Preparation	11/17/2021	11/30/2021	5	10	
4	Inoculum Collection	Site Preparation	12/1/2021	12/14/2021	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 14

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Crawler Tractors	2	8.00	215	0.43
Grading	Excavators	1	8.00	201	0.38
Grading	Scrapers	2	8.00	367	0.48
Civil Construction	Excavators	2	8.00	201	0.38
Civil Construction	Tractors/Loaders/Backhoes	2	8.00	168	0.37
Planting	Skid Steer Loaders	2	8.00	74	0.37
Inoculum Collection	Off-Highway Tractors	1	8.00	155	0.44

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	5	13.00	0.00	110.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT
Civil Construction	4	10.00	0.00	0.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT
Planting	2	5.00	0.00	0.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT
Inoculum Collection	1	3.00	0.00	2.00	16.80	6.60	35.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4970	0.0000	0.4970	0.0538	0.0000	0.0538			0.0000			0.0000
Off-Road	3.1957	37.8367	20.4347	0.0528		1.4349	1.4349		1.3201	1.3201		5,113.6252	5,113.6252	1.6539		5,154.9715
Total	**3.1957**	**37.8367**	**20.4347**	**0.0528**	**0.4970**	**1.4349**	**1.9319**	**0.0538**	**1.3201**	**1.3739**		**5,113.6252**	**5,113.6252**	**1.6539**		**5,154.9715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0431	1.3319	0.2215	4.7400e-003	0.1125	5.1700e-003	0.1176	0.0309	4.9400e-003	0.0358		497.2102	497.2102	0.0209		497.7336
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0831	0.0512	0.6743	1.7100e-003	0.1661	1.1800e-003	0.1672	0.0440	1.0800e-003	0.0451		170.0953	170.0953	5.1400e-003		170.2238
Total	**0.1262**	**1.3831**	**0.8957**	**6.4500e-003**	**0.2785**	**6.3500e-003**	**0.2849**	**0.0749**	**6.0200e-003**	**0.0809**		**667.3056**	**667.3056**	**0.0261**		**667.9575**

3.2 Grading - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4970	0.0000	0.4970	0.0538	0.0000	0.0538			0.0000			0.0000
Off-Road	3.1957	37.8367	20.4347	0.0528		1.4349	1.4349		1.3201	1.3201	0.0000	5,113.6252	5,113.6252	1.6539		5,154.9715
Total	**3.1957**	**37.8367**	**20.4347**	**0.0528**	**0.4970**	**1.4349**	**1.9319**	**0.0538**	**1.3201**	**1.3739**	**0.0000**	**5,113.6252**	**5,113.6252**	**1.6539**		**5,154.9715**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0431	1.3319	0.2215	4.7400e-003	0.1125	5.1700e-003	0.1176	0.0309	4.9400e-003	0.0358		497.2102	497.2102	0.0209		497.7336
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0831	0.0512	0.6743	1.7100e-003	0.1661	1.1800e-003	0.1672	0.0440	1.0800e-003	0.0451		170.0953	170.0953	5.1400e-003		170.2238
Total	**0.1262**	**1.3831**	**0.8957**	**6.4500e-003**	**0.2785**	**6.3500e-003**	**0.2849**	**0.0749**	**6.0200e-003**	**0.0809**		**667.3056**	**667.3056**	**0.0261**		**667.9575**

3.3 Civil Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9232	9.1173	9.7491	0.0237		0.3691	0.3691		0.3395	0.3395		2,296.2337	2,296.2337	0.7427		2,314.7999
Total	**0.9232**	**9.1173**	**9.7491**	**0.0237**		**0.3691**	**0.3691**		**0.3395**	**0.3395**		**2,296.2337**	**2,296.2337**	**0.7427**		**2,314.7999**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0639	0.0394	0.5187	1.3100e-003	0.1277	9.1000e-004	0.1286	0.0339	8.3000e-004	0.0347		130.8426	130.8426	3.9500e-003		130.9414
Total	**0.0639**	**0.0394**	**0.5187**	**1.3100e-003**	**0.1277**	**9.1000e-004**	**0.1286**	**0.0339**	**8.3000e-004**	**0.0347**		**130.8426**	**130.8426**	**3.9500e-003**		**130.9414**

3.3 Civil Construction - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9232	9.1173	9.7491	0.0237		0.3691	0.3691		0.3395	0.3395	0.0000	2,296.2337	2,296.2337	0.7427		2,314.7999
Total	**0.9232**	**9.1173**	**9.7491**	**0.0237**		**0.3691**	**0.3691**		**0.3395**	**0.3395**	**0.0000**	**2,296.2337**	**2,296.2337**	**0.7427**		**2,314.7999**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0639	0.0394	0.5187	1.3100e-003	0.1277	9.1000e-004	0.1286	0.0339	8.3000e-004	0.0347		130.8426	130.8426	3.9500e-003		130.9414
Total	**0.0639**	**0.0394**	**0.5187**	**1.3100e-003**	**0.1277**	**9.1000e-004**	**0.1286**	**0.0339**	**8.3000e-004**	**0.0347**		**130.8426**	**130.8426**	**3.9500e-003**		**130.9414**

3.4 Planting - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.1719	2.2850	3.1648	4.7100e-003		0.0930	0.0930		0.0855	0.0855		455.8363	455.8363	0.1474		459.5220
Total	**0.1719**	**2.2850**	**3.1648**	**4.7100e-003**	**0.0000**	**0.0930**	**0.0930**	**0.0000**	**0.0855**	**0.0855**		**455.8363**	**455.8363**	**0.1474**		**459.5220**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0320	0.0197	0.2593	6.6000e-004	0.0639	4.5000e-004	0.0643	0.0169	4.2000e-004	0.0174		65.4213	65.4213	1.9800e-003		65.4707
Total	**0.0320**	**0.0197**	**0.2593**	**6.6000e-004**	**0.0639**	**4.5000e-004**	**0.0643**	**0.0169**	**4.2000e-004**	**0.0174**		**65.4213**	**65.4213**	**1.9800e-003**		**65.4707**

3.4 Planting - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.1719	2.2850	3.1648	4.7100e-003		0.0930	0.0930		0.0855	0.0855	0.0000	455.8363	455.8363	0.1474		459.5220
Total	**0.1719**	**2.2850**	**3.1648**	**4.7100e-003**	**0.0000**	**0.0930**	**0.0930**	**0.0000**	**0.0855**	**0.0855**	**0.0000**	**455.8363**	**455.8363**	**0.1474**		**459.5220**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0320	0.0197	0.2593	6.6000e-004	0.0639	4.5000e-004	0.0643	0.0169	4.2000e-004	0.0174		65.4213	65.4213	1.9800e-003		65.4707
Total	**0.0320**	**0.0197**	**0.2593**	**6.6000e-004**	**0.0639**	**4.5000e-004**	**0.0643**	**0.0169**	**4.2000e-004**	**0.0174**		**65.4213**	**65.4213**	**1.9800e-003**		**65.4707**

3.5 Inoculum Collection - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3112	3.1991	3.8726	5.8800e-003		0.1547	0.1547		0.1423	0.1423		568.8524	568.8524	0.1840		573.4519
Total	**0.3112**	**3.1991**	**3.8726**	**5.8800e-003**	**0.0000**	**0.1547**	**0.1547**	**0.0000**	**0.1423**	**0.1423**		**568.8524**	**568.8524**	**0.1840**		**573.4519**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.3500e-003	0.0727	0.0121	2.6000e-004	6.1300e-003	2.8000e-004	6.4200e-003	1.6800e-003	2.7000e-004	1.9500e-003		27.1206	27.1206	1.1400e-003		27.1491
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0192	0.0118	0.1556	3.9000e-004	0.0383	2.7000e-004	0.0386	0.0102	2.5000e-004	0.0104		39.2528	39.2528	1.1900e-003		39.2824
Total	**0.0215**	**0.0845**	**0.1677**	**6.5000e-004**	**0.0445**	**5.5000e-004**	**0.0450**	**0.0118**	**5.2000e-004**	**0.0124**		**66.3733**	**66.3733**	**2.3300e-003**		**66.4315**

3.5 Inoculum Collection - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3112	3.1991	3.8726	5.8800e-003		0.1547	0.1547		0.1423	0.1423	0.0000	568.8524	568.8524	0.1840		573.4519
Total	**0.3112**	**3.1991**	**3.8726**	**5.8800e-003**	**0.0000**	**0.1547**	**0.1547**	**0.0000**	**0.1423**	**0.1423**	**0.0000**	**568.8524**	**568.8524**	**0.1840**		**573.4519**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.3500e-003	0.0727	0.0121	2.6000e-004	6.1300e-003	2.8000e-004	6.4200e-003	1.6800e-003	2.7000e-004	1.9500e-003		27.1206	27.1206	1.1400e-003		27.1491
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0192	0.0118	0.1556	3.9000e-004	0.0383	2.7000e-004	0.0386	0.0102	2.5000e-004	0.0104		39.2528	39.2528	1.1900e-003		39.2824
Total	**0.0215**	**0.0845**	**0.1677**	**6.5000e-004**	**0.0445**	**5.5000e-004**	**0.0450**	**0.0118**	**5.2000e-004**	**0.0124**		**66.3733**	**66.3733**	**2.3300e-003**		**66.4315**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	1.4265	0.0000	1.4265	0.3501	0.0000	0.3501		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	1.4265	0.0000	1.4265	0.3501	0.0000	0.3501		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	26.46	318.50	234.36	241,392	241,392
Total	26.46	318.50	234.36	241,392	241,392

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0316	1.0000e-005	1.4300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.0600e-003	3.0600e-003	1.0000e-005		3.2700e-003
Unmitigated	0.0316	1.0000e-005	1.4300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.0600e-003	3.0600e-003	1.0000e-005		3.2700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0314					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.3000e-004	1.0000e-005	1.4300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.0600e-003	3.0600e-003	1.0000e-005		3.2700e-003
Total	**0.0316**	**1.0000e-005**	**1.4300e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.0600e-003**	**3.0600e-003**	**1.0000e-005**		**3.2700e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0314					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.3000e-004	1.0000e-005	1.4300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.0600e-003	3.0600e-003	1.0000e-005		3.2700e-003
Total	**0.0316**	**1.0000e-005**	**1.4300e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.0600e-003**	**3.0600e-003**	**1.0000e-005**		**3.2700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Redtail- NNP Revised

Merced County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	5.00	Acre	5.00	217,800.00	0
City Park	20.00	Acre	20.00	871,200.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Estimates

Off-road Equipment - Equipment Specs

Off-road Equipment - Equip Specs

Off-road Equipment - Actual specs

Off-road Equipment - Conservative Estimate

Off-road Equipment - Equipment Specs

Off-road Equipment - Specs

Trips and VMT - Estimate

Grading - Estimation

Water And Wastewater - Estimated water use does not affect emissions output. It is not reflective of actual water use and is generated by the model.

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	13068	0
tblConstructionPhase	NumDays	35.00	90.00
tblConstructionPhase	NumDays	10.00	45.00
tblConstructionPhase	NumDays	10.00	60.00
tblConstructionPhase	NumDays	10.00	120.00
tblConstructionPhase	NumDays	10.00	60.00
tblFleetMix	HHD	0.06	0.00
tblFleetMix	LDA	0.56	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.18	0.00

tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.6870e-003	0.00
tblFleetMix	MCY	5.0550e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	8.1800e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.1900e-003	0.00
tblFleetMix	SBUS	6.1000e-004	0.00
tblFleetMix	UBUS	1.4530e-003	0.00
tblGrading	AcresOfGrading	180.00	25.00
tblGrading	MaterialImported	0.00	3,000.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	187.00	0.00
tblOffRoadEquipment	HorsePower	97.00	150.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	187.00	0.00
tblOffRoadEquipment	HorsePower	88.00	24.00
tblOffRoadEquipment	HorsePower	80.00	157.00
tblOffRoadEquipment	HorsePower	80.00	157.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	1.72	0.69
tblTripsAndVMT	HaulingTripLength	20.00	36.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripNumber	375.00	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	600.00
tblWater	OutdoorWaterUseRate	23,829,626.99	9,531,850.80

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2087	2.2758	2.0454	4.5800e-003	0.0366	0.0918	0.1283	7.6900e-003	0.0844	0.0921	0.0000	405.8261	405.8261	0.1174	0.0000	408.7601
2022	0.0310	0.2625	0.2860	7.7000e-004	4.3900e-003	9.8200e-003	0.0142	1.1700e-003	9.0300e-003	0.0102	0.0000	67.7993	67.7993	0.0208	0.0000	68.3199
Maximum	**0.2087**	**2.2758**	**2.0454**	**4.5800e-003**	**0.0366**	**0.0918**	**0.1283**	**7.6900e-003**	**0.0844**	**0.0921**	**0.0000**	**405.8261**	**405.8261**	**0.1174**	**0.0000**	**408.7601**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2087	2.2758	2.0454	4.5800e-003	0.0292	0.0918	0.1209	6.8900e-003	0.0844	0.0913	0.0000	405.8257	405.8257	0.1174	0.0000	408.7596
2022	0.0310	0.2625	0.2860	7.7000e-004	4.3900e-003	9.8200e-003	0.0142	1.1700e-003	9.0300e-003	0.0102	0.0000	67.7992	67.7992	0.0208	0.0000	68.3199
Maximum	**0.2087**	**2.2758**	**2.0454**	**4.5800e-003**	**0.0292**	**0.0918**	**0.1209**	**6.8900e-003**	**0.0844**	**0.0913**	**0.0000**	**405.8257**	**405.8257**	**0.1174**	**0.0000**	**408.7596**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**18.03**	**0.00**	**5.19**	**9.03**	**0.00**	**0.78**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-1-2021	5-31-2021	0.8205	0.8205
2	6-1-2021	8-31-2021	1.0527	1.0527
3	9-1-2021	11-30-2021	0.5134	0.5134
4	12-1-2021	2-28-2022	0.1916	0.1916
5	3-1-2022	5-31-2022	0.1713	0.1713
6	6-1-2022	8-31-2022	0.0025	0.0025
		Highest	1.0527	1.0527

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0223	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.5000e-004	4.5000e-004	0.0000	0.0000	4.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0390	0.2693	0.3898	1.5300e-003	0.1123	1.3000e-003	0.1136	0.0301	1.2200e-003	0.0313	0.0000	140.7853	140.7853	7.3700e-003	0.0000	140.9696
Waste						0.0000	0.0000		0.0000	0.0000	0.1401	0.0000	0.1401	8.2800e-003	0.0000	0.3470
Water						0.0000	0.0000		0.0000	0.0000	0.0000	9.7052	9.7052	4.4000e-004	9.0000e-005	9.7433
Total	**0.0613**	**0.2693**	**0.3900**	**1.5300e-003**	**0.1123**	**1.3000e-003**	**0.1136**	**0.0301**	**1.2200e-003**	**0.0313**	**0.1401**	**150.4910**	**150.6311**	**0.0161**	**9.0000e-005**	**151.0604**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0223	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.5000e-004	4.5000e-004	0.0000	0.0000	4.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0390	0.2693	0.3898	1.5300e-003	0.1123	1.3000e-003	0.1136	0.0301	1.2200e-003	0.0313	0.0000	140.7853	140.7853	7.3700e-003	0.0000	140.9696
Waste						0.0000	0.0000		0.0000	0.0000	0.1401	0.0000	0.1401	8.2800e-003	0.0000	0.3470
Water						0.0000	0.0000		0.0000	0.0000	0.0000	9.7052	9.7052	4.4000e-004	9.0000e-005	9.7433
Total	**0.0613**	**0.2693**	**0.3900**	**1.5300e-003**	**0.1123**	**1.3000e-003**	**0.1136**	**0.0301**	**1.2200e-003**	**0.0313**	**0.1401**	**150.4910**	**150.6311**	**0.0161**	**9.0000e-005**	**151.0604**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	0.0000
Total	**0.0000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Clearing and Grubbing	Site Preparation	3/1/2021	4/30/2021	5	45	
2	Grading	Grading	4/10/2021	8/13/2021	5	90	
3	Access	Site Preparation	8/16/2021	11/5/2021	5	60	
4	Site Improvements	Site Preparation	11/8/2021	4/22/2022	5	120	
5	Planting	Site Preparation	3/14/2022	6/3/2022	5	60	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 25

Acres of Paving: 5

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Clearing and Grubbing	Excavators	1	8.00	201	0.38
Clearing and Grubbing	Skid Steer Loaders	2	8.00	74	0.37
Clearing and Grubbing	Tractors/Loaders/Backhoes	1	8.00	150	0.37
Grading	Excavators	1	8.00	201	0.38
Grading	Graders	0	0.00	0	0.00
Grading	Rollers	4	8.00	157	0.38
Grading	Scrapers	2	8.00	367	0.48
Access	Excavators	1	8.00	201	0.38
Access	Graders	0	0.00	0	0.00
Access	Rollers	2	8.00	157	0.38
Access	Skid Steer Loaders	2	8.00	65	0.37
Access	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Access	Trenchers	1	8.00	78	0.50
Site Improvements	Excavators	2	8.00	201	0.38
Site Improvements	Other General Industrial Equipment	2	8.00	24	0.34
Planting	Skid Steer Loaders	2	8.00	74	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Clearing and Grubbing	4	10.00	0.00	0.00	10.80	7.30	36.00	LD_Mix	HDT_Mix	HHDT
Grading	7	18.00	0.00	0.00	10.80	7.30	35.00	LD_Mix	HDT_Mix	HHDT
Access	7	18.00	0.00	600.00	10.80	7.30	35.00	LD_Mix	HDT_Mix	HHDT
Site Improvements	4	10.00	0.00	0.00	10.80	7.30	35.00	LD_Mix	HDT_Mix	HHDT
Planting	2	5.00	0.00	0.00	10.80	7.30	35.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

3.2 Clearing and Grubbing - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0137	0.1485	0.1727	3.6000e-004		5.9700e-003	5.9700e-003		5.4900e-003	5.4900e-003	0.0000	31.6184	31.6184	0.0102	0.0000	31.8741
Total	**0.0137**	**0.1485**	**0.1727**	**3.6000e-004**	**0.0000**	**5.9700e-003**	**5.9700e-003**	**0.0000**	**5.4900e-003**	**5.4900e-003**	**0.0000**	**31.6184**	**31.6184**	**0.0102**	**0.0000**	**31.8741**

3.2 Clearing and Grubbing - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.4000e-004	6.5000e-004	6.8300e-003	2.0000e-005	1.7900e-003	1.0000e-005	1.8100e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.5851	1.5851	5.0000e-005	0.0000	1.5863
Total	**9.4000e-004**	**6.5000e-004**	**6.8300e-003**	**2.0000e-005**	**1.7900e-003**	**1.0000e-005**	**1.8100e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.5851**	**1.5851**	**5.0000e-005**	**0.0000**	**1.5863**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0137	0.1485	0.1727	3.6000e-004		5.9700e-003	5.9700e-003		5.4900e-003	5.4900e-003	0.0000	31.6184	31.6184	0.0102	0.0000	31.8740
Total	**0.0137**	**0.1485**	**0.1727**	**3.6000e-004**	**0.0000**	**5.9700e-003**	**5.9700e-003**	**0.0000**	**5.4900e-003**	**5.4900e-003**	**0.0000**	**31.6184**	**31.6184**	**0.0102**	**0.0000**	**31.8740**

3.2 Clearing and Grubbing - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.4000e-004	6.5000e-004	6.8300e-003	2.0000e-005	1.7900e-003	1.0000e-005	1.8100e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.5851	1.5851	5.0000e-005	0.0000	1.5863
Total	**9.4000e-004**	**6.5000e-004**	**6.8300e-003**	**2.0000e-005**	**1.7900e-003**	**1.0000e-005**	**1.8100e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.5851**	**1.5851**	**5.0000e-005**	**0.0000**	**1.5863**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0134	0.0000	0.0134	1.4600e-003	0.0000	1.4600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1301	1.4676	1.2514	2.5800e-003		0.0591	0.0591		0.0543	0.0543	0.0000	226.8916	226.8916	0.0734	0.0000	228.7261
Total	**0.1301**	**1.4676**	**1.2514**	**2.5800e-003**	**0.0134**	**0.0591**	**0.0725**	**1.4600e-003**	**0.0543**	**0.0558**	**0.0000**	**226.8916**	**226.8916**	**0.0734**	**0.0000**	**228.7261**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3900e-003	2.3200e-003	0.0246	6.0000e-005	6.4600e-003	5.0000e-005	6.5100e-003	1.7200e-003	5.0000e-005	1.7600e-003	0.0000	5.7064	5.7064	1.7000e-004	0.0000	5.7108
Total	**3.3900e-003**	**2.3200e-003**	**0.0246**	**6.0000e-005**	**6.4600e-003**	**5.0000e-005**	**6.5100e-003**	**1.7200e-003**	**5.0000e-005**	**1.7600e-003**	**0.0000**	**5.7064**	**5.7064**	**1.7000e-004**	**0.0000**	**5.7108**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.0400e-003	0.0000	6.0400e-003	6.6000e-004	0.0000	6.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1301	1.4676	1.2514	2.5800e-003		0.0591	0.0591		0.0543	0.0543	0.0000	226.8913	226.8913	0.0734	0.0000	228.7258
Total	**0.1301**	**1.4676**	**1.2514**	**2.5800e-003**	**6.0400e-003**	**0.0591**	**0.0651**	**6.6000e-004**	**0.0543**	**0.0550**	**0.0000**	**226.8913**	**226.8913**	**0.0734**	**0.0000**	**228.7258**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3900e-003	2.3200e-003	0.0246	6.0000e-005	6.4600e-003	5.0000e-005	6.5100e-003	1.7200e-003	5.0000e-005	1.7600e-003	0.0000	5.7064	5.7064	1.7000e-004	0.0000	5.7108
Total	**3.3900e-003**	**2.3200e-003**	**0.0246**	**6.0000e-005**	**6.4600e-003**	**5.0000e-005**	**6.5100e-003**	**1.7200e-003**	**5.0000e-005**	**1.7600e-003**	**0.0000**	**5.7064**	**5.7064**	**1.7000e-004**	**0.0000**	**5.7108**

3.4 Access - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0404	0.4250	0.4587	8.2000e-004		0.0217	0.0217		0.0200	0.0200	0.0000	72.3126	72.3126	0.0234	0.0000	72.8973
Total	**0.0404**	**0.4250**	**0.4587**	**8.2000e-004**	**0.0000**	**0.0217**	**0.0217**	**0.0000**	**0.0200**	**0.0200**	**0.0000**	**72.3126**	**72.3126**	**0.0234**	**0.0000**	**72.8973**

3.4 Access - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.5500e-003	0.1122	0.0187	3.9000e-004	8.9700e-003	4.2000e-004	9.3900e-003	2.4700e-003	4.1000e-004	2.8700e-003	0.0000	36.6881	36.6881	1.6300e-003	0.0000	36.7290
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2600e-003	1.5500e-003	0.0164	4.0000e-005	4.3100e-003	3.0000e-005	4.3400e-003	1.1400e-003	3.0000e-005	1.1800e-003	0.0000	3.8043	3.8043	1.2000e-004	0.0000	3.8072
Total	**5.8100e-003**	**0.1138**	**0.0351**	**4.3000e-004**	**0.0133**	**4.5000e-004**	**0.0137**	**3.6100e-003**	**4.4000e-004**	**4.0500e-003**	**0.0000**	**40.4924**	**40.4924**	**1.7500e-003**	**0.0000**	**40.5361**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0404	0.4250	0.4587	8.2000e-004		0.0217	0.0217		0.0200	0.0200	0.0000	72.3125	72.3125	0.0234	0.0000	72.8972
Total	**0.0404**	**0.4250**	**0.4587**	**8.2000e-004**	**0.0000**	**0.0217**	**0.0217**	**0.0000**	**0.0200**	**0.0200**	**0.0000**	**72.3125**	**72.3125**	**0.0234**	**0.0000**	**72.8972**

3.4 Access - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.5500e-003	0.1122	0.0187	3.9000e-004	8.9700e-003	4.2000e-004	9.3900e-003	2.4700e-003	4.1000e-004	2.8700e-003	0.0000	36.6881	36.6881	1.6300e-003	0.0000	36.7290
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2600e-003	1.5500e-003	0.0164	4.0000e-005	4.3100e-003	3.0000e-005	4.3400e-003	1.1400e-003	3.0000e-005	1.1800e-003	0.0000	3.8043	3.8043	1.2000e-004	0.0000	3.8072
Total	**5.8100e-003**	**0.1138**	**0.0351**	**4.3000e-004**	**0.0133**	**4.5000e-004**	**0.0137**	**3.6100e-003**	**4.4000e-004**	**4.0500e-003**	**0.0000**	**40.4924**	**40.4924**	**1.7500e-003**	**0.0000**	**40.5361**

3.5 Site Improvements - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0136	0.1174	0.0900	2.9000e-004		4.4800e-003	4.4800e-003		4.1200e-003	4.1200e-003	0.0000	25.8107	25.8107	8.3500e-003	0.0000	26.0194
Total	**0.0136**	**0.1174**	**0.0900**	**2.9000e-004**	**0.0000**	**4.4800e-003**	**4.4800e-003**	**0.0000**	**4.1200e-003**	**4.1200e-003**	**0.0000**	**25.8107**	**25.8107**	**8.3500e-003**	**0.0000**	**26.0194**

3.5 Site Improvements - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-004	5.7000e-004	6.0700e-003	2.0000e-005	1.6000e-003	1.0000e-005	1.6100e-003	4.2000e-004	1.0000e-005	4.4000e-004	0.0000	1.4090	1.4090	4.0000e-005	0.0000	1.4101
Total	**8.4000e-004**	**5.7000e-004**	**6.0700e-003**	**2.0000e-005**	**1.6000e-003**	**1.0000e-005**	**1.6100e-003**	**4.2000e-004**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**1.4090**	**1.4090**	**4.0000e-005**	**0.0000**	**1.4101**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0136	0.1174	0.0900	2.9000e-004		4.4800e-003	4.4800e-003		4.1200e-003	4.1200e-003	0.0000	25.8106	25.8106	8.3500e-003	0.0000	26.0193
Total	**0.0136**	**0.1174**	**0.0900**	**2.9000e-004**	**0.0000**	**4.4800e-003**	**4.4800e-003**	**0.0000**	**4.1200e-003**	**4.1200e-003**	**0.0000**	**25.8106**	**25.8106**	**8.3500e-003**	**0.0000**	**26.0193**

3.5 Site Improvements - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-004	5.7000e-004	6.0700e-003	2.0000e-005	1.6000e-003	1.0000e-005	1.6100e-003	4.2000e-004	1.0000e-005	4.4000e-004	0.0000	1.4090	1.4090	4.0000e-005	0.0000	1.4101
Total	**8.4000e-004**	**5.7000e-004**	**6.0700e-003**	**2.0000e-005**	**1.6000e-003**	**1.0000e-005**	**1.6100e-003**	**4.2000e-004**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**1.4090**	**1.4090**	**4.0000e-005**	**0.0000**	**1.4101**

3.5 Site Improvements - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0241	0.1977	0.1761	5.9000e-004		7.4300e-003	7.4300e-003		6.8300e-003	6.8300e-003	0.0000	51.6456	51.6456	0.0167	0.0000	52.0632
Total	**0.0241**	**0.1977**	**0.1761**	**5.9000e-004**	**0.0000**	**7.4300e-003**	**7.4300e-003**	**0.0000**	**6.8300e-003**	**6.8300e-003**	**0.0000**	**51.6456**	**51.6456**	**0.0167**	**0.0000**	**52.0632**

3.5 Site Improvements - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5500e-003	1.0200e-003	0.0111	3.0000e-005	3.1900e-003	2.0000e-005	3.2100e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	2.7171	2.7171	8.0000e-005	0.0000	2.7190
Total	**1.5500e-003**	**1.0200e-003**	**0.0111**	**3.0000e-005**	**3.1900e-003**	**2.0000e-005**	**3.2100e-003**	**8.5000e-004**	**2.0000e-005**	**8.7000e-004**	**0.0000**	**2.7171**	**2.7171**	**8.0000e-005**	**0.0000**	**2.7190**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0241	0.1977	0.1761	5.9000e-004		7.4300e-003	7.4300e-003		6.8300e-003	6.8300e-003	0.0000	51.6455	51.6455	0.0167	0.0000	52.0631
Total	**0.0241**	**0.1977**	**0.1761**	**5.9000e-004**	**0.0000**	**7.4300e-003**	**7.4300e-003**	**0.0000**	**6.8300e-003**	**6.8300e-003**	**0.0000**	**51.6455**	**51.6455**	**0.0167**	**0.0000**	**52.0631**

3.5 Site Improvements - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5500e-003	1.0200e-003	0.0111	3.0000e-005	3.1900e-003	2.0000e-005	3.2100e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	2.7171	2.7171	8.0000e-005	0.0000	2.7190
Total	**1.5500e-003**	**1.0200e-003**	**0.0111**	**3.0000e-005**	**3.1900e-003**	**2.0000e-005**	**3.2100e-003**	**8.5000e-004**	**2.0000e-005**	**8.7000e-004**	**0.0000**	**2.7171**	**2.7171**	**8.0000e-005**	**0.0000**	**2.7190**

3.6 Planting - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7600e-003	0.0634	0.0948	1.4000e-004		2.3600e-003	2.3600e-003		2.1700e-003	2.1700e-003	0.0000	12.4178	12.4178	4.0200e-003	0.0000	12.5182
Total	**4.7600e-003**	**0.0634**	**0.0948**	**1.4000e-004**	**0.0000**	**2.3600e-003**	**2.3600e-003**	**0.0000**	**2.1700e-003**	**2.1700e-003**	**0.0000**	**12.4178**	**12.4178**	**4.0200e-003**	**0.0000**	**12.5182**

3.6 Planting - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	3.8000e-004	4.1500e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0189	1.0189	3.0000e-005	0.0000	1.0196
Total	**5.8000e-004**	**3.8000e-004**	**4.1500e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0189**	**1.0189**	**3.0000e-005**	**0.0000**	**1.0196**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7600e-003	0.0634	0.0948	1.4000e-004		2.3600e-003	2.3600e-003		2.1700e-003	2.1700e-003	0.0000	12.4178	12.4178	4.0200e-003	0.0000	12.5182
Total	**4.7600e-003**	**0.0634**	**0.0948**	**1.4000e-004**	**0.0000**	**2.3600e-003**	**2.3600e-003**	**0.0000**	**2.1700e-003**	**2.1700e-003**	**0.0000**	**12.4178**	**12.4178**	**4.0200e-003**	**0.0000**	**12.5182**

3.6 Planting - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	3.8000e-004	4.1500e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0189	1.0189	3.0000e-005	0.0000	1.0196
Total	**5.8000e-004**	**3.8000e-004**	**4.1500e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0189**	**1.0189**	**3.0000e-005**	**0.0000**	**1.0196**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0390	0.2693	0.3898	1.5300e-003	0.1123	1.3000e-003	0.1136	0.0301	1.2200e-003	0.0313	0.0000	140.7853	140.7853	7.3700e-003	0.0000	140.9696
Unmitigated	0.0390	0.2693	0.3898	1.5300e-003	0.1123	1.3000e-003	0.1136	0.0301	1.2200e-003	0.0313	0.0000	140.7853	140.7853	7.3700e-003	0.0000	140.9696

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	37.80	455.00	334.80	298,513	298,513
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	37.80	455.00	334.80	298,513	298,513

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.556917	0.035296	0.183646	0.120139	0.017882	0.004687	0.016156	0.056151	0.001190	0.001453	0.005055	0.000610	0.000818
Other Non-Asphalt Surfaces	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0223	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.5000e-004	4.5000e-004	0.0000	0.0000	4.8000e-004
Unmitigated	0.0223	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.5000e-004	4.5000e-004	0.0000	0.0000	4.8000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0223					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.5000e-004	4.5000e-004	0.0000	0.0000	4.8000e-004
Total	**0.0223**	**0.0000**	**2.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**4.5000e-004**	**4.5000e-004**	**0.0000**	**0.0000**	**4.8000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0223					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.5000e-004	4.5000e-004	0.0000	0.0000	4.8000e-004
Total	**0.0223**	**0.0000**	**2.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**4.5000e-004**	**4.5000e-004**	**0.0000**	**0.0000**	**4.8000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	9.7052	4.4000e-004	9.0000e-005	9.7433
Unmitigated	9.7052	4.4000e-004	9.0000e-005	9.7433

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 9.53185	9.7052	4.4000e-004	9.0000e-005	9.7433
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**9.7052**	**4.4000e-004**	**9.0000e-005**	**9.7433**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 9.53185	9.7052	4.4000e-004	9.0000e-005	9.7433
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**9.7052**	**4.4000e-004**	**9.0000e-005**	**9.7433**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.1401	8.2800e-003	0.0000	0.3470
Unmitigated	0.1401	8.2800e-003	0.0000	0.3470

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.69	0.1401	8.2800e-003	0.0000	0.3470
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.1401**	**8.2800e-003**	**0.0000**	**0.3470**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.69	0.1401	8.2800e-003	0.0000	0.3470
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.1401**	**8.2800e-003**	**0.0000**	**0.3470**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	0.0000	0.0000	0.0000	0.0000

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Wetlands	0 / 8	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Redtail- NNP Revised

Merced County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	5.00	Acre	5.00	217,800.00	0
City Park	20.00	Acre	20.00	871,200.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Estimates

Off-road Equipment - Equipment Specs

Off-road Equipment - Equip Specs

Off-road Equipment - Actual specs

Off-road Equipment - Conservative Estimate

Off-road Equipment - Equipment Specs

Off-road Equipment - Specs

Trips and VMT - Estimate

Grading - Estimation

Water And Wastewater - Estimated water use does not affect emissions output. It is not reflective of actual water use and is generated by the model.

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	13068	0
tblConstructionPhase	NumDays	35.00	90.00
tblConstructionPhase	NumDays	10.00	45.00
tblConstructionPhase	NumDays	10.00	60.00
tblConstructionPhase	NumDays	10.00	120.00
tblConstructionPhase	NumDays	10.00	60.00
tblFleetMix	HHD	0.06	0.00
tblFleetMix	LDA	0.56	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.18	0.00

tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.6870e-003	0.00
tblFleetMix	MCY	5.0550e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	8.1800e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.1900e-003	0.00
tblFleetMix	SBUS	6.1000e-004	0.00
tblFleetMix	UBUS	1.4530e-003	0.00
tblGrading	AcresOfGrading	180.00	25.00
tblGrading	MaterialImported	0.00	3,000.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	187.00	0.00
tblOffRoadEquipment	HorsePower	97.00	150.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	HorsePower	187.00	0.00
tblOffRoadEquipment	HorsePower	88.00	24.00
tblOffRoadEquipment	HorsePower	80.00	157.00
tblOffRoadEquipment	HorsePower	80.00	157.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	1.72	0.69
tblTripsAndVMT	HaulingTripLength	20.00	36.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripLength	20.00	35.00
tblTripsAndVMT	HaulingTripNumber	375.00	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	600.00
tblWater	OutdoorWaterUseRate	23,829,626.99	9,531,850.80

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	3.6318	39.2890	36.4665	0.0758	0.5284	1.5796	2.1080	0.1234	1.4532	1.5466	0.0000	7,344.7476	7,344.7476	2.3059	0.0000	7,402.3949
2022	0.8267	7.0926	8.0399	0.0206	0.1232	0.2651	0.3883	0.0327	0.2439	0.2766	0.0000	2,002.3521	2,002.3521	0.6114	0.0000	2,017.6371
Maximum	**3.6318**	**39.2890**	**36.4665**	**0.0758**	**0.5284**	**1.5796**	**2.1080**	**0.1234**	**1.4532**	**1.5466**	**0.0000**	**7,344.7476**	**7,344.7476**	**2.3059**	**0.0000**	**7,402.3949**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	3.6318	39.2890	36.4665	0.0758	0.4546	1.5796	1.9439	0.1234	1.4532	1.5288	0.0000	7,344.7476	7,344.7476	2.3059	0.0000	7,402.3949
2022	0.8267	7.0926	8.0399	0.0206	0.1232	0.2651	0.3883	0.0327	0.2439	0.2766	0.0000	2,002.3521	2,002.3521	0.6114	0.0000	2,017.6371
Maximum	**3.6318**	**39.2890**	**36.4665**	**0.0758**	**0.4546**	**1.5796**	**1.9439**	**0.1234**	**1.4532**	**1.5288**	**0.0000**	**7,344.7476**	**7,344.7476**	**2.3059**	**0.0000**	**7,402.3949**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**11.32**	**0.00**	**6.57**	**0.00**	**0.00**	**0.98**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1223	2.0000e-005	2.5600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.4700e-003	5.4700e-003	1.0000e-005		5.8300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.8393	4.7294	7.3938	0.0290	2.0674	0.0230	2.0904	0.5528	0.0216	0.5745		2,942.8124	2,942.8124	0.1435		2,946.3986
Total	**0.9616**	**4.7294**	**7.3964**	**0.0290**	**2.0674**	**0.0230**	**2.0904**	**0.5528**	**0.0216**	**0.5745**		**2,942.8178**	**2,942.8178**	**0.1435**	**0.0000**	**2,946.4044**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1223	2.0000e-005	2.5600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.4700e-003	5.4700e-003	1.0000e-005		5.8300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.8393	4.7294	7.3938	0.0290	2.0674	0.0230	2.0904	0.5528	0.0216	0.5745		2,942.8124	2,942.8124	0.1435		2,946.3986
Total	**0.9616**	**4.7294**	**7.3964**	**0.0290**	**2.0674**	**0.0230**	**2.0904**	**0.5528**	**0.0216**	**0.5745**		**2,942.8178**	**2,942.8178**	**0.1435**	**0.0000**	**2,946.4044**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Clearing and Grubbing	Site Preparation	3/1/2021	4/30/2021	5	45	
2	Grading	Grading	4/10/2021	8/13/2021	5	90	
3	Access	Site Preparation	8/16/2021	11/5/2021	5	60	
4	Site Improvements	Site Preparation	11/8/2021	4/22/2022	5	120	
5	Planting	Site Preparation	3/14/2022	6/3/2022	5	60	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 25

Acres of Paving: 5

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Clearing and Grubbing	Excavators	1	8.00	201	0.38
Clearing and Grubbing	Skid Steer Loaders	2	8.00	74	0.37
Clearing and Grubbing	Tractors/Loaders/Backhoes	1	8.00	150	0.37
Grading	Excavators	1	8.00	201	0.38
Grading	Graders	0	0.00	0	0.00
Grading	Rollers	4	8.00	157	0.38
Grading	Scrapers	2	8.00	367	0.48
Access	Excavators	1	8.00	201	0.38
Access	Graders	0	0.00	0	0.00
Access	Rollers	2	8.00	157	0.38
Access	Skid Steer Loaders	2	8.00	65	0.37
Access	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Access	Trenchers	1	8.00	78	0.50
Site Improvements	Excavators	2	8.00	201	0.38
Site Improvements	Other General Industrial Equipment	2	8.00	24	0.34
Planting	Skid Steer Loaders	2	8.00	74	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Clearing and Grubbing	4	10.00	0.00	0.00	10.80	7.30	36.00	LD_Mix	HDT_Mix	HHDT
Grading	7	18.00	0.00	0.00	10.80	7.30	35.00	LD_Mix	HDT_Mix	HHDT
Access	7	18.00	0.00	600.00	10.80	7.30	35.00	LD_Mix	HDT_Mix	HHDT
Site Improvements	4	10.00	0.00	0.00	10.80	7.30	35.00	LD_Mix	HDT_Mix	HHDT
Planting	2	5.00	0.00	0.00	10.80	7.30	35.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

3.2 Clearing and Grubbing - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6075	6.6014	7.6763	0.0160		0.2653	0.2653		0.2441	0.2441		1,549.0362	1,549.0362	0.5010		1,561.5609
Total	**0.6075**	**6.6014**	**7.6763**	**0.0160**	**0.0000**	**0.2653**	**0.2653**	**0.0000**	**0.2441**	**0.2441**		**1,549.0362**	**1,549.0362**	**0.5010**		**1,561.5609**

3.2 Clearing and Grubbing - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0479	0.0266	0.3504	8.5000e-004	0.0822	6.1000e-004	0.0828	0.0218	5.6000e-004	0.0224		84.9354	84.9354	2.6300e-003		85.0011
Total	**0.0479**	**0.0266**	**0.3504**	**8.5000e-004**	**0.0822**	**6.1000e-004**	**0.0828**	**0.0218**	**5.6000e-004**	**0.0224**		**84.9354**	**84.9354**	**2.6300e-003**		**85.0011**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6075	6.6014	7.6763	0.0160		0.2653	0.2653		0.2441	0.2441	0.0000	1,549.0362	1,549.0362	0.5010		1,561.5609
Total	**0.6075**	**6.6014**	**7.6763**	**0.0160**	**0.0000**	**0.2653**	**0.2653**	**0.0000**	**0.2441**	**0.2441**	**0.0000**	**1,549.0362**	**1,549.0362**	**0.5010**		**1,561.5609**

3.2 Clearing and Grubbing - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0479	0.0266	0.3504	8.5000e-004	0.0822	6.1000e-004	0.0828	0.0218	5.6000e-004	0.0224		84.9354	84.9354	2.6300e-003		85.0011
Total	**0.0479**	**0.0266**	**0.3504**	**8.5000e-004**	**0.0822**	**6.1000e-004**	**0.0828**	**0.0218**	**5.6000e-004**	**0.0224**		**84.9354**	**84.9354**	**2.6300e-003**		**85.0011**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2984	0.0000	0.2984	0.0324	0.0000	0.0324			0.0000			0.0000
Off-Road	2.8901	32.6132	27.8091	0.0574		1.3126	1.3126		1.2076	1.2076		5,557.8924	5,557.8924	1.7975		5,602.8308
Total	**2.8901**	**32.6132**	**27.8091**	**0.0574**	**0.2984**	**1.3126**	**1.6110**	**0.0324**	**1.2076**	**1.2400**		**5,557.8924**	**5,557.8924**	**1.7975**		**5,602.8308**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0862	0.0478	0.6307	1.5400e-003	0.1479	1.0900e-003	0.1490	0.0392	1.0100e-003	0.0402		152.8836	152.8836	4.7400e-003		153.0020
Total	**0.0862**	**0.0478**	**0.6307**	**1.5400e-003**	**0.1479**	**1.0900e-003**	**0.1490**	**0.0392**	**1.0100e-003**	**0.0402**		**152.8836**	**152.8836**	**4.7400e-003**		**153.0020**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1343	0.0000	0.1343	0.0146	0.0000	0.0146			0.0000			0.0000
Off-Road	2.8901	32.6132	27.8091	0.0574		1.3126	1.3126		1.2076	1.2076	0.0000	5,557.8924	5,557.8924	1.7975		5,602.8308
Total	**2.8901**	**32.6132**	**27.8091**	**0.0574**	**0.1343**	**1.3126**	**1.4469**	**0.0146**	**1.2076**	**1.2222**	**0.0000**	**5,557.8924**	**5,557.8924**	**1.7975**		**5,602.8308**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0862	0.0478	0.6307	1.5400e-003	0.1479	1.0900e-003	0.1490	0.0392	1.0100e-003	0.0402		152.8836	152.8836	4.7400e-003		153.0020
Total	**0.0862**	**0.0478**	**0.6307**	**1.5400e-003**	**0.1479**	**1.0900e-003**	**0.1490**	**0.0392**	**1.0100e-003**	**0.0402**		**152.8836**	**152.8836**	**4.7400e-003**		**153.0020**

3.4 Access - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.3460	14.1677	15.2894	0.0274		0.7236	0.7236		0.6657	0.6657		2,657.0332	2,657.0332	0.8593		2,678.5167
Total	**1.3460**	**14.1677**	**15.2894**	**0.0274**	**0.0000**	**0.7236**	**0.7236**	**0.0000**	**0.6657**	**0.6657**		**2,657.0332**	**2,657.0332**	**0.8593**		**2,678.5167**

3.4 Access - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1174	3.6324	0.6040	0.0129	0.3067	0.0141	0.3208	0.0841	0.0135	0.0976		1,356.0279	1,356.0279	0.0571		1,357.4554
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0862	0.0478	0.6307	1.5400e-003	0.1479	1.0900e-003	0.1490	0.0392	1.0100e-003	0.0402		152.8836	152.8836	4.7400e-003		153.0020
Total	**0.2036**	**3.6802**	**1.2347**	**0.0145**	**0.4546**	**0.0152**	**0.4698**	**0.1234**	**0.0145**	**0.1378**		**1,508.9116**	**1,508.9116**	**0.0618**		**1,510.4574**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.3460	14.1677	15.2894	0.0274		0.7236	0.7236		0.6657	0.6657	0.0000	2,657.0332	2,657.0332	0.8593		2,678.5167
Total	**1.3460**	**14.1677**	**15.2894**	**0.0274**	**0.0000**	**0.7236**	**0.7236**	**0.0000**	**0.6657**	**0.6657**	**0.0000**	**2,657.0332**	**2,657.0332**	**0.8593**		**2,678.5167**

3.4 Access - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1174	3.6324	0.6040	0.0129	0.3067	0.0141	0.3208	0.0841	0.0135	0.0976		1,356.0279	1,356.0279	0.0571		1,357.4554
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0862	0.0478	0.6307	1.5400e-003	0.1479	1.0900e-003	0.1490	0.0392	1.0100e-003	0.0402		152.8836	152.8836	4.7400e-003		153.0020
Total	**0.2036**	**3.6802**	**1.2347**	**0.0145**	**0.4546**	**0.0152**	**0.4698**	**0.1234**	**0.0145**	**0.1378**		**1,508.9116**	**1,508.9116**	**0.0618**		**1,510.4574**

3.5 Site Improvements - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6779	5.8694	4.5018	0.0147		0.2240	0.2240		0.2061	0.2061		1,422.5690	1,422.5690	0.4601		1,434.0712
Total	**0.6779**	**5.8694**	**4.5018**	**0.0147**	**0.0000**	**0.2240**	**0.2240**	**0.0000**	**0.2061**	**0.2061**		**1,422.5690**	**1,422.5690**	**0.4601**		**1,434.0712**

3.5 Site Improvements - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0479	0.0266	0.3504	8.5000e-004	0.0822	6.1000e-004	0.0828	0.0218	5.6000e-004	0.0224		84.9354	84.9354	2.6300e-003		85.0011
Total	**0.0479**	**0.0266**	**0.3504**	**8.5000e-004**	**0.0822**	**6.1000e-004**	**0.0828**	**0.0218**	**5.6000e-004**	**0.0224**		**84.9354**	**84.9354**	**2.6300e-003**		**85.0011**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6779	5.8694	4.5018	0.0147		0.2240	0.2240		0.2061	0.2061	0.0000	1,422.5690	1,422.5690	0.4601		1,434.0712
Total	**0.6779**	**5.8694**	**4.5018**	**0.0147**	**0.0000**	**0.2240**	**0.2240**	**0.0000**	**0.2061**	**0.2061**	**0.0000**	**1,422.5690**	**1,422.5690**	**0.4601**		**1,434.0712**

3.5 Site Improvements - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0479	0.0266	0.3504	8.5000e-004	0.0822	6.1000e-004	0.0828	0.0218	5.6000e-004	0.0224		84.9354	84.9354	2.6300e-003		85.0011
Total	**0.0479**	**0.0266**	**0.3504**	**8.5000e-004**	**0.0822**	**6.1000e-004**	**0.0828**	**0.0218**	**5.6000e-004**	**0.0224**		**84.9354**	**84.9354**	**2.6300e-003**		**85.0011**

3.5 Site Improvements - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6018	4.9426	4.4020	0.0147		0.1857	0.1857		0.1708	0.1708		1,423.2376	1,423.2376	0.4603		1,434.7452
Total	**0.6018**	**4.9426**	**4.4020**	**0.0147**	**0.0000**	**0.1857**	**0.1857**	**0.0000**	**0.1708**	**0.1708**		**1,423.2376**	**1,423.2376**	**0.4603**		**1,434.7452**

3.5 Site Improvements - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0442	0.0237	0.3196	8.2000e-004	0.0822	5.9000e-004	0.0827	0.0218	5.4000e-004	0.0223		81.8927	81.8927	2.3500e-003		81.9515
Total	**0.0442**	**0.0237**	**0.3196**	**8.2000e-004**	**0.0822**	**5.9000e-004**	**0.0827**	**0.0218**	**5.4000e-004**	**0.0223**		**81.8927**	**81.8927**	**2.3500e-003**		**81.9515**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6018	4.9426	4.4020	0.0147		0.1857	0.1857		0.1708	0.1708	0.0000	1,423.2376	1,423.2376	0.4603		1,434.7452
Total	**0.6018**	**4.9426**	**4.4020**	**0.0147**	**0.0000**	**0.1857**	**0.1857**	**0.0000**	**0.1708**	**0.1708**	**0.0000**	**1,423.2376**	**1,423.2376**	**0.4603**		**1,434.7452**

3.5 Site Improvements - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0442	0.0237	0.3196	8.2000e-004	0.0822	5.9000e-004	0.0827	0.0218	5.4000e-004	0.0223		81.8927	81.8927	2.3500e-003		81.9515
Total	**0.0442**	**0.0237**	**0.3196**	**8.2000e-004**	**0.0822**	**5.9000e-004**	**0.0827**	**0.0218**	**5.4000e-004**	**0.0223**		**81.8927**	**81.8927**	**2.3500e-003**		**81.9515**

3.6 Planting - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.1585	2.1144	3.1585	4.7100e-003		0.0786	0.0786		0.0723	0.0723		456.2755	456.2755	0.1476		459.9647
Total	**0.1585**	**2.1144**	**3.1585**	**4.7100e-003**	**0.0000**	**0.0786**	**0.0786**	**0.0000**	**0.0723**	**0.0723**		**456.2755**	**456.2755**	**0.1476**		**459.9647**

3.6 Planting - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0221	0.0119	0.1598	4.1000e-004	0.0411	2.9000e-004	0.0414	0.0109	2.7000e-004	0.0112		40.9464	40.9464	1.1800e-003		40.9758
Total	**0.0221**	**0.0119**	**0.1598**	**4.1000e-004**	**0.0411**	**2.9000e-004**	**0.0414**	**0.0109**	**2.7000e-004**	**0.0112**		**40.9464**	**40.9464**	**1.1800e-003**		**40.9758**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.1585	2.1144	3.1585	4.7100e-003		0.0786	0.0786		0.0723	0.0723	0.0000	456.2755	456.2755	0.1476		459.9647
Total	**0.1585**	**2.1144**	**3.1585**	**4.7100e-003**	**0.0000**	**0.0786**	**0.0786**	**0.0000**	**0.0723**	**0.0723**	**0.0000**	**456.2755**	**456.2755**	**0.1476**		**459.9647**

3.6 Planting - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0221	0.0119	0.1598	4.1000e-004	0.0411	2.9000e-004	0.0414	0.0109	2.7000e-004	0.0112		40.9464	40.9464	1.1800e-003		40.9758
Total	**0.0221**	**0.0119**	**0.1598**	**4.1000e-004**	**0.0411**	**2.9000e-004**	**0.0414**	**0.0109**	**2.7000e-004**	**0.0112**		**40.9464**	**40.9464**	**1.1800e-003**		**40.9758**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.8393	4.7294	7.3938	0.0290	2.0674	0.0230	2.0904	0.5528	0.0216	0.5745		2,942.8124	2,942.8124	0.1435		2,946.3986
Unmitigated	0.8393	4.7294	7.3938	0.0290	2.0674	0.0230	2.0904	0.5528	0.0216	0.5745		2,942.8124	2,942.8124	0.1435		2,946.3986

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	37.80	455.00	334.80	298,513	298,513
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	37.80	455.00	334.80	298,513	298,513

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.556917	0.035296	0.183646	0.120139	0.017882	0.004687	0.016156	0.056151	0.001190	0.001453	0.005055	0.000610	0.000818
Other Non-Asphalt Surfaces	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1223	2.0000e-005	2.5600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.4700e-003	5.4700e-003	1.0000e-005		5.8300e-003
Unmitigated	0.1223	2.0000e-005	2.5600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.4700e-003	5.4700e-003	1.0000e-005		5.8300e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1220					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.4000e-004	2.0000e-005	2.5600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.4700e-003	5.4700e-003	1.0000e-005		5.8300e-003
Total	**0.1223**	**2.0000e-005**	**2.5600e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**5.4700e-003**	**5.4700e-003**	**1.0000e-005**		**5.8300e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1220					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.4000e-004	2.0000e-005	2.5600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.4700e-003	5.4700e-003	1.0000e-005		5.8300e-003
Total	**0.1223**	**2.0000e-005**	**2.5600e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**5.4700e-003**	**5.4700e-003**	**1.0000e-005**		**5.8300e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Redtail- Pipe Extension

Merced County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.20		0.20	8,712.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Redtail- Pipe Extension - Merced County, Annual

Project Characteristics -

Land Use -

Construction Phase - Estimates

Off-road Equipment - Equip Specs

Off-road Equipment - Specs

Off-road Equipment - Off Highway Trucks:
- 10 wheeler
- Cement truck

Trips and VMT - Estimating some amount of trips required to move concrete.

Grading -

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	523	0
tblConstructionPhase	NumDays	5.00	20.00
tblFleetMix	HHD	0.06	0.00
tblFleetMix	LDA	0.56	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.6870e-003	0.00
tblFleetMix	MCY	5.0550e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	8.1800e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.1900e-003	0.00

tblFleetMix	SBUS	6.1000e-004	0.00
tblFleetMix	UBUS	1.4530e-003	0.00
tblOffRoadEquipment	HorsePower	80.00	157.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSequestration	NumberOfNewTrees	0.00	110.00
tblTripsAndVMT	HaulingTripNumber	0.00	60.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripLength	6.60	7.30
tblTripsAndVMT	VendorTripLength	6.60	7.30
tblTripsAndVMT	WorkerTripLength	16.80	10.80
tblTripsAndVMT	WorkerTripLength	16.80	10.80

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0235	0.2061	0.2149	4.7000e-004	2.6700e-003	0.0100	0.0127	7.2000e-004	9.6000e-003	0.0103	0.0000	40.6700	40.6700	7.9400e-003	0.0000	40.8686
Maximum	**0.0235**	**0.2061**	**0.2149**	**4.7000e-004**	**2.6700e-003**	**0.0100**	**0.0127**	**7.2000e-004**	**9.6000e-003**	**0.0103**	**0.0000**	**40.6700**	**40.6700**	**7.9400e-003**	**0.0000**	**40.8686**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0235	0.2061	0.2149	4.7000e-004	2.6700e-003	0.0100	0.0127	7.2000e-004	9.6000e-003	0.0103	0.0000	40.6700	40.6700	7.9400e-003	0.0000	40.8685
Maximum	**0.0235**	**0.2061**	**0.2149**	**4.7000e-004**	**2.6700e-003**	**0.0100**	**0.0127**	**7.2000e-004**	**9.6000e-003**	**0.0103**	**0.0000**	**40.6700**	**40.6700**	**7.9400e-003**	**0.0000**	**40.8685**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Redtail- Pipe Extension - Merced County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-1-2021	5-31-2021	0.0255	0.0255
2	6-1-2021	8-31-2021	0.2040	0.2040
		Highest	0.2040	0.2040

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.6000e-004	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.6000e-004**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.6000e-004	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.6000e-004**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	77.8800
Vegetation Land Change	0.0000
Total	**77.8800**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Paving	Paving	5/22/2021	6/18/2021	5	20	
2	Excevation, Pipe Laying, and Trench Backfill	Trenching	6/19/2021	7/16/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.2

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Concrete/Industrial Saws	1	8.00	81	0.73
Paving	Rollers	1	8.00	157	0.38
Excevation, Pipe Laying, and Trench Backfill	Air Compressors	1	8.00	78	0.48
Excevation, Pipe Laying, and Trench Backfill	Excavators	2	8.00	201	0.38
Excevation, Pipe Laying, and Trench Backfill	Generator Sets	1	8.00	84	0.74
Excevation, Pipe Laying, and Trench Backfill	Plate Compactors	1	8.00	8	0.43
Excevation, Pipe Laying, and Trench Backfill	Sweepers/Scrubbers	1	8.00	64	0.46
Excevation, Pipe Laying, and Trench Backfill	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Paving	3	8.00	0.00	60.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excevation, Pipe Laying, and Trench Ba	7	18.00	0.00	10.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.4700e-003	0.0563	0.0706	1.2000e-004		2.9000e-003	2.9000e-003		2.8200e-003	2.8200e-003	0.0000	10.3402	10.3402	1.8200e-003	0.0000	10.3856
Paving	2.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7300e-003**	**0.0563**	**0.0706**	**1.2000e-004**		**2.9000e-003**	**2.9000e-003**		**2.8200e-003**	**2.8200e-003**	**0.0000**	**10.3402**	**10.3402**	**1.8200e-003**	**0.0000**	**10.3856**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	7.7100e-003	1.1900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.4000e-004	1.4000e-004	2.0000e-005	1.7000e-004	0.0000	2.2582	2.2582	1.5000e-004	0.0000	2.2621
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.3000e-004	2.4300e-003	1.0000e-005	6.4000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5636	0.5636	2.0000e-005	0.0000	0.5640
Total	**5.6000e-004**	**7.9400e-003**	**3.6200e-003**	**3.0000e-005**	**1.1500e-003**	**3.0000e-005**	**1.1800e-003**	**3.1000e-004**	**2.0000e-005**	**3.4000e-004**	**0.0000**	**2.8218**	**2.8218**	**1.7000e-004**	**0.0000**	**2.8261**

3.2 Paving - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.4700e-003	0.0563	0.0706	1.2000e-004		2.9000e-003	2.9000e-003		2.8200e-003	2.8200e-003	0.0000	10.3402	10.3402	1.8200e-003	0.0000	10.3856
Paving	2.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7300e-003**	**0.0563**	**0.0706**	**1.2000e-004**		**2.9000e-003**	**2.9000e-003**		**2.8200e-003**	**2.8200e-003**	**0.0000**	**10.3402**	**10.3402**	**1.8200e-003**	**0.0000**	**10.3856**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	7.7100e-003	1.1900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.4000e-004	1.4000e-004	2.0000e-005	1.7000e-004	0.0000	2.2582	2.2582	1.5000e-004	0.0000	2.2621
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.3000e-004	2.4300e-003	1.0000e-005	6.4000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5636	0.5636	2.0000e-005	0.0000	0.5640
Total	**5.6000e-004**	**7.9400e-003**	**3.6200e-003**	**3.0000e-005**	**1.1500e-003**	**3.0000e-005**	**1.1800e-003**	**3.1000e-004**	**2.0000e-005**	**3.4000e-004**	**0.0000**	**2.8218**	**2.8218**	**1.7000e-004**	**0.0000**	**2.8261**

3.3 Excevation, Pipe Laying, and Trench Backfill - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0154	0.1400	0.1350	3.0000e-004		7.0700e-003	7.0700e-003		6.7500e-003	6.7500e-003	0.0000	25.8636	25.8636	5.8900e-003	0.0000	26.0108
Total	**0.0154**	**0.1400**	**0.1350**	**3.0000e-004**		**7.0700e-003**	**7.0700e-003**		**6.7500e-003**	**6.7500e-003**	**0.0000**	**25.8636**	**25.8636**	**5.8900e-003**	**0.0000**	**26.0108**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.2800e-003	2.0000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	3.0000e-005	0.0000	0.3764	0.3764	3.0000e-005	0.0000	0.3770
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.5000e-004	5.2000e-004	5.4600e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2681	1.2681	4.0000e-005	0.0000	1.2691
Total	**7.9000e-004**	**1.8000e-003**	**5.6600e-003**	**1.0000e-005**	**1.5300e-003**	**1.0000e-005**	**1.5400e-003**	**4.0000e-004**	**1.0000e-005**	**4.2000e-004**	**0.0000**	**1.6445**	**1.6445**	**7.0000e-005**	**0.0000**	**1.6461**

3.3 Excevation, Pipe Laying, and Trench Backfill - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0154	0.1400	0.1350	3.0000e-004		7.0700e-003	7.0700e-003		6.7500e-003	6.7500e-003	0.0000	25.8636	25.8636	5.8900e-003	0.0000	26.0108
Total	**0.0154**	**0.1400**	**0.1350**	**3.0000e-004**		**7.0700e-003**	**7.0700e-003**		**6.7500e-003**	**6.7500e-003**	**0.0000**	**25.8636**	**25.8636**	**5.8900e-003**	**0.0000**	**26.0108**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.2800e-003	2.0000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	3.0000e-005	0.0000	0.3764	0.3764	3.0000e-005	0.0000	0.3770
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.5000e-004	5.2000e-004	5.4600e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2681	1.2681	4.0000e-005	0.0000	1.2691
Total	**7.9000e-004**	**1.8000e-003**	**5.6600e-003**	**1.0000e-005**	**1.5300e-003**	**1.0000e-005**	**1.5400e-003**	**4.0000e-004**	**1.0000e-005**	**4.2000e-004**	**0.0000**	**1.6445**	**1.6445**	**7.0000e-005**	**0.0000**	**1.6461**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.6000e-004	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	5.6000e-004	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.6000e-004**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.6000e-004**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	77.8800	0.0000	0.0000	77.8800

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Wetlands	78 / 78	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	110	77.8800	0.0000	0.0000	77.8800
Total		**77.8800**	**0.0000**	**0.0000**	**77.8800**

Redtail- Pipe Extension

Merced County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.20		0.20	8,712.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Redtail- Pipe Extension - Merced County, Summer

Project Characteristics -

Land Use -

Construction Phase - Estimates

Off-road Equipment - Equip Specs

Off-road Equipment - Specs

Off-road Equipment - Off Highway Trucks:
- 10 wheeler
- Cement truck

Trips and VMT - Estimating some amount of trips required to move concrete.

Grading -

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	523	0
tblConstructionPhase	NumDays	5.00	20.00
tblFleetMix	HHD	0.06	0.00
tblFleetMix	LDA	0.56	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.6870e-003	0.00
tblFleetMix	MCY	5.0550e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	8.1800e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.1900e-003	0.00

tblFleetMix	SBUS	6.1000e-004	0.00
tblFleetMix	UBUS	1.4530e-003	0.00
tblOffRoadEquipment	HorsePower	80.00	157.00
tblOffRoadEquipment	HorsePower	158.00	201.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSequestration	NumberOfNewTrees	0.00	110.00
tblTripsAndVMT	HaulingTripNumber	0.00	60.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripLength	6.60	7.30
tblTripsAndVMT	VendorTripLength	6.60	7.30
tblTripsAndVMT	WorkerTripLength	16.80	10.80
tblTripsAndVMT	WorkerTripLength	16.80	10.80

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6338	14.1754	14.1517	0.0318	0.1566	0.7084	0.8650	0.0416	0.6759	0.7176	0.0000	3,045.7415	3,045.7415	0.6566	0.0000	3,062.1562
Maximum	**1.6338**	**14.1754**	**14.1517**	**0.0318**	**0.1566**	**0.7084**	**0.8650**	**0.0416**	**0.6759**	**0.7176**	**0.0000**	**3,045.7415**	**3,045.7415**	**0.6566**	**0.0000**	**3,062.1562**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6338	14.1754	14.1517	0.0318	0.1566	0.7084	0.8650	0.0416	0.6759	0.7176	0.0000	3,045.7415	3,045.7415	0.6566	0.0000	3,062.1562
Maximum	**1.6338**	**14.1754**	**14.1517**	**0.0318**	**0.1566**	**0.7084**	**0.8650**	**0.0416**	**0.6759**	**0.7176**	**0.0000**	**3,045.7415**	**3,045.7415**	**0.6566**	**0.0000**	**3,062.1562**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.0900e-003	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		4.0000e-005	4.0000e-005	0.0000		5.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.0900e-003**	**0.0000**	**2.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**0.0000**	**5.0000e-005**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.0900e-003	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		4.0000e-005	4.0000e-005	0.0000		5.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.0900e-003**	**0.0000**	**2.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**0.0000**	**5.0000e-005**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Paving	Paving	5/22/2021	6/18/2021	5	20	
2	Excavation, Pipe Laying, and Trench Backfill	Trenching	6/19/2021	7/16/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.2

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Concrete/Industrial Saws	1	8.00	81	0.73
Paving	Rollers	1	8.00	157	0.38
Excavation, Pipe Laying, and Trench Backfill	Air Compressors	1	8.00	78	0.48
Excavation, Pipe Laying, and Trench Backfill	Excavators	2	8.00	201	0.38
Excavation, Pipe Laying, and Trench Backfill	Generator Sets	1	8.00	84	0.74
Excavation, Pipe Laying, and Trench Backfill	Plate Compactors	1	8.00	8	0.43
Excavation, Pipe Laying, and Trench Backfill	Sweepers/Scrubbers	1	8.00	64	0.46
Excavation, Pipe Laying, and Trench Backfill	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Paving	3	8.00	0.00	60.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation, Pipe Laying, and Trench Ba	7	18.00	0.00	10.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6466	5.6335	7.0608	0.0121		0.2898	0.2898		0.2816	0.2816		1,139.8087	1,139.8087	0.2003		1,144.8157
Paving	0.0262					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6728**	**5.6335**	**7.0608**	**0.0121**		**0.2898**	**0.2898**		**0.2816**	**0.2816**		**1,139.8087**	**1,139.8087**	**0.2003**		**1,144.8157**

3.2 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0226	0.7547	0.1130	2.4000e-003	0.0526	2.4800e-003	0.0551	0.0144	2.3800e-003	0.0168		251.3193	251.3193	0.0161		251.7221
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0383	0.0213	0.2803	6.8000e-004	0.0657	4.9000e-004	0.0662	0.0174	4.5000e-004	0.0179		67.9483	67.9483	2.1100e-003		68.0009
Total	**0.0609**	**0.7760**	**0.3933**	**3.0800e-003**	**0.1183**	**2.9700e-003**	**0.1213**	**0.0319**	**2.8300e-003**	**0.0347**		**319.2676**	**319.2676**	**0.0182**		**319.7230**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6466	5.6335	7.0608	0.0121		0.2898	0.2898		0.2816	0.2816	0.0000	1,139.8087	1,139.8087	0.2003		1,144.8157
Paving	0.0262					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6728**	**5.6335**	**7.0608**	**0.0121**		**0.2898**	**0.2898**		**0.2816**	**0.2816**	**0.0000**	**1,139.8087**	**1,139.8087**	**0.2003**		**1,144.8157**

3.2 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0226	0.7547	0.1130	2.4000e-003	0.0526	2.4800e-003	0.0551	0.0144	2.3800e-003	0.0168		251.3193	251.3193	0.0161		251.7221
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0383	0.0213	0.2803	6.8000e-004	0.0657	4.9000e-004	0.0662	0.0174	4.5000e-004	0.0179		67.9483	67.9483	2.1100e-003		68.0009
Total	**0.0609**	**0.7760**	**0.3933**	**3.0800e-003**	**0.1183**	**2.9700e-003**	**0.1213**	**0.0319**	**2.8300e-003**	**0.0347**		**319.2676**	**319.2676**	**0.0182**		**319.7230**

3.3 Excavation, Pipe Laying, and Trench Backfill - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5438	14.0018	13.5022	0.0298		0.7068	0.7068		0.6745	0.6745		2,850.9713	2,850.9713	0.6492		2,867.2005
Total	**1.5438**	**14.0018**	**13.5022**	**0.0298**		**0.7068**	**0.7068**		**0.6745**	**0.6745**		**2,850.9713**	**2,850.9713**	**0.6492**		**2,867.2005**

3.3 Excevation, Pipe Laying, and Trench Backfill - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.7600e-003	0.1258	0.0188	4.0000e-004	8.7700e-003	4.1000e-004	9.1800e-003	2.4100e-003	4.0000e-004	2.8000e-003		41.8866	41.8866	2.6900e-003		41.9537
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0862	0.0478	0.6307	1.5400e-003	0.1479	1.0900e-003	0.1490	0.0392	1.0100e-003	0.0402		152.8836	152.8836	4.7400e-003		153.0020
Total	**0.0900**	**0.1736**	**0.6495**	**1.9400e-003**	**0.1566**	**1.5000e-003**	**0.1581**	**0.0416**	**1.4100e-003**	**0.0430**		**194.7702**	**194.7702**	**7.4300e-003**		**194.9557**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5438	14.0018	13.5022	0.0298		0.7068	0.7068		0.6745	0.6745	0.0000	2,850.9713	2,850.9713	0.6492		2,867.2005
Total	**1.5438**	**14.0018**	**13.5022**	**0.0298**		**0.7068**	**0.7068**		**0.6745**	**0.6745**	**0.0000**	**2,850.9713**	**2,850.9713**	**0.6492**		**2,867.2005**

3.3 Excevation, Pipe Laying, and Trench Backfill - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.7600e-003	0.1258	0.0188	4.0000e-004	8.7700e-003	4.1000e-004	9.1800e-003	2.4100e-003	4.0000e-004	2.8000e-003		41.8866	41.8866	2.6900e-003		41.9537
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0862	0.0478	0.6307	1.5400e-003	0.1479	1.0900e-003	0.1490	0.0392	1.0100e-003	0.0402		152.8836	152.8836	4.7400e-003		153.0020
Total	**0.0900**	**0.1736**	**0.6495**	**1.9400e-003**	**0.1566**	**1.5000e-003**	**0.1581**	**0.0416**	**1.4100e-003**	**0.0430**		**194.7702**	**194.7702**	**7.4300e-003**		**194.9557**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.0900e-003	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		4.0000e-005	4.0000e-005	0.0000		5.0000e-005
Unmitigated	3.0900e-003	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		4.0000e-005	4.0000e-005	0.0000		5.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.0900e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		4.0000e-005	4.0000e-005	0.0000		5.0000e-005
Total	**3.0900e-003**	**0.0000**	**2.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**4.0000e-005**	**4.0000e-005**	**0.0000**		**5.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.0900e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		4.0000e-005	4.0000e-005	0.0000		5.0000e-005
Total	**3.0900e-003**	**0.0000**	**2.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**4.0000e-005**	**4.0000e-005**	**0.0000**		**5.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Redtail- NNP Paving

Merced County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	4.00	1000sqft	0.09	4,000.00	0
Parking Lot	7.50	1000sqft	0.17	7,500.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Off-road Equipment - Based off listed equipment

Off-road Equipment - Based off listed equipment

Grading - Based on acres graded

Table Name	Column Name	Default Value	New Value
tblGrading	AcresOfGrading	0.00	0.26
tblOffRoadEquipment	HorsePower	80.00	157.00
tblOffRoadEquipment	HorsePower	247.00	276.00
tblOffRoadEquipment	HorsePower	97.00	155.00
tblOffRoadEquipment	HorsePower	97.00	155.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	3.3200e-003	0.0254	0.0333	6.0000e-005	1.3300e-003	1.2300e-003	2.5600e-003	5.5000e-004	1.1500e-003	1.7000e-003	0.0000	4.8451	4.8451	1.2400e-003	0.0000	4.8760
Maximum	**3.3200e-003**	**0.0254**	**0.0333**	**6.0000e-005**	**1.3300e-003**	**1.2300e-003**	**2.5600e-003**	**5.5000e-004**	**1.1500e-003**	**1.7000e-003**	**0.0000**	**4.8451**	**4.8451**	**1.2400e-003**	**0.0000**	**4.8760**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	3.3200e-003	0.0254	0.0333	6.0000e-005	1.3300e-003	1.2300e-003	2.5600e-003	5.5000e-004	1.1500e-003	1.7000e-003	0.0000	4.8451	4.8451	1.2400e-003	0.0000	4.8760
Maximum	**3.3200e-003**	**0.0254**	**0.0333**	**6.0000e-005**	**1.3300e-003**	**1.2300e-003**	**2.5600e-003**	**5.5000e-004**	**1.1500e-003**	**1.7000e-003**	**0.0000**	**4.8451**	**4.8451**	**1.2400e-003**	**0.0000**	**4.8760**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	2-23-2021	5-22-2021	0.0264	0.0264
		Highest	0.0264	0.0264

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	9.9000e-004	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.1000e-004	2.1000e-004	0.0000	0.0000	2.2000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1709	1.1709	5.0000e-005	1.0000e-005	1.1755
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.9000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.1711**	**1.1711**	**5.0000e-005**	**1.0000e-005**	**1.1757**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	9.9000e-004	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.1000e-004	2.1000e-004	0.0000	0.0000	2.2000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1709	1.1709	5.0000e-005	1.0000e-005	1.1755
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.9000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.1711**	**1.1711**	**5.0000e-005**	**1.0000e-005**	**1.1757**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	3/10/2021	3/11/2021	5	2	
2	Paving	Paving	3/11/2021	3/17/2021	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0.26

Acres of Paving: 0.26

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	276	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	155	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	157	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	155	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.9000e-004	0.0000	8.9000e-004	4.3000e-004	0.0000	4.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.4000e-004	7.4000e-003	9.3500e-003	1.0000e-005		3.9000e-004	3.9000e-004		3.7000e-004	3.7000e-004	0.0000	1.2869	1.2869	2.7000e-004	0.0000	1.2938
Total	**8.4000e-004**	**7.4000e-003**	**9.3500e-003**	**1.0000e-005**	**8.9000e-004**	**3.9000e-004**	**1.2800e-003**	**4.3000e-004**	**3.7000e-004**	**8.0000e-004**	**0.0000**	**1.2869**	**1.2869**	**2.7000e-004**	**0.0000**	**1.2938**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	3.0000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0705	0.0705	0.0000	0.0000	0.0705
Total	**4.0000e-005**	**3.0000e-005**	**3.0000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0705**	**0.0705**	**0.0000**	**0.0000**	**0.0705**

3.2 Grading - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.9000e-004	0.0000	8.9000e-004	4.3000e-004	0.0000	4.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.4000e-004	7.4000e-003	9.3500e-003	1.0000e-005		3.9000e-004	3.9000e-004		3.7000e-004	3.7000e-004	0.0000	1.2869	1.2869	2.7000e-004	0.0000	1.2938
Total	**8.4000e-004**	**7.4000e-003**	**9.3500e-003**	**1.0000e-005**	**8.9000e-004**	**3.9000e-004**	**1.2800e-003**	**4.3000e-004**	**3.7000e-004**	**8.0000e-004**	**0.0000**	**1.2869**	**1.2869**	**2.7000e-004**	**0.0000**	**1.2938**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	3.0000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0705	0.0705	0.0000	0.0000	0.0705
Total	**4.0000e-005**	**3.0000e-005**	**3.0000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0705**	**0.0705**	**0.0000**	**0.0000**	**0.0705**

3.3 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.9100e-003	0.0179	0.0222	4.0000e-005		8.4000e-004	8.4000e-004		7.8000e-004	7.8000e-004	0.0000	3.1708	3.1708	9.5000e-004	0.0000	3.1945
Paving	3.4000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.2500e-003**	**0.0179**	**0.0222**	**4.0000e-005**		**8.4000e-004**	**8.4000e-004**		**7.8000e-004**	**7.8000e-004**	**0.0000**	**3.1708**	**3.1708**	**9.5000e-004**	**0.0000**	**3.1945**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	1.3000e-004	1.3700e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3170	0.3170	1.0000e-005	0.0000	0.3173
Total	**1.9000e-004**	**1.3000e-004**	**1.3700e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3170**	**0.3170**	**1.0000e-005**	**0.0000**	**0.3173**

3.3 Paving - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.9100e-003	0.0179	0.0222	4.0000e-005		8.4000e-004	8.4000e-004		7.8000e-004	7.8000e-004	0.0000	3.1707	3.1707	9.5000e-004	0.0000	3.1945
Paving	3.4000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.2500e-003**	**0.0179**	**0.0222**	**4.0000e-005**		**8.4000e-004**	**8.4000e-004**		**7.8000e-004**	**7.8000e-004**	**0.0000**	**3.1707**	**3.1707**	**9.5000e-004**	**0.0000**	**3.1945**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	1.3000e-004	1.3700e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3170	0.3170	1.0000e-005	0.0000	0.3173
Total	**1.9000e-004**	**1.3000e-004**	**1.3700e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3170**	**0.3170**	**1.0000e-005**	**0.0000**	**0.3173**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.552050	0.036079	0.182449	0.124563	0.019215	0.004844	0.016098	0.055414	0.001187	0.001496	0.005121	0.000613	0.000871

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1.1709	1.1709	5.0000e-005	1.0000e-005	1.1755
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1.1709	1.1709	5.0000e-005	1.0000e-005	1.1755
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	1400	0.4073	2.0000e-005	0.0000	0.4089
Parking Lot	2625	0.7636	3.0000e-005	1.0000e-005	0.7666
Total		**1.1709**	**5.0000e-005**	**1.0000e-005**	**1.1755**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	1400	0.4073	2.0000e-005	0.0000	0.4089
Parking Lot	2625	0.7636	3.0000e-005	1.0000e-005	0.7666
Total		**1.1709**	**5.0000e-005**	**1.0000e-005**	**1.1755**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	9.9000e-004	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.1000e-004	2.1000e-004	0.0000	0.0000	2.2000e-004
Unmitigated	9.9000e-004	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.1000e-004	2.1000e-004	0.0000	0.0000	2.2000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.4000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	7.4000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.1000e-004	2.1000e-004	0.0000	0.0000	2.2000e-004
Total	**9.9000e-004**	**0.0000**	**1.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.1000e-004**	**2.1000e-004**	**0.0000**	**0.0000**	**2.2000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.4000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	7.4000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.1000e-004	2.1000e-004	0.0000	0.0000	2.2000e-004
Total	**9.9000e-004**	**0.0000**	**1.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.1000e-004**	**2.1000e-004**	**0.0000**	**0.0000**	**2.2000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Redtail- NNP Paving

Merced County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	4.00	1000sqft	0.09	4,000.00	0
Parking Lot	7.50	1000sqft	0.17	7,500.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Off-road Equipment - Based off listed equipment

Off-road Equipment - Based off listed equipment

Grading - Based on acres graded

Table Name	Column Name	Default Value	New Value
tblGrading	AcresOfGrading	0.00	0.26
tblOffRoadEquipment	HorsePower	80.00	157.00
tblOffRoadEquipment	HorsePower	247.00	276.00
tblOffRoadEquipment	HorsePower	97.00	155.00
tblOffRoadEquipment	HorsePower	97.00	155.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.8752	14.6272	19.2237	0.0322	1.1207	0.7236	1.8443	0.4897	0.6830	1.1727	0.0000	3,054.4692	3,054.4692	0.7278	0.0000	3,072.6638
Maximum	**1.8752**	**14.6272**	**19.2237**	**0.0322**	**1.1207**	**0.7236**	**1.8443**	**0.4897**	**0.6830**	**1.1727**	**0.0000**	**3,054.4692**	**3,054.4692**	**0.7278**	**0.0000**	**3,072.6638**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.8752	14.6272	19.2237	0.0322	1.1207	0.7236	1.8443	0.4897	0.6830	1.1727	0.0000	3,054.4692	3,054.4692	0.7278	0.0000	3,072.6638
Maximum	**1.8752**	**14.6272**	**19.2237**	**0.0322**	**1.1207**	**0.7236**	**1.8443**	**0.4897**	**0.6830**	**1.1727**	**0.0000**	**3,054.4692**	**3,054.4692**	**0.7278**	**0.0000**	**3,072.6638**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.5000e-003	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.5000e-003**	**1.0000e-005**	**1.1800e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.5200e-003**	**2.5200e-003**	**1.0000e-005**	**0.0000**	**2.6800e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.5000e-003	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.5000e-003**	**1.0000e-005**	**1.1800e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.5200e-003**	**2.5200e-003**	**1.0000e-005**	**0.0000**	**2.6800e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	3/10/2021	3/11/2021	5	2	
2	Paving	Paving	3/11/2021	3/17/2021	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0.26

Acres of Paving: 0.26

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	276	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	155	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	157	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	155	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.8906	0.0000	0.8906	0.4287	0.0000	0.4287			0.0000			0.0000
Off-Road	0.8400	7.4034	9.3469	0.0148		0.3875	0.3875		0.3704	0.3704		1,418.5897	1,418.5897	0.3015		1,426.1281
Total	**0.8400**	**7.4034**	**9.3469**	**0.0148**	**0.8906**	**0.3875**	**1.2782**	**0.4287**	**0.3704**	**0.7991**		**1,418.5897**	**1,418.5897**	**0.3015**		**1,426.1281**

3.2 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0479	0.0266	0.3504	8.5000e-004	0.0822	6.1000e-004	0.0828	0.0218	5.6000e-004	0.0224		84.9354	84.9354	2.6300e-003		85.0011
Total	**0.0479**	**0.0266**	**0.3504**	**8.5000e-004**	**0.0822**	**6.1000e-004**	**0.0828**	**0.0218**	**5.6000e-004**	**0.0224**		**84.9354**	**84.9354**	**2.6300e-003**		**85.0011**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.8906	0.0000	0.8906	0.4287	0.0000	0.4287			0.0000			0.0000
Off-Road	0.8400	7.4034	9.3469	0.0148		0.3875	0.3875		0.3704	0.3704	0.0000	1,418.5897	1,418.5897	0.3015		1,426.1281
Total	**0.8400**	**7.4034**	**9.3469**	**0.0148**	**0.8906**	**0.3875**	**1.2782**	**0.4287**	**0.3704**	**0.7991**	**0.0000**	**1,418.5897**	**1,418.5897**	**0.3015**		**1,426.1281**

3.2 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0479	0.0266	0.3504	8.5000e-004	0.0822	6.1000e-004	0.0828	0.0218	5.6000e-004	0.0224		84.9354	84.9354	2.6300e-003		85.0011
Total	**0.0479**	**0.0266**	**0.3504**	**8.5000e-004**	**0.0822**	**6.1000e-004**	**0.0828**	**0.0218**	**5.6000e-004**	**0.0224**		**84.9354**	**84.9354**	**2.6300e-003**		**85.0011**

3.3 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7649	7.1494	8.8958	0.0150		0.3344	0.3344		0.3111	0.3111		1,398.0606	1,398.0606	0.4189		1,408.5326
Paving	0.1362					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9012**	**7.1494**	**8.8958**	**0.0150**		**0.3344**	**0.3344**		**0.3111**	**0.3111**		**1,398.0606**	**1,398.0606**	**0.4189**		**1,408.5326**

3.3 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0862	0.0478	0.6307	1.5400e-003	0.1479	1.0900e-003	0.1490	0.0392	1.0100e-003	0.0402		152.8836	152.8836	4.7400e-003		153.0020
Total	**0.0862**	**0.0478**	**0.6307**	**1.5400e-003**	**0.1479**	**1.0900e-003**	**0.1490**	**0.0392**	**1.0100e-003**	**0.0402**		**152.8836**	**152.8836**	**4.7400e-003**		**153.0020**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7649	7.1494	8.8958	0.0150		0.3344	0.3344		0.3111	0.3111	0.0000	1,398.0606	1,398.0606	0.4189		1,408.5326
Paving	0.1362					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9012**	**7.1494**	**8.8958**	**0.0150**		**0.3344**	**0.3344**		**0.3111**	**0.3111**	**0.0000**	**1,398.0606**	**1,398.0606**	**0.4189**		**1,408.5326**

3.3 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0862	0.0478	0.6307	1.5400e-003	0.1479	1.0900e-003	0.1490	0.0392	1.0100e-003	0.0402		152.8836	152.8836	4.7400e-003		153.0020
Total	**0.0862**	**0.0478**	**0.6307**	**1.5400e-003**	**0.1479**	**1.0900e-003**	**0.1490**	**0.0392**	**1.0100e-003**	**0.0402**		**152.8836**	**152.8836**	**4.7400e-003**		**153.0020**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.552050	0.036079	0.182449	0.124563	0.019215	0.004844	0.016098	0.055414	0.001187	0.001496	0.005121	0.000613	0.000871

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.5000e-003	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6800e-003
Unmitigated	5.5000e-003	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6800e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.3100e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0700e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6800e-003
Total	**5.4900e-003**	**1.0000e-005**	**1.1800e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.5200e-003**	**2.5200e-003**	**1.0000e-005**		**2.6800e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.3100e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0700e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6800e-003
Total	**5.4900e-003**	**1.0000e-005**	**1.1800e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.5200e-003**	**2.5200e-003**	**1.0000e-005**		**2.6800e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

		Daily emissions from offroad equipment exhaust (lb/day)							Annual emissions from offroad equipment exhaust (tons/yr)							
Construction Phase	Work Days	ROG	CO	NOx	SO2	PM10	PM2.5		ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
NEWS Clearing and grubbing	10	1.67	18.5	17.9	0.0467	0.68	0.62		0.0083	0.093	0.090	2.3E-04	0.0034	0.0031	22	0.0071
NEWS Grading - Berm construction	10	3.57	21.4	41.9	0.0607	1.61	1.48		0.0179	0.107	0.210	3.0E-04	0.0080	0.0074	29	0.0093
NEWS Grading - Pond and berm finishing	30	5.51	24.6	51.4	0.0889	1.90	1.79		0.0827	0.369	0.772	1.3E-03	0.0285	0.0269	137	0.0261
NEWS Access/trail finishing	10	5.09	24.8	32.4	0.0879	1.19	1.18		0.0255	0.124	0.162	4.4E-04	0.0060	0.0059	49	0.0037
NEWS Construction of concrete pad in forebay	60	0.06	0.3	0.4	0.0007	0.01	0.01		0.0018	0.009	0.011	2.1E-05	0.0004	0.0004	2	0.0002
NEWS Culvert installation	30	0.92	9.7	9.1	0.0244	0.37	0.34		0.0139	0.146	0.137	3.7E-04	0.0055	0.0051	34	0.0111
NEWS Finishing/stabilization	20	0.68	4.5	5.9	0.0149	0.22	0.21		0.0068	0.045	0.059	1.5E-04	0.0022	0.0021	14	0.0046
Wetland Grading	21	3.20	20.4	37.8	0.0541	1.43	1.32		0.0336	0.215	0.397	5.7E-04	0.0151	0.0138	54	0.0174
Wetland Civil Construction	22	0.92	9.7	9.1	0.0244	0.37	0.34		0.0102	0.107	0.100	2.7E-04	0.0040	0.0037	25	0.0082
Wetland Live Plant Material Collection	66	0	0	0	0	0	0		0	0	0	0	0	0	0	0
Wetland Planting	10	0.09	1.6	1.1	0.0024	0.05	0.04		0.0004	0.008	0.006	1.2E-05	0.0002	0.0002	1	0.0004
Wetland Inoculum Collection	3	0.22	3.1	2.1	0.0051	0.11	0.10		0.0003	0.005	0.003	7.6E-06	0.0002	0.0001	1	0.0002
Wetland Inoculum Spreading	2	0	0	0	0	0	0		0	0	0	0	0	0	0	0
NNP Clearing and grubbing	30	0.62	7.8	6.7	0.0166	0.27	0.25		0.0138	0.175	0.150	3.7E-04	0.0060	0.0056	35	0.0114
NNP Grading	90	2.89	27.8	32.6	0.0588	1.31	1.21		0.1300	1.251	1.468	2.6E-03	0.0590	0.0543	250	0.0810
NNP Access/circulation and util.	60	1.37	15.7	14.4	0.0287	0.73	0.68		0.0410	0.470	0.433	8.6E-04	0.0220	0.0203	81	0.0264
NNP Site improvements and furn.	90	1.88	15.0	19.5	0.0292	0.99	0.92		0.1125	0.902	1.168	1.8E-03	0.0597	0.0549	166	0.0536
NNP Planting	45	0.41	4.7	3.6	0.0063	0.18	0.16		0.0123	0.141	0.107	1.9E-04	0.0053	0.0049	18	0.0059
Water Service Extension Excavation, pipe laying, backfill	39	1.63	12.2	14.9	0.0337	0.62	0.60		0.0318	0.238	0.290	6.6E-04	0.0121	0.0117	62	0.0145
Water Service Extension Paving	39	0.97	10.4	8.3	0.0178	0.45	0.44		0.0190	0.203	0.162	3.5E-04	0.0087	0.0086	33	0.0045
	Max	5.5	27.8	51.4	0.09	1.9	1.8	Total	0.72	5.5	7.2	0.01	0.30	0.28	1,299	0.35

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: NEWS Clearing and grubbing Workdays: 10

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr) ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Excavators	158	201	4	8		0.38	0.163	1.10324	1.7057	0.005	0.052	0.048	471.7931	0.153
Skid Steer Loaders	65	74	4	8		0.37	0.178	3.27687	2.3659	0.005	0.096	0.089	471.9774	0.153
Tractors/Loaders/Backhoes	97	155	2	8		0.37	0.221	3.09070	2.0622	0.005	0.104	0.096	467.5285	0.151

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: NEWS Clearing and grubbing Workdays: 10

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Excavators	158	201	0.88	5.9	9.19	0.03	0.28	0.26	2,542	0.82	0.0044	0.0297	0.0460	0.0001	0.0014	0.0013	13	0.0041
Skid Steer Loaders	65	74	0.34	6.3	4.57	0.01	0.19	0.17	912	0.30	0.0017	0.0316	0.0228	0.0000	0.0009	0.0009	5	0.0015
Tractors/Loaders/Backhoes	97	155	0.45	6.3	4.17	0.01	0.21	0.19	946	0.31	0.0022	0.0313	0.0209	0.0001	0.0011	0.0010	5	0.0015
			1.67	18.5	17.93	0.05	0.68	0.62	4,400	1.43	0.008	0.093	0.090	0.0002	0.003	0.003	22	0.007

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: NEWS Grading - Berm construction Workdays: 10

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr)							
							ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Rollers	80	157	2	8		0.38	0.193	2.9256	2.1169	0.005	0.097	0.090	471.9799	0.153
Crawler Tractors	212	215	4	8		0.43	0.343	1.51456	4.3339	0.005	0.163	0.150	472.9246	0.153
Rubber Tired Loaders	203	277	2	8		0.36	0.264	1.52922	2.6104	0.005	0.097	0.090	467.9277	0.151

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: NEWS Grading - Berm construction Workdays: 10

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Rollers	80	157	0.41	6.2	4.45	0.01	0.20	0.19	993	0.32	0.0020	0.0308	0.0223	0.0001	0.0010	0.0009	5	0.0016
Crawler Tractors	212	215	2.24	9.9	28.27	0.03	1.06	0.98	3,084	1.00	0.0112	0.0494	0.1413	0.0002	0.0053	0.0049	15	0.0050
Rubber Tired Loaders	203	277	0.93	5.4	9.18	0.02	0.34	0.32	1,646	0.53	0.0046	0.0269	0.0459	0.0001	0.0017	0.0016	8	0.0027
			3.57	21.4	41.90	0.06	1.61	1.48	5,724	1.85	0.018	0.107	0.210	0.0003	0.008	0.007	29	0.009

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: NEWS Grading - Pond and berm finishing Workdays: 30

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr) ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Graders	187	535	2	8		0.41	0.303	1.20700	1.8080	0.005	0.064	0.064	568.2990	0.027
Crawler Tractors	212	215	4	8		0.43	0.343	1.51456	4.3339	0.005	0.163	0.150	472.9246	0.153
Rubber Tired Loaders	203	277	2	8		0.36	0.264	1.52922	2.6104	0.005	0.097	0.090	467.9277	0.151

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: NEWS Grading - Pond and berm finishing Workdays: 30

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Graders	187	535	2.34	9.3	13.99	0.04	0.50	0.50	4,397	0.21	0.0352	0.1401	0.2098	0.0006	0.0074	0.0074	66	0.0031
Crawler Tractors	212	215	2.24	9.9	28.27	0.03	1.06	0.98	3,084	1.00	0.0336	0.1482	0.4240	0.0005	0.0159	0.0147	46	0.0150
Rubber Tired Loaders	203	277	0.93	5.4	9.18	0.02	0.34	0.32	1,646	0.53	0.0139	0.0807	0.1377	0.0003	0.0051	0.0047	25	0.0080
			5.51	24.6	51.44	0.09	1.90	1.79	9,127	1.74	0.083	0.369	0.772	0.0013	0.028	0.027	137	0.026

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: NEWS Access/trail finishing Workdays: 10

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr) ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Graders	187	535	4	8		0.41	0.303	1.20700	1.8080	0.005	0.064	0.064	568.2990	0.027
Rollers	80	157	2	8		0.38	0.193	2.92560	2.1169	0.005	0.097	0.090	471.9799	0.153

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: NEWS Access/trail finishing Workdays: 10

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Graders	187	535	4.69	18.7	27.98	0.08	0.99	0.99	8,794	0.42	0.0234	0.0934	0.1399	0.0004	0.0050	0.0050	44	0.0021
Rollers	80	157	0.41	6.2	4.45	0.01	0.20	0.19	993	0.32	0.0020	0.0308	0.0223	0.0001	0.0010	0.0009	5	0.0016
			5.09	24.8	32.43	0.09	1.19	1.18	9,787	0.74	0.025	0.124	0.162	0.0004	0.006	0.006	49	0.004

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: NEWS Construction of concrete pad in forebay Workdays: 60

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr)							
							ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Cement and Mortar Mixers	9	9	1	8		0.56	0.661	3.46900	4.1420	0.008	0.161	0.161	568.2990	0.059

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: NEWS Construction of concrete pad in forebay Workdays: 60

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Cement and Mortar Mixers	9	9	0.06	0.3	0.37	0.00	0.01	0.01	51	0.01	0.0018	0.0093	0.0110	0.0000	0.0004	0.0004	2	0.0002
			0.06	0.3	0.37	0.00	0.01	0.01	51	0.01	0.002	0.009	0.011	0.0000	0.000	0.000	2	0.000

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: NEWS Culvert installation Workdays: 30

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr)							
							ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Tractors/Loaders/Backhoes	97	168	2	8		0.37	0.221	3.09070	2.0622	0.005	0.104	0.096	467.5285	0.151
Excavators	158	201	2	8		0.38	0.163	1.10324	1.7057	0.005	0.052	0.048	471.7931	0.153

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: NEWS Culvert installation Workdays: 30

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Tractors/Loaders/Backhoes	97	168	0.48	6.8	4.52	0.01	0.23	0.21	1,025	0.33	0.0073	0.1016	0.0678	0.0002	0.0034	0.0032	15	0.0050
Excavators	158	201	0.44	3.0	4.60	0.01	0.14	0.13	1,271	0.41	0.0066	0.0446	0.0689	0.0002	0.0021	0.0019	19	0.0062
			0.92	9.7	9.12	0.02	0.37	0.34	2,296	0.74	0.014	0.146	0.137	0.0004	0.006	0.005	34	0.011

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: NEWS Finishing/stabilization Workdays: 20

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr) ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Other General Industrial Equipment	88	24	2	8		0.34	0.831	5.31354	4.4253	0.005	0.289	0.266	526.1761	0.17
Excavators	158	201	2	8		0.38	0.163	1.10324	1.7057	0.005	0.052	0.048	471.7931	0.153

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: NEWS Finishing/stabilization Workdays: 20

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Other General Industrial Equipment	88	24	0.24	1.5	1.27	0.00	0.08	0.08	151	0.05	0.0024	0.0153	0.0127	0.0000	0.0008	0.0008	2	0.0005
Excavators	158	201	0.44	3.0	4.60	0.01	0.14	0.13	1,271	0.41	0.0044	0.0297	0.0460	0.0001	0.0014	0.0013	13	0.0041
			0.68	4.5	5.87	0.01	0.22	0.21	1,423	0.46	0.007	0.045	0.059	0.0001	0.002	0.002	14	0.005

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: Wetland Grading Workdays: 21

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr) ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Scrapers	367	367	2	8		0.48	0.299	2.25454	3.4448	0.005	0.134	0.123	472.4636	0.153
Crawler Tractors	212	215	2	8		0.43	0.343	1.51456	4.3339	0.005	0.163	0.150	472.9246	0.153
Excavators	158	201	1	8		0.38	0.163	1.10324	1.7057	0.005	0.052	0.048	471.7931	0.153
Tractors/Loaders/Backhoes	97	150	0	8		0.37	0.221	3.09070	2.0622	0.005	0.104	0.096	467.5285	0.151

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: Wetland Grading Workdays: 21

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Scrapers	367	367	1.86	14.0	21.41	0.03	0.83	0.76	2,936	0.95	0.0195	0.1471	0.2248	0.0003	0.0087	0.0080	31	0.0100
Crawler Tractors	212	215	1.12	4.9	14.13	0.02	0.53	0.49	1,542	0.50	0.0117	0.0519	0.1484	0.0002	0.0056	0.0051	16	0.0052
Excavators	158	201	0.22	1.5	2.30	0.01	0.07	0.06	636	0.21	0.0023	0.0156	0.0241	0.0001	0.0007	0.0007	7	0.0022
Tractors/Loaders/Backhoes	97	150	0.00	0.0	0.00	0.00	0.00	0.00	0	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0.0000
			3.20	20.4	37.84	0.05	1.43	1.32	5,114	1.66	0.034	0.215	0.397	0.0006	0.015	0.014	54	0.017

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: Wetland Civil Construction Workdays: 22

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr) ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Tractors/Loaders/Backhoes	97	168	2	8		0.37	0.221	3.09070	2.0622	0.005	0.104	0.096	467.5285	0.151
Excavators	158	201	2	8		0.38	0.163	1.10324	1.7057	0.005	0.052	0.048	471.7931	0.153

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: Wetland Civil Construction Workdays: 22

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Tractors/Loaders/Backhoes	97	168	0.48	6.8	4.52	0.01	0.23	0.21	1,025	0.33	0.0053	0.0745	0.0497	0.0001	0.0025	0.0023	11	0.0036
Excavators	158	201	0.44	3.0	4.60	0.01	0.14	0.13	1,271	0.41	0.0048	0.0327	0.0506	0.0001	0.0015	0.0014	14	0.0045
			0.92	9.7	9.12	0.02	0.37	0.34	2,296	0.74	0.010	0.107	0.100	0.0003	0.004	0.004	25	0.008

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: Wetland Planting Workdays: 10

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr) ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Skid Steer Loaders	65	74	1	8		0.37	0.178	3.27687	2.3659	0.005	0.096	0.089	471.9774	0.153

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: Wetland Planting Workdays: 10

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Skid Steer Loaders	65	74	0.09	1.6	1.14	0.00	0.05	0.04	228	0.07	0.0004	0.0079	0.0057	0.0000	0.0002	0.0002	1	0.0004
			0.09	1.6	1.14	0.00	0.05	0.04	228	0.07	0.000	0.008	0.006	0.0000	0.000	0.000	1	0.000

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: Wetland Inoculum Collection Workdays: 3

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr)							
							ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Tractors/Loaders/Backhoes	97	155	1	8		0.37	0.221	3.09070	2.0622	0.005	0.104	0.096	467.5285	0.151

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: Wetland Inoculum Collection Workdays: 3

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Tractors/Loaders/Backhoes	97	155	0.22	3.1	2.09	0.01	0.11	0.10	473	0.15	0.0003	0.0047	0.0031	0.0000	0.0002	0.0001	1	0.0002
			0.22	3.1	2.09	0.01	0.11	0.10	473	0.15	0.000	0.005	0.003	0.0000	0.000	0.000	1	0.000

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: NNP Clearing and grubbing Workdays: 45

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr) ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Tractors/Loaders/Backhoes	97	155	1	8		0.37	0.221	3.09070	2.0622	0.005	0.104	0.096	467.5285	0.151
Excavators	158	201	1	8		0.38	0.163	1.10324	1.7057	0.005	0.052	0.048	471.7931	0.153
Skid Steer Loaders	65	74	2	8		0.37	0.178	3.27687	2.3659	0.005	0.096	0.089	471.9774	0.153

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: NNP Clearing and grubbing Workdays: 45

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Tractors/Loaders/Backhoes	97	155	0.22	3.1	2.09	0.01	0.11	0.10	473	0.15	0.0050	0.0703	0.0469	0.0001	0.0024	0.0022	11	0.0034
Excavators	158	201	0.22	1.5	2.30	0.01	0.07	0.06	636	0.21	0.0049	0.0334	0.0517	0.0002	0.0016	0.0015	14	0.0046
Skid Steer Loaders	65	74	0.17	3.2	2.28	0.00	0.09	0.09	456	0.15	0.0039	0.0712	0.0514	0.0001	0.0021	0.0019	10	0.0033
			0.62	7.8	6.67	0.02	0.27	0.25	1,564	0.51	0.014	0.175	0.150	0.0004	0.006	0.006	35	0.011

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: NNP Grading Workdays: 90

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr)							
							ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Excavators	158	201	1	8		0.38	0.163	1.10324	1.7057	0.005	0.052	0.048	471.7931	0.153
Scrapers	367	367	2	8		0.48	0.299	2.25454	3.4448	0.005	0.134	0.123	472.4636	0.153
Rollers	80	157	2	8		0.38	0.193	2.92560	2.1169	0.005	0.097	0.090	471.9799	0.153
Rollers	80	157	2	8		0.38	0.193	2.92560	2.1169	0.005	0.097	0.090	471.9799	0.153

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: NNP Grading Workdays: 90

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Excavators	158	201	0.22	1.5	2.30	0.01	0.07	0.06	636	0.21	0.0099	0.0669	0.1034	0.0003	0.0032	0.0029	29	0.0093
Scrapers	367	367	1.86	14.0	21.41	0.03	0.83	0.76	2,936	0.95	0.0836	0.6304	0.9632	0.0014	0.0375	0.0344	132	0.0428
Rollers	80	157	0.41	6.2	4.45	0.01	0.20	0.19	993	0.32	0.0183	0.2770	0.2005	0.0005	0.0092	0.0085	45	0.0145
Rollers	80	157	0.41	6.2	4.45	0.01	0.20	0.19	993	0.32	0.0183	0.2770	0.2005	0.0005	0.0092	0.0085	45	0.0145
			2.89	27.8	32.61	0.06	1.31	1.21	5,558	1.80	0.130	1.251	1.468	0.0026	0.059	0.054	250	0.081

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: NNP Access/circulation and util. Workdays: 60

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr)							
							ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Excavators	158	201	1	8		0.38	0.163	1.10324	1.7057	0.005	0.052	0.048	471.7931	0.153
Skid Steer Loaders	65	74	2	8		0.37	0.178	3.27687	2.3659	0.005	0.096	0.089	471.9774	0.153
Rollers	80	157	1	8		0.38	0.193	2.92560	2.1169	0.005	0.097	0.090	471.9799	0.153
Rollers	80	157	1	8		0.38	0.193	2.92560	2.1169	0.005	0.097	0.090	471.9799	0.153
Tractors/Loaders/Backhoes	97	97	1	8		0.37	0.296	3.57072	2.9950	0.005	0.177	0.162	475.3621	0.154
Trenchers	78	78	1	8		0.5	0.556	3.78912	5.1059	0.005	0.371	0.341	475.287	0.154

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: NNP Access/circulation and util. Workdays: 60

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Excavators	158	201	0.22	1.5	2.30	0.01	0.07	0.06	636	0.21	0.0066	0.0446	0.0689	0.0002	0.0021	0.0019	19	0.0062
Skid Steer Loaders	65	74	0.17	3.2	2.28	0.00	0.09	0.09	456	0.15	0.0052	0.0949	0.0685	0.0001	0.0028	0.0026	14	0.0044
Rollers	80	157	0.20	3.1	2.23	0.01	0.10	0.09	497	0.16	0.0061	0.0923	0.0668	0.0002	0.0031	0.0028	15	0.0048
Rollers	80	157	0.20	3.1	2.23	0.01	0.10	0.09	497	0.16	0.0061	0.0923	0.0668	0.0002	0.0031	0.0028	15	0.0048
Tractors/Loaders/Backhoes	97	97	0.19	2.3	1.90	0.00	0.11	0.10	301	0.10	0.0056	0.0678	0.0569	0.0001	0.0034	0.0031	9	0.0029
Trenchers	78	78	0.38	2.6	3.51	0.00	0.26	0.23	327	0.11	0.0115	0.0782	0.1054	0.0001	0.0077	0.0070	10	0.0032
			1.37	15.7	14.45	0.03	0.73	0.68	2,712	0.88	0.041	0.470	0.433	0.0009	0.022	0.020	81	0.026

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: NNP Site improvements and furn. Workdays: 120

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr) ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Cranes	231	231	1	8		0.29	0.349	1.67824	4.1044	0.005	0.167	0.153	472.9057	0.153
Forklifts	89	89	2	8		0.2	0.412	3.72	3.7559	0.005	0.267	0.245	471.5285	0.153
Tractors/Loaders/Backhoes	97	97	1	8		0.37	0.296	3.57072	2.9950	0.005	0.177	0.162	475.3621	0.154
Trenchers	78	78	1	8		0.5	0.556	3.78912	5.1059	0.005	0.371	0.341	475.287	0.154
Rubber Tired Loaders	203	276	1	8		0.36	0.264	1.52922	2.6104	0.005	0.097	0.090	467.9277	0.151
Skid Steer Loaders	65	74	2	8		0.37	0.178	3.27687	2.3659	0.005	0.096	0.089	471.9774	0.153

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: NNP Site improvements and furn. Workdays: 120

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Cranes	231	231	0.41	2.0	4.85	0.01	0.20	0.18	559	0.18	0.0247	0.1190	0.2910	0.0004	0.0118	0.0108	34	0.0108
Forklifts	89	89	0.26	2.3	2.36	0.00	0.17	0.15	296	0.10	0.0155	0.1401	0.1415	0.0002	0.0101	0.0092	18	0.0058
Tractors/Loaders/Backhoes	97	97	0.19	2.3	1.90	0.00	0.11	0.10	301	0.10	0.0112	0.1356	0.1137	0.0002	0.0067	0.0062	18	0.0058
Trenchers	78	78	0.38	2.6	3.51	0.00	0.26	0.23	327	0.11	0.0229	0.1564	0.2107	0.0002	0.0153	0.0141	20	0.0064
Rubber Tired Loaders	203	276	0.46	2.7	4.57	0.01	0.17	0.16	820	0.26	0.0278	0.1608	0.2745	0.0005	0.0102	0.0095	49	0.0159
Skid Steer Loaders	65	74	0.17	3.2	2.28	0.00	0.09	0.09	456	0.15	0.0103	0.1899	0.1371	0.0003	0.0056	0.0052	27	0.0089
			1.88	15.0	19.47	0.03	0.99	0.92	2,758	0.89	0.113	0.902	1.168	0.0018	0.060	0.055	166	0.054

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: NNP Planting Workdays: 60

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr) ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Skid Steer Loaders	65	74	2	8		0.37	0.178	3.27687	2.3659	0.005	0.096	0.089	471.9774	0.153
Other General Industrial Equipment	88	24	2	8		0.34	0.831	5.31354	4.4253	0.005	0.289	0.266	526.1761	0.17

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: NNP Planting Workdays: 60

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Skid Steer Loaders	65	74	0.17	3.2	2.28	0.00	0.09	0.09	456	0.15	0.0052	0.0949	0.0685	0.0001	0.0028	0.0026	14	0.0044
Other General Industrial Equipment	88	24	0.24	1.5	1.27	0.00	0.08	0.08	151	0.05	0.0072	0.0459	0.0382	0.0000	0.0025	0.0023	5	0.0015
			0.41	4.7	3.56	0.01	0.18	0.16	607	0.20	0.012	0.141	0.107	0.0002	0.005	0.005	18	0.006

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: Water Service Extension Excavation, pipe laying, backfill Workdays: 39

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr) ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Excavators	158	201	2	8		0.38	0.163	1.10324	1.7057	0.005	0.052	0.048	471.7931	0.153
Plate Compactors	8	8	2	8		0.43	0.661	3.46900	4.1420	0.008	0.161	0.161	568.2990	0.059
Generator Sets	84	84	1	8		0.74	0.326	3.36100	2.8880	0.006	0.153	0.153	568.2990	0.029
Air Compressors	78	78	1	8		0.48	0.442	3.67	3.0830	0.006	0.19	0.19	568.299	0.039
Rubber Tired Loaders	203	276	1	8		0.36	0.264	1.52922	2.6104	0.005	0.097	0.090	467.9277	0.151
Skid Steer Loaders	65	74	0	8		0.37	0.178	3.27687	2.3659	0.005	0.096	0.089	471.9774	0.153

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: Water Service Extension Excavation, pipe laying, backfill Workdays: 39

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Excavators	158	201	0.44	3.0	4.60	0.01	0.14	0.13	1,271	0.41	0.0086	0.0580	0.0896	0.0003	0.0027	0.0025	25	0.0080
Plate Compactors	8	8	0.08	0.4	0.50	0.00	0.02	0.02	69	0.01	0.0016	0.0082	0.0098	0.0000	0.0004	0.0004	1	0.0001
Generator Sets	84	84	0.36	3.7	3.17	0.01	0.17	0.17	623	0.03	0.0070	0.0719	0.0617	0.0001	0.0033	0.0033	12	0.0006
Air Compressors	78	78	0.29	2.4	2.04	0.00	0.13	0.13	375	0.03	0.0057	0.0473	0.0397	0.0001	0.0024	0.0024	7	0.0005
Rubber Tired Loaders	203	276	0.46	2.7	4.57	0.01	0.17	0.16	820	0.26	0.0090	0.0523	0.0892	0.0002	0.0033	0.0031	16	0.0052
Skid Steer Loaders	65	74	0.00	0.0	0.00	0.00	0.00	0.00	0	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0.0000
			1.63	12.2	14.87	0.03	0.62	0.60	3,158	0.74	0.032	0.238	0.290	0.0007	0.012	0.012	62	0.014

Off-road Equipment Emissions

Emissions calculated in accordance with the methodology used in CalEEMod® [1]:

$Emission_{DieselEx} = \sum_i (EF_i \times Pop_i \times AvgHp_i \times Load_i \times Activity_i)$

where for a given equipment type/size of i,
EF = the emission factor
Pop = the number of pieces of equipment,
AvgHp = the size (or average size) of the equipment
Load = the load factor
Activity = hours of operation

Construction Phase Name: Water Service Extension Paving Workdays: 39

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Pop	Hrs/Day	Tier (if known)	CalEEMod® Default Load	CalEEMod® EF (g/bhp-hr) ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Rollers	80	157	1	8		0.38	0.193	2.92560	2.1169	0.005	0.097	0.090	471.9799	0.153
Concrete/Industrial Saws	81	81	2	8		0.73	0.369	3.52300	2.9130	0.006	0.166	0.166	568.2990	0.033

[1] BREEZE Software, "Off-road Equipment", Section 4.2 of Appendix A: Calculation Details for CalEEMod", prepared for CAPCOA by BREEZE Software, October 2017, CalEEMod2016.3.2. Available from http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

Off-road Equipment Emissions

Construction Phase Name: Water Service Extension Paving Workdays: 39

OFFROAD Equipment Type	CalEEMod® Default AvgHp	AvgHp	Emissions (lb/day)								Emissions (tons/yr)							
			ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4	ROG	CO	NOx	SO2	PM10	PM2.5	CO2	CH4
Rollers	80	157	0.20	3.1	2.23	0.01	0.10	0.09	497	0.16	0.0040	0.0600	0.0434	0.0001	0.0020	0.0018	10	0.0031
Concrete/Industrial Saws	81	81	0.77	7.3	6.08	0.01	0.35	0.35	1,185	0.07	0.0150	0.1433	0.1185	0.0002	0.0068	0.0068	23	0.0013
			0.97	10.4	8.30	0.02	0.45	0.44	1,682	0.23	0.019	0.203	0.162	0.0003	0.009	0.009	33	0.004

Emissions Summary

Annual CalEEMod® Results

2.1 Overall Construction

Mitigated Construction (total, including on-site and off-site, all years)

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	Total CO2	CH4	N2O	CO2e
	tons/yr						MT/yr			
NEWS	0.22	3.39	1.24	9.18E-03	0.226	0.102	867	0.0897	0	869
Inyo Ave. parking	0.00	0.02	0.02	3.91E-05	0.002	0.001	3	0.000809	0	3
Wetland	0.07	0.75	0.51	1.32E-03	0.042	0.029	117	0.0345	0	117
NNP	0.24	2.54	2.33	5.35E-03	0.102	0.193	474	0.1382	0	477
Brazo Rd. parking	0.00	0.01	0.01	2.09E-05	0.001	0.001	2	4.31E-04	0	2
MDTW	0.17	2.54	0.93	0.006885	0.169	0.076	650	0.067275	0	652
Water Service Ext.	0.02	0.21	0.21	4.70E-04	0.013	0.010	41	7.94E-03	0	41

2.2 Overall Operational

Mitigated Operational (Total)

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	Total CO2	CH4	N2O	CO2e
	tons/yr						MT/yr			
NEWS	0.0552	0.321	0.4976	1.87E-03	0.1379	0.0381	198	0.0317	2.40E-04	199
Wetland	5.75E-03	0.00E+00	1.30E-04	0.00E+00	0.0771	0.0189	13	1.20E-02	1.20E-04	14
NNP	0.0613	0.2693	0.39	1.53E-03	0.1136	0.0313	151	0.0161	9.00E-05	151
MDTW	0.0552	0.321	0.4976	0.00187	0.1379	0.0381	198	0.0317	0.00024	199
Water Service Ext.	5.60E-04	0	0	0.00E+00	0	0.00E+00	0	0	0.00E+00	0
All projects	0.18	0.91	1.39	0.01	0.47	0.13	560	0.09	0.00	563
Revised exhaust emis based on KDA/EMFAC	0.76	1.58	5.72	0.01	0.48	0.14	1,472	0.09		1474.71

Daily (Summer) CalEEMod® Results

Mitigated Construction On-Site (worst-case phase for each project)

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
	lb/day					
NEWS grading-pond	5.5	51	25	0.09	2.4	1.8
NEWS Inyo Ave parking	0.5	5	6	0.01	0.8	0.5
Wetland-grading	3.2	38	20	0.05	1.4	1.4
NNP-grading	2.9	33	28	0.06	1.4	1.2
NNP Brazo Rd parking	0.3	3	3	0.01	0.4	0.3
MDTW	5.5	51	25	0.09	2.4	1.8
Water Service Ext.	1.5	14	14	0.03	0.71	0.67

Worst-case on-site

[1] Results shown are those for the worst-case phase, Grading-Pond and Berm Finishing (CalEEMod output page shows higher daily values due to inadvertent overlap of the Clearing and Grubbing and Berm Construction phases)

Emissions Summary - Overall Construction

Revised to reflect EMFAC results

2.1 Overall Construction

Mitigated Construction (total, including on-site and off-site, all years)

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	Total CO2	CH4	CO2e
	tons/yr						MT/yr		
Worst-Case Construction Scenario 1 (2021)									
Wetland	0.07	0.76	0.51	1.33E-03	0.043	0.029	118	0.0345	119
NEWS	0.22	2.44	1.12	5.27E-03	0.233	0.109	524	0.0897	526
Inyo Ave. parking	0.00	0.02	0.02	3.91E-05	0.002	0.001	3	0.000809	3
Water Service Ext.	0.02	0.21	0.21	4.70E-04	0.013	0.010	41	7.94E-03	41
Total tons/yr, 2021:	0.3	3.4	1.9	0.01	0.3	0.1			
Worst-Case Construction Scenario 2 (2023)									
NNP	0.24	2.44	2.32	5.00E-03	0.168	0.101	441	0.1382	444
Brazo Rd. parking	0.001	0.01	0.01	2.09E-05	0.001	0.001	2	0.000431	2
Water Service Ext.	0.02	0.21	0.21	4.70E-04	0.013	0.010	41	0.00794	41
MDTW	0.17	1.83	0.84	0.003951	0.175	0.081	393	0.067275	394
Total tons/yr, 2023:	0.4	4.5	3.4	0.01	0.4	0.2			

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	Total CO2	CH4	CO2e
Operational	0.8	1.6	5.7	0.01	0.5	0.1	1,472	0.09	1,475
SJV Significance Thresholds	**10**	**10**	**100**	**27**	**15**	**15**			
General Conformity Thresholds	**10**	**10**	**100**	**100**	**100**	**100**			

Off-site construction emissions
Annual CalEEMod® Results

Mitigated Construction Off-Site

NEWS

	ROG	NOx	CO	SO2	fug PM10	exh PM10	PM10 Total	Fug PM2.5	Exh PM2.5	PM2.5 Total	Bio-CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
3.2 Clearing/Grubbing																
Hauling	0.0144	0.4586	0.0785	1.590E-03	0.0368	1.750E-03	0.0385	0.0101	1.670E-03	0.0118	0.000E+00	151.0085	151.0085	4.450E-03	0.000E+00	151.1199
Total	**0.0151**	**0.4591**	**0.0831**	**1.600E-03**	**0.0383**	**1.76E-03**	**0.0401**	**0.0105**	**1.680E-03**	**0.0122**	**0.000E+00**	**152.3164**	**152.3164**	**4.480E-03**	**0.000E+00**	**152.4286**
3.3 Grading-Berm Construction																
Hauling	5.24E-03	0.2167	0.0282	4.60E-04	6.94E-03	4.10E-04	7.34E-03	1.91E-03	3.90E-04	2.30E-03	0.00E+00	43.9572	43.9572	4.39E-03	0.00E+00	44.0669
Total	**5.91E-03**	**0.2172**	**0.0331**	**4.80E-04**	**8.55E-03**	**4.20E-04**	**8.96E-03**	**2.34E-03**	**4.00E-04**	**2.74E-03**	**0.00E+00**	**45.3174**	**45.3174**	**4.42E-03**	**0.00E+00**	**45.4279**
3.4 Grading-Pond and Berm Finishing																
Hauling	0.0423	1.3475	0.2299	4.64E-03	0.1073	5.10E-03	0.1124	0.0295	4.88E-03	0.0344	0.00E+00	441.6104	441.6104	0.0133	0.00E+00	441.9418
Total	**0.0439**	**1.3486**	**0.2411**	**4.67E-03**	**0.1110**	**5.12E-03**	**0.1162**	**0.0305**	**4.90E-03**	**0.0354**	**0.00E+00**	**444.7493**	**444.7493**	**0.0133**	**0.00E+00**	**445.0827**
3.5 Access/Trail Finishing																
Hauling	1.86E-03	0.0591	0.0101	2.00E-04	4.71E-03	2.20E-04	4.93E-03	1.29E-03	2.10E-04	1.51E-03	0.00E+00	19.3818	19.3818	5.80E-04	0.00E+00	19.3963
Total	**2.24E-03**	**0.0594**	**0.0129**	**2.10E-04**	**5.64E-03**	**2.30E-04**	**5.86E-03**	**1.54E-03**	**2.20E-04**	**1.76E-03**	**0.00E+00**	**20.1665**	**20.1665**	**6.00E-04**	**0.00E+00**	**20.1816**
3.6 Construction of Concrete Pad																
Hauling	1.41E-03	0.0449	7.66E-03	1.50E-04	3.58E-03	1.70E-04	3.75E-03	9.80E-04	1.60E-04	1.15E-03	0.00E+00	14.7204	14.7204	4.40E-04	0.00E+00	14.7314
Total	**1.87E-03**	**0.0453**	**0.0110**	**1.60E-04**	**4.59E-03**	**1.80E-04**	**4.87E-03**	**1.28E-03**	**1.70E-04**	**1.45E-03**	**0.00E+00**	**15.6620**	**15.6620**	**4.60E-04**	**0.00E+00**	**15.6737**
3.7 Culvert Installation																
Hauling	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	**5.10E-04**	**3.80E-04**	**3.72E-03**	**1.00E-05**	**1.24E-03**	**1.00E-05**	**1.25E-03**	**3.30E-04**	**1.00E-05**	**3.40E-04**	**0.00E+00**	**1.0463**	**1.0463**	**3.00E-05**	**0.00E+00**	**1.0470**
3.8 Finishing/Stabilization																
Hauling	1.30E-04	4.12E-03	7.00E-04	1.00E-05	3.30E-04	2.00E-05	3.40E-04	9.00E-05	1.00E-05	1.10E-04	0.00E+00	1.3494	1.3494	4.00E-05	0.00E+00	1.3504
Total	**9.00E-04**	**4.69E-03**	**6.29E-03**	**3.00E-05**	**2.19E-03**	**3.00E-05**	**2.21E-03**	**5.80E-04**	**2.00E-05**	**6.10E-04**	**0.00E+00**	**2.9188**	**2.9188**	**8.00E-05**	**0.00E+00**	**2.9208**
Total, CalEEMod results for all NEWS Phases																
Hauling	0.0653	2.1309	0.3551	7.05E-03	0.1597	7.67E-03	0.1673	0.0439	7.32E-03	0.0513	0.00E+00	672.0277	672.0277	0.0232	0.00E+00	672.6067
Total	**0.0704**	**2.1347**	**0.3912**	**7.16E-03**	**0.1715**	**7.75E-03**	**0.1795**	**0.0471**	**7.40E-03**	**0.0545**	**0.00E+00**	**682.1767**	**682.1767**	**0.0234**	**0.00E+00**	**682.7623**
Wetlands																
3.2 Grading																
Hauling	6.50E-04	0.0206	3.51E-03	7.00E-05	1.64E-03	8.00E-05	1.72E-03	4.50E-04	7.00E-05	5.30E-04	0.00E+00	6.7468	6.7468	2.00E-04	0.00E+00	6.7519
Total	**0.0151**	**0.4591**	**0.0831**	**1.60E-03**	**0.0383**	**1.76E-03**	**0.0401**	**0.0105**	**1.68E-03**	**0.0122**	**0.00E+00**	**152.3164**	**152.3164**	**4.48E-03**	**0.00E+00**	**152.4286**
3.3 Civil Construction																
Hauling	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	**7.70E-04**	**5.70E-04**	**5.59E-03**	**2.00E-05**	**1.86E-03**	**1.00E-05**	**1.87E-03**	**4.90E-04**	**1.00E-05**	**5.00E-04**	**0.00E+00**	**1.5695**	**1.5695**	**4.00E-05**	**0.00E+00**	**1.5704**
3.4 Planting																
Hauling	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	**1.30E-04**	**9.00E-05**	**9.30E-04**	**0.00E+00**	**3.10E-04**	**0.00E+00**	**3.10E-04**	**8.00E-05**	**0.00E+00**	**8.00E-05**	**0.00E+00**	**0.2616**	**0.2616**	**1.00E-05**	**0.00E+00**	**0.2617**
3.5 Inocolum Collection																
Hauling	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	**8.00E-05**	**6.00E-05**	**5.60E-04**	**0.00E+00**	**1.90E-04**	**0.00E+00**	**1.90E-04**	**5.00E-05**	**0.00E+00**	**5.00E-05**	**0.00E+00**	**0.1570**	**0.1570**	**0.00E+00**	**0.00E+00**	**0.1570**
Total, CalEEMod results for all Wetlands Phases																
Hauling	6.50E-04	0.0206	3.51E-03	7.00E-05	1.64E-03	8.00E-05	1.72E-03	4.50E-04	7.00E-05	5.30E-04	0.00E+00	6.7468	6.7468	2.00E-04	0.00E+00	6.7519
Total	**0.0161**	**0.4598**	**0.0902**	**1.62E-03**	**0.0407**	**1.77E-03**	**0.0425**	**0.0111**	**1.69E-03**	**0.0128**	**0.00E+00**	**154.3045**	**154.3045**	**4.53E-03**	**0.00E+00**	**154.4177**
NNP (Hauling only)																
3.2 Clearing/Grub 2021	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.3 Grading 2021	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.4 Access 2021	3.53E-03	0.1123	0.0192	3.90E-04	8.94E-03	4.20E-04	9.37E-03	2.46E-03	4.10E-04	2.86E-03	0.00E+00	36.8009	36.8009	1.10E-03	0.00E+00	36.8285
3.5 Site Improv 2021	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.5 Site Improve 2022	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.6 Planting 2021	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.6 Planting 2022	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total, CalEEMod results for all Access & Education Phases																
Hauling	0.0035	0.1123	0.0192	0.0004	0.0089	0.0004	0.0094	0.0025	0.0004	0.0029	0.0000	36.8009	36.8009	0.0011	0.0000	36.8285
Pipe Extension (Hauling only)																
3.2 Paving	2.30E-04	7.67E-03	1.22E-03	2.00E-05	5.10E-04	3.00E-05	5.40E-04	1.40E-04	2.00E-05	1.60E-04	0.00E+00	2.2532	2.2532	1.00E-04	0.00E+00	2.2556
3.3 Excav, Pipe Lay, ...	4.00E-05	1.28E-03	2.00E-04	0.00E+00	9.00E-05	0.00E+00	9.00E-05	2.00E-05	0.00E+00	3.00E-05	0.00E+00	3.76E-01	0.3755	2.00E-05	0.00E+00	3.76E-01
Total, CalEEMod results for all Access & Education Phases																
Hauling	0.0003	0.0090	0.0014	0.0000	0.0006	0.0000	0.0006	0.0002	0.0000	0.0002	0.0000	2.6287	2.6287	0.0001	0.0000	2.6315

EMFAC Results for Haul Trucks

NEWS project (and MDTW project - each)						VMT
Clearing and grubbing	120	truckloads offhauled greenwaste/day ×	72	-mi roundtrip ×	10 days =	86,400
Grading	120	truckloads offhauled greenwaste/day ×	10.4	-mi roundtrip ×	43 days =	53,664
Access/Trail finishing	158	truckloads inhaul of aggregate (total) ×	70	-mi roundtrip =		11,060
Concrete pad construction	120	truckloads inhaul of concrete (total) ×	70	-mi roundtrip =		8,400
Finishing/pad stabilization	11	truckloads inhaul of plants (total) ×	40	-mi roundtrip =		440
						159,964
Wetlands project						
Grading	55	truckloads offhaul (total) ×	72	-mi roundtrip =		3,960
Inoculum	1	truck ×	40	-mi roundtrip =		40
						4,000
NNP project						
Fill for main plaza/parking area	3000	cy /	16	cy/truck =	187.5 trucks ×	10.4 -mi roundtrip = 1,950

EMFAC run for 4800 VMT/day for T7 construction trucks

	ROG	NOx	CO	SO2	fug PM10	exh PM10*	PM10 Total	Fug PM2.5	Exh PM2.5*	PM2.5 Total	Bio-CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
lb/day	3.8	70.9	14.2	0.19	NA*	0.89	NA*	NA*	0.85	NA*			19,737			
lb/1000 VMT	0.8	14.8	3.0	0.04		0.18			0.18				4,112			

*EMFAC can calculate brake and tire wear emissions, but not total road dust

	tons/yr										MT/yr					
NEWS	0.06	1.18	0.24	0.00		0.01			0.01				329			
Wetland	0.002	0.030	0.006	7.8E-05		3.7E-04			3.5E-04				8			
NNP	0.001	0.014	0.003	3.8E-05		1.8E-04			1.7E-04				4			
Comparison to CalEEMod results																
NEWS	0.07	2.13	0.36	0.01	0.15966	0.01	0.16726	0.04387	0.01	0.05127	0	672.0277	672	0.0232	0	672.6067
Wetland	0.001	0.021	0.004	7.0E-05	1.6E-03	8.0E-05	1.7E-03	4.5E-04	7.0E-05	0.001	0	6.7468	7	0.0002	0	6.7519
NNP	0.004	0.112	0.019	3.9E-04	8.9E-03	4.2E-04	9.4E-03	2.5E-03	4.1E-04	0.003	0	36.8009	37	0.0011	0	36.8285
Haz waste haul	0.319159076	5.90591492	1.18095936	0.01569188	#VALUE!	0.073849	#VALUE!	#VALUE!	0.070655	#VALUE!	0	0	1644.77	0	0	0
	0.00015958	0.00295296	0.00059048	7.8459E-06	#VALUE!	3.69E-05	#VALUE!	#VALUE!	3.53E-05				0.745928			

EMFAC Model Output for Haul Trucks **EMFAC Output for Haul Trucks**

Area	Cal. Year	Season	Veh_Tech	EMFAC2007 Category	VMT (per day)	ROG_TOTAL	CO_TOTEX	NOx_TOTEX	CO2_TOTEX	PM10_RUNEX	PM2_5_RUNEX	SOx_TOTEX	
Stanislaus	2021	Annual	T7 CAIRP CONSTRUCTION - DSL	HHDT - DSL	4,800.0	0.0007	0.0042	0.0263	9.272237196	0.0002	0.0002	0.0001	tons/day
Stanislaus	2021	Annual	T7 SINGLE CONSTRUCTION - DSL	HHDT - DSL	4,800.0	0.0024	0.0075	0.0374	10.0	0.0006	0.0006	0.0001	tons/day
				weighted average for CAIRP and non-CAIRP T7 construction trucks:		0.0019	0.0071	0.0354	9.87	0.0004	0.0004	0.0001	tons/day
						3.8	14.2	70.9	19,737	0.89	0.85	0.19	lb/day

EMFAC Input for Operational Emissions (EMFAC County VMT and KDA Project VMT Transposition)

County	GAI	Sub-Area	Cal_Year	Veh_Tech	New Total VMT			(Input VMT for Run)
Stanislaus	54	Stanislaus (SJV)	2021	All Other Buses - Dsl	12,108.2			0
Stanislaus	54	Stanislaus (SJV)	2021	LDA - Dsl	73,755.3	Total cars	9,059	44
Stanislaus	54	Stanislaus (SJV)	2021	LDA - Gas	8,489,566.8			5,062
Stanislaus	54	Stanislaus (SJV)	2021	LDT1 - Dsl	357.0			0
Stanislaus	54	Stanislaus (SJV)	2021	LDT1 - Gas	769,317.7			459
Stanislaus	54	Stanislaus (SJV)	2021	LDT2 - Dsl	13,376.8			8
Stanislaus	54	Stanislaus (SJV)	2021	LDT2 - Gas	2,591,472.9			1,545
Stanislaus	54	Stanislaus (SJV)	2021	LHD1 - Dsl	305,938.7			182
Stanislaus	54	Stanislaus (SJV)	2021	LHD1 - Gas	239,707.3			143
Stanislaus	54	Stanislaus (SJV)	2021	LHD2 - Dsl	95,507.3			57
Stanislaus	54	Stanislaus (SJV)	2021	LHD2 - Gas	38,372.5			23
Stanislaus	54	Stanislaus (SJV)	2021	MCY - Gas	75,803.5			45
Stanislaus	54	Stanislaus (SJV)	2021	MDV - Dsl	54,138.4			32
Stanislaus	54	Stanislaus (SJV)	2021	MDV - Gas	2,444,668.7		9,059	1,458
Stanislaus	54	Stanislaus (SJV)	2021	MH - Dsl	4,836.5			0
Stanislaus	54	Stanislaus (SJV)	2021	MH - Gas	11,714.6			0
Stanislaus	54	Stanislaus (SJV)	2021	Motor Coach - Dsl	3,650.6			0
Stanislaus	54	Stanislaus (SJV)	2021	OBUS - Gas	7,805.5			103
Stanislaus	54	Stanislaus (SJV)	2021	PTO - Dsl	10,652.2			0
Stanislaus	54	Stanislaus (SJV)	2021	SBUS - Dsl	15,757.6	Total bus	398	208
Stanislaus	54	Stanislaus (SJV)	2021	SBUS - Gas	6,585.1		398	87
Stanislaus	54	Stanislaus (SJV)	2021	T6 Ag - Dsl	946.9			0
Stanislaus	54	Stanislaus (SJV)	2021	T6 CAIRP Heavy - Dsl	15,414.3			0
Stanislaus	54	Stanislaus (SJV)	2021	T6 CAIRP Small - Dsl	2,140.8			0
Stanislaus	54	Stanislaus (SJV)	2021	T6 Instate Construction Heavy - Dsl	14,005.7			0
Stanislaus	54	Stanislaus (SJV)	2021	T6 Instate Construction Small - Dsl	58,560.2			0
Stanislaus	54	Stanislaus (SJV)	2021	T6 Instate Heavy - Dsl	141,218.8			0
Stanislaus	54	Stanislaus (SJV)	2021	T6 Instate Small - Dsl	112,231.1			0
Stanislaus	54	Stanislaus (SJV)	2021	T6 OOS Heavy - Dsl	8,631.3			0
Stanislaus	54	Stanislaus (SJV)	2021	T6 OOS Small - Dsl	1,224.6			0
Stanislaus	54	Stanislaus (SJV)	2021	T6 Public - Dsl	6,580.3			0
Stanislaus	54	Stanislaus (SJV)	2021	T6 Utility - Dsl	954.1			0
Stanislaus	54	Stanislaus (SJV)	2021	T6TS - Gas	25,682.5			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 Ag - Dsl	1,179.2			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 CAIRP - Dsl	187,495.4			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 CAIRP Construction - Dsl	10,060.4			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 NNOOS - Dsl	228,578.8			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 NOOS - Dsl	73,666.7			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 Other Port - Dsl	3,382.4			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 POAK - Dsl	13,009.1			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 POLA - Dsl	12,888.3			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 Public - Dsl	7,483.2			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 Single - Dsl	53,646.6			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 Single Construction - Dsl	24,958.0			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 SWCV - Dsl	6,372.2			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 Tractor - Dsl	265,890.7			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 Tractor Construction - Dsl	20,588.2			0
Stanislaus	54	Stanislaus (SJV)	2021	T7 Utility - Dsl	285.3			0
Stanislaus	54	Stanislaus (SJV)	2021	T7IS - Gas	90.2			0
Stanislaus	54	Stanislaus (SJV)	2021	UBUS - Dsl	8,937.5			0
Stanislaus	54	Stanislaus (SJV)	2021	UBUS - Gas	2,077.8			0

Group	Cal. Year	Season	Title	Veh_Tech	EMFAC2007 Category	VMT	ROG_TOTAL	CO_TOTEX	NOx_TOTEX	CO2_TOTEX	PM10_TOTEX	PM2_5_TOTEX	SOx_TOTEX	
1	2021	Annual	Areas-2021	All Vehicles	All Vehicles	9,457.0	0.0021	0.0157	0.0043	4.034046881	0.0000	0.0000	0.0000	tons/day
1	2021	Annual	Areas-2021	ALL OTHER BUSES - DSL	OBUS - DSL	0	0	0	0	0	0	0	0	
1	2021	Annual	Areas-2021	LDA - DSL	LDA - DSL	44.0	0.0000	0.0000	0.0000	0.0102	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	LDA - GAS	LDA - GAS	5,062.3	0.0006	0.0057	0.0004	1.55136069	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	LDT1 - DSL	LDT1 - DSL	0.2129	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	LDT1 - GAS	LDT1 - GAS	458.7	0.0002	0.0011	0.0001	0.1674	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	LDT2 - DSL	LDT2 - DSL	7.976618532	0.0000	0.0000	0.0000	0.0025	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	LDT2 - GAS	LDT2 - GAS	1,545.3	0.0003	0.0026	0.0003	0.6158	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	LHD1 - DSL	LHDT1 - DSL	182.4	0.0000	0.0002	0.0007	0.1159	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	LHD1 - GAS	LHDT1 - GAS	142.9	0.0001	0.0004	0.0001	0.1622	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	LHD2 - DSL	LHDT2 - DSL	57.0	0.0000	0.0001	0.0002	0.0405	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	LHD2 - GAS	LHDT2 - GAS	22.9	0.0000	0.0000	0.0000	0.0297	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	MCY - GAS	MCY - GAS	45.2	0.0002	0.0012	0.0001	0.0091	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	MDV - DSL	MDV - DSL	32.3	0.0000	0.0000	0.0000	0.0139	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	MDV - GAS	MDV - GAS	1,457.8	0.0004	0.0030	0.0003	0.7218	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	MH - DSL	MH - DSL	0	0	0	0	0	0	0	0	
1	2021	Annual	Areas-2021	MH - GAS	MH - GAS	0	0	0	0	0	0	0	0	
1	2021	Annual	Areas-2021	MOTOR COACH - DSL	OBUS - DSL	0	0	0	0	0	0	0	0	
1	2021	Annual	Areas-2021	OBUS - GAS	OBUS - GAS	103.0	0.0000	0.0005	0.0001	0.2071	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	PTO - DSL	HHDT - DSL	0	0	0	0	0	0	0	0	
1	2021	Annual	Areas-2021	SBUS - DSL	SBUS - DSL	208.0	0.0000	0.0001	0.0020	0.2956	0.0000	0.0000	0.0000	
1	2021	Annual	Areas-2021	SBUS - GAS	SBUS - GAS	86.9	0.0001	0.0008	0.0001	0.0908	0.0000	0.0000	0.0000	
						Tons/yr	0.76	5.72	1.58	1472.43	0.015	0.014	0.015	

Appendix D

Cultural Resources Technical Report (HPSR/FOE)

HISTORIC PROPERTY SURVEY REPORT/ FINDING OF EFFECT

NEWMAN COMMUNITY CONSERVATION AREA 78 AND 24-ACRE PARCELS MERCED COUNTY, CALIFORNIA

FOR

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CORRESPONDENCE

LETTER	Request to Native American Heritage Commission
LETTER	Response from Native American Heritage Commission
LETTER	Letters to Native American Individuals and Groups Recommended by the Native American Heritage Commission

CHRIS/CCIC SEARCH RESULTS

SEARCH 1	File No. 11485IN dated August 26, 2020 (No Confidential Information)

DPR 523 PRIMARY FORM – Miller Ditch

FORM 1	DPR Primary Form – Miller Ditch. Dated November 2020

1.0 INTRODUCTION

This *Historic Property Survey Report/Finding of Effect* report (HPSR/FOE) represents the archaeological identification and evaluation effort completed for the City of Newman's proposed Newman Community Conservation Area (NCAA). The NCAA is planned to support three separate but related habitat restoration and creation projects, a multi-use trail system, and other amenities that will provide public access, recreation, nature viewing, and nature- and conservation-oriented education opportunities to the community on two separate 78-acre and 24-acres parcels located to the immediate southeast of the city in Merced County.

The review was requested to determine if significant cultural resources under both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) might be affected by the proposed actions. Portions of the habitat restoration and creation project may have to comply with Section 404 of the Clean Water Act (codified at 33 U.S.C. § 1344) and the regulatory requirements of the Department of the Army, Corps of Engineers (USACE) with regard to cultural resources (historic properties) for a permit.

The USACE is the NEPA responsible entity for actions that will require a Section 404 permit and is required to complete the federal regulatory requirements for cultural resources pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) (54 U.S.C. § 306108) and its implementing regulations 36 CFR Part 800. The regulations require a federal agency with jurisdiction over a federal, federally assisted or federally licensed undertaking to take into account the effort of the undertaking on properties listed on or eligible for the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the undertaking should it adversely affect a NRHP eligible or NRHP listed property. The criteria for determining NRHP eligibility are found in 36 CFR Part 60.

The City of Newman is the lead local agency and the USACE is the lead federal agency for the projects. The USACE is responsible for consulting with the California State Historic Preservation Office (SHPO) on their identification and evaluation efforts and on the effects, if any, of the undertaking upon historic properties in accordance with 54 U.S.C. § 302303(b)(5), (b)(6) and (b)(9).

The Area of Potential Effects (APE) for Archaeology includes the area within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, should any be present within the APE. The horizontal and vertical APE consists of the proposed construction within the footprint of the two parcels to develop the habitat restoration and creation projects as well as associated improvements.

The completion of an HPSR/FOE document will allow the project proponent to partially satisfy the regulations of the ACHP (36 CFR Part 800) for implementing Section 106 of the NHPA of 1966 as amended (54 U.S.C. § 306108). Section 106 studies provide the information necessary to satisfy the legal requirements for environmental documents or categorical exclusions under NEPA. In addition, the lead local agency, is required to determine the potential impacts of the construction on both historical and archaeological cultural resources and mitigate impacts on any significant resources located that may be affected by the project to a less than significant effect in

accordance with CEQA.

The research completed for the HPSR/FOE recommends that a finding of *No Adverse Effect* pursuant to 36 CFR Part 800.4(d)(1) for historic properties is appropriate as the proposed habitat restoration and creation and associated impacts will have no adverse effect as defined in 36 CFR Part 800.16(i).

2.0 **DESCRIPTION AND LOCATION**

2.1 LOCATION

The proposed NCAA projects will be completed within two parcels comprising 78-acres (APNs 054-050-019 and 054-050-020) and 24-acres (APN 054-05-010) southeast of the City of Newman. Both parcels are within Merced County (USGS Newman, Calif. 1978 and Gustine, Calif. 1973 Section 20 of Township 7 South Range 9 East) [Figs. 1-3].

The 78-acre parcel is bounded by Inyo Avenue and the Miller Ditch on the north, on the east by irrigated agricultural land, on the south by Brazo Road and on the west by Canal School Road and the Miller Ditch. Historically the majority of this parcel was graded into terraces or gently-angled pastures to facilitate irrigation and cultivation but the parcel has been fallowed since at least the late 1990s, and now is primarily used for cattle grazing. The parcel probably supported a mosaic of perennial grasslands, vernal pools, alkali seasonal wetlands, and potentially a portion of a tributary of the San Joaquin River. The various historic modifications have changed the extent of wetlands, as well as their hydrology and the associated plant communities (see Vollmar 2020a-b).

The 24-acre parcel is located to the east and consists of a northwest/southeast trending parcel with the north end bounded by Inyo Avenue/Miller Ditch and the south by the Newman Wasteway near Brazo Road. The eastern boundary is a drainage ditch and the Santa Fe Grade, a portion of railroad alignment constructed in 1890 that was never used and was subsequently converted to serve as both a gravel access road and reclamation structure. The west boundary is adjacent to former agricultural lands. The parcel is comprised of severely degraded wetlands, including a large alkali seasonal wetland as well as upland areas. This parcel has not been intensively cultivated, but has been overgrazed by cattle and received unseasonable irrigation water during the summer via drainage from the adjoining agricultural property (see Vollmar 2020a-b).

2.2 DESCRIPTION

The proposed NCAA projects include four separate complementary projects within the two parcels to be completed over a number of years: (1) Newman Environmental Wetland System (NEWS Project); (2) Wetland Project; (3) Miller Ditch Treatment Wetland Project; and, (4) Newman Nature Park. The NEWS, Miller Ditch Treatment Wetland Project, and Newman Nature Park projects would be located on the 78-acre parcel. The wetland project would extend to the 24-acre parcel [see Fig. 3]. The NEWS and Newman Nature Park projects would be served by City water for limited irrigation, potable and handwashing station use.

2.2A NEWS Project

The ***NEWS Project*** will occupy the northwest quadrant of the 78-acre parcel. This project will treat stormwater and dry season runoff from the City and surrounding agricultural lands prior to discharge to the Newman Wasteway and, ultimately, the San Joaquin River. Flows from the Miller Ditch would enter the NEWS facility via a passive diversion structure located at the northwest corner of the 78-acre parcel. Project components include a 2.5-acre sediment settling forebay, approximately eight acres of constructed wetland habitat for stormwater treatment (including 5.6 acres of low marsh habitat plus an additional 2.5 acres of high marsh habitat), and a 2.2-acre "micropool" with emergent wetland habitat for final polishing treatment. Unpaved roads/trails to enable O&M access are also planned. These would be opened to the public for walking, bicycling, jogging, and other non-motorized recreational use, with split-rail fencing around the forebay, wetland areas, and micropool providing for safety and discouraging entry into sensitive habitat. Native trees and shrubs would be planted along the access roads/trails at the west side of the forebay, and bordering the wetland area and micropool, in addition to native wetland plantings in the treatment cells.

2.2B Wetland Project

The ***Wetland Project*** would extend from the central and east-central portions of the 78-acre parcel to the 24-acre parcel to the east to restore and enhance an approximate 11-acre connected mosaic of wetland and perennial grassland habitat resembling the historic landscape as inferred from historic aerial photographs, historic topographic maps, and intact natural reference sites in the vicinity.

It is expected to include enhancement of about 1.4 acres existing marsh habitat in the central swale and reestablishment of another 6 acres of marsh habitat in the central swale; reestablishment of about 0.14 acre of seasonal wetlands adjacent to the central swale in the northeast corner of the 78-acre parcel; planting of at least 50 riparian trees along the south edge of the central swale on the 78-acre parcel; reestablishment of native perennial grasslands in disturbed upland areas south of the central swale on the 78-acre parcel; and enhancement of existing wetlands on the 24-acre parcel, which have been degraded and modified by unseasonable irrigation. The current practice of flood irrigation on the 78-acre parcel would be discontinued, and irrigation flows from the intervening privately owned parcel would be blocked from entering the 24-acre parcel to enable wetlands to return to a more site-appropriate ephemeral regime. Grazing on the 78-acre parcel would also be modified and limited under a new Grazing Management Plan tailored to supporting wetland function and value.

2.2C Newman Nature Park Project

The ***Newman Nature Park Project*** in the east and southeast portions of the 78-acre parcel would provide nature-oriented community recreational and education amenities, potentially including a community gathering plaza, outdoor classroom areas, and native plant, rainwise garden, and low-impact development demonstration areas. It would also construct new accessible (ADA-compliant) trails suitable for non-vehicular passive recreation such as jogging, walking, biking, and wildlife observation. Trails would include signage as well as split-rail fencing or other measures to restrict access to sensitive habitat areas. Seating and shade would be provided at

"trail nodes" for rest, nature viewing, and contemplation areas. The community area would also include restrooms with composting toilets, a handwashing station, and a hydration station. Vehicle and bicycle parking, potentially including a bus drop-off would be provided in a parking area off Brazo Road.

2.2D Miller Ditch Treatment Wetland Project

The ***Miller Ditch Treatment Wetland Project*** in the southwest portion of the 78-acre parcel would occupy about 16 acres with a focus on the removal of nitrates and phosphorus from the Miller Ditch. Contributions to public nature viewing and educational amenities for the City and surrounding area are anticipated by providing unpaved access suitable for operations and maintenance as well as non-vehicular public use such as walking, jogging, bicycling, birding, and watershed education. This project will be in collaboration with the Environmental Systems Graduate Group at the University of California, Merced (UC Merced) Department of Civil and Environmental Engineering,

2.2E Water Service Extension

The NEWS and Newman Nature Park projects would be served by City water for limited irrigation, potable, and handwashing station use. Water service for the NEWS project would be extended east from the City's existing 8-inch-diameter water pipeline at the corner of Canal School Road and Inyo Avenue. Two possible alignments are under consideration for the Newman Nature Park Project: (1) water line would extend south along Canal School Road and then east on Brazo Road, entering the 78-acre parcel via the future location of the Newman Nature Park Project driveway; and, (2) water line would extend along the north edge of the 78-acre parcel, paralleling the Miller Ditch, and then south along the east property boundary to reach the community area [see Fig. 3]. Construction is expected to rely on conventional open cut or cut and cover installation.

2.3 AREA OF POTENTIAL EFFECTS (APE)

The Area of Potential Effects (APE) includes all areas where direct or indirect impacts may occur within the projects. The horizontal and vertical Area of Potential Effects (APE) of the proposed project consists of the two parcels (102 acres) with subsurface impacts up to 10 feet deep with excavation primarily focused on the NEWS and Wetland project areas as well as potential water line open-cut trenching. Staging and laydown areas would be confined to the NCCA property or other public right of way or possible adjacent private land with the permission of the land owner. Water intake and drainage would be via existing canals and ditches.

3.0 REGULATORY CONTEXT

Cultural resources include prehistoric and historic archaeological sites, districts, and objects; standing historic structures, buildings, districts, and objects, and locations of important historic events or sites of traditional and/or cultural importance to various groups. The analysis of cultural resources can provide valuable information on the cultural heritage of both local and regional populations.

Cultural resources may be determined significant or potentially significant in terms of national, state, or local criteria either individually or in combination. Resource evaluation criteria are determined by the compliance requirements of a specific project.

3.1 FEDERAL

At least two of the projects (NEWS project and Miller Ditch Treatment Wetland Project) are expected to require authorization under Section 404 of the Clean Water Act (codified at 33 U.S.C. § 1344) and will therefore need to satisfy the regulatory requirements of the USACE with regard to cultural resources (historic properties) for a permit.

The USACE is the NEPA responsible entity and is required to complete the federal regulatory requirements for cultural resources pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) (54 U.S.C. § 306108) and its implementing regulations 36 CFR Part 800. The regulations require a federal agency with jurisdiction over a federal, federally assisted or federally licensed undertaking to take into account the effort of the undertaking on properties listed on or eligible for the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the undertaking should it adversely affect a NRHP eligible or NRHP listed property. The criteria for determining NRHP eligibility are found in 36 CFR Part 60.

3.2 STATE

The City of Newman, as the lead state agency under CEQA, must determine the potential impacts of the project on both historical and unique archaeological resources and identify possible mitigation measures or alternatives that can minimize adverse impacts on any significant cultural resources that may be affected by the project.

Public agencies under CEQA must consider the effects of their actions on both "historical resources" and "unique archaeological resources." Pursuant to California Public Resources Code (PRC) Section 21084.1, a "project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment" (CEQA Guidelines Section 15064.5(b).) PRC 21083.2 requires agencies to determine whether a proposed project would have an effect on "unique" archaeological resources.

"Historical resource" (see PRC 21084.1 and CEQA Guidelines Section 15064.5(a)) includes a resource listed in or determined to be eligible for listing in the California Register of Historic Resources (CRHR). The CRHR includes resources listed in or formally determined eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest.

Properties of local historic significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be "historical resources" for purposes of CEQA unless a preponderance of evidence indicates otherwise (PRC 5024.1 and CEQA Guidelines Section 15064.5(a)(2)). Unless a resource listed in a survey has been demolished or has lost substantial integrity, or there is a preponderance of evidence

indicating that it is otherwise not historically or culturally significant, a lead agency should consider the resource a historical resource under CEQA.

In addition to resources listed on the CRHR or included in a local register of historical resources as defined by PRC 5020.1(k) or identified as significant in an historical resource survey meeting the requirements of PRC section 5024.1(g), the lead agency has discretion to treat an object, building, structure, site, area, place, record, or manuscript as a historical resource for CEQA purposes if the lead agency has substantial evidence showing that such a resource is historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California (PRC 21084.1 and CEQA Guidelines Section 15064.5(a)(3)). Generally, a lead agency considers a resource to be "historically significant" if the resource meets the criteria for listing on the CRHR, including the following:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2 Is associated with the lives of persons important in our past;
3 Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or,
4. Has yielded, or may be likely to yield, information important in prehistory or history (State CEQA Guidelines Section 15064.5(a)(3)).

The fact that a resource is not listed or determined to be eligible for listing in the CRHR, or not included in a local register of historical resources (pursuant to PRC section 5020.1(k)), or identified in an historical resources survey meeting the criteria in PRC section 5024.1(g) does not preclude a lead agency from determining that the resource may be a historical resource (PRC 21084.1 and CEQA Guidelines Section 15064.5(a)(4)).

CEQA also distinguishes between two classes of archaeological resources: archaeological sites that meet the definition of a historical resource, as described above, and "unique archaeological resources." Under CEQA, an archaeological resource is considered "unique" if it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that the resource meets any of the following criteria:

Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;

Has a special and particular quality such as being the oldest of its type or the best available example of its type; or,

Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC 21083.2(g)).

CEQA states that if a proposed project would result in an impact that might cause a substantial adverse change in the significance of a historical resource, then an EIR must be prepared and mitigation measures considered. A "substantial adverse change" in the significance of a historical resource means physical demolition, destruction, relocation, or alteration of the

resource or its immediate surroundings such that the significance of a historical resource would be materially impaired (CEQA Guidelines Section 15064.5(b)(1)).

The CEQA Guidelines (Section 15064.5(c)) also provide specific guidance on the treatment of archaeological resources, depending on whether they meet the definition of a historical resource or a unique archaeological resource. If the site is not a historical resources, but meets the definition of a unique archaeological resource, it must be treated in accordance with the provisions of PRC 21083.2. PRC Section 21083.2 states that if it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. Examples of that treatment, in no order of preference, may include, but are not limited to:

(1) Planning construction to avoid archaeological sites.

(2) Deeding archaeological sites into permanent conservation easements.

(3) Capping or covering archaeological sites with a layer of soil before building on the sites.

(4) Planning parks, greenspace, or other open space to incorporate archaeological sites.

When an archaeological resource is listed in or is eligible to be listed in the CRHR, PRC Section 21084.1 controls, and it states that "[a] project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." PRC Sections 21083.2 and 21084.1 operate independently to ensure that potential effects on archaeological resources are considered as part of a project's environmental analysis.

Tribal Resources

Assembly Bill 52 (AB 52) provides protections for tribal cultural resources.[1] All lead agencies issuing a notice of preparation or a notice of negative declaration or mitigated negative declaration on or after July 1, 2015, are required, if formally requested by a culturally affiliated California Native American Tribe, to consult with such tribe regarding the impacts of a project on tribal cultural resources prior to the release of any negative declaration, mitigated negative declaration or draft environmental impact report. Under PRC Section 21074, tribal cultural resources include site features, places, cultural landscapes, sacred places or objects that are of cultural value to a tribe that are eligible or listed on the CRHR or a local historic register or that the lead agency has determined to be a significant tribal cultural resource.

Tribal consultation is to continue until mitigation measures are agreed to or either the tribe or the lead agency concludes in good faith that an agreement cannot be reached. In the case of agreement, the lead agency is required to include the mitigation measures in the environmental document along with the related Mitigation Monitoring and Reporting Program (MMRP). If no

1. AB 52 amended Section 5097.94 of, and added Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3 to, the California Public Resources Code

agreement is reached, the lead agency must still impose all feasible mitigation measures necessary for a project to avoid or minimize significant adverse impacts on tribal cultural resources (PRC Section 21084.3).

Other California Laws and Regulations

Other state-level requirements for cultural resources management appear in the California PRC Chapter 1.7, Section 5097.5 "Archaeological, Paleontological, and Historical Sites," and Chapter 1.75 beginning at Section 5097.9 "Native American Historical, Cultural, and Sacred Sites" for lands owned by the state or a state agency.

The disposition of Native American burials is governed by Section 7050.5 of the California Health and Safety Code and PRC Sections 5097.94 and 5097.98, and falls within the jurisdiction of the Native American Heritage Commission.

4.0 BACKGROUND REVIEW

4.1 ENVIRONMENTAL SETTING

The NCCA site is located in Merced County in the central San Joaquin Valley . The 1980 square mile county is situated between the Coast Ranges on the west and the foothills of the Sierra Nevada on the east. Stanislaus County forms the northern boundary with Mariposa County on the east, Madera and Fresno counties on the south, and San Benito and Santa Clara counties on the west. Three major drainages are within or adjacent to the county – the San Joaquin River, the Merced River and the Chowchilla River on the southern boundary. Other major and minor streams flow from the Sierra foothills on the east and the Diablo Range on the west.

The San Joaquin Valley surface sediments are characterized as mostly fine grained basin fill consisting of sandy clay and clayey sand dissected by widely spaced, narrow drainages and stream channels filled with sand and gravel (see USBR 2009:3).

4.1A Project Area[2]

The two NCAA parcels are at an elevation of 75-80 feet above mean sea level with the maximum difference in elevation across each parcel less than 10 feet. Both parcels were historically part of the large floodplain and tributary complex draining generally eastward to the San Joaquin River (Bennett Valley-San Joaquin River watershed). Regionally and in the project site vicinity, this system has been substantially disrupted and replaced by agricultural uses. These NCCA parcels now occupy a complex surface water drainage context that includes a network of agricultural canals and ditches as well as the Newman Wasteway, which ultimately discharges to the San Joaquin River to the east. The Miller Ditch adjacent to the northern boundary of each project parcel is a feature constructed after 1949 but prior to 1952 that conveys flows from several sources. During the spring and summer, supply from the Central California Irrigation District (CCID) canal west of the City is diverted into the Miller Ditch for irrigation use.. The Miller Ditch also receives agricultural tailwater and some overland runoff. As a result,

2. This section relies generally on text provide by Redtail Consulting.

flow in the Ditch is generally year-round, although flow volumes and water quality vary seasonally.

Site topography and historic aerial photographs indicate that the 78-acre parcel was previously graded for flood irrigation supported by a system of ditches, and was formerly cultivated for row crops, although it has been fallow since the 1990s. In contrast, the 24-acre parcel does not appear to have been substantially graded or cultivated. In recent years, both of the parcels have primarily been used for grazing and are at least intermittently irrigated during the dry season.

Neither of the parcels appears to have been subject to the deep ripping typical of agricultural lands in the vicinity. As a result, they likely preserve intact Northern Claypan, an indurated subsurface clay layer that significantly reduces downward percolation of surface water and creates perched groundwater conditions in the shallow subsurface. This is conducive to the formation of seasonal wetlands.

Both parcels exhibit a channel-like feature, a central swale, that appears to represent a substantially disturbed remnant tributary of the San Joaquin River. This remnant channel no longer supports through-going flow, is blocked by berms at both ends, has been extensively modified by shallow grading for agriculture, and is disconnected from the River by intervening cultivated lands. Berming along the banks has also reduced its original extent and further modified its hydrology although it is locally open to overland flow input on both the 78-acre and 24-acre parcels.

4.2 NATIVE AMERICAN

4.2A Prehistoric

Cultural resources are traces of human occupation and activity. The lower San Joaquin River would have provided a favorable environment for Native Americans despite the periodic flooding of the bottomlands, intense summer heat, and the ever-present annoyance of mosquitoes (Wallace 1978b:463). Native American occupation sites appear to have been selected for accessibility, protection from seasonal flooding, and the availability of resources. Archaeological research over the past 50 years suggests an increase in the prehistoric population over time due to more efficient resource procurement, storage and increasing political complexity (see Moratto 1984).

The prehistory of the San Joaquin Valley may have had its origins in late Pleistocene and early Holocene sites dating from perhaps as early as 12,000 years ago. The Farmington Complex sites in San Joaquin and Stanislaus Counties north of Merced County (Riddell 1949; Treganza 1952) and the Tranquility Site in Fresno County (CA-FRE-48/P-10-000085; Hewes 1946) are suggested as providing some of the earliest examples of human activity within the Central Valley area. The Fluted Point Cultural Tradition (or Big Game Hunting Tradition) in the San Joaquin Valley is present at the Witt Site and other Tulare Lake shoreline finds which date from approximately 11,000 years ago (Riddell and Olson 1969). Sizeable prehistoric populations appeared in the San Joaquin Valley with the Western Pluvial Lake Tradition (WPLT), which extended from approximately 11,000 to 7,000 years ago. This period saw the emergence of a cultural tradition which was adapted to the wetland environments of Tulare and Buena Vista

Lakes. Following the WPLT in Central California, various regionalized cultural traditions and sequences emerged throughout the San Joaquin Valley, Sierra Foothills, and Coast Range area.

The prehistoric record of the western edge of the San Joaquin Valley and the lower eastern slopes of the Diablo Range was first explored by archaeological investigations associated with the San Luis, Los Banos, and Little Panoche flood control and reclamation projects. During the early 1960s and 1970s, archaeological surveys and excavations were conducted at these three reservoir locations (Treganza 1960; Olsen and Payen 1968, 1969, 1983; Pritchard 1966, 1983) and those studies have established the cultural and temporal prehistory for the project area.

A tentative chronological sequence of four cultural complexes has been proposed for the general area: Positas (ca. 330-2600 B.C.); Pacheco (ca. 2600 B.C.-A.D. 300); Gonzaga (ca. A.D. 300-100); and, Panoche (ca. A.D. 1500-1850) (see Moratto 1984:191-193 after Olsen and Payen 1983).

Hewes' (1941:124, Fig. 14) schematic map includes five sites in the area around Newman. Four sites are mapped along the San Joaquin River including three on the west side of the river; one of these is in Stanislaus County and the other three in Merced County. The fifth site is a considerable distance west of the river in Stanislaus County. The absence of prehistoric sites in, adjacent to, and within 0.25 mile of the project site and the paucity of recorded sites in the study general area around Newman reiterates Moratto's assessment of the area south of the Stockton District of the San Joaquin Valley as one of the least-known archaeological areas in California (Moratto 1984:215).

In terms of the potential for aboriginal sites in the vicinity of water resources, especially vernal pools, Roop has reported on the presence of ". . . millingstones, manos, pestles of a type designed for use in wooden mortars, and occasional flaked-stone tools on the margins of vernal pools". He has also postulated occupation ". . . near these pools for brief intervals each spring to harvest freshwater shrimp, take occasional waterfowl, and especially to gather the greens, bulbs, and seeds of clover, hairgrass, eryngium, navarretia, tarweed, brodiaea, and other plants associated with the pools" (Moratto 1984:198 after Roop 1981). In contrast, another research synthesis noted that flooding would have prevented occupation in the "winter and spring seasons" along creeks in the study area (Peak & Associates 1982:20).

Additional information on the regional and local prehistory is presented in Hewes (1941), King (1978), Elsasser (1978), Moratto (1984), Napton (1981:Merced Co), Moratto and Jackson (1990), TA/WAPA (1986:Appendix K), and Jones and Klar (2007) with a Central Valley specific chapter by Rosenthal et al. (2007).

4.2B Ethnographic

Little is known of the aboriginal inhabitants of the lower or northern San Joaquin Valley as a result of introduced diseases, missionization and displacement by gold seekers. Kroeber (1925:485) notes, "In the plains along the Merced, Tuolumne, Stanislaus, and Calaveras rivers, on the east bank of the San Joaquin, and perhaps on its west side also, were Yokuts" but he does not include a specific tribelet in the general Newman study area (Kroeber 1925:474-491, map opposite pg. 527).

The Yokutsan-speaking people numbered approximately 18,000 and were dispersed in 40-50 small tribelets speaking at least 21 dialects.[3] These dialects appear to belong to 12 Yokutsan language groups within two divisions. Nearby dialects were probably intelligible, while geographically distant groups probably spoke unintelligible dialects. Yokuts subsistence relied on hunting and gathering, most especially salmon and acorns, but also on fowling and the consumption of tule roots. Reportedly Yokuts tribes were practically extinct on the west side of the San Joaquin River before 1790. In addition, a notable pestilence swept through Yokuts territory on the east side of the San Joaquin River as far south as the Fresno River in 1833. After 1833 forays against the missions and settlers by both the Miwoks and surviving Yokuts were a constant in Hispanic territory with Mission San Juan Bautista reported as under siege by Native Americans in 1841. These raids were a means of securing horses and cattle and have been also interpreted as a consequence of the mission system which entrapped and confined Indians to missions as laborers who endured punishment, abuse, and an inadequate diet (Wallace 1978b:464).

Tribal names are unknown or uncertain on the west side of the San Joaquin River from the vicinity of Manteca to Gustine. Occupation appears to have been "clustered in a narrow strip of land bordering the San Joaquin and its main tributaries" (Wallace 1978b:463). Archaeologists and ethnologists place the *Nupchenche (or* alternatively, the *Nopchinchi)* south of the NCAA project area. Schenck (1926) places the *Nupchenche* on the west side of the San Joaquin River roughly between Mariposa Creek and the Chowchilla River if these features extended to the west side of the San Joaquin River.

Following Cook (1955), the NCCA project appears to be located on the probable boundary between the "*Lower River Group*" and the *Nupchenches* whose territory straddled the San Joaquin River from just south of Newman to below Mendota (Cook 1955 and maps therein). Latta (1977) maps contemporary Newman and Gustine with no Yokuts groups or village sites in the vicinity of the NCAA project. The closest group, the *Miumne,* occupied "the entire Orestimba Creek Basin, ranging as far south as the Garzas Creek Basin and extending to the west bank of the San Joaquin River." (Latta 1977:126-127). This location appears to conform to the outlier site west of the San Joaquin River mapped by Schenck (1926). Wallace (1978b) does not map any Northern Valley Yokuts locations on the west side of the San Joaquin River between Manteca (north of the Stanislaus River) south to about the Chowchilla River (south of Ingomar). The *Nopchinchi* are the only group shown on the west side of the San Joaquin River from just north of Los Banos Creek and southward to north of Firebaugh (Wallace 1978b:462, Fig. 1).

The aboriginal inhabitants of the San Joaquin Valley were transformed from hunters and gatherers into agricultural laborers who lived at the missions including Mission San Jose (in the present-day City of Fremont), Santa Clara, Soledad, San Juan Bautista and San Antonio de Padua and worked with former neighboring groups such as the Ohlone and Esselen. In addition to missionization, the pestilence of 1833 decimated the San Joaquin Valley as far south as the Fresno River. The rapid influx of American miners and settlers during the gold rush (1848-

3. Latta (1977:xxx) as 60 tribes with an average of 400 individuals each.

1860s) was also a contributing factor to the disappearance of the Native peoples (Latta 1977:xxix; Wallace 1978a:462, Fig. 1).

No Native American ethnographic settlements or contemporary Native American use areas have been identified in or adjacent to the project site (Eargle 1986 with various sources). For a more extensive review of the aboriginal inhabitants of the NCAA project area see Kroeber (1925), Latta (1977), and Wallace (1978a-b), as well as Silverstein (1978), Spier (1978) and Swernoff (1982).

4.3 HISTORIC ERA

The history of the San Joaquin Valley can be divided into the Hispanic Period (Spanish Period 1769-1821 and Mexican Period 1822-1848), and the American Period (1848-onward). During the Hispanic Period, Spanish government policy in northwestern New Spain was directed at the founding of *presidios* (forts), missions and *pueblos* (secular towns) with the land held by the Crown whereas later Mexican policy (1822-1848) stressed individual ownership of the land with grants of vast tracts of land to individuals. The American Period focused on development and growth, a pattern that continues into the 21st Century (Hart 1987).

4.3A Hispanic Period (1769-1848)

The routes of the early explorers, even though they cannot be determined with total accuracy, had a profound effect on the indigenous populations. On March 30, 1772, Juan Crespi with Pedro Fages saw the San Joaquin River and named it *San Francisco*. The first party to travel through the general study area, reportedly in 1805 or 1806, was led by Gabriel Moraga who proceeded from San Juan Bautista through the San Joaquin Valley to as far north as the Mokelumne River. This party crossed the San Joaquin River between Bear Creek and the Chowchilla River and proceeded along the east side of the river. This expedition named the river *San Joaquin*, although portions of the river were variously named until ca. 1810. In 1810, Jose Viader, accompanied by Gabriel Moraga, travelled along the west side the San Joaquin River to as far south as the Merced River. Later, in 1828, the Mexican expedition of Sebastian Rodriquez also travelled along the San Joaquin River through the general study area (Schenck 1926:125-129; Hoover et al. 1966:200; Beck and Haase 1974:#20, 21, 22; Gudde 1998:337).

The project site is within ungranted land approximately 0.6 mile from the irregular western boundary of *Rancho Orestimba*, a rancho on the west side of the San Joaquin River (Beck and Haase 1974:#32; USGS Newman 1978). No Hispanic Period sites or features such as dwellings, corrals, roads etc. appear to have been present in or near the project (Dyer 1861).

As early as the 1820s Anglo-American mountain men followed many of routes favored by Spanish explorers through the San Joaquin. Mountain men are important in the history of the west as the precursors of Anglo-American settlement and the San Joaquin Valley was a favorite route from the 1820s. They first explored, trapped and traded and later "regularized" trails and escorted others who would eventually settle in the area. These included Jedediah Strong Smith in 1827, the Ewing-Young expedition in 1832-1833, and Joseph Reddeford Walker and his group in 1833. In addition, John Charles Fremont led five expeditions through the San Joaquin Valley from 1842 through 1853-1854. None of the known routes appear to have passed through

the NCCA project area or vicinity (Schenck 1926; Hoover et al. 1966; Beck and Haase 1974; Hart 1987).

4.3B American Period

California became a United States territory in 1848 through the Treaty of Guadalupe Hidalgo that ended the Mexican War of 1846-1847. California was not formally admitted as a state until 1850. In the mid-19th century, the majority of the rancho and pueblo lands and some of the ungranted land in California were subdivided as the result of the American takeover, population growth, and the confirmation of Mexican Period property titles. The initial population boom in California was associated with the Gold Rush (1848), followed later by the construction of the transcontinental railroad (1869). Still later, the development of the refrigerator railroad car (ca. 1880s) used for the transport of agricultural produce to distant markets, had a major impact. The agricultural land use pattern within the study area and environs and dependence on transportation systems - trails/roads, ferries, bridges, and the railroad - has persisted to date (Hart 1987).

By the 1850s, the Central Valley was an important source of meat, horses, and other agricultural products that supplied mining camps. The 1860s were a period of natural disasters that decimated thousands of sheep and cattle including the great flood of 1862, disease the following year, and drought in 1864. By 1865 wheat had replaced cattle and sheep (Napton 1991).

The San Joaquin River runs through the San Joaquin Valley including Stanislaus and Merced counties dividing them into two broad regions with distinct settlement histories. The City of Newman, just north of the project parcels, is within Stanislaus County which was created April 5, 1854 from portions of Tuolumne County and then modified in 1860 with land from San Joaquin County. From 1866 to 1868, Stanislaus County included a substantial portion of what is now Merced County which was formed in 1855 from part of Mariposa County (Outcalt 1925; Hoover et al. 1966; Coy 1973).

Early American settlement was initiated by former gold miners who established cattle ranches west of the San Joaquin River along the Merced River or valley creeks. The first county seat was on the Turner and Osborn Ranch near Mariposa Creek while Snellings' Ranch became the second county seat in 1857 (Kyle et al. 2002; Graham 1957). Cattle ranching (1848-1870) was followed by dry land wheat farming in the late-1860s as the main agricultural focus with the second wave of settlement leading to an increase in population from nearly 3,000 to over 9,000 in 1900 (Outcalt 1925). Most of the people who lived in Merced County during the wheat era (1870-1900) were sparsely settled on large agricultural parcels.

The project parcels are located in Section 20 of Township 7 South Range 9 East. "Newman's House" is mapped on the 1861 rancho plat as located adjacent to the west side of the San Joaquin River south of Orestimba Creek - a considerable distance north of the project parcels in Lot No. 38 of Township 6 South Range 9 East (Dyer 1861).

Britton & Rey's Map of the State of California (Goddard 1857) shows two trails/roads crossing the San Joaquin River and continuing westerly, but does not map Hills Ferry, a ferry founded in fall 1849 on the west side of the San Joaquin River and approximately three miles northeast of the project parcels. The land and water transportation system in the study area focused on Hill's

Ferry was superseded by rail in the late 1880s. The San Pablo & Tulare Extension Railroad (SP&TRR) , was incorporated by the Southern Pacific Company in 1887 with construction from Tracy to Newman and Los Banos completed in late 1889. In 1891-1892, the SP&TRR was extended south to Fresno (Brotherton 1981; Fickewirth 1992:133).

The Town of Newman was created in 1887 and named for Simon Newman who had arrived in Hill's Ferry in 1869. The ferry began operations in 1849 and was important for shipping grain as well as other produce from the surrounding area. By 1881, Newman had a store as well as a large warehouse at the Hill's Ferry Landing roughly three miles northeast of the town. As a result of the growing importance of the town, the population of Hills Ferry as well as Dutch Corners, a half-way house located two miles south of Hill's Ferry, moved to Newman. At the time, Newman, was the terminus of the Southern Pacific Railroad (SPRR) and was the focus of shipping and trade on the west side of the Stanislaus County and the northwestern part of Merced County.[4] In addition to the railroad, a stage connected Newman with Modesto (to the north) and beyond. Newman has merited a post office since August 9, 1888. The town was incorporated in 1908 and had a population of 1,251 in 1921 (Lewis Publishing Company 1892; Tinkham 1921; Patera 1991; Brotherton 1982; Gooch 1988; Kyle 2002; Gudde 1998; DC&E 2007).

In general, agricultural development of the Newman project area focused on areas east of the railroad which had access to irrigation canals. The passage of the Wright Act in 1887, sponsored by state senator C.C. Wright of Modesto, had a major impact on the general area. The act permitted groups of farmers to form irrigation districts with the power to divert river water to dry lands for flood control and water conservation. As a result, the power of owners with unrestricted stream use as part of a vast gravity irrigation system was radically altered. Small irrigation districts were formed throughout the San Joaquin Valley and allowed diversification of crops, so that in addition to cattle raising and wheat, grapes (introduced in the 1850s), almond and peach trees (from the 1870s and 1880s) and rice (from 1910-1915), and cotton (from 1910) could be grown. Today, dairy products, along with other crops such as tomatoes, potatoes, alfalfa, sugar beets, olives, and various fruits, especially apricots, are important (Beck and Haase 1974; Hart 1987). Numerous named and unnamed irrigation ditches/canals have facilitated agriculture within the Newman area and region (e.g., USGS v.d.).

The 24-acre project parcel is located adjacent to the Newman Wasteway on the south, a 8.2 mile long overflow canal built 1951 as an element of the 117 mile long Delta-Mendota Canal (DMC) constructed between 1946-1952. The canal is a major component of the Central Valley Project (CVP), a federal program under the management of the U.S. Bureau of Reclamation. The system was designed to prevent the devastating cycles of flood and drought common to the San Joaquin Valley and utilized Sacramento River water to irrigate the western part of the San Joaquin Valley. The CVP project has been determined eligible for the National Register of Historic Places (NRHP) under criterion a for its association with irrigation and agricultural development in California ((Hart 1987; JRP/Caltrans 2000; Overly 2009/form; Anderson 2010/form; USBR 2007, 2009).

4. Portions of the Southern Pacific Railroad line have been recorded as P-24-000097 in Merced County and P-50-000001 in Stanislaus County (see Cartier 2008).

5.0 RESEARCH PROTOCOLS

A prehistoric and historic site record and literature search was completed for a 0.25 mile radius around the NCAA project by the California Historical Resources Information System, Central California Information Center, California State University, Stanislaus, Turlock (CHRIS/CCIC File No. 11485IN by Greathouse dated 8/26/2020). Specialized listings for cultural resources consulted include:

- *National Register of Historic Places* listings for Merced and Stanislaus Counties, California (USNPS 2015/2017/2020);
- *OHP [*Office of Historic Preservation] *Built Environment Resources Directory* (BERD) for Merced and Stanislaus Counties (includes National Historical Landmarks, National Register of Historic Places, Federal (Agency Nominations, California Register of Historical Resources, California Historical Landmarks and California Points of Historical Interest listings). (CAL/OHP 2019a)**.**
- *Archeological Determinations of Eligibility* [ADOE] for Merced and Stanislaus Counties (CAL/OHP 2020c**).**
- *California History Plan* (CAL/OHP 1973).
- *California Inventory of Historic Resources* (CAL/OHP 1976).
- *Five Views: An Ethnic Sites Survey for California* (CAL/OHP 1988).
- *Listed California Historical Resources* – Merced and Stanislaus Counties (including National Register, State Landmark, California Register, and Point of Interest) (CAL/OHP 2020b).
- Local lists, inventories and limited historic view maps.

The Native American Heritage Commission (NAHC) was contacted in regard to resources listed on the Sacred Lands File (SLF) (Busby 2020a). The NAHC responded with negative results and provided a list of locally knowledgeable Native American tribes who may also have knowledge of cultural resources in the project area (Gonzales-Lopez 2020). Requests for information were sent to the four knowledgeable Native American individuals/organizations identified by the NAHC (Busby 2020b-e) (see Attachments).

The Central California Irrigation District (CCID) and the Newman Drainage District were contacted regarding the Miller Ditch. No other agencies, departments or local historical societies were contacted.

Mr. Christopher Canzonieri (MA, RPA) conducted a systematic field inventory of the two project parcels on September 30 and October 1, 2020.

5.1 RECORDS SEARCH RESULTS (CHRIS/CCIC File No. 11485IN)

No prehistoric, combined prehistoric or historic era archaeological sites have been recorded or reported for the two parcels. Two historic built environment resources are adjacent to the southern and eastern boundary of the 24-acre parcel.

5.1A Compliance Reports

One archaeological report includes part of the 24-acre project (Busby 2007/ME/ST-06488). One additional study includes an area opposite the 78-acre project parcel (Cartier 2008/ME-06712 / ST-06712). Both of these reports are negative for cultural resources within the two project parcels.

5.1B Recorded and/or Reported Sites

No prehistoric, combined prehistoric or historic era archaeological sites have been recorded or reported in the project APE. Two built environment cultural resources are present adjacent to the 24-acre parcel. P-24-001894, the Newman Wasteway has been recorded adjacent to the southern boundary of the 24-acre parcel and P-24-000083, the Old Santa Fe Grade, is adjacent to the eastern boundary of the 24-acre parcel. The Santa Fe Grade is part of a historic district identified as the Los Banos Miller-Lux Canal District (P-24-002104).

P-24-001894 - The Newman Wasteway, located both south and east of the City of Newman, consists of a 8.2 mile long overflow canal in both Merced and Stanislaus Counties completed in 1951. The Wasteway is an element of the 117 mile long Delta Mendota Canal (DMC) and a component of the U.S. Bureau of Reclamation Central Valley Project (CVP). The CVP has been determined eligible for the National Register of Historic Places (NRHP) under criterion a for its association with irrigation and agricultural development of California with the Newman Wasteway considered as a contributing element. The Newman Wasteway is owned and used by the U.S. Bureau of Reclamation and the Central California Irrigation District (CCID) as an overflow to the San Joaquin River. The canal is approximately 120 feet wide with large artificial levees on both sides. The initial 1.4 miles of the Wasteway is a 13-feet deep, concrete lined section, the remaining 6.8 miles is an unlined 21.25-foot deep 'V' shaped canal which terminates at and discharges into the San Joaquin River (Overly 2009/form; USBR 2009).

P-24-000083 - The Old Santa Fe Grade adjacent to the eastern boundary of the 24-acre parcel is currently a one-lane gravel road through the existing degraded wetlands (Levy 1995/form; Rogers 2017). Components of this former 100-mile long railroad alignment constructed in 1890 and converted to a roadway to allow access to Miller and Lux ranch lands have been recorded in Merced and Fresno counties by various researchers (Hattersley-Drayton 2001/form; Anderson 2009; Bowen et al. 2011; Lemon 2010; Rogers 2017). The resource was originally built for a potential Santa Fe Railroad line extension along the western edge of the San Joaquin Valley to cross seasonal wetlands. The opening of the Southern Pacific Railroad line west of the proposed Santa Fe line resulted in the abandonment of the alignment and its reversion to the Miller and Lux Company[5] who used it for a roadway and for land reclamation related to its ranching interests.

5. A San Francisco firm of meatpackers started by German immigrants during the Gold Rush and lasting until its dissolution in the 1920s. At one point, the firm was one of the nation's largest 200 industrial corporations that at its peak dominated the Pacific Coast and intermountain meat markets. The entity controlled over 1.25 million acres in three states and had over 100,000 head of cattle. It controlled both land and water rights and

This resource is also listed as a contributor to P-24-002104, the Los Banos Miller and Lux Canal District (Caltrans 2003/form). The historic district includes portions of five contributors:

P-24-000083 The Old Santa Fe Grade Road.
P-24-000082 The Joaquin and Kings River Canal ("Main Canal");[6]
P-24-001926 The San Luis Canal;
P-24-001893 The Santa Fe Canal; and,
P-24-001796 The Arroyo Canal.

Caltrans (2003) proposed the historic district theme "Los Banos Area Water Management 1866-1985" with a period of significance from 1872 to 1916, the Miller and Lux Company era. Caltrans concluded that the proposed district lacked sufficient documentation, and that five properties listed as potential contributors ". . . were not eligible as a district" (Hattersley-Drayton 2002/form; Caltrans 2003/form; Rogers 2017/form).

The Santa Fe Grade was individually reviewed in 2017 and found eligible for listing in the NRHP/CRHR under criteria a/1 (associated with events that have made a significant contribution to the broad patterns of our history), and b/2 (associated with the lives of significant persons in our past) with a period of signicance as 1890 (Rogers 2017). The resource retains its integrity of location, setting and feeling by maintaining its historic route through western Merced County's river floodplain and agricultural communities. The grade has been altered through maintenance and improvements, and no longer retains good integrity of original materials and workmanship. The property was originally developed as a railroad grade for the Santa Fe Railroad but was also utilized as a road by Miller and Lux. It was never used for its original purpose for a railroad but continues its function as a roadway; therefore, the property retains its integrity of association with its original use. In conclusion, the property retains its integrity of location, setting, and association that continue to adequately convey its historic significance.

The proposed Los Banos Miller and Lux Canal Historic District (see Caltrans 2003) was reviewed. Rogers (2017) concluded that the district did not qualify and was not eligible for the NRHP/CRHR and that the Santa Fe Grade was not a contributor to the district.

5.1C Listed Historic Properties

No local, state or federal historically or architecturally significant structures, landmarks, or points of interest have been identified within the project parcels.

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was considered a vertically integrated industrial enterprise that included cattle ranching, meat packing and marketing. The firm is notable for engaging in large scale natural landscape modification including the development of massive irrigation systems, waterways and drainage schemes to create pastures for grazing and agricultural land for raising cattle feed. The firm was a litigant in numerous water rights cases in the San Joaquin Valley that established legal precedents for water control and use. Miller's death in 1916 led the decline of the firm and its ultimate dissolution (see Igler 2001 for a review).

6. P-50-000065 in Stanislaus County (DC&E 2006:4.5-9).

The California Office of Historic Preservation *Built Environment Resources Directory* (BERD) (CAL/OHP 2019a-b) reviewed by the CHRIS/CCIC for Merced County does not identify any listed resources within the two project parcels. The Newman Wasteway, adjacent to the 24-acre parcel on its southern boundary, is considered a contributing element to the NRHP-listed CVP.. The Santa Fe Grade, adjacent to the eastern boundary of the 24-acre parcel, was reviewed in 2017 and the evaluator found that the resource was individually eligible for both the NRHP and CRHR under criteria a/ and b/2. However, this determination does not appear to have been officially reviewed for inclusion on the CRHR as of November, 2020 based on the results presented in the BERD.

5.1D Archaeological Sensitivity

No recorded prehistoric archaeological resources are known for the two parcels and within 0.25 miles. Both parcels were historically part of the large floodplain and tributary complex draining generally eastward to the San Joaquin River. Regionally and in the project parcel vicinity, this system has been substantially disrupted and replaced by agricultural uses. The archival record for the past 100 years suggests a very low potential for the exposure of subsurface resources as wetlands are generally not favored for human occupation but may be intermittently used for resource procurement. In addition, no listed historic resources associated with the settlement and economic development of the project area are present. The archaeological sensitivity based on the archival record and literature review, the locations of the project sites within a flood plain and wetlands and impacts by agricultural activities including previous grading suggest a low potential for the exposure of significant subsurface cultural materials.

6.0 INDIVIDUALS, GROUP AND AGENCY PARTICIPATION

The Native American Heritage Commission (NAHC) was contacted in regard to resources listed on the Sacred Lands File (SLF) (Busby 2020a). The NAHC responded with negative results and recommended contacting Native American tribes who may also have knowledge of cultural resources in the project area (Gonzales-Lopez 2020). Letters and/or email requests for assistance were sent to three knowledgeable Native American individuals/organizations identified by the NAHC (Busby 2020b-e) (see Attachments). None of these individuals are members of Indian Entities Recognized and Eligible to Receive Services from the United States Bureau of Indian Affairs (e.g., Federally recognized) (USDI/BIA) 2020.

Valentin Lopez, Chairperson, Amah Mutsun Tribal Band;

Katherine Erolinda Perez, Chairperson, North Valley Yokuts Tribe, and,

William Leonard, Chairperson, Southern Sierra Miwuk Nation, Mariposa.

No responses were received in regard to the two project parcels.

The Central California Irrigation District (CCID) and the Newman Drainage District were contacted regarding the Miller Ditch. No other agencies, departments or local historical societies were contacted.

7.0 ARCHAEOLOGICAL FIELD INVENTORY

Mr. Christopher Canzonieri (MA, RPA) completed a systematic field inventory of the two project parcels September 30 and October 1, 2020. No evidence of prehistoric and/or historic materials and/or culturally modified sediments was observed during the survey conducted for the proposed project. Two previously identified historic features, the Newman Wasteway and the Santa Fe Grade, were noted adjacent to the project APE. The Miller Ditch, a previously unrecorded historic water service ditch, was noted as adjacent to the APE boundary on the west and north.

7.1 78-ACRE PARCEL [Figs. 4-16]

The 78-acre parcel is bordered on the north by a segment of the Miller Ditch; on the west by Canal School Road and another segment of the Miller Ditch; on the east by vacant agricultural land used for grazing; and, on the south by Brazo Road. Field transects were oriented north to south in alignment with the parcel boundary and spaced approximately 18 meters (60 feet) apart. Surface visibility varied within parcel from 0-5% in marshy areas near the northwest and southwest and along the various earthen drainages. Other areas within the parcel consisted of open areas that had been grazed. The open space surface visibility varied from 25-50%. Observed sediments consisted of grayish brown clayey silt to brown clayey silt.

A series of drainage and irrigation ditches borders the parcel with associated irrigation laterals and other drainages present within the parcel. The Miller Ditch forms the northern boundary [Figs. 6, 8]. A shallow earth ditch, present along the east side of the project and running the approximate length of the parcel and terminating at Brazo Road, is approximately 4-5 feet wide by 2 feet deep [see Fig. 5]. Another short earth drainage extends east from the Miller Ditch at Canal School Road parallel to Brazo Road [Fig,. 16]. The 600-foot long ditch is approximately 12 feet wide and runs roughly 1200 feet north into the parcel [Fig. 11]. The ditch has numerous laterals (est. 22-24 laterals) along the east bank that allow irrigation water to flow into the agricultural/grazing field. The shallow 3-5 feet deep ditches are approximately 20 feet long, spaced at intervals of roughly 40-50 feet and vary from 3-5 feet wide.[7] Another 2000-foot long x 12-20 foot wide earth drainage trends northeast/southwest across the parcel from approximately the Miller Ditch to the mid-point of Canal School Road between Inyo Avenue and Brazo Road [Fig. 10]. Depth of this drainage ranges from three feet near the west end to nearly ground level at the east end. The drainage appears to follow the alignment of a potential portion of the tributary of the San Joaquin River although historic modifications have nearly erased indications of the former waterway as viewed from the ground, although it is evident on air photos.

Various contemporary features were noted during inventory including:

> A series of 12-24 inch plastic, reinforced concrete and steel pipes in association with metal screw/slot gates are used to control the water flow from the Miller Ditch and other drainages. A large number of these features were partially silted in and not visible for a detailed review

7. The laterals are clearly visible on Google Earth (see 07/2019 view).

at the time of the inventory. The visible portions suggest installation within the past 25 years.

A modern power pole is located at the northwest end. It is associated with a modern electric water pump and cattle trough.

A 4-foot diameter x 4 foot high concrete riser with a steel cover and hand valve is present in the northwest corner of the parcel.

A cattle paddock [see Fig. 15] is located at the southwest corner of the parcel and measures approximately 100 feet east to west x 50 feet north to south. The paddock appears to be in disrepair, it is accessible via a gravel road off of Brazo Road.

Several, probable geotechnical or soil exploration pits measuring approximately 5 feet x 5 feet x 1 foot deep were observed within the 78-acre parcel; these pits appear to have been recently excavated, as indicated by the little to no vegetation growth within the pits [Fig. 12].

7.2 24-ACRE PARCEL [Figs. 4, 17-22]

This narrow 24-acre parcel is oriented northwest to southeast and is bounded by the former Santa Fe Grade (P-24-000083, Old Santa Fe Grade Road) and an agricultural field on the east, a grazing pasture to the west, the Newman Wasteway (P-24-001894) on the south and Inyo Avenue/Miller Ditch on the north. Barbed wire fencing, two-strand with two points (Glidden's Barb see Clifton 1970:100) is present along the east, west, and south end (near Newman Wasteway). The north end (near the Miller Ditch) is protected by a modern electric cattle fence. Both banks along the Miller Ditch are sloped at 45 degree angles into the water and are sparsely covered with grasses.

Field transects were oriented northwest to southeast (in alignment with the parcel) and spaced approximately 18 meters (60 feet) apart. Surface visibility varied within the parcel with 25-50% at the north end and 0-5% at the south end. Additionally, there were several marshy areas (wetlands) and standing water. An earth drainage ditch [Fig. 17] extends the length of the parcel from the south to the north along the east side [Figs. 17, 24]. The drainage ditch measures approximately 25 feet wide x 2-3 feet deep. The shallow earth berm along the west side of the drainage ditch probably representing dirt removed during the construction of the ditch varies from 2-8 feet wide. A second shallow ditch [Fig. 19] extends diagonally from the west fence line approximately 420 feet to the into the drainage ditch along the east side. The ditch is approximately 5 feet wide x 2 feet deep. An electric power line crosses the project and one power pole (no utility markings) is within the project parcel along the east side near the barbed wire fence and earth drainage. Observed sediments consisted of grayish brown clayey silt to brown clayey silt. A modern cattle trough is present along the west side of the property.

7.3 The Miller Ditch (see Attachments)

The Miller Ditch, a previously unrecorded historic water service ditch, was noted as adjacent to the APE boundary on the west and north.

The Miller Ditch, a water service ditch approximately 15 feet wide by four feet deep, provides irrigation water from the Central California Irrigation District (CCID) Main Canal to the west for agricultural lands adjacent to the project site. The ditch forms the northern border of both project sites. The CCID was formed in 1951 when it took over control of the San Joaquin and Kings River Canal and Irrigation Company. The portion of the Miller Ditch along Canal School Road which is the western boundary of the 78-acre parcel and the northern boundary of both project sites appears to have been constructed in the early 1950s based on a review of historic topographic maps. It may have been constructed to take advantage of the additional water that could be obtained from the Central Valley Project Delta Mendota Canal (CVP DMC) to the west or the additional drainage offered by the Newman Wasteway which was completed in 1951 as part of the CVP DMC.

The Miller Ditch does not appear eligible for either the NRHP or CRHR under any of the criteria:

a/1 the ditch does not appear to be associated with any important events in Merced and/or Stanislaus counties or with the development of irrigated farming in the immediate or general area;

b/2 the ditch is not associated with an important person or prominent engineer either in the area's history or with water development in the State of California or regional history;

c/3 the ditch does not possess important engineering or design values – it is a standard earth, 'v'-profile irrigation ditch typical of a large number of similar ditches in the general area used to deliver irrigation water or act as drainages. It is part of the larger water conveyance and drainage system of the Central California Irrigation District but is not a distinguishable entity of the system.

d/4 the ditch is a standard water service structure which is not likely to provide information important in history.

A DPR 523 Primary Form was completed for the resource (see Attachments).

8.0 FINDINGS

This document was prepared to identify archaeological resources which may be listed, determined or potentially eligible for inclusion on the NRHP and/or CRHR within or immediately adjacent to the NCAA project.

Two cultural resources reports are on file that include the proposed projects or adjacent areas. The reports are negative for resources in/or adjacent to the project sites.

No prehistoric, combined prehistoric or historic era archaeological sites have been recorded or reported in the project parcels**.**

No known prehistoric, ethnographic or contemporary Native American resources, including sacred places and traditional use areas, have been identified in, adjacent, or near the project parcels.

No historic era or architecturally significant sites, structures, landmarks, or points of interest have been identified within the project parcels as part of either the archival records search or the field inventory.

Two previously recorded historic resources, The Old Santa Fe Grade Road (P-24-000083) and the Newman Wasteway (P-24-001894) are adjacent to the APEs for the project parcels. The Santa Fe Grade was found eligible for listing in the NRHP/CRHR under criteria a/1 and b/2 in 2017 but the determination has not yet been reviewed. The Newman Wasteway is considered a contributing element to the CVP under criterion a for its association with irrigation and agricultural development of California.

Two segments of the Miller Ditch, a historic water service ditch constructed ca. 1951, were identified along Canal School Road and Inyo Road. The ditch was recorded and evaluated. The two segments do not appear eligible for either the NRHP or CRHR under any of the criteria.

No National, State of California historical landmarks or points of interest are located in or adjacent to the project. parcels.

The field inventory of the project parcels was negative for prehistoric, combined prehistoric or historic era archaeological sites or isolates within the two parcels.

Archaeological Sensitivity, based on the archival record and literature review, the project site locations within a flood plain and wetlands and impacts by agricultural activities, appears low with a minimal potential for the exposure of significant subsurface cultural materials during construction.

9.0 FINDING OF EFFECT

A reasonable and good faith effort has been made to identify historic properties listed, determined, or potentially eligible for inclusion on the NRHP (36 CFR Part 800.4) within the APEs for the proposed habitat restoration and creation projects pursuant to the NHPA of 1966 (as amended) (54 U.S.C. § 306108) and its implementing regulations 36 CFR Part 800. The identification effort included: (1) a records search of the two project APEs and adjacent areas; (2) a literature review; (3) a project specific field review of the two project APEs; (4) Native American outreach; and, (5) consultation with the CCID in regard to the Miller Ditch adjacent to the two project sites.

Two previously recorded historic resources, The Old Santa Fe Grade Road (P-24-000083) and the Newman Wasteway (P-24-001894), are adjacent to the APEs for the project parcels. The Santa Fe Grade was found eligible for listing in the NRHP/CRHR under criteria a/1 and b/2 in 2017 but the determination has not yet been reviewed. The Newman Wasteway is considered a contributing element to the CVP under criterion a for its association with irrigation and agricultural development of California. Two segments of the Miller Ditch, a previously unrecorded historic water service ditch constructed ca. 1951 and adjacent to the NCAA project, do not appear eligible for either the NRHP or CRHR under any of the criteria.

The regulations implementing Section 106 define an effect as any action that would alter the characteristics of a historic property that may qualify the property for inclusion in the NRHP and, diminish the integrity of a property's location, setting, design, materials, workmanship, feeling or association (36 CFR Part 800.5(a)(1-2)).

A determination of *No Adverse Effect* (36 CFR Part 800.5(b)) is recommended as the proposed habitat restoration and creation projects will have no adverse effect on the three historic properties as defined in 36 CFR Part 800.5(a)(1). The two habitat restoration and creation projects will continue the historic use of the identified historic properties for irrigation and drainage. The proposed effort will not affect any of the criteria that could compromise or contribute to the eligibility of the three resources identified adjacent to the project sites for the NRHP.

10.0 RECOMMENDATIONS

- The development of a formal *Post-Review Discovery Plan* is not recommended due to the very low potential for exposing significant subsurface cultural material within each project APE.

- In the event of post-review discoveries of cultural resources,[8] the USACE shall be notified so that any discoveries may be treated in accordance with 36 CFR Part 800.13(b).

- The exposure and treatment of Native American burials and any associated or unassociated funerary objects discovered during any soil-disturbing activity within the project site shall comply with applicable State laws. This shall include immediate notification of the appropriate county Coroner/Medical Examiner. In the event of the coroner's determination that the human remains are Native American, notification of the Native American Heritage Commission, is required who shall appoint a Most Likely Descendant (MLD) (Public Resources Code Section 5097.98) who shall make recommendations for treatment.

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8. Significant prehistoric cultural materials may include:

   a. Human bone - either isolated or intact burials.
   b. Habitation (occupation or ceremonial structures as interpreted from rock rings/features, distinct ground depressions, differences in compaction (e.g., house floors).
   c. Artifacts including chipped stone objects such as projectile points and bifaces; groundstone artifacts such as manos, metates, mortars, pestles, grinding stones, pitted hammerstones; and, shell and bone artifacts including ornaments and beads.
   d. Various features and samples including hearths (fire-cracked rock; baked and vitrified clay), artifact caches, faunal and shellfish remains (which permit dietary reconstruction), distinctive changes in soil stratigraphy indicative of prehistoric activities.
   e. Isolated artifacts

   Significant historic cultural materials may include finds from the late 19th through early 20th centuries. Objects and features associated with the Historic Period can include.

   f. Structural remains or portions of foundations (bricks, cobbles/boulders, stacked field stone, postholes, etc.).
   g. Trash pits, privies, wells and associated artifacts.
   h. Isolated artifacts or isolated clusters of manufactured artifacts (e.g., glass bottles, metal cans, manufactured wood items, etc.).
   i. Human remains.

   In addition, cultural materials including both artifacts and structures that can be attributed to Hispanic, Asian and other ethnic or racial groups are potentially significant. Such features or clusters of artifacts and samples include remains of structures, trash pits, and privies.

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Abbreviations

n.d.	no date	v.d.	various dates
N.P.	no publisher noted	n.p.	no place of publisher noted
I.P.	in progress		

CHRIS/CCIC, CSU Stanislaus, Turlock - used for materials on file at the California Historical Resources Information System, Central California Information Center, California State University, Stanislaus (abbreviations: ME = Merced County, SJ = San Joaquin County, ST = Stanislaus County, TO = Tuolumne County)

ATTACHMENTS

FIGURES

FIGURE 1	General Project Location (ESRI World Street Map)
FIGURE 2	Project Location - T7S R9E Section 20 (USGS Newman, Calif. 1978 and Gustine, Calif. 1973)
FIGURE 3	Conceptual NCCA Site Layout – Newman Community Conservation Area Master Plan, City of Newman
FIGURE 4	Project Parcels with Photo View Locations
FIGURE 5	78-Acre Parcel – from Miller Ditch along drainage ditch on the east side of the property
FIGURE 6	78-Acre Parcel – view west along Miller Ditch from the northeast corner of the parcel
FIGURE 7	78-Acre Parcel – view south across the center of the parcel from the north end
FIGURE 8	78-Acre Parcel – view east along Miller Ditch from the northwest corner of the parcel
FIGURE 9	78-Acre Parcel – view south along the west side of the parcel along Miller Ditch
FIGURE 10	78-Acre Parcel – view southwest towards Canal School Road along drainage that extends diagonally through the parcel
FIGURE 11	78-Acre Parcel – view south along drainage from the middle of the parcel
FIGURE 12	78-Acre Parcel – view northeast at a possible geotechnical exploration pit near the middle of the parcel
FIGURE 13	78-Acre Parcel – view north from the southeast corner of the parcel
FIGURE 14	78-Acre Parcel – view north from the south end of the parcel
FIGURE 15	78-Acre Parcel – view west of paddock near the southwest corner of the parcel
FIGURE 16	78-Acre Parcel – view west along Brazo Road from near the southwest corner of parcel
FIGURE 17	24-Acre Parcel – view northeast along Miller Ditch from the northwest corner of the parcel
FIGURE 18	24-Acre Parcel – view southeast from the northeast corner of the parcel
FIGURE 19	24-Acre Parcel – view south along the earthen drainage extending across the middle of the parcel

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FIGURE 20 24-Acre Parcel – view northwest from the middle of the parcel

FIGURE 21 24-Acre Parcel – view northwest along the earthen drainage on the east side of the parcel

FIGURE 22 24-Acre Parcel – view northwest from the south end of the parcel

CORRESPONDENCE

LETTER Request to Native American Heritage Commission

LETTER Response from Native American Heritage Commission

LETTER Letters to Native American Individuals and Groups Recommended by the Native American Heritage Commission

CHRIS/CCIC SEARCH RESULTS

SEARCH 1 File No. 11485IN dated August 26, 2020 (No Confidential Information)

MILLER DITCH – DPR 523 FORM

FORM 1 Miller Ditch - DPR 523 Primary Form. Dated November 2020

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FIGURES

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FIGURE 20	24-Acre Parcel – view northwest from the middle of the parcel
FIGURE 21	24-Acre Parcel – view northwest along the earthen drainage on the east side of the parcel
FIGURE 22	24-Acre Parcel – view northwest from the south end of the parcel

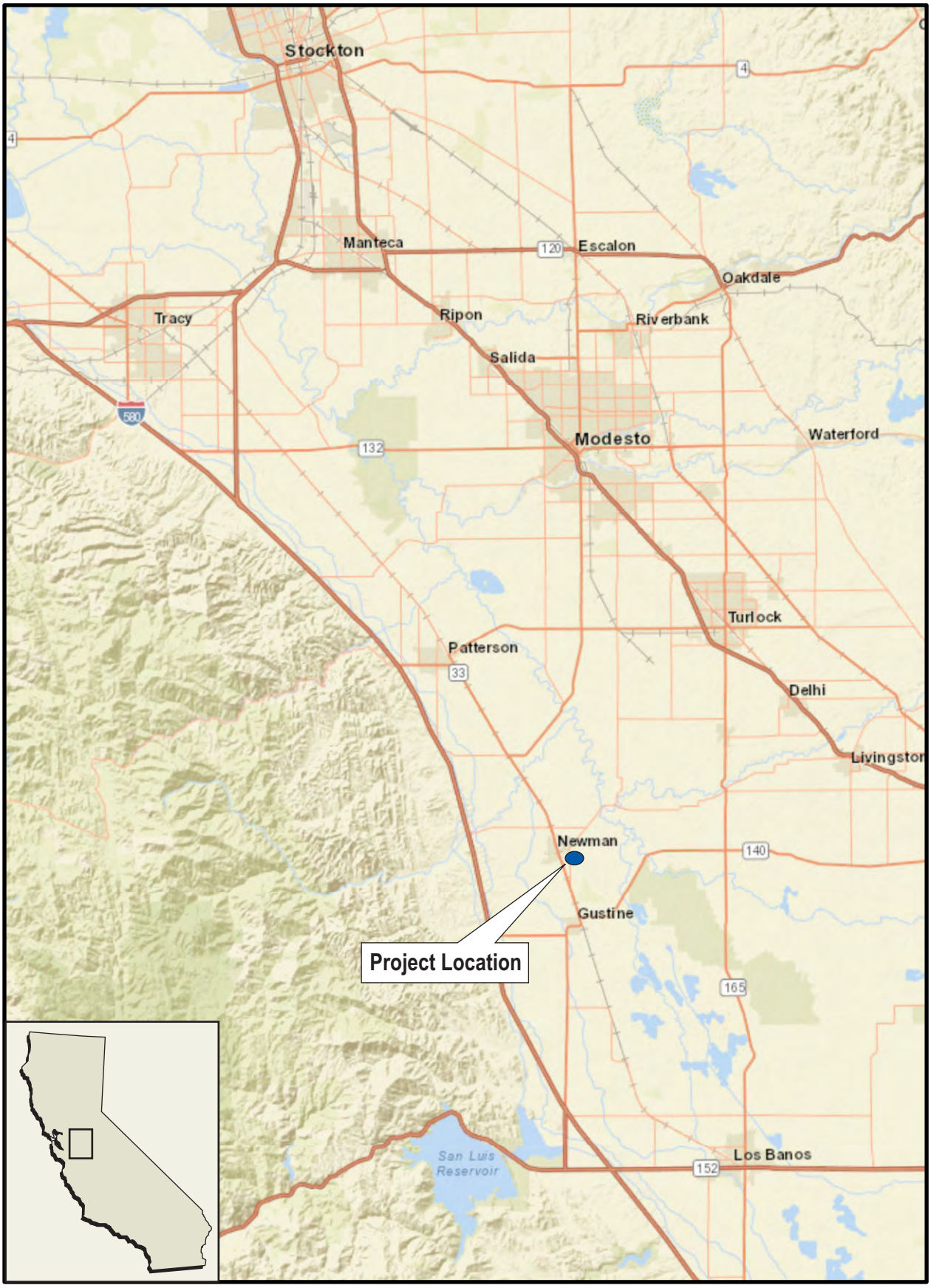

Figure 1: General Project Location (ESRI World Street Map)

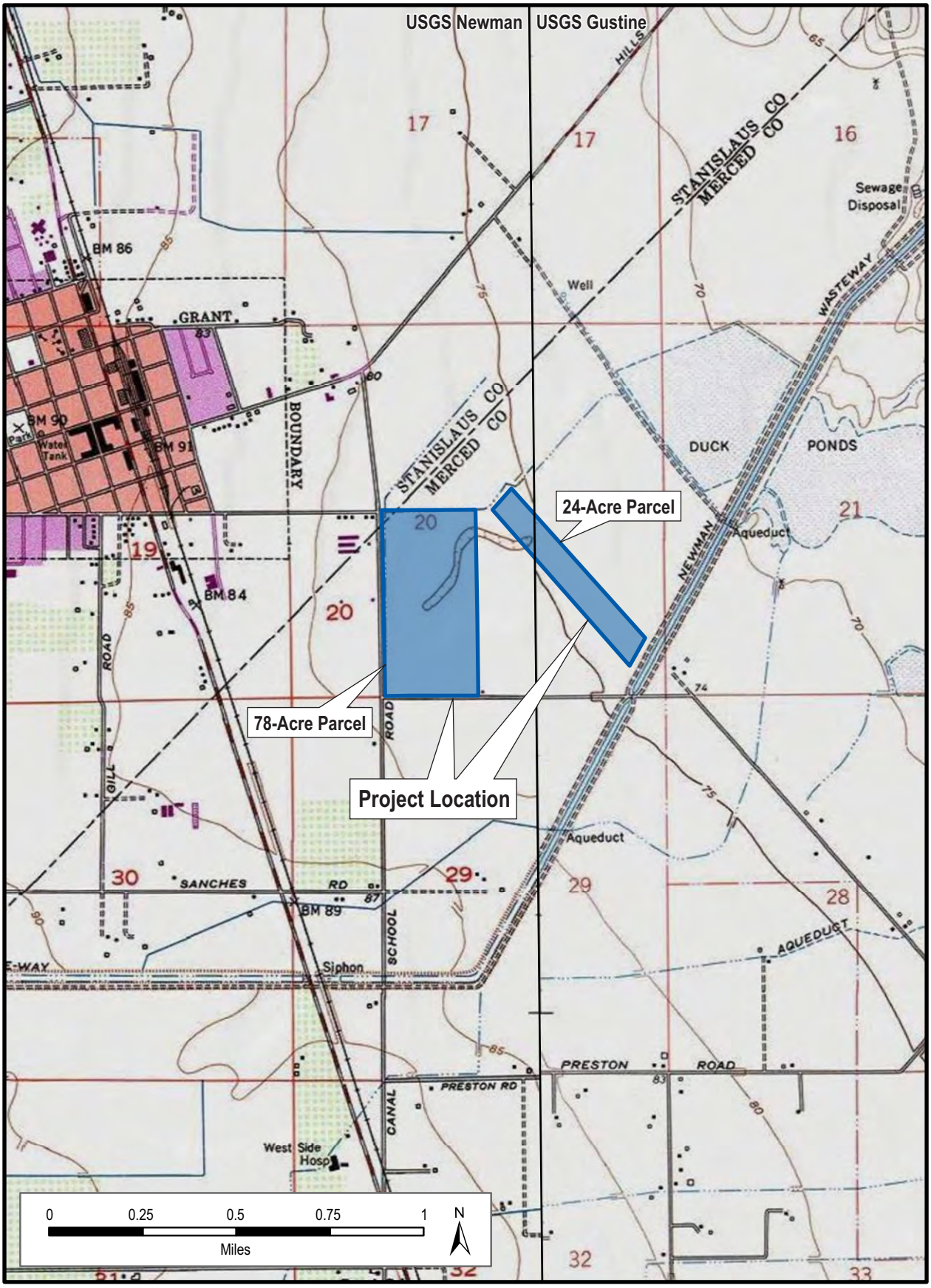

Figure 2: Project Location - T7S R9E Section 20 (USGS Newman, Calif. 1978 and Gustine, Calif. 1973)

Aerial Photograph Source: GoogleEarth (imagery date 07/18/2019, downloaded 03/16/2020)

Redtail Consulting
Environment & Community

Figure 3

Figure 1-2. Conceptual NCCA Site Layout
Newman Community Conservation Area Master Plan
City of Newman

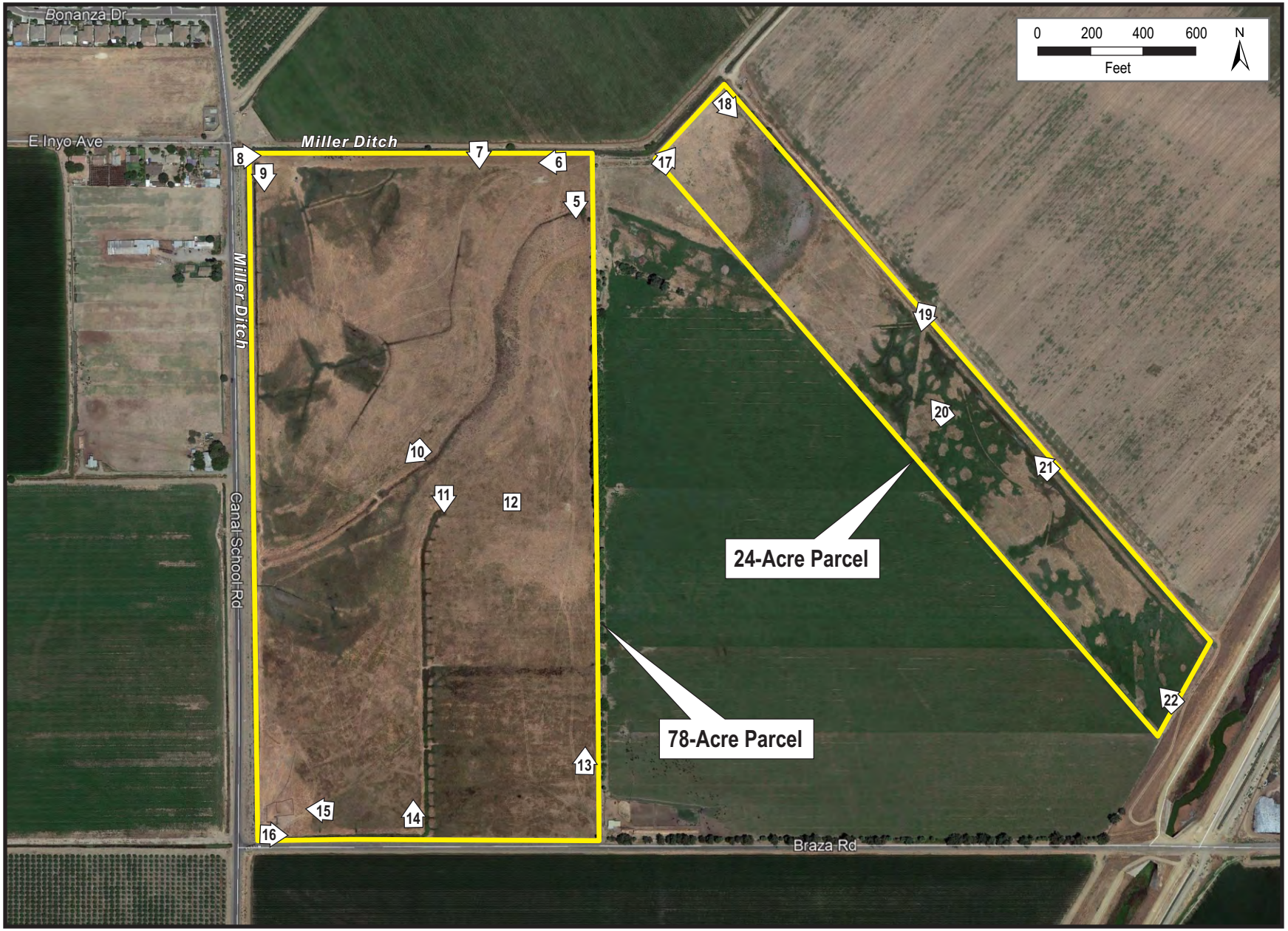

Figure 4: Project Parcels with Photo View Locations

Figure 5: 78-Acre Parcel – view south from Miller Ditch along drainage ditch on the east side of the property

Figure 6: 78-Acre Parcel – view west along Miller Ditch from the northeast corner of the parcel

Figure 7: 78-Acre Parcel – view south across the center of the parcel from the north end

Figure 8: 78-Acre Parcel – view east along Miller Ditch from the northwest corner of the parcel

Figure 9: 78-Acre Parcel – view south along the west side of the parcel along Miller Ditch

Figure 10: 78-Acre Parcel – view southwest towards Canal School Road along drainage that extends diagonally through the parcel

Figure 11: 78-Acre Parcel – view south along drainage from the middle of the parcel

Figure 12: 78-Acre Parcel – view northeast at a possible geotechnical exploration pit near the middle of the parcel

Figure 13: 78-Acre Parcel – view north from the southeast corner of the parcel

Figure 14: 78-Acre Parcel – view north from the south end of the parcel

Figure 15: 78-Acre Parcel – view west of paddock near the southwest corner of the parcel

Figure 16: 78-Acre Parcel – view west along Brazo Road from near the southwest corner of parcel

Figure 17: 24-Acre Parcel – view northeast along Miller Ditch from the northwest corner of the parcel

Figure 18: 24-Acre Parcel – view southeast from the northeast corner of the parcel

Figure 19: 24-Acre Parcel – view south along the earthen drainage extending across the middle of the parcel

Figure 20: 24-Acre Parcel – view northwest from the middle of the parcel

Figure 21: 24-Acre Parcel – view northwest along the earthen drainage on the east side of the parcel

Figure 22: 24-Acre Parcel – view northwest from the south end of the parcel

CORRESPONDENCE

LETTER	Request to Native American Heritage Commission
LETTER	Response from Native American Heritage Commission
LETTER	Letters to Native American Individuals and Groups Recommended by the Native American Heritage Commission

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
1556 Harbor Boulevard, STE 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: City of Newman Habitation Restoration and Creation as per Newman Community Conservation Area (NCAA) Master Plan – Initial Study of projects

County: Merced County – less than 1% in Stanislaus County

USGS Quadrangle Name: USGS Newman, Calif. 1978 and Gustine, Calif. 1973)

Address: None

Township: 7 South, **Range**: 9 East, Section 20

Company/Firm/Agency: Basin Research Associates

Contact Person: Colin I. Busby, PhD, RPA

Street Address: 1933 Davis Street, STE 210

City/Zip: San Leandro, CA 94577

Phone: (510) 430-8441 x101

Email: Please send response to basinres1@gmail.com

Project Description:

The City of Newman plans two conservation areas on two parcels – a 78-acre parcel located at the southeast corner of Canal School Road and Inyo Avenue and a 24-acre parcel located nearby, northeast of Brazo Road. The 78-acre parcel has four separate projects:

NW portion of the 78-acre parcel, the Newman Environmental Wetland System **(NEWS project)**, an approximately 21-acre constructed wetland complex that will treat stormwater and dry season runoff from the City and surrounding agricultural lands prior to discharge to the Newman Wasteway1 and, ultimately, the San Joaquin River

SE portion of the 78-acre parcel and likely extending to the central portion of the 24-acre parcel, a 10+-acre seasonal wetland, riparian, and grassland restoration project **(wetland project)** emphasizing natural sequestration of greenhouse gases (GHGs)

SW portion of the 78-acre parcel, an additional up to 10-acre constructed wetland project that is being planned in collaboration with the Environmental Systems Graduate Group at the University of California, Merced (UC Merced) Department of Civil and Environmental Engineering to treat water from the Miller Ditch and agricultural tailwater **(UC Merced project)**

SEasternmost portion of the 78-acre parcel, a community gathering plaza, outdoor classroom areas, and native plant, rainwise garden, and low-impact development demonstration areas, with an unpaved trail network and interpretive signage extending throughout the 78-acre parcel to enable appropriate public recreational access and tie all of the projects together **(access and education project**

Date: 09/04/2020

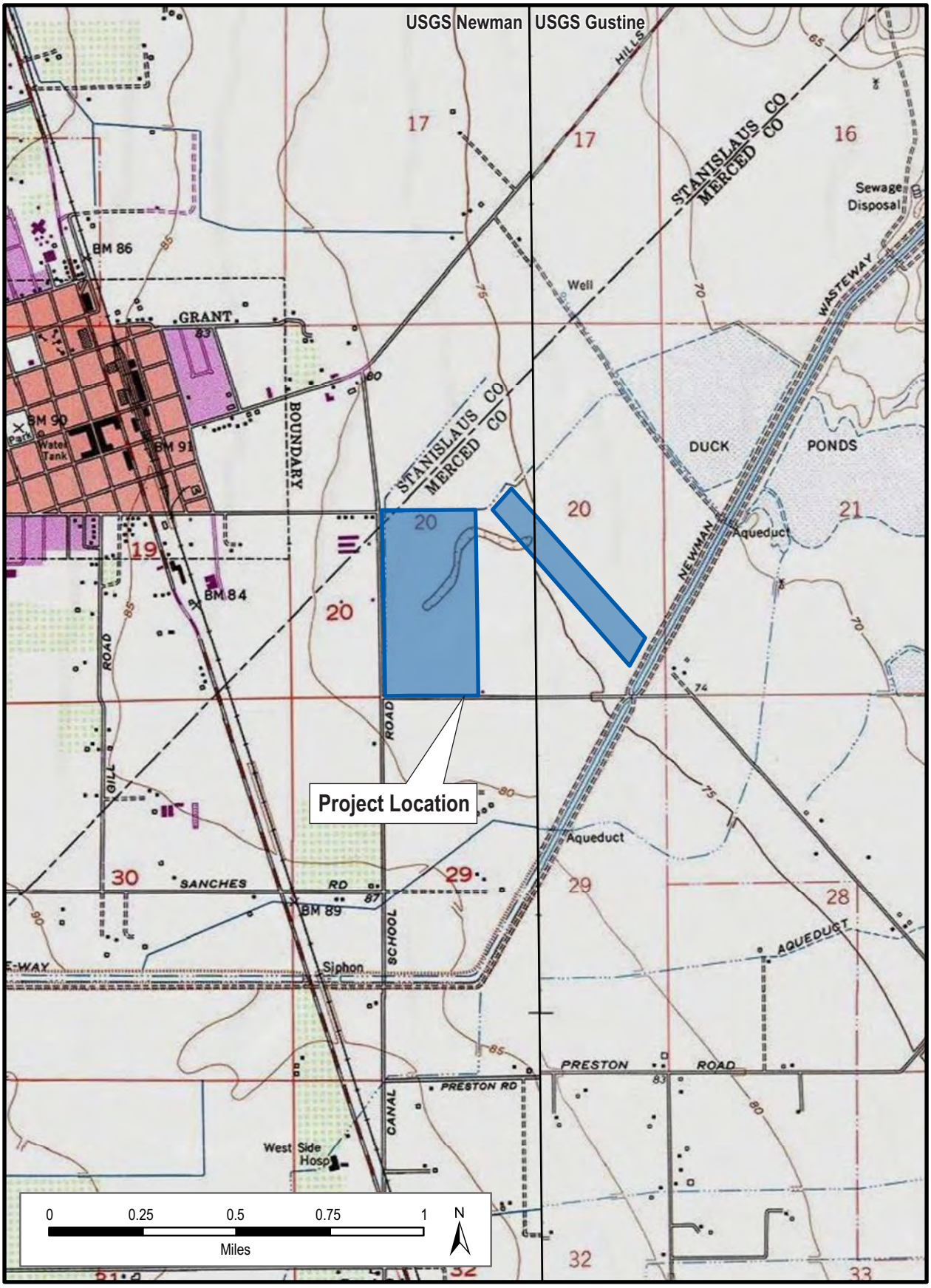

Figure 1: Project - T7S R9E Section 20 (USGS Newman, Calif. 1978 and Gustine, Calif. 1973)

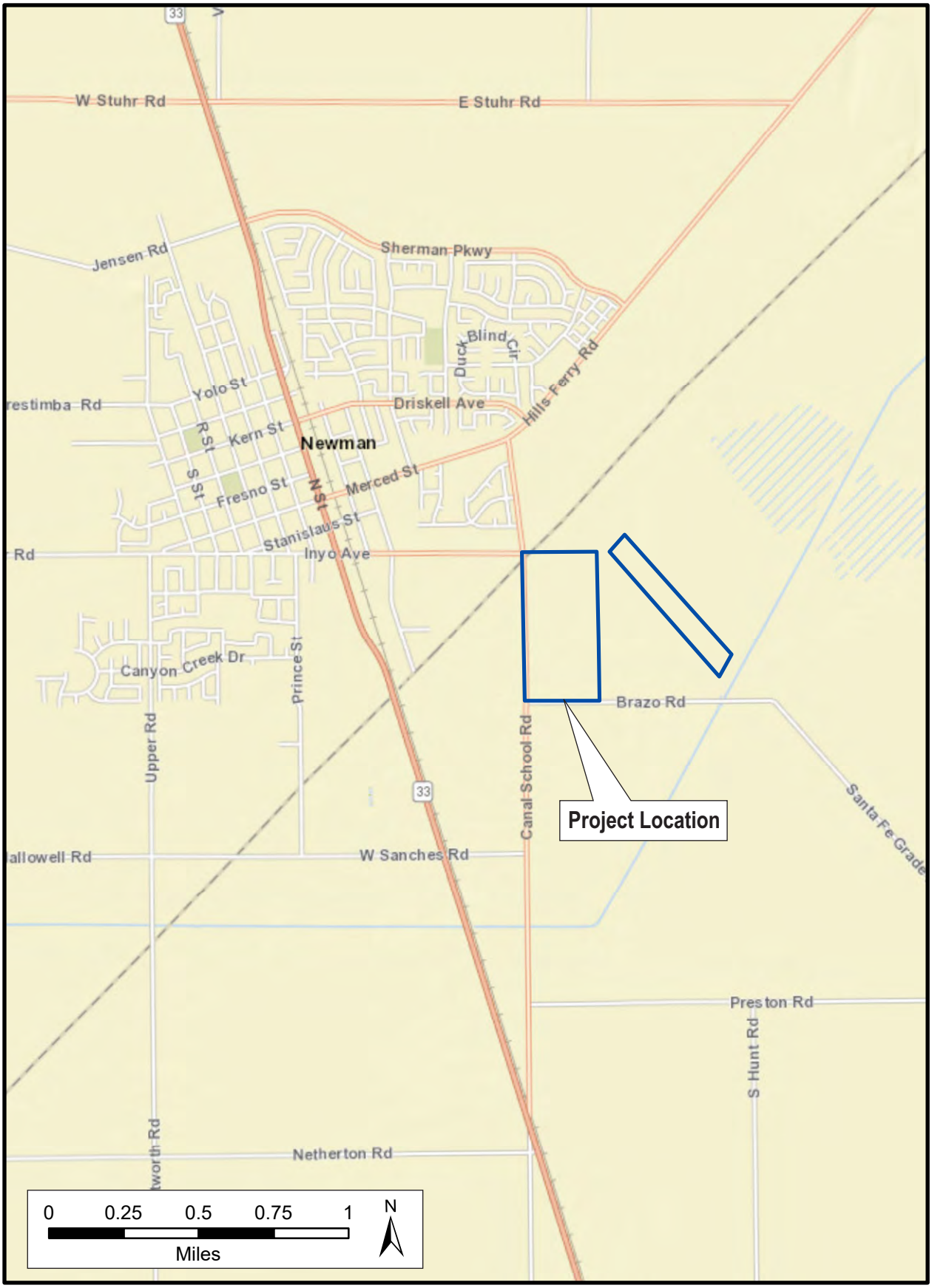

Figure 1: Project Location T11S R1W (ESRI World Street Map)

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
Luiseño

PARLIAMENTARIAN
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Karuk

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Marshall McKay
Wintun

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
[**Vacant**]

COMMISSIONER
Julie Tumamait-Stenslie
Chumash

COMMISSIONER
[**Vacant**]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

September 22, 2020

Colin I. Busby

Basin Research Associates

Via Email to: basinres1@gmail.com

Re: City of Newman Habitation Restoration and Creation as per Newman Community Conservation Area (NCAA) Master Plan, Merced County

Dear Mr. Busby:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Nancy.Gonzalez-Lopez@nahc.ca.gov.

Sincerely,

Nancy Gonzalez-Lopez
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Merced County
9/22/2020

Amah MutsunTribal Band
Valentin Lopez, Chairperson
P.O. Box 5272
Galt, CA, 95632
Phone: (916) 743 - 5833
vlopez@amahmutsun.org

Costanoan
Northern Valley
Yokut

North Valley Yokuts Tribe
Katherine Perez, Chairperson
P.O. Box 717
Linden, CA, 95236
Phone: (209) 887 - 3415
canutes@verizon.net

Costanoan
Northern Valley
Yokut

North Valley Yokuts Tribe
Timothy Perez, MLD Contact
P.O. Box 717
Linden, CA, 95236
Phone: (209) 662 - 2788
huskanam@gmail.com

Costanoan
Northern Valley
Yokut

Southern Sierra Miwuk Nation
William Leonard, Chairperson
P.O. Box 186
Mariposa, CA, 95338
Phone: (209) 628 - 8603

Miwok
Northern Valley
Yokut
Paiute

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed City of Newman Habitation Restoration and Creation as per Newman Community Conservation Area (NCAA) Master Plan, Merced County.

September 25, 2020

BASIN
RESEARCH
ASSOCIATES
1933 DAVIS STREET
SUITE 215
SAN LEANDRO, CA 94577
VOICE (510) 430-8441
FAX (510) 430-8443

Amah Mutsun Tribal Band
Valentin Lopez, Chairperson
P.O. Box 5272
Galt, CA 95632

RE: Request for Information – City of Newman Habitation Restoration and Creation as per Newman Community Conservation Area (NCAA) Master Plan – Initial Study of Projects

Dear Val,

The Native American Heritage Commission has provided your name as a person who may have further information on Native American resources in the City of Newman, Merced County and a small portion of adjoining Stanislaus County.

The City of Newman plans two conservation areas on two parcels currently used for agriculture. The parcels include a 78-acre main parcel located at the southeast corner of Canal School Road and Inyo Avenue and a 24-acre parcel located nearby, northeast of Brazo Road. The 78-acre parcel has four separate projects that will construct wetlands of various sizes covering 10-21 acres to treat stormwater and dry season runoff. Other planned improvements include a community gathering plaza, outdoor classroom areas, and native plant, rainwise garden, and low-impact development demonstration areas, with an unpaved trail network and interpretive signage extending throughout the main 78-acre parcel to enable appropriate public recreational access and tie all of the projects together.

No known resources are present within the proposed project areas.

Any information that you can provide will be used during the environmental review process. We look forward to hearing from you. I can be reached at (510) 430-8441 x101 or via email at basinres1@gmail.com. Thanking you in advance for any assistance.

BASIN RESEARCH ASSOCIATES, INC.

Colin I. Busby, Ph.D., RPA

September 25, 2020

BASIN
RESEARCH
ASSOCIATES
1933 DAVIS STREET
SUITE 215
SAN LEANDRO, CA 94577
VOICE (510) 430-8441
FAX (510) 430-8443

North Valley Yokuts Tribe
Katherine Perez, Chairperson
P.O. Box 717
Linden, CA, 95236

RE: Request for Information – City of Newman Habitation Restoration and Creation as per Newman Community Conservation Area (NCAA) Master Plan – Initial Study of projects

Dear Kathy,

The Native American Heritage Commission has provided your name as a person who may have further information on Native American resources in the City of Newman, Merced County and a small portion of adjoining Stanislaus County.

The City of Newman plans two conservation areas on two parcels currently used for agriculture. The parcels include a 78-acre main parcel located at the southeast corner of Canal School Road and Inyo Avenue and a 24-acre parcel located nearby, northeast of Brazo Road. The 78-acre parcel has four separate projects that will construct wetlands of various sizes covering 10-21 acres to treat stormwater and dry season runoff. Other planned improvements include a community gathering plaza, outdoor classroom areas, and native plant, rainwise garden, and low-impact development demonstration areas, with an unpaved trail network and interpretive signage extending throughout the main 78-acre parcel to enable appropriate public recreational access and tie all of the projects together.

No known resources are present within the proposed project areas.

Any information that you can provide will be used during the environmental review process. We look forward to hearing from you. I can be reached at (510) 430-8441 x101 or via email at basinres1@gmail.com. Thanking you in advance for any assistance.

BASIN RESEARCH ASSOCIATES, INC.

Colin I. Busby, Ph.D., RPA

September 25, 2020

BASIN
RESEARCH
ASSOCIATES
1933 DAVIS STREET
SUITE 215
SAN LEANDRO, CA 94577
VOICE (510) 430-8441
FAX (510) 430-8443

Southern Sierra Miwuk Nation
William Leonard, Chairperson
P.O. Box 186
Mariposa, CA 95338

RE: Request for Information – City of Newman Habitation Restoration and Creation as per Newman Community Conservation Area (NCAA) Master Plan – Initial Study of projects

Dear Chairperson Leonard,

The Native American Heritage Commission has provided your name as a person who may have further information on Native American resources in the City of Newman, Merced County and a small portion of adjoining Stanislaus County.

The City of Newman plans two conservation areas on two parcels currently used for agriculture. The parcels include a 78-acre main parcel located at the southeast corner of Canal School Road and Inyo Avenue and a 24-acre parcel located nearby, northeast of Brazo Road. The 78-acre parcel has four separate projects that will construct wetlands of various sizes covering 10-21 acres to treat stormwater and dry season runoff. Other planned improvements include a community gathering plaza, outdoor classroom areas, and native plant, rainwise garden, and low-impact development demonstration areas, with an unpaved trail network and interpretive signage extending throughout the main 78-acre parcel to enable appropriate public recreational access and tie all of the projects together.

No known resources are present within the proposed project areas.

Any information that you can provide will be used during the environmental review process. We look forward to hearing from you. I can be reached at (510) 430-8441 x101 or via email at basinres1@gmail.com. Thanking you in advance for any assistance.

BASIN RESEARCH ASSOCIATES, INC.

Colin I. Busby, Ph.D., RPA

CHRIS/CCIC SEARCH RESULTS

SEARCH 1 File No. 11485IN dated August 26, 2020 (No Confidential Information)

CENTRAL CALIFORNIA INFORMATION CENTER

California Historical Resources Information System
Department of Anthropology – California State University, Stanislaus
One University Circle, Turlock, California 95382
(209) 667-3307

Alpine, Calaveras, Mariposa, Merced, San Joaquin, Stanislaus & Tuolumne Counties

Date: 8/26/2020

Records Search File No.: 11485IN
Access Agreement: #114
Project: Newman Habitat Rest, Canal School Road and Brazo Road, Newman

Donna M. Garaventa
Basin Research Associates
1933 Davis Street, Suite 215
San Leandro, CA 94577
510-430-8441

basinres1@gmail.com

Dear Ms. Garaventa:

The Central California Information Center received your record search request for the project area referenced above, located on the Gustine and Newman 7.5' quadrangles in Merced and Stanislaus counties. The following reflects the results of the records search for the project study area and radius:

As per data currently available at the CCaIC, the locations of resources/reports are provided in the following format: ☒ custom GIS maps ☐ shape files ☐ hand-drawn maps

Summary Data:

Resources within the project area:	None formally reported to the Information Center.
Resources within the 1/4-mile radius:	3: P-24-000083, 1894, 2104
Reports within the project area:	1: ME-06488
Reports within the 1/4-mile radius:	3: ME-06712, ST-06488, ST-06712

Resource Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Report Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Resource Record Copies:	☒ enclosed	☐ not requested	☐ nothing listed
Report Copies:	☒ enclosed	☐ not requested	☐ nothing listed

OHP Historic Properties Directory: New Excel File: Built Environment Resource Directory (BERD)

Dated 12/17/2019	☐ enclosed	☐ not requested	☒ nothing listed
Archaeological Determinations of Eligibility:	☐ enclosed	☐ not requested	☒ nothing listed
CA Inventory of Historic Resources (1976):	☐ enclosed	☒ not requested	☐ nothing listed
Caltrans Bridge Survey:	☐ enclosed	☒ not requested	☐ nothing listed
Ethnographic Information:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Literature:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Maps:	☐ enclosed	☒ not requested	☐ nothing listed
Local Inventories:	☐ enclosed	☒ not requested	☐ nothing listed
GLO and/or Rancho Plat Maps:	☐ enclosed	☒ not requested	☐ nothing listed
Shipwreck Inventory:	☒ not available at CCIC; please go to http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp		
Soil Survey Maps:	☒ not available at CCIC; please go to http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx		

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS).

Note: Billing will be transmitted separately via email by our Financial Services office *($241.50), payable within 60 days of receipt of the invoice.

If you wish to include payment by Credit Card, you must wait to receive the official invoice

from Financial Services so that you can reference the CMP # (Invoice Number), and then contact the link below:

https://commerce.cashnet.com/ANTHROPOLOGY

Sincerely,

E. A. Greathouse

E. A. Greathouse, Coordinator
Central California Information Center
California Historical Resources Information System

* Invoice Request sent to: Laurie Marroquin CSU Stanislaus Financial Services
lamarroquin@csustan.edu

DPR 523 PRIMARY FORM – Miller Ditch

FORM 1 DPR Primary Form – Miller Ditch. Dated November 2020

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

Page 1 **of** 5 **Resource Name or #:** Miller Ditch (Segment)

P1. Other Identifier:
P2. Location: ☐ **Not for Publication** ☐ **Unrestricted**
a. County Merced and Stanislaus
b. USGS 7.5' Quad Newman (1978) and Gustine (1973) **T7S R9E; S ½ of Section 20;** Mount Diablo **B.M.**
c. Address Canal School Rd between E Inyo Ave and Braza Rd **City** Newman **Zip**
d. UTM: A) 10S 676539 mE 4130481 mN; B) 676517 mE 4131228 mN; C) 677053 mE 4131322 mN (WGS84)
e. Other Locational Data: The recorded segment of the Miller Ditch runs north from Braza Road to E Inyo Ave, then turning east, then northeast. The Miller Ditch, just southeast of Newman, is located primarily in Merced County; only a small portion extends into Stanislaus County.

P3a. Description

The Miller Ditch, a water service ditch approximately 15 feet wide by four feet deep, provides irrigation water from the Central California Irrigation District (CCID) Main Canal to the west for agricultural lands adjacent to the project site. The CCID was formed in 1951 when it took over control of the San Joaquin and Kings River Canal and Irrigation Company. The portion of the Miller Ditch along Canal School Road which is the western boundary of the 78-acre parcel and the northern boundary of both project sites appears to have been constructed in the early 1950s based on a review of historic topographic maps. It may have been constructed to take advantage of the additional water that could be obtained from the Central Valley Project Delta Mendota Canal (CVP DMC) to the west or the additional drainage offered by the Newman Wasteway which was completed in 1951 as part of the CVP DMC. The ditch is similar to other earth, 'v'-shaped irrigation and drainage ditches within the CCID service area.

(see continuation page)

P3b. Resource Attributes: AP20 – Canal/aqueduct
P4. Resources present: ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other

P5b. Description of Photo:
View west along Miller Ditch towards Canal School Rd

P6. Date Constructed/Age and Sources:
☒ Historic ☐ Prehistoric ☐ Both
Ca. early 1950s

P7. Owner and Address
Central California Irrigation District
1335 W. I Street
Los Banos, CA 93635

P8. Recorded by:
Basin Research Associates
1933 Davis Street, STE 215
San Leandro, CA 94577

P9. Date Recorded November 2020

P10. Survey Type:
Intensive Survey

P11. Report Citation HPSR/FOE Newman Community Conservation Area, Newman, Stanislaus County (November 2020)

Attachments: ☐ NONE ☒ Location Map ☐ Sketch Map ☒ Continuation Sheet ☐ Building, Structure and Object Record
☐ Archaeological Record ☐ District Record ☒ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record
☐ Photograph Record ☐ Other (List)

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LINEAR FEATURE RECORD

Primary #
HRI #
Trinomial

Page 2 **of** 5 **Resource Name or #:** Miller Ditch (Segment)
Recorded by Basin Research Associates **Date:** November 2020 ☒ Continuation ☐ Update

L1. Historic and/or Common Name: same
L2a. Portion Described: ☐ Entire Resource ☒ Segment ☐ Point Observation **Designation:**

b. Location of point or segment:

UTM coordinates: A) 10S 676539 mE 4130481 mN; B) 676517 mE 4131228 mN; C) 677053 mE 4131322 mN (WGS84)
T7S R9E; S ½ of Section 20
The recorded segment of the Miller Ditch runs north from Braza Road to E Inyo Ave, then turns east, then northeast.

L3. Description:

The Miller Ditch is a standard earth, 'v'-profile irrigation ditch. Both banks are sloped at approximately 45 degrees, and are sparsely covered with grasses.
The recorded segment measures approximately 4425 ft; 2550 ft north-south along Canal School Rd, 1500 ft east from the intersection of Canal School Road and E Inyo Avenue, then northeast for ca. 375 ft.

L4. Dimensions:

a.	**Top Width**	ca. 15 ft
b.	**Bottom Width**	unknown
c.	**Height or Depth**	ca. 4 ft
d.	**Length of Segment**	ca. 4426 ft

L5. Associated Resources:

{PRIVATE }**L4e. Sketch of Cross-Section** Facing:

L6. Setting:

The Miller Ditch is located on the west side of the San Joaquin Valley, between the San Joaquin River and the Diablo Range, at an elevation of about 80 ft asl. The area was historically part of the large floodplain and tributary complex draining generally eastward to the San Joaquin River (Bennett Valley-San Joaquin River watershed). The area is now predominantly agricultural, with a complex surface water drainage context that includes a network of agricultural canals and ditches, as well as the Newman Wasteway, which ultimately discharges to the San Joaquin River to the east.

L7. Integrity Considerations:

L8b. Description of Photo, Map, or Drawing:
View southwest from northeast end of recorded segment

L9. Remarks:

L10. Form Prepared by:

Basin Research Associates
1933 Davis Street, STE 215
San Leandro, CA 94577

L11. Date: November 2020

P3a. Description, con't

During the spring and summer, supply from the Central California Irrigation District (CCID) canal west of the City is diverted into the Miller Ditch for irrigation use. The Miller Ditch also receives agricultural tailwater and some overland runoff. As a result, flow in the Ditch is generally year-round, although flow volumes and water quality vary seasonally.

Evaluation

The Miller Ditch, a historic water service ditch, is adjacent to the APE boundary on the west and north.

The Miller Ditch, a water service ditch approximately 15 feet wide by four feet deep, provides irrigation water from the Central California Irrigation District (CCID) Main Canal to the west for agricultural lands adjacent to the project site. The ditch forms the northern border of both project sites. The CCID was formed in 1951 when it took over control of the San Joaquin and Kings River Canal and Irrigation Company. The portion of the Miller Ditch along Canal School Road which is the western boundary of the 78-acre parcel and the northern boundary of both project sites appears to have been constructed in the early 1950s based on a review of historic topographic maps. It may have been constructed to take advantage of the additional water that could be obtained from the Central Valley Project Delta Mendota Canal (CVP DMC) to the west or the additional drainage offered by the Newman Wasteway which was completed in 1951 as part of the CVP DMC.

The Miller Ditch does not appear eligible for either the NRHP or CRHR under any of the criteria:

a/1 the Miller Ditch does not appear to be associated with any important events in Merced and/or Stanislaus counties or with the development of irrigated farming in the immediate or general area;

b/2 the ditch is not associated with an important person or prominent engineer either in the area's history or with water development in the State of California or regional history;

c/3 the ditch does not possess important engineering or design values – it is a standard earth, 'v'-profile irrigation ditch typical of a large number of similar ditches in the general area used to deliver irrigation water or act as drainages. It is part of the larger water conveyance and drainage system of the Central California Irrigation District but is not a distinguishable entity of the system.

d/4 the ditch is a standard water service structure which is not likely to provide information important in history.

References

United States Department of Interior, Geological Survey (USGS)

1919, 1941 Orestimba, Calif. [Quadrangle]. Topographic map, 15 minute series.

1952 Newman, Calif. [Quadrangle]. Topographic map, 7.5 minute series.

Personal Communications

2020 Jarrett Martin, Central California Irrigation District, personal communications on Miller Ditch, November, 2020.

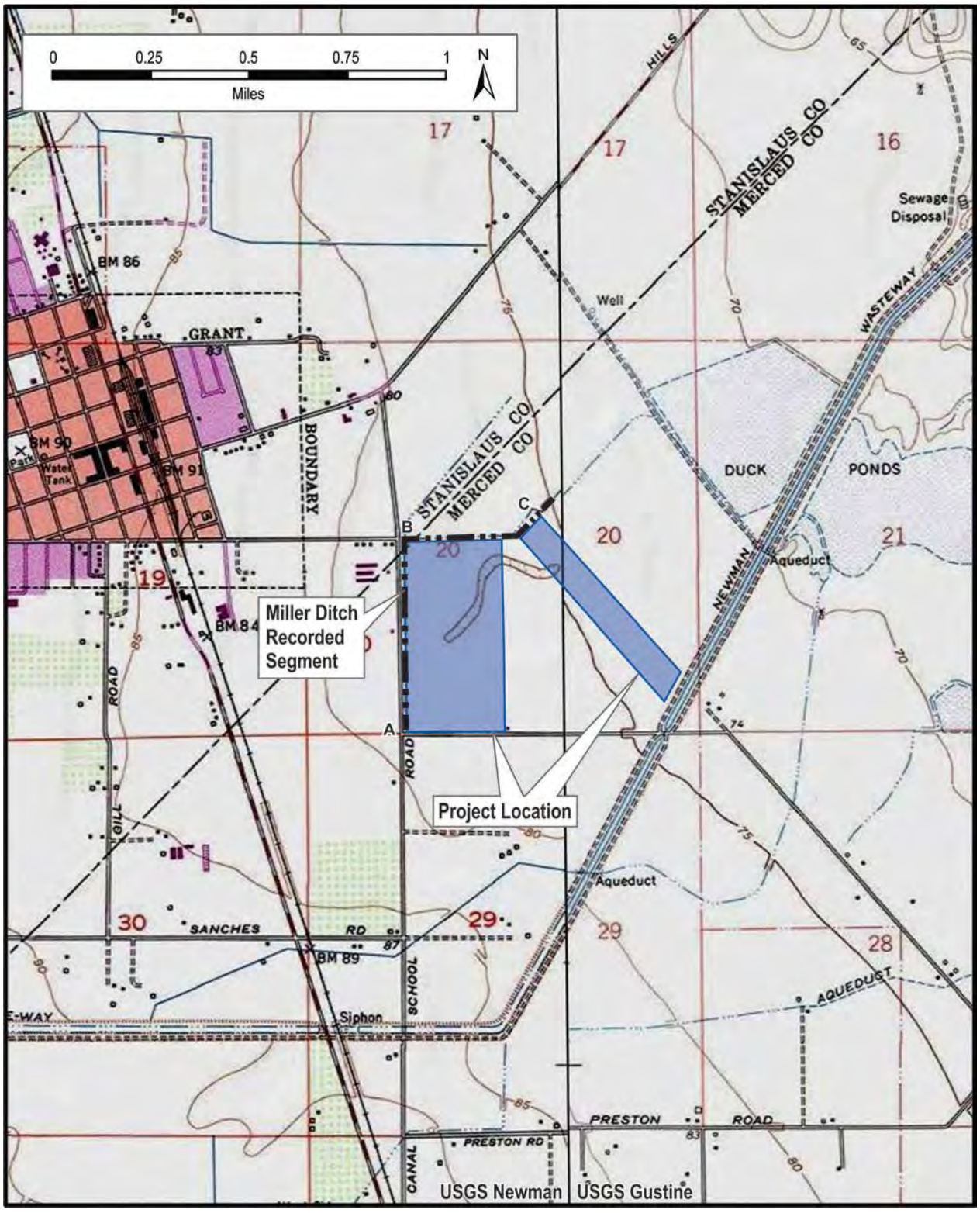
View south along Miller Ditch from near East Inyo Rd (Vollmar Natural Lands Consulting)

View east along Miller Ditch from near East Inyo Rd (Vollmar Natural Lands Consulting)

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI #
Trinomial

Page 5 **of** 5 **Resource Name or #:** Miller Ditch (Segment)
USGS Newman, Calif. 1978 and Gustine, Calif. 1973 **Date:** November 2020 ☒ Continuation ☐ Update



Appendix E

NEWS Project Basis of Design Memorandum

RICK ENGINEERING COMPANY™

Memorandum

To: Eileen Alduenda (Council for Watershed Health)
Date: April 30, 2020
From: Hernan Cortez, Venkat Gummadi, Tom Martin, and Brendan Hastie
CC: Kathryn Reyes (City of Newman), Darla Elswick (Darla Elswick Consulting)

SUBJECT: CITY OF NEWMAN PROPOSITION 1 STORMWATER TECHNICAL ASSISTANCE – TASK 6.2 – PROJECT BASIS OF DESIGN AND FINAL STORMWATER QUALITY BENEFIT ANALYSIS (RICK J# 18529)

This memo provides a summary of the basis of design and design components that will require further refinement to finalize the design prior to construction for the proposed City of Newman Environmental Wetland System (NEWS) project.

This memo also provides a revised summary of storm water pollutant removals, and volume-based performance that may be achieved by the proposed stormwater wetland. The design and results presented in this memo supersede those presented as part of the Task 5.2 memo.

I BASIS OF DESIGN

I.1 Design Selection Summary: Constructed Storm Water Treatment Wetland

The project design was influenced by the City's goals and objectives as well as Proposition 1 Storm Water Implementation grant program eligibility and funding priorities. Objectives for project performance include storm and dry weather runoff treatment, groundwater augmentation, ecosystems and community. Through the preparation and development of Tasks 1 through 5, several types of stormwater management permanent structural Best Management Practices (BMPs) were considered, including vegetated swales, a regional wet pond, and a stormwater wetland. A series of desktop and field studies were conducted to facilitate the selection of the best BMP type and more importantly, check the feasibility of the project.

Through the field and desktop studies, existing potential jurisdictional wetland areas were observed sporadically throughout the project site, shallow groundwater was encountered, and constraints from existing storm drain infrastructure were identified. The potential jurisdictional wetland areas will require coordination with regional agencies such as the Regional Water Quality Control Board (RWQCB), the Army Corps of Engineers (ACOE), and Department of Fish and Wildlife (DFW) and potential processing of permits (401, 404, and 1602). The presence of shallow groundwater restricts the depth of the system and influences the type of BMP that is selected (i.e., adequate treatment of infiltrated storm water). Finally, the existing storm drain infrastructure constraints include vertical and routing constraints, which require the proposed site improvements to have a relatively flat slope (< 0.5% +/-) and make it difficult to bypass runoff from agricultural land due to comingling upstream of the project. Due to these existing site conditions and constraints, a constructed storm water treatment wetland was selected as the

preferred design to meet project performance and multi-benefit objectives for the following reasons:

- The project would decrease pollutant loading to the San Joaquin River from urban and agricultural stormwater and dry weather flows;
- Addresses the State Trash Capture requirements (removing trash from the San Joaquin River);
- a storm water wetland would best mimic the historic natural watershed conditions and support any potential existing wetlands);
- would provide separation from the shallow groundwater at the micro pool using a clay liner;
- will function as desired given the elevation constraints to capture and convey storm water to manage both wet and dry weather runoff conditions from urban and agricultural land uses (see Attachment A for contributing Drainage Management Areas).
- storm water treatment wetland berms and operation and maintenance access can provide dual use as public access amenity;
- sufficient land, owned by the City, is available for a regional system with multiple constructed wetland components (e.g., sediment forebay, treatment ponds).
- Preserves open space and provides the City with the opportunity for future recreational enhancements for uses such as bike/walking paths and creating learning opportunities for the community tailored to stormwater.

The water quality treatment and hydrologic/hydraulic design are discussed in more detail below.

Water Quality Treatment Design: The NEWS project will achieve water quality treatment through diversion of dry (including agricultural returns) and wet weather flows into a constructed stormwater wetland which is comprised of three primary components. Attachment 2 shows the flow schematic and concept plan view exhibit.

- **Full Trash Capture Device and Sediment forebay**: Diverted flows will first be routed through a Full Trash Capture device (FTC) and sediment forebay. The FTC will remove trash and debris as small as 5 mm prior to discharging into the sediment Forebay to address the State Trash Amendment (STA) requirements for the City. The FTC and sediment forebay will reduce the amount of maintenance that is required for the downstream components. The sediment forebay will provide settling of suspended solids, sediment. This component also helps to concentrate maintenance activities. The sediment forebay is designed for a 48-hour drawdown time and includes three culverts (set at different elevations) to convey flows to the downstream stormwater wetland. The first (lowest elevation) culvert is designed to convey dry weather/nuisance flows, while

the other two culverts discharge into the low- and high-marsh areas of the downstream stormwater wetland as the sediment forebay fills up. A low-marsh and high-marsh area are defined by the standing water depth within the stormwater wetland that supports emergent wetland vegetation. A low-marsh area has a standing water depth of 6- to 18-inches, while a High-marsh area has a standing water depth of 6-inches. The sediment forebay will also include an emergency overflow structure that is designed to safely convey a 100-year event (as required by the County of Stanislaus Standards and Specifications for similar facilities) to the downstream stormwater wetland.

  - A drawdown time of 24 hours to 96 hours is recommended in SE-2 (Sediment Basin) Factsheet (CASQA, 2011). The 24-hour limit is specified to provide adequate settling time and the 96-hour limit is specified to mitigate vector control issues.
  - Designed based on guidance from the New Jersey Stormwater Best Management Practices Manual (2004), the California Stormwater Quality Association (CASQA) Stormwater BMP Handbook (2003), and the Environmental Protection Agency's (EPA's) Storm Water Technology Fact Sheet (1999).

- **Constructed wetland**: Flows from the sediment forebay discharge to the constructed wetland basin through the proposed culverts or spillways (as described above) based on flow rate and volume entering the system to provide storm water treatment of urban and agricultural pollutants via physical, biological and biochemical processes. The constructed wetland is designed for a 72-hour drawdown time. The constructed wetland includes five culverts (all at the same elevation) to convey flows into the downstream micro pool. Stormwater flows will be routed into the stormwater wetland's low-marsh and/or high marsh areas prior to entering the micro pool based on the amount of inflow volume and flow rate. The wetland also includes an emergency overflow structure to safely convey the 100-year event to the micro pool (as required by the County of Stanislaus Standards and Specifications for similar facilities).
  - The County of Stanislaus post construction standards plan (County of Stanislaus, 2015) recommends the impounded water to be discharged within 72 hours to avoid vector breeding problems.
  - Design based on guidance from the New Jersey Stormwater Best Management Practices Manual (2004), the California Stormwater Quality Association (CASQA) Stormwater BMP Handbook (2003), and the Environmental Protection Agency's (EPA's) Storm Water Technology Fact Sheet (1999).
- **Micro pool**: Small runoff volumes (dry weather/nuisance flows) are routed from the sediment forebay to the stormwater wetland (via the lowest elevation culvert) and into the micro pool for treatment via a direct low-flow channel. The micro pool removes pollutants through both sedimentation, biological, and biochemical processes (e.g.,

settling, plant update, redox transformations). Sedimentation processes remove particulates, organic matter, and metals, while dissolved metals and nutrients are removed through biological uptake (USEPA, 1999). Higher stages in this basin will receive additional stormwater quality treatment through extended detention and/or attenuation of the peak rates of runoff. The permanent micro pool is designed to have a 3-day hydraulic residence time (time it takes for water entering the micro pool to reach the outlet). The presence of a year-round base flow and replacement of water in the micro pool assists with water quality, oxygen levels, control of mosquito breeding, and prevents stagnation. The extended detention portion of the basin is designed for a 72-hour drawdown time. The micro pool also includes an overflow structure is designed to safely convey the 100-year storm back to the Miller Ditch (as required by the County of Stanislaus Standards and Specifications for similar facilities).

- The County of Stanislaus post construction standards plan (County of Stanislaus, 2015) recommends the impounded water to be discharged within 72 hours to avoid vector breeding problems.
- Design based on guidance from the New Jersey Stormwater Best Management Practices Manual (2004), the California Stormwater Quality Association (CASQA) Stormwater BMP Handbook (2003), and the Environmental Protection Agency's (EPA's) Storm Water Technology Fact Sheet (1999).

The diversion into the system, flow routing between basins, and discharge back to Miller Ditch will be driven by gravity flow. Pumping will be necessary to empty the permanent micro pool for maintenance purposes.

Hydrologic/Hydraulic Operation: The Newman Environmental Wetland System will operate differently during dry and wet weather flow regimes.

- **Dry Weather**: Flows diverted from Miller Ditch during dry weather will be routed through the sediment forebay, the wetland area and then the micro pool via a low-flow channel. The micro pool is designed to have a 3-day hydraulic residence time. Hydraulic residence time is the average time a dry weather water drop remains within the permanent micro pool receiving treatment. The Dry weather flow was assumed to have a flow rate of 0.9 cfs based on the capacity of the low-flow pump within the existing storm drain pump station (see Section II.3.2 for more information on dry weather flow). The micro pool provides approximately 5.4 acre-feet storage below a 74.5' elevation (elevation of the outlet pipe).
- **Wet Weather**: Wet weather flows will be diverted from the Miller Ditch to the sediment forebay. Flows from the sediment forebay will then be discharged to the constructed wetland through three different outlet structures at different inverts (elevations of 75',

76', and 77'. These multistage outlets are intended to activate different portions of the wetland area based on the rainfall amount to facilitate formation of low marsh and high marsh zones. Flows from the constructed wetland are then discharged to the Miller Ditch via the permanent micro pool.

II STORMWATER WETLANDS DESIGN AND MODEL REFINEMENTS

The Project design provides water quality treatment to reduce pollutant loads to the San Joaquin River. Additionally, the project will support groundwater quality and quantity through partial infiltration of treated runoff. Project water quality benefits were estimated based on continuous simulation model analyses, which are described below.

II.1 Analysis Approach

The stormwater pollutant load and volume reductions were estimated utilizing the proprietary software PCSWMM (version 7.2), distributed by Computational Hydraulics International (CHI). PCSWMM utilizes the non-proprietary Environmental Protection Agency Stormwater Management Model (EPA SWMM) Version 5 engine (SWMM5). EPA SWMM has the capability to simulate rainfall and runoff processes utilizing long-term rain gage data coupled with pollutant buildup/wash-off processes, infiltration, evapotranspiration, as well as pollutant treatment and removal. PCSWMM is used throughout the United States to provide estimates of pollutant reductions achieved by storm water projects including constructed storm water treatment wetlands.

Relevant data sources were reviewed to support the estimation of water quality treatment benefits including:

- National Stormwater Quality Database Version 4.02 (Maestre & Pitt, 2018)
  - Pollutant EMCs by Land Use
- Paired influent and effluent date from the 2016 version of the International Stormwater BMP Database 2016 (http://bmpdatabase.org/)
  - BMP Pollutant Reduction Performance
- National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI) Climate Data Online
  - Rain Station Precipitation Data
- California State Water Resources Control Board (SWRCB)
  - 303(d) Listed Water Bodies
- California Irrigation Management Information System (CIMIS)
  - Evapotranspiration rates

The Newman Wasteway is the receiving water directly downstream from the project site and is listed on the 2014-2016 statewide 303(d) list. The pollutant, category, and potential source of

the pollutant for the Newman Wasteway as provided by the 303(d) list are listed within Table 1 for reference purposes. The Newman Wasteway discharges to the San Joaquin River, which is listed by the Water Board for beneficial uses including municipal, agriculture and aquatic resources.

Table 1. 2014-2016 California 303(d) Listed Waterbodies and Associated Pollutants

WATER BODY NAME	POLLUTANT	POLLUTANT CATEGORY	POTENTIAL SOURCES
Newman Wasteway	Simazine	Pesticides	Source Unknown
	Salinity	Salinity	Source Unknown
	Oxygen, Dissolved	Nutrients	Source Unknown
	Indicator Bacteria	Fecal Indicator Bacteria	Source Unknown
	Chlorpyrifos	Pesticides	Agriculture
	DDE (Dichlorodiphenyldichloroethylene)	Pesticides	Source Unknown

The Newman Environmental Wetland System is anticipated to reduce the pollutants listed in Table 1 before discharging to the Newman Wasteway. The pollutant concentrations and wetland performance data are not readily available for majority of the pollutants under Table 1 (except for Fecal Indicator Bacteria – such as fecal coliform) so these pollutant reductions are not explicitly quantified. The pollutants which were quantified in the modeling efforts consist of the following urban and agricultural land use pollutants:

- Fecal Indicator Bacteria: Fecal Coliform (FC)
- Metals: Copper (Cu); Lead (Pb); Zinc (Zn)
- Nutrients: Nitrites + Nitrates (NO2 + NO3); Total Phosphorus (TP)
- Sediment: Total Suspended Solids (TSS)

Event mean concentrations (EMCs) for these pollutants for different land uses were obtained from the National Stormwater Quality Database (NSQD) and the pollutant reduction data were developed using the influent/effluent data from the International Stormwater BMP Database. This data was then used to build the continuous simulation model in PCSWMM. The long-term continuous simulation results obtained from the modeling software were analyzed to aggregate pollutant inflows and outflows for individual water years (October 1 to September 30), to estimate an average annual pollutant reduction.

II.2 Watershed and Land Use

Drainage area delineations completed in a previous task were reviewed and revised to more closely match existing drainage patterns. This effort assisted in distinguishing areas draining to the project including flows from the existing storm drain pump station located at the intersection of Inyo Avenue and Canal School Road, and from areas draining via gravity flow to the location of Miller Ditch immediately upstream of the proposed wetlands. Storm drain maps from Master Drainage Plan prepared by Doyle were used to identify storm drains connected to Inyo Avenue

Storm Drain Pump Station. The drainage areas to the Newman Environmental Wetland System are shown in Attachment A. The existing land use breakdown is presented in Table 2.

It should be noted that two scenarios are presented below in Table 2 due to the possibility of UC Merced developing a project that will manage runoff from DMA South. The "long term" scenario assumes the UC Merced project gets constructed and the DMA South gets bypassed from this project. The "short term" scenario assumes the UC Merced project has not been built and that all three DMAs (DMA North, DMA Central, DMA South) are routed through this project. Both scenarios are presented due to the uncertainty of the UC Merced project schedule.

Table 2: Existing Land Use Composition

Land Use	Long-term DMA: DMA North + DMA Central			Short-term DMA: DMA North + DMA Central + DMA South		
	Area (acres)	% Total Area	% Impervious	Area (acres)	% Total Area	% Impervious
Urban Land Uses	1,151	51%	73%	1,390	44%	74%
Agriculture	1,090	49%	0%	1,804	56%	0%
Total Drainage Area	**2,241**	**-**	**38%**	**3,194**	**-**	**32%**

Land Use		DMA North		DMA Central		DMA South	
		Area (acres)	% Impervious	Area (acres)	% Impervious	Area (acres)	% Impervious
Urban Land Uses		485	72%	666	74%	239	81%
Urban Land Use Categories	Commercial	0	-	53	-	25	-
	Industrial	13	-	80	-	40	-
	Transportation	146	-	185	-	63	-
	Open Space	47	-	84	-	9	-
	Single Family Residential	254	-	199	-	83	-
	Multi-Family Residential	24	-	64	-	20	-
Agriculture		620	0%	471	0%	714	0%
TOTAL		**1,105**	**31%**	**1,136**	**44%**	**953**	**20%**

II.3 Hydrology

II.3.1 Rainfall Data

Hourly rainfall data was obtained from the NOAA NCEI Climate Data Online Map Server. The nearest rain station to the project location with the longest period of record is located in the City of Modesto (MODESTO 2 CA US), approximately 20 miles north of the City of Newman. The rainfall record ranges from July 1, 1948 to December 7, 2013. For modeling purposes, 65 complete water years from October 1, 1948 to September 30, 2013 (Water Years 1949 to 2013) were incorporated into the continuous simulation model.

The raw hourly data was pre-processed to remove missing values, and long accumulation periods (i.e. 1 month). The revised rainfall data was input as a Rain Gage time-series component in PCSWMM to simulate the delivery of rainfall over the drainage areas tributary to the project study area. The average annual rainfall for the Rain Gage is 11.0 inches. Table 3 summarizes the total rainfall depths recorded at the Modesto Rain Station per water year.

Table 3: Modesto Rain Station – Total Precipitation by Water Year

Water Year	Rain (in.)	Water Year	Rain (in.)	Water Year	Rain (in.)	Water Year	Rain (in.)
1949	8.04	1966	9.03	1983	10.20	2000	16.30
1950	9.92	1967	13.73	1984	7.70	2001	11.60
1951	12.48	1968	7.91	1985	6.50	2002	11.00
1952	14.39	1969	17.49	1986	16.50	2003	8.10
1953	7.95	1970	9.23	1987	8.20	2004	5.20
1954	7.20	1971	11.84	1988	9.00	2005	12.80
1955	11.22	1972	6.52	1989	7.90	2006	13.70
1956	13.45	1973	18.00	1990	9.30	2007	7.90
1957	7.22	1974	15.60	1991	9.50	2008	9.80
1958	18.27	1975	12.00	1992	11.70	2009	7.40
1959	8.47	1976	6.40	1993	18.70	2010	14.10
1960	5.36	1977	6.50	1994	10.10	2011	8.80
1961	7.79	1978	19.10	1995	19.90	2012	7.70
1962	10.56	1979	8.10	1996	10.20	2013	8.90
1963	12.44	1980	14.80	1997	14.10	-	-
1964	8.11	1981	9.30	1998	25.50	-	-
1965	10.60	1982	16.80	1999	10.80	-	-

The typical approach for post construction BMPs is treat the 85th percentile, 24-hour storm event (85th percentile). Therefore, a single-storm event scenario comprised of the 85th percentile precipitation depth was modeled using a Soil Conservation Service (SCS) Type I storm distribution within the SWMM Software. A precipitation depth of 0.49 inches was used for the 85th percentile. This depth was obtained from the Caltrans Basin Sizer program.

II.3.2 Baseflow

A baseflow of 0.9 cfs (1.8 acre-feet/day) has been incorporated into the model to represent dry weather/agricultural tailwater conditions. This flow rate was based on review of as-built drawings of the Inyo Avenue storm drain pump station (part of the "Woodside Homes Storm and Sewer Water Lift Stations: Lucas Ranch II" plan set, dated July 3, 2001). The drawings show a low-flow "nuisance" (non-stormwater or low-flows) pump with a capacity of 400 gallons per minute (approximately 0.9 cfs) to convey dry-weather nuisance flows present in the storm drain system.

II.3.3 Evapotranspiration Data

Monthly average evapotranspiration data was obtained from the CIMIS Reference Evapotranspiration Zones data available from the California Department of Water Resources. The project study area is located within Evapotranspiration Zone 14 in the State of California. Table 4 summarizes the monthly average evapotranspiration rates utilized in the PCSWMM model continuous simulation:

Table 4: Average Monthly Evapotranspiration Rates (inches/day)

Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
14	0.05	0.08	0.12	0.17	0.22	0.26	0.28	0.25	0.19	0.13	0.07	0.05

II.4 Grading and Storage Volume

A stage-storage relationship was developed from the grading contours and included in the model to represent surface ponding, evapotranspiration, and flow attenuation that may occur as stormwater runoff is discharged into the Newman Environmental Wetland System. The stage-storage relationship is described in the model utilizing storage nodes with an assigned volume rating curve.

The project site has flat topography with short vertical fall within study area. In order to have gravity flow for the diversion, flow routing between basins, and discharge back to Miller Ditch shallow depths and conveyance connections were proposed.

Based on a boring performed at the project site (per the Infiltration Test Results report prepared by Technicon, dated June 3, 2019), it was assumed the groundwater table is at elevation 71.5'. Additional groundwater data was obtained from piezometers installed on April 15th, 2020 by ENGEO Inc. Based on the piezometer readings on April 15th, the groundwater elevation at the proposed location of the micro pool is at approximately an elevation of 70.0'. The bottom elevation of the micro pool is proposed to be at 72', therefore, providing an approximate 2.0 feet separation. It is recommended that a clay liner be installed at the bottom of the micro pool to maintain a permanent pool of water as well as to reduce potential contamination of groundwater. Based on standard engineering practice for designing BMPs, the unlined portions of the NEWS project (sediment forebay and wetland area) will have more than 3 feet of separation to sufficiently protect the underlying groundwater. The NEWS project incorporates pretreatment via a sediment forebay which will further reduce the potential for groundwater

contamination (Clark and Pitt, 2007). The vertical elevations for different cells may need to be refined as part of the detailed design once additional groundwater measurements are available for the study area. Table 5 summarizes the stage-storage relationship utilized in the continuous simulation model. Table 6 provides a summary of total volume and a range of elevations for each system component.

Table 5: Stage-Storage Relationship for Wetland Design Concept

	Sediment Forebay		Constructed Wetland		Micro pool		Total System	
Elevation	**Area**	**Volume**	**Area**	**Volume**	**Area**	**Volume**	**Area**	**Volume**
(FT)	*(SF)*	*(AC-FT)*	*(SF)*	*(AC-FT)*	*(SF)*	*(AC-FT)*	*(SF)*	*(AC-FT)*
72	-	-	-	-	92,772	-	92,772	-
73	-	-	-	-	97,467	2.18	97,467	2.18
74	-	-	-	-	102,222	4.48	102,222	4.48
74.5	-	-	-	-	*104,572*	5.66	206,085	5.66
75	*35,971*	-	167,056	-	107,037	6.88	310,064	6.88
76	*80,878*	1.34	291,161	5.26	111,912	9.39	483,951	15.99
77	*106,941*	3.50	362,529	12.76	116,846	12.02	586,317	28.28
78[1]	120,451	6.11	374,880	21.23	121,841	14.76	617,172	42.09
79	127,452	8.95	387,409	29.98	126,896	17.61	641,757	56.54
80	137,053	11.99	405,329	39.08	134,559	20.61	676,941	71.68

1. The overflow/bypass spillway elevation is set at 78; therefore, the provided static storage volume for all three cells combined is 42.1 AC-FT. The elevation of the access berm/road is approximately elevation 80. With a target freeboard of 1 foot, the design provides 1 foot for bypass/overflow during larger storm events.

Table 6: Storage Summary for Wetland Design

BMP Component	Storage at WQ Depth	Elevation Ranges	Water Quality Depth		Depth to Top of Berm
			Dry Weather[2]	Wet Weather	
Sediment Forebay	6.11 acre-feet	75’ to 78’	N/A	3 feet	5 feet
Constructed Wetland	21.23 acre-feet	75’ to 78’	N/A	3 feet	5 feet
Micro Pool	14.76 acre-feet[1]	72’ to 74.5’ (Dry Weather) 72’ to 78’ (Wet Weather)	2.5 feet	6 feet	8 feet

1. Dry weather permanent pool storage is 5.66 acre-feet. The remaining storage of 9.1 acre-feet is for wet weather.
2. Dry weather conditions are designed to flow from the sediment forebay, through the wetland area, and into the micro-pool through a low-flow channel. The micro pool is designed to provide a permanent 2.5 ft ponding depth and to allow a flow-through condition for dry weather flows as described in the previous sections.

II.5 Hydraulics

II.5.1 Facility Sizing: Flow and Volume Design Performance

For volumetric best management practices (BMPs), the Phase II Municipal Separate Storm Sewer System (MS4) permit (2013) and the County of Stanislaus post construction standards plan

(County of Stanislaus, 2015) requires the BMPs be sized to meet at least one of the following volumetric hydraulic sizing design criteria.

- The maximized capture storm water volume for the tributary area, on the basis of historical rainfall records, determined using the formula and volume capture coefficients in the Urban Runoff Quality Management, Water Environment Federation (WEF) Manual of Practice No. 23/ASCE Manual of Practice No. 87 (1998) pages 175-178 (that is, approximately the 85th percentile runoff event); or
- The volume of annual runoff required to achieve 80 percent or more capture, determined in accordance with the methodology in Section 5 of CASQA's Stormwater Best Management Practice Handbook, New Development and Redevelopment (2003), using local rainfall data.

These sizing criteria are consistent with the Phase II MS4 permit for storm water quality compliance for post-construction requirements. Based on the modeling results, the 85th percentile runoff total for Newman DMA and North Ag DMA (Scenario 1) is 31.9 acre-feet and for all contributing DMAs (Scenario 2) is 39.9 acre-feet. The static storage provided below the overflow elevation for all three BMP components combined is 42.1 acre-feet. In addition, a target diversion flow rate of 50 cubic feet per second is selected, which results in 80 percent capture of storm water runoff from all contributing DMAs (Scenario 2) so the second design criteria is also met (see Figure 3). The target diversion rate of 50 cubic feet per second will result in 85 percent capture of storm water runoff from Newman DMA and North Ag DMA (Scenario 1).

A 6'W x 2'H reinforced concrete box (RCB) from the Miller Ditch to the sediment forebay with a 2' headwall across the Miller Ditch will result in a diversion of 50 cubic feet per second or greater. See Figure 1 below for the volume captured to diversion rate relationship for the project.

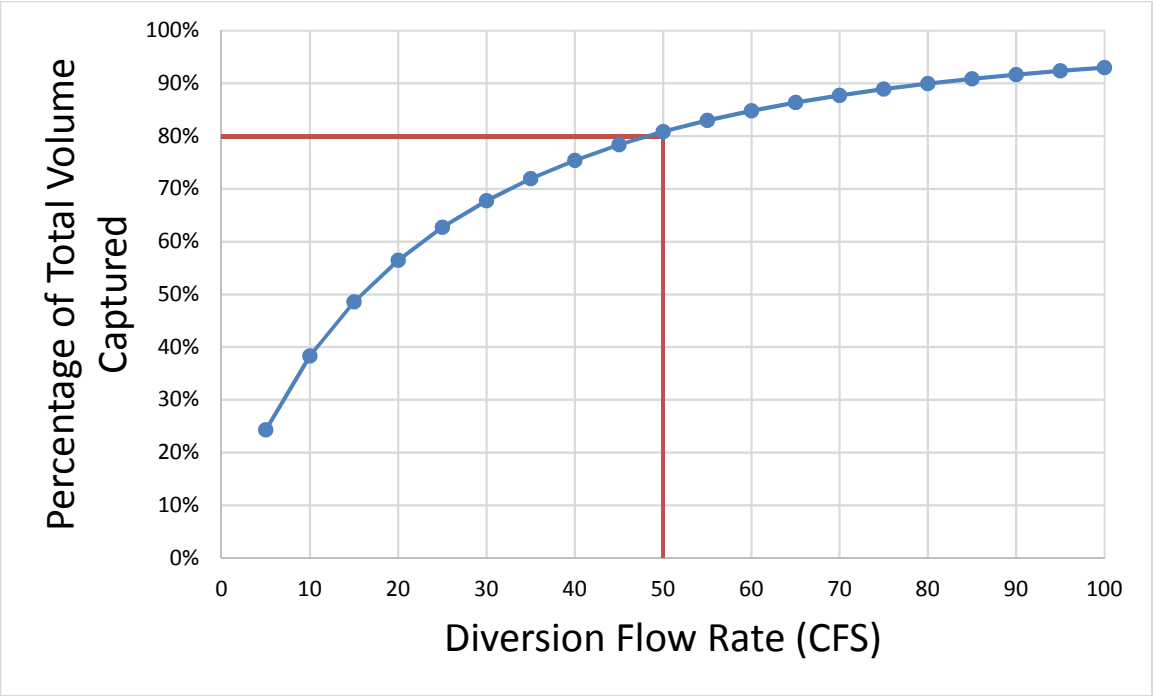


Figure 1: Flow Diversion Sensitivity Analysis for all contributing DMAs (Scenario 2)

II.5.2 Sediment Forebay

The sediment forebay outlets structures are designed to have 48-hour drawdown time and to safely convey a 100-year event to the downstream components. Four different outlet structures are designed to activate different portions of the wetland area based on the rainfall amount to facilitate formation of low marsh and high marsh zones. The low flow restrictor outlet, which is the closest to the inflow of the sediment forebay, is designed to convey the dry weather/agriculture tailwater flow rates. This is done to reduce short-circuiting of wet weather flows through the micro pool. The flows through the low flow restrictor outlet discharge to the micro pool via a low flow channel in the constructed wetland. Each subsequent outlet in the sediment forebay allows routing to low and high marsh areas of the constructed wetland pond, respectively. The proposed outlet structures in the sediment forebay are summarized below (approved equivalents may be used):

- Low-Flow Restrictor: 1'W x 0.25'H Rectangular notch (FL 75');
- Mid-Flow Outlet: Grated Catch Basin (Caltrans D77B, Type 24-13) (FL 76');
- High-Flow Outlet: Triple Grated Catch Basin (FL 77') (Caltrans D77B, Type 24-13); and
- Overflow Spillway: 195'W x 2'H (FL 78').

It is recommended that a portion of the sediment forebay include a concrete pad to facilitate maintenance. No infiltration losses are assumed for the sediment forebay area due to sediment loading; however, evapotranspiration benefits were quantified for this area.

II.5.3 Constructed Wetland

The constructed wetland outlet pipes are designed so they do not restrict flows to the micro pool and the overflow spillway is designed to safely convey the 100-year event to the micro pool. The drawdown within the constructed wetland is regulated using the outlet structures in the micro pool. The proposed outlet structures in the constructed wetland area are summarized below (approved equivalents may be used)::

- 6 – 48" RCP (FL 74); and
- Overflow Spillway: 195'W x 2'H (FL 78).

The measured infiltration was obtained from the geotechnical letter report prepared by Technicon Engineering Services, Inc. in support of the Proposition 1 Technical Assistance for the City of Newman titled, "Newman LID Project NEC Braza Road & Canal School Road, Newman, California – Infiltration Test Results," and dated June 3, 2019. Infiltration test "DR-3" was determined to be the limiting infiltration rate result located within the footprint of the proposed stormwater wetland with an observed infiltration rate of 0.25 inches per hour (in/hr.). Since shallow groundwater table is anticipated, conservatively a factor of safety of 5 was applied to the observed infiltration rate. The design "seepage" modeling component of 0.05 in/hr. was used to represent a uniform infiltration rate across the footprint of the constructed wetland cell. As additional groundwater measurements and geotechnical information becomes available it is recommended that this assumption be revisited as part of the final design. Evapotranspiration benefits were quantified for this area.

II.5.4 Micro Pool

The permanent micro pool volume is designed to have a 3-day hydraulic residence time (dry weather flow rate of 0.9 cfs; >5.36 acre-feet storage below 74.5' elevation). The outlet structures for the permanent micro pool are designed to support a 72-hour drawdown time and safely convey a 100-year event. It is recommended that a clay liner be installed at the bottom of the micro pool to maintain a permanent pool of water as well as to reduce potential contamination of groundwater. The proposed outlet structures are summarized below (approved equivalents may be used)::

- Storage below FL 74.5' = 5.66 acre-feet (> 5.36 acre-feet required to have a hydraulic residence time of 3 days);
- 3.5'W x 0.25'H Rectangular notch (FL 74.5');
- 0.6'W x 0.25'H Rectangular notch (FL 76.5');
- Grated Catch Basin (FL 77.25') (Caltrans D77B, Type 24-13); and
- Overflow Spillway: 195'W x 2'H (FL 78)

No infiltration losses are assumed for the permanent micro pool area. Evapotranspiration benefits were quantified for this area.

II.6 Pollutant Loading and Removal Estimate

II.6.1 Pollutant Loading Rates Data – Event Mean Concentrations (EMCs) by Land Use

To account for pollutant loading rates from the tributary drainage areas, Event Mean Concentration (EMC) data documented in the latest National Stormwater Quality Database Version 4.02 (NSQD V4.02) was assigned to individual urban land uses within the tributary drainage area and incorporated into the SWMM model. The aggregate concentration of pollutants present in stormwater runoff from the tributary drainage area is calculated by the SWMM program, with consideration of the total of individual land uses present within the delineated drainage boundary.

Given that the drainage area tributary to the study area consists of a significant amount of Agricultural land, which is not individually documented in the NSQD V4.02 tables, a separate source was referenced to obtain EMC data for this land use category. The document titled, "A User's Guide for the Structural BMP Prioritization and Analysis Tool (SBPAT V1.0) Technical Appendices," prepared by Geosyntec Consultants was consulted to reference the Agricultural Land Use EMCs. For reference purposes, SBPAT is a tool accepted by the State of California Los Angeles Regional Water Quality Control Board (LA RWQCB) to estimate BMP performance.

Table 7 presents a summary of median pollutant EMC values included in the continuous simulation water quality modeling.

Table 7: Median Pollutant Event Mean Concentration by Land Use

Land Use	Fecal Indicator Bacteria	Metals			Nutrients		Sediment
	FC	Cu	Pb	Zn	NO2 + NO3	TP	TSS
	MPN/100mL	ug/L	ug/L	ug/L	mg/L	mg/L	mg/L
Agricultural	60,300	100.1	30.2	274.8	43.37	3.34	999.2
Commercial	4200	13.3	11	119	0.7	0.19	52
Industrial	1980	14	9	140	0.6	0.22	74
Multi-Family Residential	9000	10.9	5	70	0.6	0.3	56
Open Space	2150	5.9	1	10	0.5	0.12	38
Single-Family Residential	9000	10.9	5	70	0.6	0.3	56
Transportation (Roads)	2000	24	31	130	1.2	0.25	74

Agricultural EMC data obtained from SBPAT Technical Appendices. Pollutant Removal Rates, paired influent, and effluent data from the 2016 version of the International Stormwater BMP Database 2016 (http://bmpdatabase.org/) was used to estimate the performance of the Newman Environmental Wetland System. Table 8 presents a summary of average influent concentrations entering the BMP and the estimated effluents leaving the forebay and the constructed wetland/micro pool and derived percent reductions for each pollutant type.

Table 8: Median Pollutant Inflow/Outflow Concentrations and Percent Reductions

Pollutant Category	Pollutant	Average Influent Concentration	Forebay		Constructed Wetland / Micro Pool[1]	
			Effluent	% Reduction	Effluent	% Reduction
Fecal Indicator Bacteria	FC	15,962 MPN/100mL	14,827 MPN/100mL	7%	6,704 MPN/100mL	58%
Metals	Cu	34.24 ug/L	21.3 ug/L	38%	15.3 ug/L	55%
	Pb	19.99 ug/L	19.3 ug/L	3%	5.7 ug/L	71%
	Zn	143 ug/L	84.5 ug/L	41%	45.9 ug/L	68%
Nutrients	NO2 + NO3	9.62 mg/L	4.2 mg/L	56%	2.4 mg/L	75%
	TP	0.89 mg/L	0.37 mg/L	59%	0.30 mg/L	67%
Sediment	TSS	258 mg/L	94 mg/L	64%	53.8 mg/L	79%

1. Same treatment efficiency was used for both the constructed wetland cell and the storage in micro pool between 74.5' to 78' as the same outlet works controls the drawdown time in both cells. Once the performance was estimated it was then subdivided based on the weightage of detention storage.

III MODELING RESULTS AND STORM WATER QUALITY BENEFITS

III.1 Pollutant Contributions

Table 9 presents the wet weather loads for the 85th percentile event and average annual loads. Table 10 presents urban wet weather loads for the 85th percentile event and average annual loads. Table 11 presents agricultural wet weather loads for the 85th percentile event and average annual loads. The breakdown between urban and agricultural loads were calculated using an approximate method utilizing land area, event mean concentrations and runoff factors.

Table 9: Wet Weather Loads

Pollutant Category	Pollutant	Long-term DMA: DMA North + DMA Central		Short-term DMA: DMA North + DMA Central + DMA South	
		85th	Avg. Annual	85th	Avg. Annual
Fecal Indicator Bacteria	FC (MPN)	1.1E+13	2.2E+14	1.5E+13	2.8E+14
Metals	Cu (Kg)	2.8	91	3.5	102
	Pb (Kg)	1.0	32	1.2	35
	Zn (Kg)	8.9	283	10.8	315
Nutrients	NO2 + NO3 (Kg)	1,083	36,028	1,357	40,675
	TP (Kg)	88	2,916	110	3,279
Sediment	TSS (Kg)	25,970	858,892	32,400	967,169

Table 10: Urban Wet Weather Loads

Pollutant Category	Pollutant	Long-term DMA: DMA North + DMA Central		Short-term DMA: DMA North + DMA Central + DMA South	
		85th	Avg. Annual	85th	Avg. Annual
Fecal Indicator Bacteria	FC (MPN)	3.5E+12	7.0E+13	4.0E+12	7.9E+13
Metals	Cu (Kg)	1.4	47	1.6	50
	Pb (Kg)	0.8	25	0.9	27
	Zn (Kg)	6.3	200	7.2	215
Nutrients	NO2 + NO3 (Kg)	119	3,969	130	4,157
	TP (Kg)	28	939	31	990
Sediment	TSS (Kg)	7,485	247,533	8,304	261,327

Table 11: Agricultural Wet Weather Loads

Pollutant Category	Pollutant	Long-term DMA: DMA North + DMA Central		Short-term DMA: DMA North + DMA Central + DMA South	
		85th	Avg. Annual	85th	Avg. Annual
Fecal Indicator Bacteria	FC (MPN)	7.5E+12	1.5E+14	1.1E+13	2.1E+14
Metals	Cu (Kg)	1.4	44	1.8	52
	Pb (Kg)	0.2	7	0.3	9
	Zn (Kg)	2.6	83	3.6	100
Nutrients	NO2 + NO3 (Kg)	964	32,059	1,227	36,518
	TP (Kg)	60	1,977	78	2,289
Sediment	TSS (Kg)	18,485	611,359	24,096	705,842

III.2 Pollutant Load Reduction Results

Pollutant time series were exported from the PCSWMM model results and analyzed in a spreadsheet. This allowed the wetlands influent/effluent pollutant quantities reported hourly by the model to be aggregated, in order to identify the pollutant reduction metrics. Table 12 presents a summary of wet weather pollutant load reduction for the 85th percentile and Table 13 presents a summary of wet weather pollutant load reductions based on continuous simulation (Water Year 1949 to 2013 – 65 Years). The wet weather load reductions are summarized for each system component and the combined system. The permanent micro pool captures and treats the dry weather and agricultural return flows through both sedimentation and biological uptake process.

Table 12: Pollutant Load Reduction – 85th Percentile Storm

Long-term DMA: DMA North + DMA Central							
Land Use	**Fecal Indicator Bacteria (MPN)**	**Metals (Kg)**			**Nutrients (Kg)**		**Sediment (kg)**
	FC	**Cu**	**Pb**	**Zn**	**NO2 + NO3**	**TP**	**TSS**
Sediment Forebay	1.27E+12	1.26	0.14	4.21	662	56.2	17,683
Constructed Wetlands	4.74E+12	0.67	0.47	2.41	235	16.3	4,830
Micro pool	1.91E+12	0.26	0.19	0.95	93	6.4	1,928
Combined System	**7.92E+12**	**2.20**	**0.80**	**7.57**	**991**	**79**	**24,441**
Percent Removals							
Sediment Forebay	12%	45%	14%	48%	61%	64%	68%
Constructed Wetlands	43%	24%	46%	27%	22%	18%	19%
Micro pool	17%	9%	18%	11%	9%	7%	7%
Combined System	**72%**	**78%**	**78%**	**86%**	**92%**	**90%**	**94%**
% Urban Contributions[1]	100%	100%	100%	100%	100%	100%	100%
% of Agricultural land use Contributions[2]	59%	56%	3%	51%	90%	85%	92%

Notes: 1. Based on these results, NEWS is anticipated to remove 100% of the wet weather pollutant contributions from the urban land uses associated with all storms up to and including the 85th percentile, 24-hour storm event
2. This row is based on load reductions achieved greater than the wet weather pollutant loads generated from urban land uses.

Short-term DMA: DMA North + DMA Central + DMA South							
Land Use	**Fecal Indicator Bacteria (MPN)**	**Metals (Kg)**			**Nutrients (Kg)**		**Sediment (kg)**
	FC	**Cu**	**Pb**	**Zn**	**NO2 + NO3**	**TP**	**TSS**
Sediment Forebay	1.68E+12	1.52	0.16	5.04	819	69.1	21,854
Constructed Wetlands	6.32E+12	0.85	0.58	2.98	300	20.7	6,141
Micro pool	2.56E+12	0.33	0.23	1.19	121	8.3	2,471
Combined System	**1.06E+13**	**2.70**	**0.97**	**9.21**	**1,239**	**98.1**	**30,466**
Percent Removals							
Sediment Forebay	11%	44%	12%	47%	60%	63%	67%
Constructed Wetlands	42%	24%	47%	28%	22%	19%	19%
Micro pool	17%	10%	19%	11%	9%	8%	8%
Combined System	**70%**	**78%**	**78%**	**86%**	**91%**	**90%**	**94%**
% Urban Contributions[1]	100%	100%	100%	100%	100%	100%	100%
% of Agricultural land use Contributions[2]	60%	59%	16%	56%	90%	85%	92%

Notes: 1. Based on these results, NEWS is anticipated to remove 100% of the wet weather pollutant contributions from the urban land uses associated with all storms up to and including the 85th percentile, 24-hour storm event
2. This row is based on load reductions achieved greater than the wet weather pollutant loads generated from urban land uses.

Table 13: Pollutant Load Reduction – Average Annual

Long-term DMA: DMA North + DMA Central							
Land Use	**Fecal Indicator Bacteria (MPN)**	**Metals (Kg)**			**Nutrients (Kg)**		**Sediment (kg)**
	FC	**Cu**	**Pb**	**Zn**	**NO2 + NO3**	**TP**	**TSS**
Sediment Forebay	2.68E+13	34	2	112	19,815	1,631	519,785
Constructed Wetlands	7.49E+13	22	14	77	8,003	547	163,429
Micro pool	3.13E+13	8	6	30	3,176	216	65,135
Combined System	**1.33E+14**	**64**	**22**	**219**	**30,364**	**2,394**	**748,349**
Percent Removals							
Sediment Forebay	12%	37%	7%	39%	53%	56%	61%
Constructed Wetlands	34%	24%	45%	27%	22%	19%	19%
Micro pool	14%	9%	18%	11%	9%	7%	8%
Combined System	**60%**	**70%**	**70%**	**77%**	**84%**	**82%**	**88%**
% Urban Contributions[1]	100%	100%	90%	100%	100%	100%	100%
% of Agricultural land use Contribution[2]	42%	39%	0%	23%	82%	74%	82%

1. Based on these results, Newman Environmental Wetland System is anticipated to remove 100% of the wet weather pollutants from the urban land uses (except for lead).
2. This row is based on load reductions achieved greater than the wet weather pollutant loads generated from urban land uses.

Short-term DMA: DMA North + DMA Central + DMA South							
Land Use	**Fecal Indicator Bacteria (MPN)**	**Metals (Kg)**			**Nutrients (Kg)**		**Sediment (kg)**
	FC	**Cu**	**Pb**	**Zn**	**NO2 + NO3**	**TP**	**TSS**
Sediment Forebay	3.33E+13	36	2	120	20,837	1,765	562,523
Constructed Wetlands	8.98E+13	24	15	82	8,623	588	175,633
Micro pool	3.76E+13	9	6	33	3,439	233	70,287
Combined System	**1.61E+14**	**69**	**24**	**234**	**32,899**	**2,586**	**808,443**
Percent Removals							
Sediment Forebay	12%	36%	7%	38%	51%	54%	58%
Constructed Wetlands	32%	23%	43%	26%	21%	18%	18%
Micro pool	13%	9%	17%	10%	8%	7%	7%
Combined System	**57%**	**68%**	**67%**	**74%**	**80%**	**79%**	**83%**
% Urban Contributions[1]	100%	100%	89%	100%	100%	100%	100%
% of Agricultural land use Contribution[2]	40%	37%	0%	19%	79%	70%	78%

1. Based on these results, Newman Environmental Wetland System is anticipated to remove 100% of the wet weather pollutants from the urban land uses (except for lead).
2. This row is based on load reductions achieved greater than the wet weather pollutant loads generated from urban land uses.

III.3 Stormwater Capture/Retention Results

The continuous simulation (Water Year (WY) 1949 to 2013 – 65 years) and the 85th percentile model incorporated evapotranspiration (for all three components) and native soil infiltration parameters (for constructed wetland cell) to quantify the amount of water that is retained through the implementation of the project. While the project design is not intended to function as an infiltration BMP since there is relatively shallow groundwater, there will be incidental infiltration that occurs as the underlying soil acts as a sponge. Table 14 summarizes the water balance results which was analyzed at the inflow and outflow points of the Newman Environmental Wetland System.

Table 14: Stormwater Capture/Retention Results

	Scenario 1: Newman + North Ag	Scenario 2: Newman + North Ag + South Ag
Wet Weather Volume from 85th Percentile	31.9 acre-feet	39.9 acre-feet
Percent of 85th Percentile treated by the BMP	100%	100%
Average Wet Weather Volume Per Year	585 acre-feet	699 acre-feet
Average Dry Weather Volume Per Year	652 acre-feet	652 acre-feet
Total Average Volume Per Year (Dry + Wet)	1,237 acre-feet	1,351 acre-feet
Dry and Wet Weather Volume treated by the BMP Per Year	1,156 acre-feet (93.4%)	1,216 acre-feet (90%)
Average Volume Captured and Filtered Per Year	1,087 acre-feet (87.9%)	1,147 acre-feet (84.9%)
Average Volume Reduction by Infiltration Per Year	45 acre-feet (3.6%)	46 acre-feet (3.4%)
Average Volume Reduction by Evaporation Per Year	24 acre-feet (1.9%)	23 acre-feet (1.7%)

III.4 Trash Generation and Reduction

Pursuant to the State Trash Amendment (as discussed in the City of Newman Stormwater Management Project - Task 3.3 Preliminary Design Concepts, prepared by Rick Engineering Company, and dated June 6, 2019), full-trash capture devices must be designed to capture particles that are 5-mm or greater for the 1-year, 1-hour storm event for Priority Land Use Areas (PLUs). To quantify the trash generation and reduction for the City of Newman, this analysis focused first on PLU areas. PLUs are defined as land uses that studies have shown to generate significant sources of trash and include: high density residential, industrial, commercial, mixed urban and public transportation stations. GIS Parcel data was utilized to determine the acreage of each PLU type within the City and was multiplied by a trash generation factor based on land use. Since the project is proposing the use of a certified full-trash capture device (as approved by the State Water Resources Control Board), or an alternative non-proprietary screen sized for the same 5 mm particle size and 1-year, 1-hour storm event, it is assumed that the reduction in

volume of trash is equal to the amount of trash generated from the City. Table 15 provides a summary of the annual trash generation based on PLU type and annual load reduction for the City during the short- and long-term scenarios..

Table 15: Trash Generation and Load Reduction Summary

	Short Term Scenario (DMA North + DMA Central + DMA South)							
	High Density Residential	**Industrial**	**Commercial**	**Mixed Urban**	**Public Transportation Stations**	**Non-PLU Trash Generating Areas[3]**	**Subtotal for PLU Area Managed[2]**	
Area (acres)	107.2	132.7	78.4	0.0	0	536.6	**318.3**	
Trash Generation Rate (gal/ac/yr.)[1]	2.5	2.6	6.0	2.5	6.0	1.0	**Total Annual Trash Load Reduction from PLU Areas (gal/yr)**	**Total Annual Trash Load Reduction (Including PLU & Non-PLU Areas) (gal/yr)**
Annual Trash Generated (gal/yr.)	268.0	345.0	470.3	0.0	0.0	536.6	**1083.3**	**1619.9**

Notes: 1. Trash generation rates were obtained from a study performed for the County of San Diego titled "Technical Memorandum for Countywide Inlet Mapping, Collection, and Drainage Area Delineations", dated November 2, 2018.
2. PLU Acreage is based on existing land use and not zoned land use.
3. Non-PLU trash generating areas are comprised of single-family residential land uses and does not include agricultural or Open Space land use.

	Long Term Scenario (DMA North + DMA Central)							
	High Density Residential	**Industrial**	**Commercial**	**Mixed Urban**	**Public Transportation Stations**	**Non-PLU Trash Generating Areas[3]**	**Subtotal for PLU Area Managed[2]**	
Area (acres)	87.7	92.7	53.7	0.0	0	453.8	**234.0**	
Trash Generation Rate (gal/ac/yr.)[1]	2.5	2.6	6.0	2.5	6.0	1.0	**Total Annual Trash Load Reduction from PLU Areas (gal/yr)**	**Total Annual Trash Load Reduction (Including PLU & Non-PLU Areas) (gal/yr)**
Annual Trash Generated (gal/yr.)	219.2	241.0	322.0	0.0	0.0	453.8	**782.1**	**1235.9**

Notes: 1. Trash generation rates were obtained from a study performed for the County of San Diego titled "Technical Memorandum for Countywide Inlet Mapping, Collection, and Drainage Area Delineations", dated November 2, 2018.
2. PLU Acreage is based on existing land use and not zoned land use.
3. Non-PLU trash generating areas are comprised of single-family residential land uses and does not include agricultural or Open Space land use.

It should be noted that not all of the City's PLU Areas are routed through a full trash capture system during the long term scenario; however, the total trash captured (including trash generated from non-PLU areas) is greater than the trash generated from the City's PLU areas due to the amount of non-PLU areas that will be routed through the system. Based on the equivalent trash generation rate used for non-PLU areas in this study, it is anticipated that the project will continue to meet the requirements of the State Trash Amendment even during the long term scenario.

OPERATIONS AND MAINTENANCE DESIGN CONSIDERATIONS

The project will require long-term operations and Maintenance (O&M); therefore, the following components were designed to facilitate O&M:

- Access Roads were included to allow maintenance vehicles to drive the perimeter of each component (sediment forebay, wetland, and micro pool) and were designed to be a minimum of 15 feet based on anticipated maintenance vehicles (excavators, vactor, and utility trucks.) The access roads are set at an elevation approximately 2 feet above the design water surface elevation to provide conveyance and freeboard above the emergency spillways.
- Maintenance Ramps were included at each component (component (sediment forebay, wetland, and micro pool) to allow maintenance crews to drive down into the facilities if necessary (i.e., to remove sediment or debris). The ramps are a minimum of 15 feet wide
- A concrete pad was included within the sediment forebay to facilitate removal of accumulated sediment and debris and to minimize the potential for over-excavation during maintenance activities. The concrete pad only covers a portion of the sediment forebay from the inlet to the system to the first culvert to the wetland area.
- A permanent pump has included near the micro pool to allow draw-down of the micro pool's permanent pool to allow maintenance crews to access the bottom of the facility as needed (to remove accumulated debris/sediment or to inspect the facility)
- A maintenance storage and parking lot was included to allow crews to stage and store material and equipment as necessary.
- The full trash capture device will include manholes/hatches to allow access into the system to allow removal of accumulated trash and debris

PUBLIC SAFETY DESIGN CONSIDERATIONS

As a multi-purpose constructed storm water treatment wetland, the project will provide community benefit by providing access along the O&M road, which may serve a dual purpose

as a public pathway. Public health and safety elements have been incorporated into the design including:

- Wooden Split rail fencing approximately 3 feet in height will run along the outer perimeter each of the system components (sediment forebay, wetland, and micro pool) to discourage people entering the facility
- Side slopes are all set at a maximum of 3:1 (H:V)
- Maintenance access ramps include bollards to prohibit unauthorized vehicular access
- An access gate is included to allow closure of the facility during larger maintenance operations or during times of non-operation
- A low-flow channel is provided to promote constant movement of water to deter stagnation and vector breeding. Other vector control components include facilitating access for surveillance, maintenance, and mosquito control activities, avoiding still, isolated, shallow areas, providing multiple flow paths among wetland components, and potentially the use of mosquito fish in the micro pool area (County of San Diego, 2010).
- Informational signage will be included as a learning opportunity for the community and to promote safety (i.e., do not enter, no swimming, no fishing, and/or no drinking signs)

LANDSCAPE DESIGN CONSIDERATIONS

The project includes vegetation and trees to support natural resource, community, and climate change objectives. Project landscape design considered:

- Appropriate vegetation for the local climate, native species that do not require extensive irrigation beyond establishment
- Appropriate vegetation for the different inundation zones within each system component (i.e., sediment forebay, wetland areas: low/high-marsh, micro pool, and bottoms versus side slopes)
- Plants and trees that support project objectives for community benefits (e.g., shading, respite areas)

IV DESIGN ASSUMPTIONS AND CONSIDERATIONS FOR FINAL DESIGN

Project design included the following simplifications and assumptions:

- Model simulations do not consider the flow attenuation effect of the detention basins located throughout the City of Newman & surrounding areas. It is assumed that the flowrate to the Miller ditch is controlled by the capacity of the existing stormwater pump station and that the upstream detention facilities are designed for this condition.

- Drainage areas contributing to Inyo Avenue Pump Station will have a restricted flow into Miller Ditch based on Pump Capacities per As-Built drawing (36,000 GPM ~ 80 cfs).

- Inyo Avenue Pump Station nuisance pump capacity of 400 gpm/0.9 cfs (per as-built drawing) incorporated as a dry-weather/agricultural return flow component into models.

- Conservatively, a 0.05 in/hr. infiltration rate was used for the constructed wetland cell.

- The benefits assigned to the permanent micro pool were for wet weather flows. The permanent pool removes pollutants from the dry weather and agricultural return flows through both sedimentation and biological uptake process, but this was not explicitly quantified as the pollutant loading rates for these flows are not readily available.

The construction documents prepared as part of this Prop. 1 solicitation were developed to a 60% design level; therefore, they will need to be further refined prior to construction of the project As the project continues forward, the following additional analysis/refinements will be necessary prior to final design and construction:

- Detailed hydraulic design that evaluates the floodplain limits and backwater conditions to support the design of different BMP elements (i.e., diversion design, outlet structures, protection against erosion for BMP components during the 100-year event, etc.);
- Groundwater level and infiltration rate measurements to refine the vertical elevations for different BMP components, quantify volume reduction benefits, and potentially a mounding analysis to evaluate the effect on the wetland design. It is understood that the City of Newman is currently contracting with a geotechnical engineer to install monitoring wells to collect groundwater information;
- Additional evaluation for thermal effects and water rights for any downstream sensitive habitat;
- Additional evaluation and design of the Full Trash Capture (FTC) device will be necessary to ensure final design of the FTC based on required treatment and peak discharge flow rates, maintenance access, and siting;
- Regulatory coordination with resource agencies (U.S. Army Corps of Engineers, California Department of Fish and Wildlife, Regional Water Quality Control Board, Etc.).

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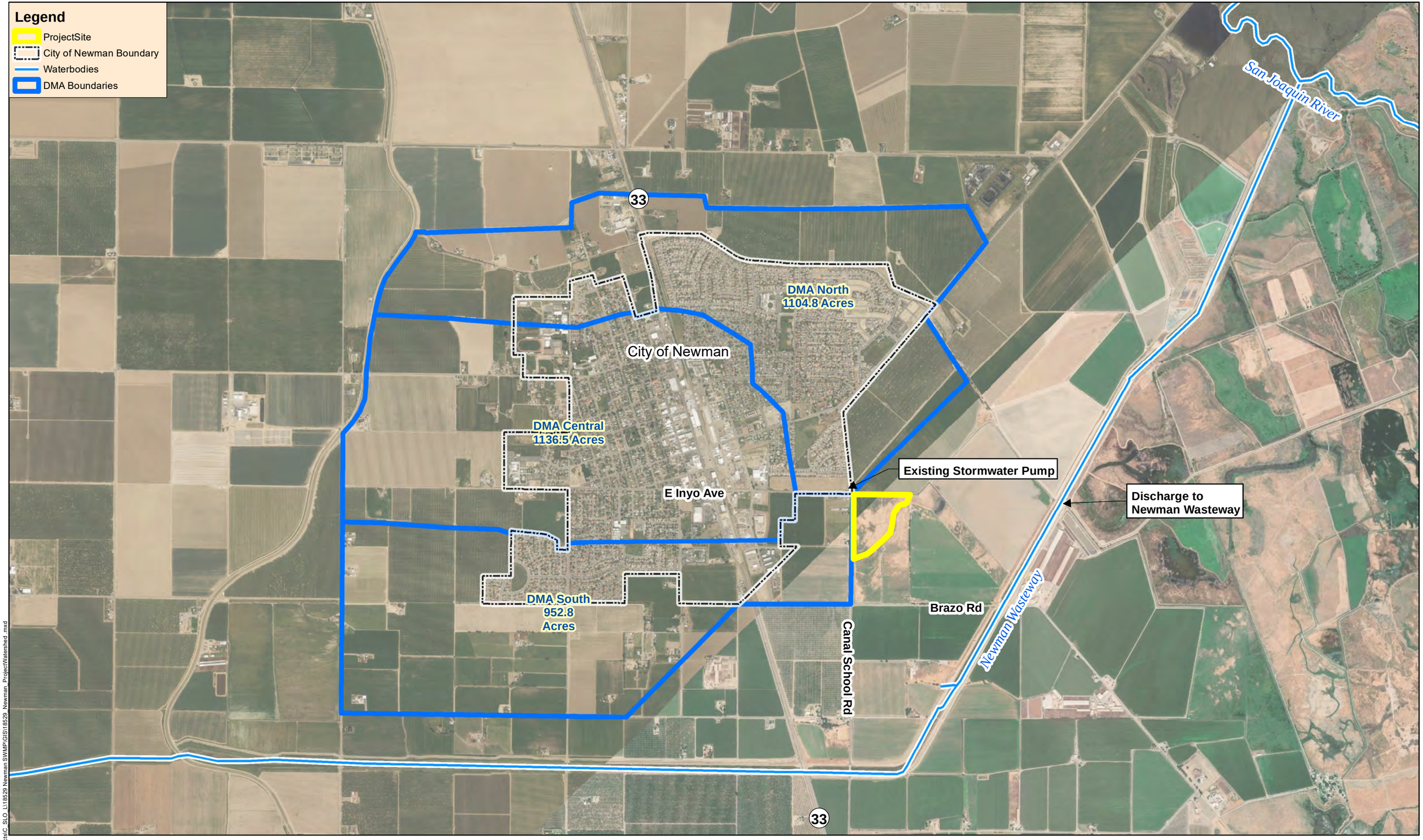
Attachment A **Tributary Watersheds**



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Date of Exhibit: 4/20/2020
DigitalGlobe Aerial Image: 04.2013

Project Site Tributary Watersheds

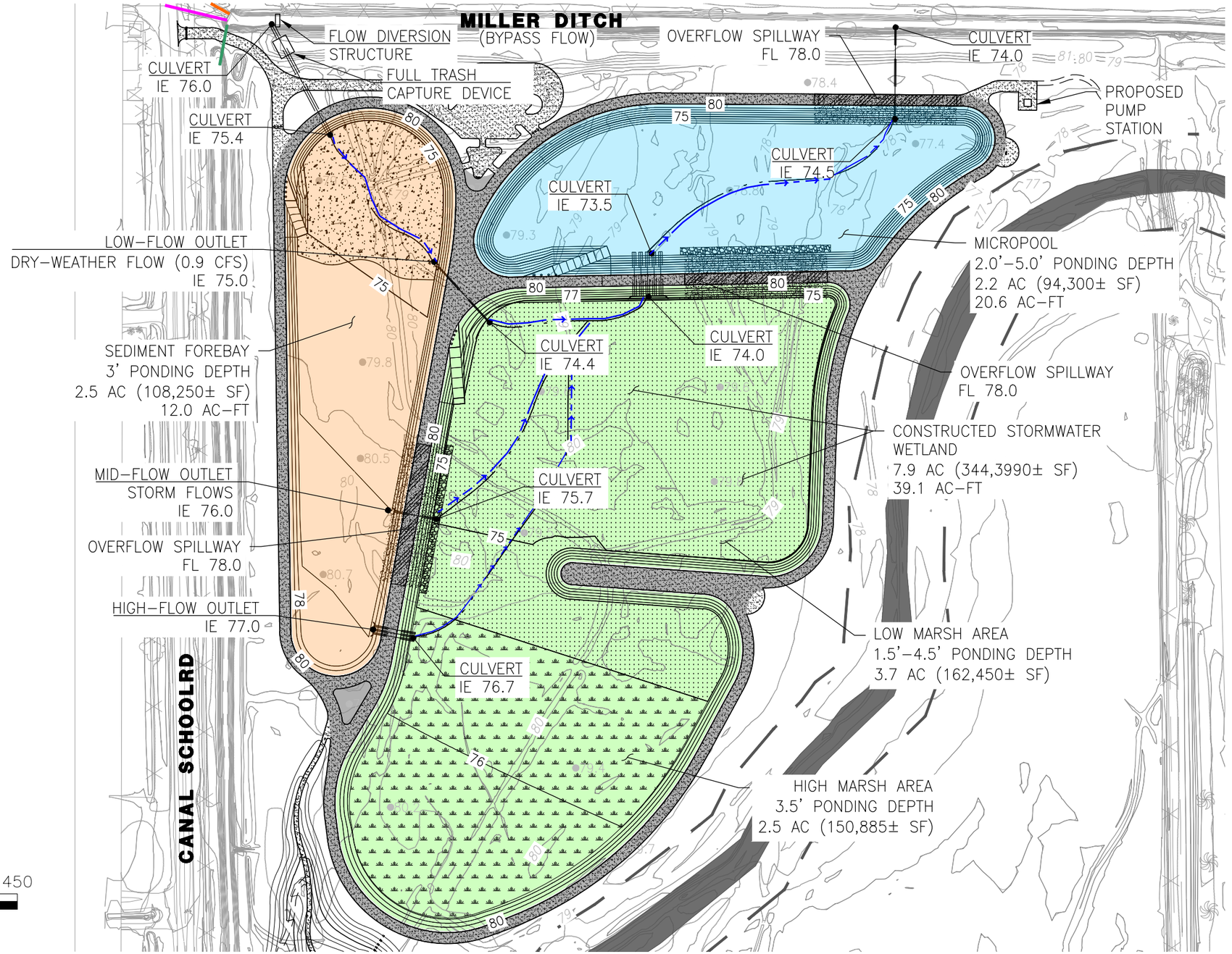
City of Newman Stormwater Management Project

J-18529

Attachment B Wetland Routing Schematic

LEGEND

- ACCESS ROAD
- SEDIMENT FOREBAY
- CONSTRUCTED WETLAND
- MICROPOOL
- HIGH MARSH AREA
- LOW MARSH AREA
- OVERFLOW SPILLWAY
- INYO AVE STORM DRAIN
- PUMP STATION STORM DRAIN
- MILLER DITCH STORM DRAIN
- FLOWPATH



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GRAPHIC SCALE: 1"=150'

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WETLAND SYSTEM ROUTING SCHEMATIC
NEWMAN ENVIRONMENTAL WETLAND SYSTEM

CITY OF NEWMAN, CA

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Appendix F

MDTW Project Technical Memoranda

UNIVERSITY OF CALIFORNIA
MERCED

NEWMAN CONSTRUCTED TREATMENT WETLAND
WATER BUDGET REPORT
(Memorandum 2)
July 2020
DRAFT

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1. SUMMARY

The present report covers a detailed estimation of the water budget information for Miller Ditch (MD), in Newman City, that will potentially be treated in a future constructed treatment wetland and reapplied on City agricultural land for irrigation purposes. The implementation of the constructed treatment wetland may allow another source of water for the City's agricultural land currently irrigated with treated wastewater that is lower in salinity and other contaminants. The combination of these two water sources would allow better water management for the City's agricultural land and possibly increase yield and profits while protecting and enhancing ground water quality.

This report, Memorandum 2, includes a description of the treatment area, field measurements of flow rates, water balance calculations and hydrologic scenario generation with estimated outflows and water retention time. Three scenarios assessed include: (1) a normal year using median values of monthly average data of rainfall and evapotranspiration, and average monthly volumetric inflows; (2) monthly assessment to show seasonality of winter versus summer conditions based on a "dry" year (20^{th} percentile monthly precipitation) and a "wet" year (80^{th} percentile monthly precipitation); and (3) three short-term storm events with 50^{th}, 90^{th} and 95^{th} percentile 24-hour precipitation values.

The results show that the main inflow contributing to MD is Q_{MD}, water originated from the Main Canal that is diverted to the agricultural land south of the ditch to service Central California Irrigation District (CCID) customers. According to the field measurements of flow in MD, taken on September and October 2019, and March 2020, flow fluctuates between 8,500 m^3/day and 460 m^3/day and it is mostly dependent to the irrigation season. Therefore, for water balance calculations, from March to October a high value was used as the water is applied to the crops and flows through the ditch. Then, from November to February the value is lower because the irrigation season is over. However, it is acknowledged that the water flow does not completely follow that pattern, as it will depend on the water use patterns of CCID costumers. Other contributors to the total inflow to the wetland is storm runoff from Agricultural area (Q_{CA}) with estimated area of 7,820,000 m^2. Monthly average flows to the treatment wetland in a normal year of precipitation and evapotranspiration range from 2,070 to 27,707 m^3/month considering 30-acres (121,406 m^2) of treatment wetland area. Other inflows and outflows (e..g, groundwater in/out flow, bank loss) are assumed zero due to climate conditions and design-construction recommendations to avoid bank and infiltration loses.

Water balance showed an outflow of 220,127 m^3/month with an average hydraulic residence time of 9 days during a normal year, assuming a 30-acre treatment wetland with a depth of 0.5 m. The seasonality demonstrates the highest flows at the beginning and at the end of the irrigation season, medium flow during the summer months and low flow in winter months when there is no irrigation and there is slow seepage. Precipitation has a small impact during the winter months and the evapotranspiration effect is noticeably during the summer months.

However, the inflows are not governed exclusively by natural phenomenon of precipitation and evapotranspiration, and they are mostly regulated by the agricultural season; therefore, the major inflow contributor is MD flow followed by the agriculture land storm runoff. Moreover, the monthly annual average outflow resulted during the wet year is twice the dry year with 305,636 m^3/month and 172,690 m^3/month, respectively. This is equivalent to an annual average residence time of 6 days in a wet year and 17 days in dry year. Finally, the 24-hours extreme storm event scenarios showed that the wetland could handle these events, but with low removal as the retention time is less than 5 days. The 50^{th} percentile 24-hour storm event resulted in a modeled wetland outflow of 13,041 m^3/d. This value increase over 5-fold for the for 95^{th} percentile 24-hour storm and nearly 10-fold for the 99^{th} percentile 24-hour storm.

2. INTRODUCTION

Newman city is located in Stanislaus County where agriculture is the dominant industry and occupation. The City is part of two hydrological areas, Patterson and Los Banos, of the Delta-Mendota Canal Hydrologic Unit in San Joaquin Hydrologic Basin according to the California Water Code (section 13240) and the Federal Clean Water Act *(California Regional Water Quality Control Board, 2018) (Fig. 1).* The California Department of Water Resources (DWR) established the Delta-Mendota Canal Hydrologic Unit as a high-priority groundwater basin based on adverse impacts on stream flows and overdrafts, among other factors *(Fig. 2 and Table 1; DWR, 2019);* therefore, the region around Newman City is considered in this high priority category for water management. However, agricultural areas around the City still irrigate using water from groundwater reserves and from CCID's Main Canal.

Given the dependence of local agriculture on CCID imported water and regional groundwater, and the critical status of this resource, the City is being cautious in managing and conserving its water resources. Thus, the Newman City has come up with a progressive and sustainable solution to treat and re-use stormwater runoff and irrigation flow-through water nearby the City. Part of the solution is the construction of a treatment wetland that UC Merced is studying, and that will be designed to treat

agriculture runoff and irrigation delivery through-flow from the south area that conforms MD (*Figs. 3 and 4)*.

Currently, water in MD flows north along MD, once reaching the northwest corner it flows east through the northside and eventually flows into the Newman Wasteway. At high flows, the water flows into the North Grasslands Wildlife Area which is managed by the California Department of Fish and Wildlife. Whether through the Wasteway or wildlife area, the water eventually reaches the San Joaquin River (*Fig. 3*). The proposed treatment wetland will be a semi-closed system with MD flow into the wetland for treatment of nitrate and phosphorus which are expected to decrease. Cleaner water from the wetland will be discharged back to MD and/or used for irrigation purposes and eventually groundwater recharge.

The aim of this report is to present detailed estimations of water budget for the proposed 30-acre treatment wetland area. Through this study, an effort has been made to understand the annual, seasonal, and extreme storm variances of inflow into the wetland. The report incorporates description of treatment area, field measurements, water balance calculation, and scenario generation methods, as well as estimated treatment wetland outflows and water retention time for the annual events. This information will be used in the modeling report (Memorandum 4) to predict the effectiveness of pollutant removal for nitrate and total phosphorus in the proposed wetland.

3. METHODS

The City has acquired 78-acres of land for their project, and of the total area around 10-30 acres (40,469-121,406 m^2) are allocated for the construction of the wetland to treat water from MD. Likewise, the wetland will be located in an area with mostly sandy clay soils (RICK, 2019), which can affect the amount of water that flows through the wetland by increasing the infiltration rate; estimations of this calculations are presented in the next section. Moreover, the top of the groundwater table has been reported to be relatively shallow and ranges from 2.4 m (Reyes, pers. comm. 2019) to 3.7 m (Cortez and Marin, pers. comm. 2019), which enhances infiltration and drainage from groundwater to MD.

Water Balance

For a better understanding of proposed wetland functioning and pollutant removal efficiency, the foremost concern is to manage its inflow and outflow because the water budget dictates water treatment efficiency and design. To budget the flows, a water balance for treatment wetland is calculated using the following equation from

Kadlec and Wallace (*2008; Fig. 5),* which represents the difference in volume (storage) at certain time (eq. 1):

$$Q_i - Q_o + Q_C - Q_B - Q_{GW} + Q_{SM} + (P \times A) - (ET \times A) = \frac{dV}{dt}$$

where the values represent volumetric water entering or exiting the wetland such that Q_i is water flowing into the wetland, Q_o is water flowing out of the wetland, Q_C is water flowing into the wetland due to precipitation from the surrounding wetland catchment area, Q_{GW} is water gained or lost to groundwater, and Q_{SM} is water entering the wetland from snowmelt. Precipitation falling into the wetland is represented as the amount of precipitation (*P*) times the surface area of the wetland (*A*); and water lost through evaporation from the water surface and transpiration through plants is represented as the rate of evapotranspiration (*ET*) times *A*.

We assumed that there is a steady-state condition, that is, the volume of water in wetland is not changing overtime; and a 30-acre area for the constructed wetland. Thus, the outflow rate (Q_o) was calculated using the following formula (eq. 2):

$$Q_i - Q_{GW} + (P \times A) - (ET \times A) = Q_o$$

Since, the amount of water flowing into the potential wetland area was not available, Q_i was determined by in-situ measurements and estimations of other inputs using the following formula with Q_{MD} as the remaining flow in MD at the proposed wetland, and C_A for the agricultural catchment areas that have precipitation runoff flowing into MD multiplied by k_A which is the runoff coefficient for the land type used to determine the amount of precipitation-related runoff (eq. 3):

$$Q_{MD} + (P \times C_A \times k_A) = Q_i$$

Using infiltration rate value from RICK Engineering's double ring infiltration test, groundwater infiltration loss from the wetland can be calculated using the formula below, where *I* is infiltration rate of soil and *A* is area of wetland (eq. 4):

$$Q_{GW} = I \times A$$

Combining all the equations above, result the following formula to calculate Q_o (equ. 5):

$$Q_{MD} + (P \times C_A \times k_A) - (I \times A) + (P \times A) - (ET \times A) = Q_o$$

Another important variable when determining the design and operational strategies that affect pollutant removal in wetlands is the hydraulic detention time (τ), which is the measurement of the average of time that water will stay in the reactor, in this case the wetland, and is associated with available time to treat pollutants in the water. It was calculated as the volume divided by the average of the inflow (Q_i) and outflow (Q_o) (eq. 6):

$$\tau = V \,/\, (Qi + Qo)/2)$$

Volumetric inflow into the wetland (Q_i) was determined by measurements of MD flow (Q_{MD}) at the proposed wetland area and through calculations of precipitation runoff into MD from the surrounding agriculture (C_A) land (*Fig. 3*) as mentioned above. On the other hand, the outflow is calculated based on the water balance model using the 30-acre of area. For the average year, Q_o was around 89% of Q_i, thus on average 10% of the water flowing into the wetland is lost to evapotranspiration. Finally, it was assumed a depth of 0.5 m to calculate the volume of water in the wetland (V) of 60,703 m^3.

- **Miller Ditch Flow**

A reconnaissance of MD was performed at publicly accessible locations between the proposed treatment wetland area to CCID's Main Canal (*Fig. 6*). Based on structures present, it seemed that water in MD is originated from the Main Canal. Flows in MD may be halted between the middle of November and beginning of February, when flows might be diverted to agricultural land south of the ditch to service CCID customers generating a slow seepage. Based on this information, it was assumed flow in MD was representative of baseline flows in all MD (Q_{MD}) at around 8,500 m^3/d (Guintini and McCurdy, CCID, pers. comm. 2019). (Note that this assumption may not be correct. Recent monitoring suggests flow in MD for May and June 2020 was only around 400 m^3/d. Ongoing monthly monitoring will help to inform and revise this water balance in the future).

During the sampling events flow measurements were taken at the proposed treatment wetland area throughout MD on September 12th and 27th, October 25th, 2019; March 13th, 2020 and June 29th, 2020. The surface method from Turnipseed and Sauer (2010) was used to measure surface velocity in the center of MD over an approximate 3.5 m (11.5 ft) and 9.1 m (30 ft) distances using a neutrally buoyant object with one to three surface velocity measurements. Surface velocity measurements for each day were averaged and converted to average velocity by using a 0.9 coefficient to translate peak surface centerline velocity to average cross-sectional velocity. The wetted width and depth of MD's canal were measured with a tape measurer, or estimated if measurements were unsafe, to estimate cross-

sectional area, and flow was calculated as average velocity times area. Recently in June 2020, flow measurements were estimated at a wooden weir structure by measuring the time it takes to fill in 5-gallon bucket with water, as well as measuring the diameter of the bucket and the length of the whole weir to find the ratio relation to multiply by to estimate for the total flow over the weir.

- **Land surface runoff**

Agricultural (Q_{AR}) catchment area was determined by delineating the runoff contributing area based on elevation from Google Earth (Google LLC, Mountain View, CA) (*Fig. 3*). The geographical area was estimated using ArcGIS 10.2 (Environmental Systems Research Institute, Redlands, CA) with values of 7,820,000 m^2. To calculate runoff generation from this land during storm events, the area was multiplied by the runoff coefficient which depends on the type of soil and slope of the area. A coefficient of 0.5 was used for agricultural land runoff into MD (k_A) which is based on values from USDA (1986) for cultivated agricultural area with clay loam soil and zero to five percent slopes. Using the SoilWeb, it was found that most of the agricultural land around the ditch follow this soil type and slope (California Soil Resource Lab, Davis, CA). While mounded banks were observed along MD, some drainage pipes from the agricultural land into the ditch were also observed (*Fig. 6*, top); therefore, all runoff was assumed to flow into MD.

- **Precipitation**

Precipitation (P) was determined from monthly rain measurements from the National Oceanic and Atmospheric Administration (NOAA) for Newman, CA from 1950 to 2018 (Station ID: GHCND:USC00046168). See *Table 3* for more information on data. If precipitation data was missing (e.g., field blank), the complete month was removed from data. NOAA data was then sorted by month. The 20^{th} percentile (dry year), 50^{th} percentile (median year), and 80^{th} percentile (wet year) was calculated using the Percentile.Inc formula in Excel for each month for the multiple scenarios (*Fig. 7*). These percentile measurements were also used to calculate water balance pertaining to catchment runoff and precipitation into wetland.

- **Evapotranspiration**

Evapotranspiration (ET) data was used to determine water loss from wetland from plant transpiration and evaporation from water surface. ET was determined from Western Regional Climate Center (WRCC) website using nearest station in Los Banos, CA (Station no. 045120). The WRCC station used average pan evaporation data for period of record from 1968 to 2005 (*Table 3*).

- **Other inflows**

Some other values were assumed to be zero for the water balance equation. First, given the Mediterranean climate of the area, it was assumed that no snow contributes with the inflow (Q_{SM}). Secondly, surrounding catchment area (Q_C) do not flow into the proposed wetland area or flow into MD if any, is captured as Q_I in the water balance calculations. Third, it is assumed that during construction of wetland, water losses through banks (Q_B) would be minimized. Thus, they were all considered zero for the purpose of the calculations.

Finally, the calculations for groundwater loss rate (Q_{GW}) resulted in a value of 14,921 m^3/d using equation 4 and infiltration rate of 12.3 cm/d from RICK (190156-001 Geo.Report, Infiltration Tests, 2019). As the resulted value was greater than the measured flows in MD (in average 533 m^3/d), this groundwater loss rate would exceed the amount of water flowing into the wetland yield no flow out (Q_o). Therefore, it was determined that Q_{GW} would need to be minimized through the design of the wetland (e.g., clay liner on the bottom). Thus, Q_{GW} was assumed to be zero for the water balance calculations. However, it is acknowledged that new infiltration rate measurements are also needed in the wetland area, as the value used is from a station near MD and might be higher than other parts of the study site.

Scenario Generation

Estimated water flow scenarios in the wetland were applied to further enhance the understanding of variation in flow through the years with normal, scarce, or ample rainfall, the seasonal patterns, and during extreme storm events. Since we have limited area for the wetland (30 ac), it becomes more important to investigate the water balance to manage the hydraulic retention time (τ) of incoming water in the wetland. Enough time of 5-10 days is optimal and needed to ensure reasonable removal of pollutants in the treatment wetland.

1. Normal year rainfall was calculated using the median values of monthly average data of rainfall and evapotranspiration, and average volumetric inflows. For the calculated balance, outflows were studied separately for winter and summer months.

2. Dry and wet years were estimated using monthly averages for each month over 68 years, which were divided into 20^{th} and 80^{th} percentiles. Twentieth percentile and lower values were considered dry years whereas, 80^{th} percentile and above were considered wet years (*Table 3*). Comparatives were drawn among the inflows and outflows for these two categories of years.

3. Storm event analysis was carried out by calculating the 50th, 95th and 99th percentile of all daily 24-hr rainy days for the Newman station and then developed a daily water balance for each percentile of precipitation.

4. RESULTS

For the proposed treatment wetland, water gains and losses were accounted. Distinct values for each month's flow in a normal year are tabulated in *Table 4* and graphically represented in *Fig. 8*. Flows from MD and agriculture land runoff are referred to as Q_{MD} and Q_{AR}, respectively. After the measurements taken on site, the flow calculated for September 12th and 27th, 2019 is of 8,571 and 8,495 m^3/d, respectively; October 25^{th,} 2019, had 457 m^3/d. Then, for March 13th, 2020, the flow estimated was 639 m^3/d, and June 29th, 2020 had the lowest flow of 369 m^3/d (T*able 2*). These flows were then averaged as high-flow irrigation season, from March to October (8,533 m^3/d), and low-flow non-irrigation season, from November to February (489 m^3/d), to calculate Q_{MD} by month in what we call a 'normal year'.

The value of Q_{MD} will be one of the major and constant contribution to the total inflow year-round except in the months with no irrigation, when water flows from CCID's Main Canal are minimal. The previous inflow is followed by agriculture flow from the surrounding areas during the months with precipitation. However, precipitation into the wetland is highly seasonal and has minimum contribution to water gains. On the other hand, evapotranspiration accounts for the only loss from the wetland as the other parameters were assumed to be negligible (*Fig. 9*). (Note that in Winter 2020 during two relatively small rain events little storm flow was observed in MD. Thus, the assumption that significant storm runoff makes it into MD may not hold. Additional monitoring in winter 2020/21 will help to answer this question.)

Normal Year

The total inflow calculated for a normal year is on average 245,764 m^3/month and the outflow is 220,127 m^3/month (T*able 4*). As expected, the minimum values were observed in February and November, as there is almost no influence of Q_{MD} because it is the time of the year with no irrigation. Besides, there is also low flow from the agricultural land runoff. On the other hand, the peak values are seen in March and April due to agricultural runoff; however, the major contribution is the flow in MD (as shown in *Fig. 8 and 9)* as the irrigation season starts. Nevertheless, due to the variability in MD flow during the year, there is not a clear pattern shown in the graphs. It seems to have higher flow at the beginning and at the end of the irrigation

season and medium flow during summer months, having the lower flow when the irrigation is over, according to the measurements and observations taken in the field.

Moreover, *Fig. 8* shows that almost all year the difference between inflow and outflow is minimum, except during the warmer months when the outflow is smaller as the evapotranspiration increases (*Fig. 9*). Another interesting factor is that during December to February there is slightly higher outflow than inflow as the value of precipitation is bigger than evapotranspiration *(Fig. 8 and 9*). Finally, hydraulic retention time (τ) (*Table 5*) ranged between 5 to 16 days having an average of 9 days, which is inside the optimal time range that will allow good removal of pollutants in the wetland.

Note if the wetland were 10 acres rather than the assumed 30 acres, the hydraulic retention time would decrease by around a third and range from around 1 to 5 days, which is not long enough to get meaningful pollutant removal. However, if the flows to the wetland from MD are lower than assumed for this modeling effort, a smaller wetland could still provide enough residence time to get suitable treatment. Continued monitoring is needed to answer these questions.

Seasonal Time

The seasonal flow was studied for hot and dry summers and wet and cold winter months. Typically, summer months have an average outflow of 235,428 m^3/month, which is higher than the average of 198,706 m^3/month during the winter months, and a hydraulic residence time of 7 and 11 days, respectively. A major contributing factor for this seasonality is the evapotranspiration value. The effect of evapotranspiration on outflow is noticeably higher in the warmer summer months, from May to September, with the lowest outflow value in June (*Fig. 10)*. Since, the inflows are not governed exclusively by natural phenomenon of precipitation and evapotranspiration, there is not a typical seasonal pattern. In the winter months two peaks in outflow are seen: one in January, when the agricultural land runoff is the major contributor due to some precipitation, and the second in March, when the irrigation season begins (*Fig. 9 and 10)*.

Dry and wet years

The monthly precipitation percentile outflow values were compared for dry, normal, and wet years. For the dry year, with 20^{th} percentile of precipitation, the outflow is 172,094 m^3/month, and for the wet year (80^{th} percentile), the outflow is 305,040 m^3/month (*Table 3* and *Fig. 11);* hydraulic residence time is 17 and 6 days, respectively, which is slightly low for the wet year, but still in the optimal range. The peak outflows were in March, as high as 274,370 and 303,789 m^3/month in wet years

and dry year, respectively; and as low as 210,838 m^3/month during June for the wet year, and 30,775 m^3/month for November during dry years. During summer months, June to August, the values were similar, around 210,220 m^3/month, for the three compared years, dry-normal-wet year, due to the fact that precipitation is not a factor that has a huge influence in the inflow for the proposed wetland (*Fig. 8*).

Normal and extreme storm events

Daily 24-hr precipitation values in winter months for 50^{th} (normal), 95^{th} (extreme), and 99^{th} (very extreme) percentiles are 0.0035 m, 0.02 m, and 0.035 m. Assuming normal year average flow in MD (Q_{MD}), non-irrigation conditions (Q_{AR}) and the previous precipitation values, the events lead to a modeled wetland outflow of 13,041 m^3/d for a normal storm event; 82,672 for m^3/d for an extreme, and 142,062 m^3/d for a very extreme event (*Fig.12)*. This corresponds to the hydraulic residence time of 4, 1, and 0.5 days, respectively, which are a low number of days to ensure good removal of pollutants. However, these events are not as frequent in Central Valley, climate change is contributing to its increment though. In summary, the extreme 24-hour event presents a 534% higher amount of water in the outflow than the normal event and a very extreme event around 989% higher. These values are important when planning the size of the treatment wetland to avoid flooding.

5. CONCLUSIONS

- A goal of this constructed treatment wetland is to provide cleaner water for the City, so identifying the types of water sources and the amount of water that will contribute to the wetland is of utmost importance. These efforts have identified two main sources of water to the proposed treatment wetland, water from Main Canal flowing in MD (Q_{MD}), and stormwater runoff from surrounding agricultural area around MD (Q_{CA}) (*Table 4).*
- It was determined that Q_{GW} would need to be minimized through the design of the wetland with a clay liner on the bottom, as the potential infiltration based on infiltration rates measured in the field is higher than typical inflow from MD. However, it is acknowledged that new infiltration rate measurements are also needed in the wetland area because the value used is from a station near MD and might be higher than infiltration rate across the study site.
- There is a variability in the amount of water in MD that depends on the necessities of CCID users. Due to this variability, there is no a clear seasonal patterns of inflows and outflows. However, calculations show that the wetland would have: (1) higher flow at the beginning and end of the irrigation season (March-April and October) due to high irrigation flows; (2) medium flow during summer months due to high irrigation flows but also high evapotranspiration;

and (3) lowest flows (February and November) when the irrigation time is over and there is slow seepage, according to the measurements and observations taken on the field.

- When the irrigation season is over, the major contributor to the inflow is the agriculture storm runoff as the climate in the region allows precipitation during those months and it is a factor that influence this parameter. Moreover, a major contributing factor for the seasonality is evapotranspiration, being higher during summertime when wetland outflow is relatively low.

- Precipitation directly to the wetland is not a factor that has a huge influence in the inflow for the proposed wetland (*Fig. 9*). However, during the wet year scenario, the outflow is double the amount of outflow during a dry year. Moreover, in a normal year, the outflow is affected during the winter months being slightly higher than the inflow. On the other hand, during the summer months, there is a noticeable difference between the inflow and outflow due to the evapotranspiration which is higher, and the precipitation which is absent.

- The outflow values in the different storm events scenarios showed low residence time, in the range of 0.5 to 4 days, which is not beneficial for good pollutant removal, even with the 30-acres modeled wetland (see pending Memorandum 4). The wetland should have more than 5-day retention time for a high removal. Thus, a smaller wetland might not have water retention time for any pollutant removal during extreme storm events.

- Recent field observations call into question some assumptions and calculations made in this report. First, in Winter 2020 during two relatively small rain events little storm flow was observed in MD. Thus, the assumption that significant storm runoff makes it into MD may not hold. In addition, recent 2020 summer flows were far below the assumed 8,500 m^3/d observed late in the irrigation season in 2019. Thus, there may be less water in MD available to low into the wetland during the summer. We will continue with monthly monitoring of the site to help elucidate these unknows. The City may want to consider installing a flow meter on MD to collect more data.

6. REFERENCES

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7. FIGURES

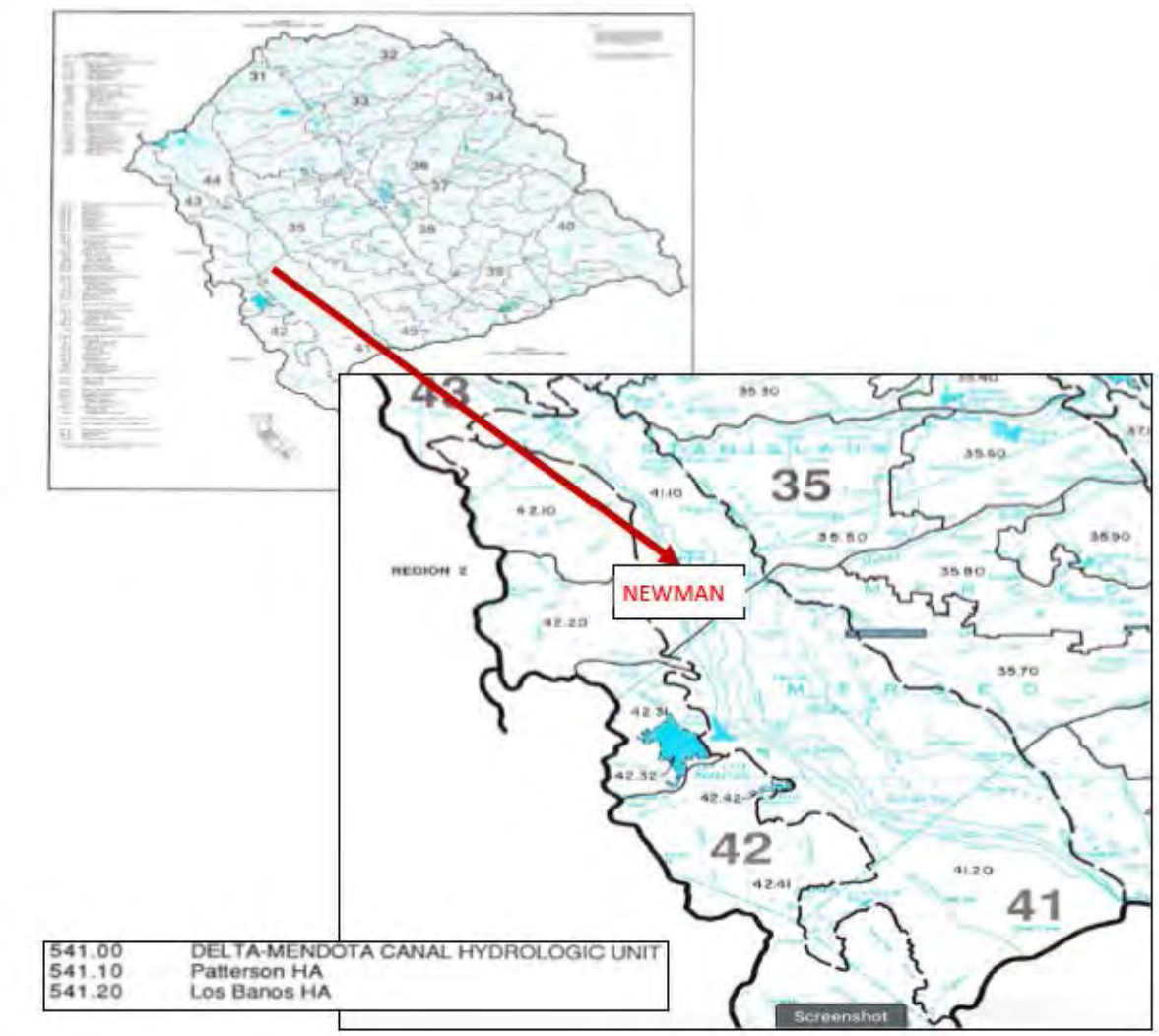

Fig. 1 - San Joaquin Hydrologic Basin Planning Area (top left). Newman is part of Patterson and Los Banos hydrological area subunits in Delta-Mendota Canal Hydrologic Unit, San Joaquin basin (bottom right).

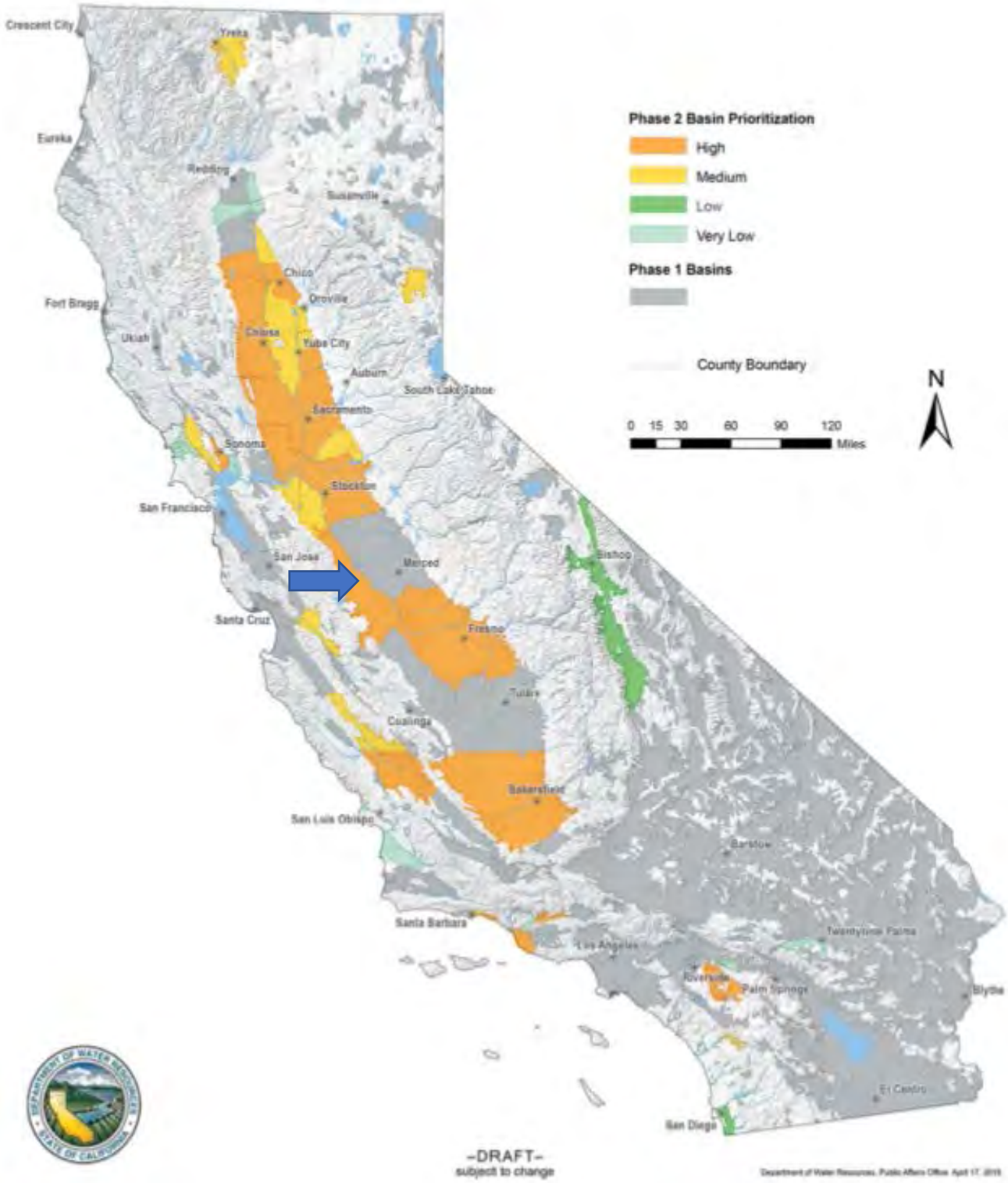

Fig. 2 - Statewide Map of SGMA 2019 Basin Prioritization Results, phase 2 Draft. Project area shown by arrow.

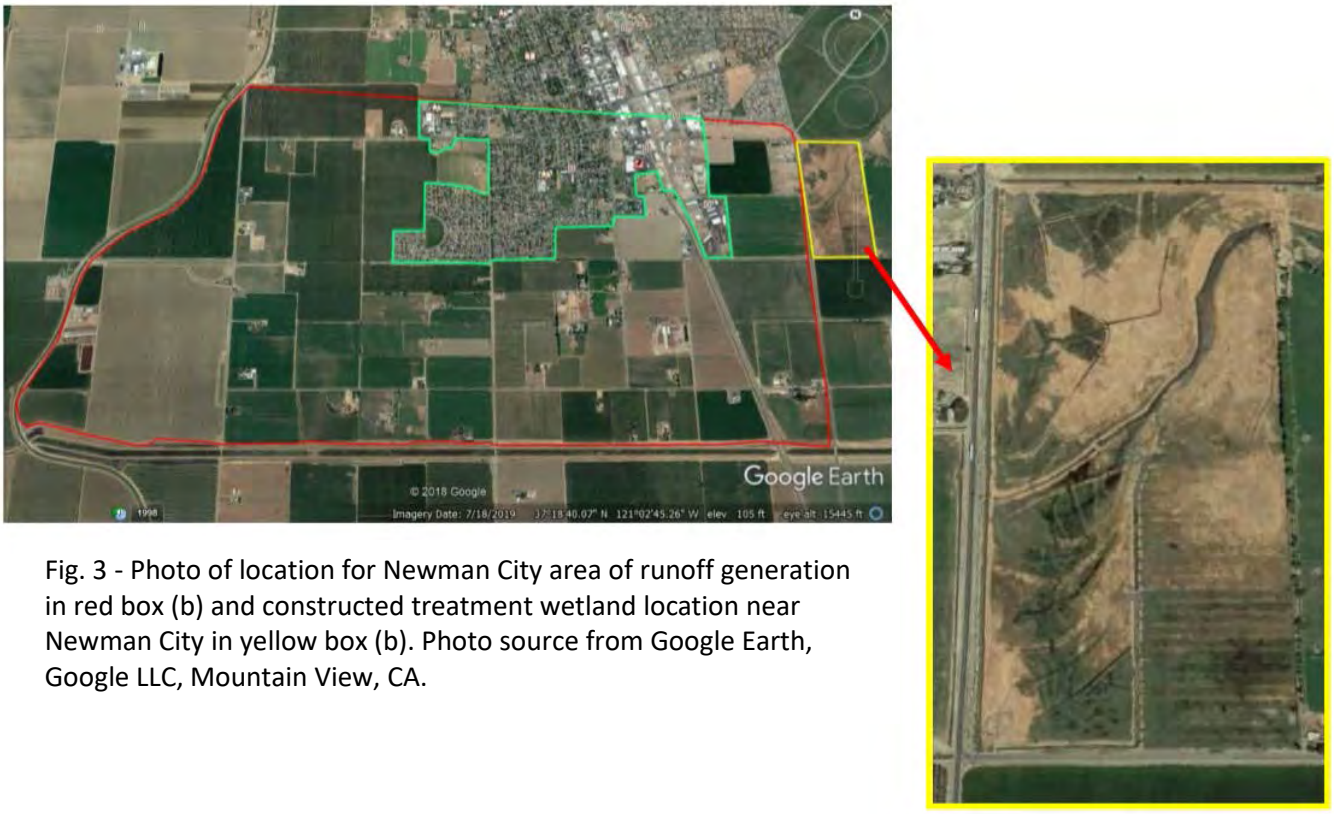

Fig. 3 - Photo of location for Newman City area of runoff generation in red box (b) and constructed treatment wetland location near Newman City in yellow box (b). Photo source from Google Earth, Google LLC, Mountain View, CA.

Fig. 4 - Image of potential layout of final constructed treatment wetland in shape of dragonfly and beetle (bottom left through center), stormwater capture area in shape of butterfly (top left), and recreational area (bottom right). Image source from Redtail Consulting Environment and Community.

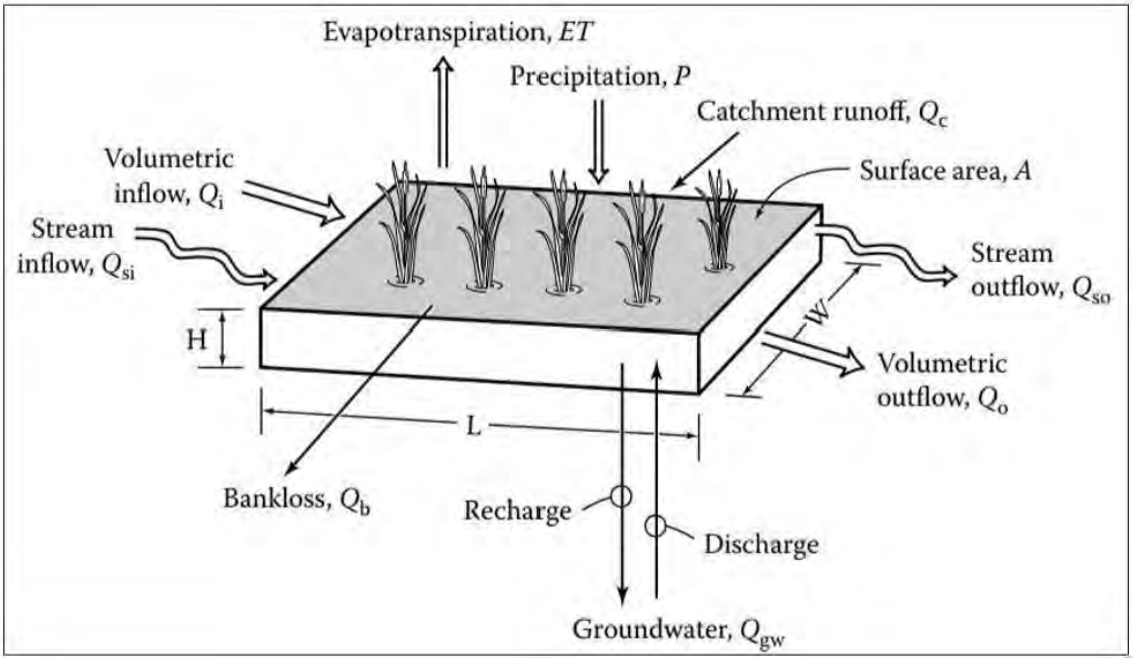

Fig. 5 - Conceptual model of the water losses and gains for calculating water budgets in wetlands (Kadlec and Wallace, 2008).

Fig. 6 - Photos of Miller Ditch and Main Canal on October 25th, 2019. Photos include area between constructed treatment wetland area and Main Canal with mounded banks along ditch with drainpipe (top) and at junction point of Main Canal and Miller Ditch (bottom) with assumed control weir (bottom right) that control flows.

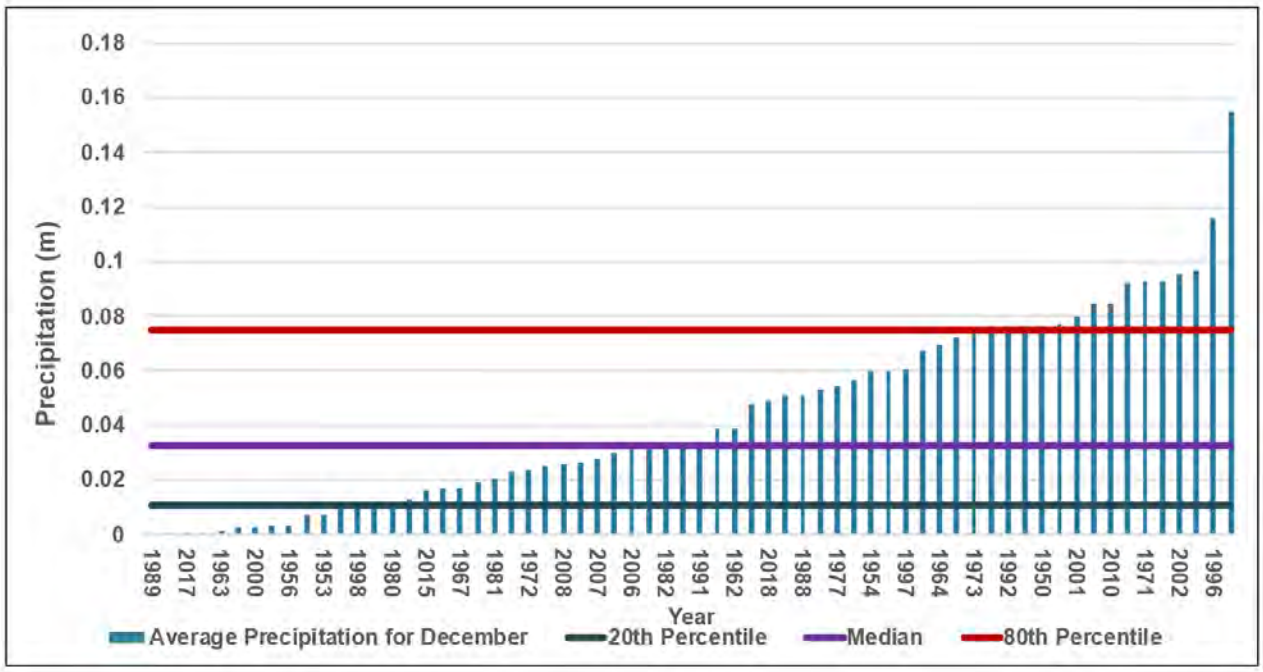

Fig. 7 – Example graph of precipitation in December from 1950 through 2018 (excluding missing data) from NOAA at Newman, CA. Calculated 20th, 50th (i.e., median), and 80th percentiles shown.

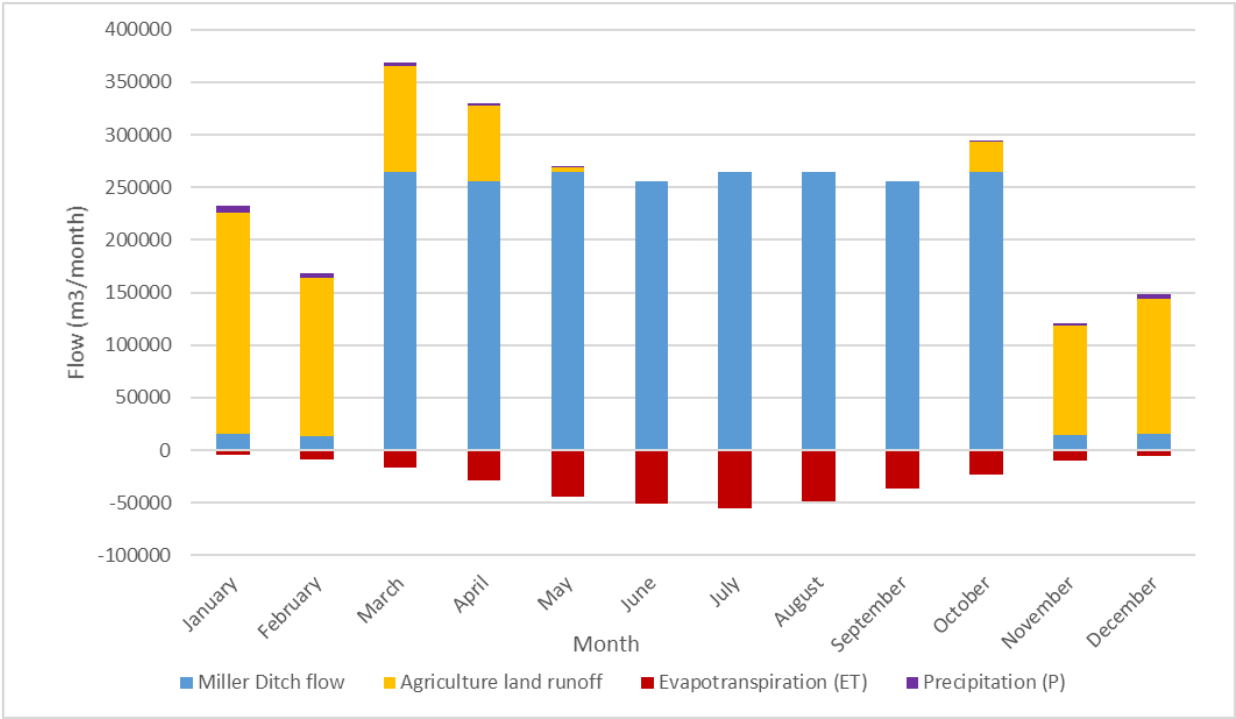

Fig. 8 – Monthly gains and losses in 30-acre treatment wetland.

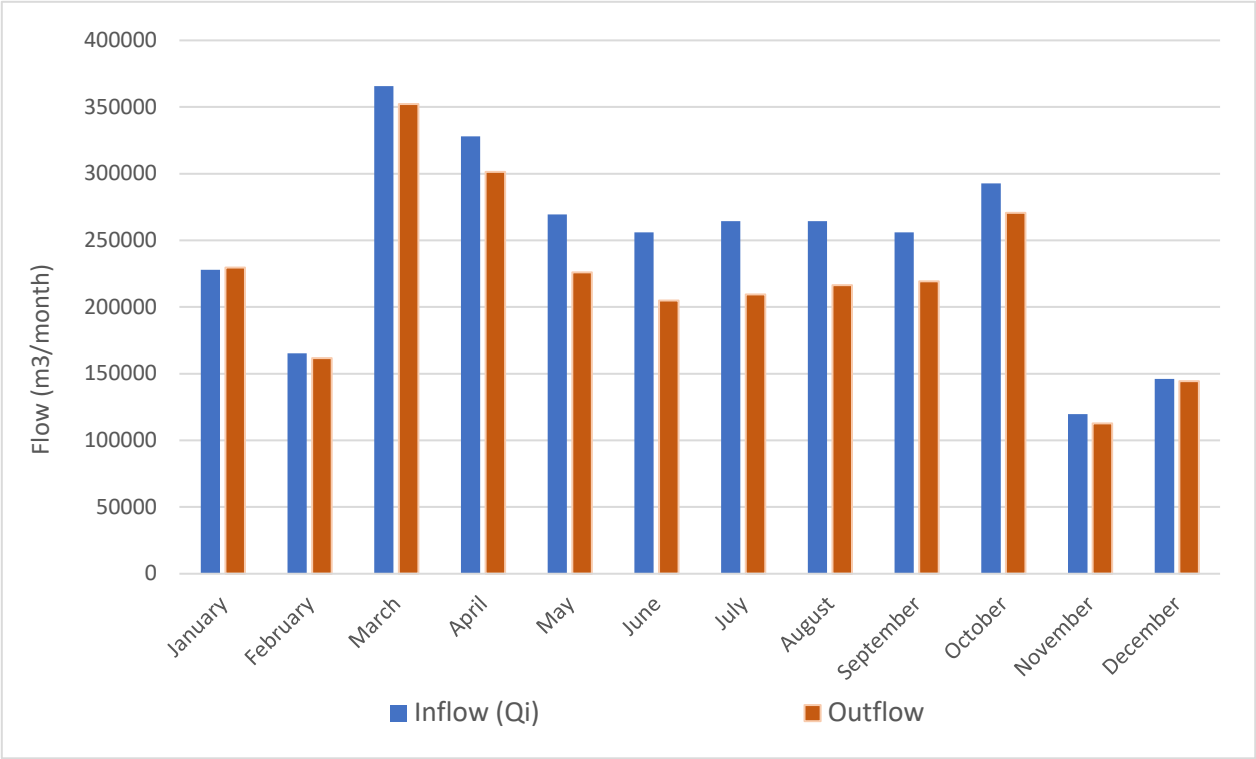

Fig. 9 – Monthly total inflow and outflow in normal year.

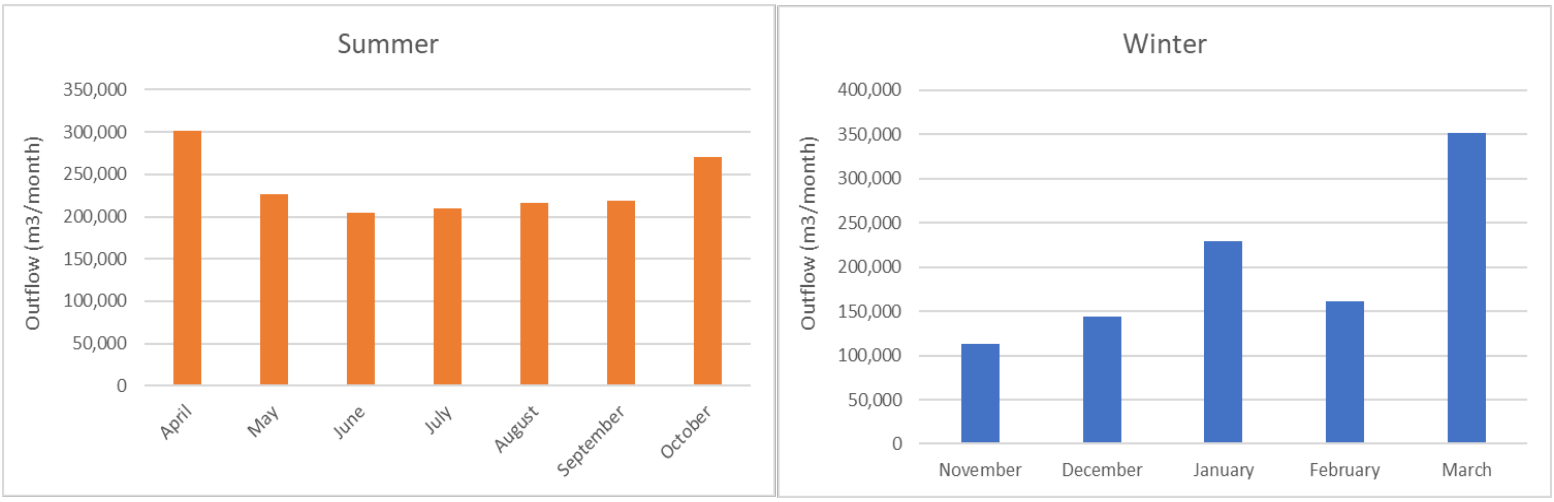

Fig.10 – Summer vs. winter outflows comparison in a normal year.

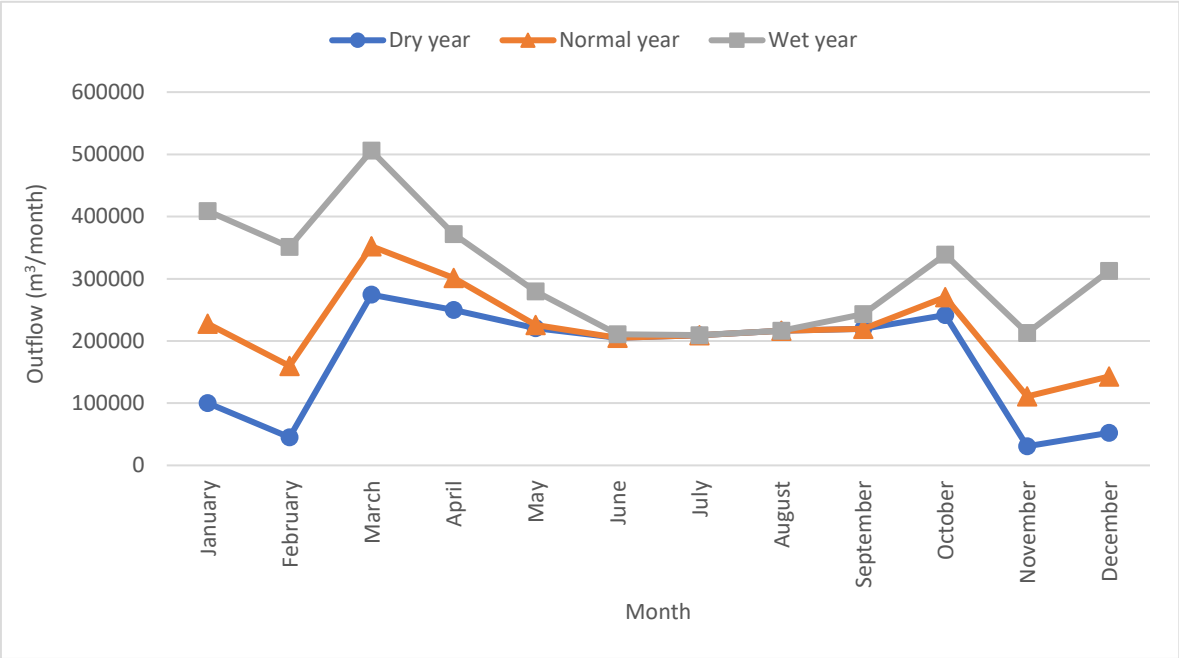

Fig.11 – Wet, Normal and Dry year outflow for proposed wetland in Newman City.

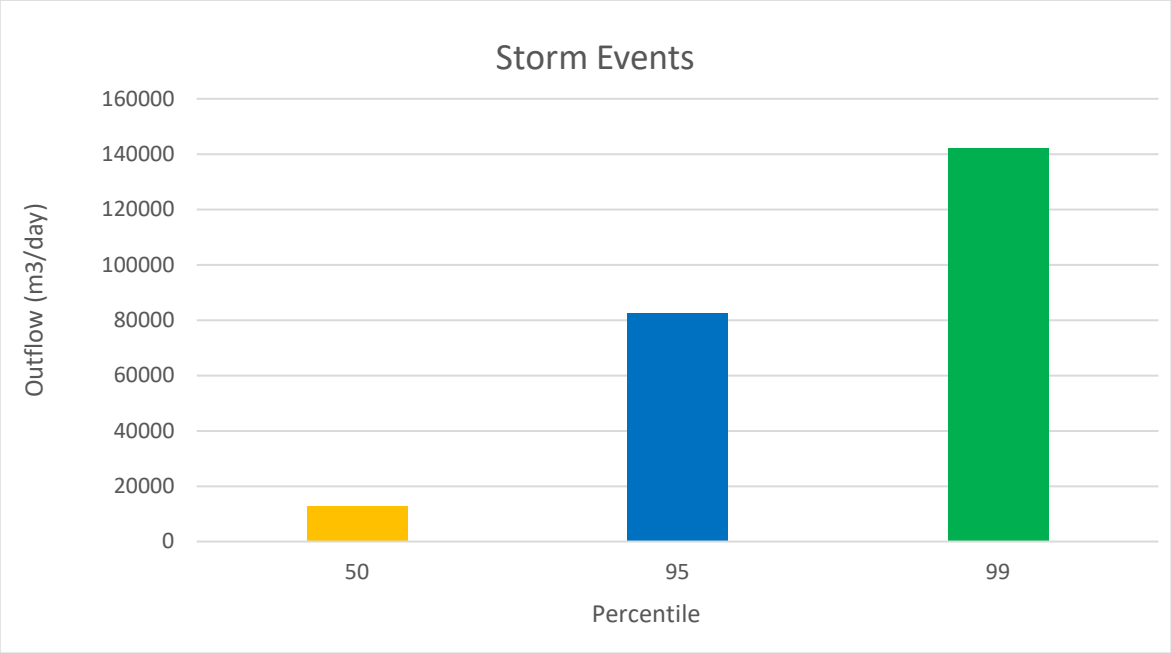

Fig. 12 – Outflows associated with 24-hour storm events: normal (median -50th percentile- storm), extreme (95th percentile), and very extreme (99th percentile) at the proposed wetland in Newman City.

8. TABLES

Basin Number	Basin/Sub-basin Name	Area (ac)	Area (mi^2)	Priority
5-022.07	Delta-Mendota	764,964.86	1,195.26	High

Table 1. Statewide SGMA 2019 Basin Prioritization Results, Phase 2 Draft information for the basin with Newman, CA.

STATION MD1A					
	09/12/19	**09/27/19**	**10/25/19**	**03/13/20**	**06/29/20**
Distance (m)	3.5	9.14	0.3	2.13	
Area (m^2)	0.45	0.88	0.03	0.19	
Volume (m^3)					0.019
Time (s)	14.4	74	60	140	20
Velocity average (m/s)	0.22	0.11	0.17	0.04	
Ratio (weir and bucket diameter)					5
Flow rate (m^3/day)	8,571	8,495	457	639	406
Average flow rate (m3/day)	**3714**				

Table 2. Table of velocity, canal dimension measurements, and flow rate calculations in Miller Ditch. A coefficient of 0.9 was used to convert measured velocity to average velocity.

Month	Precipitation 20% (m/month)	Precipitation Normal year (m/month)	Precipitation 80% (m/month)	Evapotranspiration (m/month)
January	0.022	0.054	0.099	0.040
February	0.010	0.038	0.086	0.069
March	0.007	0.026	0.064	0.138
April	0.006	0.018	0.036	0.237
May	0	0.001	0.015	0.360
June	0	0	0.001	0.421
July	0	0	0	0.453
August	0	0	0	0.397
September	0	0	0.006	0.301
October	0	0.007	0.024	0.190
November	0.007	0.026	0.052	0.085
December	0.011	0.033	0.075	0.046
Average	0.005	0.017	0.038	0.228

Table 3. 20th, 50th (i.e., median), and 80th percentile calculations of monthly rainfall from NOAA station at Newman, CA from 1950 to 2018 used for the water balance analysis. Note evapotranspiration was assumed to be the same in all years.

Month	Miller Ditch flow (Q_{MD}) (m3/month)	Agriculture land runoff (Q_{AR}) (m3/month)	Total inflow (Q_i) (m3/month)	Precipitation into wetland (P) (m3/month)	Evapotranspiration from wetland (ET) (m3/month)	Outflow (Qo) (m3/month)
January	15,144	211,042	226,186	6,553	4,841	227,898
February	13,679	149,964	163,643	4,656	8,357	159,942
March	264,522	101,300	365,822	3,145	16,775	352,192
April	255,989	72,003	327,991	2,236	28,802	301,425
May	264,522	4,966	269,487	154	43,727	225,915
June	255,989	0	255,989	0	51,128	204,861
July	264,522	0	264,522	0	55,044	209,477
August	264,522	0	264,522	0	48,198	216,323
September	255,989	0	255,989	0	36,604	219,385
October	264,522	28,304	292,826	879	23,097	270,608
November	14,656	103,287	117,942	3,207	10,300	110,850
December	15,144	129,108	144,252	4,009	5,612	142,649
Annual average	**179,100**	**66,665**	**245,764**	**2,070**	**27,707**	**220,127**

Table 4. Calculated water balance variables for the normal year scenario, using 50th percentile (i.e., median) values for precipitation, for proposed treatment wetland near Newman, CA.

Month	Hydraulic retention time (τ) normal year (day)
January	8
February	11
March	5
April	6
May	8
June	8
July	8
August	8
September	8
October	7
November	16
December	13
Annual average	**9**

Table 5. Hydraulic retention time (τ) using 50th percentile (i.e., median) values for precipitation for proposed treatment wetland near Newman, CA.

UNIVERSITY OF CALIFORNIA

MERCED

NEWMAN CONSTRUCTED TREATMENT WETLAND

WATER QUALITY REPORT

(Memorandum 3)

June 2020

DRAFT

Prepared by

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NEWMAN CONSTRUCTED TREATMENT WETLAND

WATER QUALITY REPORT

1. SUMMARY

This report (Memorandum 3) covers the water quality information from Miller Ditch (MD) in Newman City related to the potential future construction of a treatment wetland in the southwest corner of the study site to treat MD flow (Fig. 1). This wetland is complementary but different from the Newman Environmental Wetland System (NEWS) being implemented in the northwest of the study site to treat urban runoff and agricultural drainage from north of the City. The investigation consists of two assessments, the sampling events done at the study site in MD since September 2019 and the general water chemistry of the area represented by Newman Wasteway nearby and downstream of the MD discharge. The report includes a comparison between these two water quality data sources. The data assessed in this report represent a background concentration of pollutants and incoming water quality to any future treatment wetland. These data will be used in our treatment report (Memorandum 4) to model expected pollutant removal and salinity concentrations of a full-scale construction and operation of the wetland to treat MD flow. Data can also be used to inform the NEWS project.

The sampling events at MD started in September to October 2019 (dry weather) and continued in March to April 2020 (wet weather), where only two small rain events occurred. Water samples were measured for nutrients including ammonia, nitrate, total phosphorus (TP) and dissolved phosphate (PO4); for sediment in the water via total suspended solids (TSS); and for salinity in the water via electrical conductivity (EC). Flow in MD was also roughly estimated by visual inspection. The results showed low concentrations of nutrients and salinity in September 2019 when MD flow was high (TP ~0.35 mg-P/L, PO4 ~0.2 mg-P/L, nitrate ~1.7 mg-N/L, EC~340 µS/cm), likely a result of flow-through of relatively high quality imported irrigation water. High concentrations of nitrate and EC, but lower concentrations of P, were observed in October 2019 when MD flow was low (TP ~0.1 mg-P/L, PO4 ~0.1 mg-P/L, nitrate ~8.4 mg-N/L, EC~1300 µS/cm). The high salinity and nitrate suggest that MD was dominated by shallow groundwater inputs in October after irrigation flows were turned off for the season.

During low-flow dry weather sampling in March 2020, nutrient and conductivity levels in MD were low and ammonia was detectable at low levels (TP ~0.1 mg-P/L, PO4 ~0.04 mg-P/L, nitrate ~2.0 mg-N/L, ammonia ~0.1 mg-N/L, EC~ 800 µS/cm). During low-flow wet conditions in March 2020 at station MD2A associated with stormwater from the City coming into MD, all the compounds presented low concentrations, except for TSS and ammonia, likely resulting from decay of organic matter (OM) in City runoff (TP ~0.4 mg-P/L, PO4 ~0.2 mg-P/L, nitrate ~0.6 mg-N/L, ammonia ~0.7 mg-N/L, EC ~200 µS/cm, TSS

~200 mg/L). Wet weather did not yield high flows in MD, suggesting it does not capture substantial stormwater.

Monitoring suggests three regimes of water quality and flow in MD. First, during the summer irrigation season (e.g., September 2019 sampling event), flow is relatively high in MD and is dominated by unused imported water low in salinity and nitrate. Second, during the dry fall after irrigation flows are discontinued (e.g., October 2019 sampling event) flow in MD is low and dominated by shallow groundwater inputs high in salinity and nitrate, but low in phosphorus. Third, during the winter MD flows are low to moderate and salinity is somewhat elevated suggesting a mixture of shallow groundwater and modest fresher rainfall-related inputs. Further monitoring is needed to assess this proposed flow/water quality conceptual model, which of course would be impacted by annual variability in weather conditions (e.g., wet year vs dry year).

The comparison between MD water quality data and Newman Wasteway data collected by the Westside San Joaquin Watershed Coalition showed that the two sties had similar water quality. Water quality in Newman Wasteway was typically: TP ~0.3 mg-P/L, PO4 ~0.1 mg-P/L, nitrate ~1.0 mg-N/L, and ammonia ~0.3 mg-N/L. TSS measured at MD (~80 mg/L) was generally higher than levels measured in the Newman Wasteway (~50 mg/L). Finally, a range of pesticides were measure in a sampled collected as part of this study in MD in September 2019, and it was found no detectable pesticides.

2. INTRODUCTION

Newman City is a small agricultural community with a population of approximately 11,000 people (US Census Bureau, 2019) located in Stanislaus County, on the west side of California's Central Valley, one of the most productive agricultural regions in the world. In this area, increasing population and agricultural activity is projected to strain scarce water resources; thus, water reuse and recycling is highly important for the region.

The City recently purchased around 100 acres of land to its southeast with the vision of developing a treatment wetland system. The system would treat urban stormwater and agricultural runoff, while providing public recreational and educational opportunities related to wetland ecology and sustainable water management. In addition, the City might ultimately be able to harvest the relatively low-salinity water to dilute high-salinity treated wastewater used to irrigate crops and recharge groundwater. The City is now developing an application to the State of California to implement the Newman Environmental Wetlands System (NEWS). The 21-acre system would capture and treat stormwater runoff from the City as well as agricultural runoff from north of the City (*Fig. 1).* The City is also working with the State to develop around 10 acres of restored native habitat in the central-east section of the study site. In addition, an educational community area would be developed in the south-east section of the area (*Fig. 1*).

This study focuses on a third potential treatment wetland. This treatment wetland would be constructed on the southwest corner of the study site, adjacent to Canal School Rd and Baraza Rd (*Fig. 1*). The size of the treatment wetland is not yet formally determined and could range in size from around 20-40 acres. The wetland would treat receiving water from the south section of MD which includes water delivery flow-through, agricultural runoff and precipitation-related agricultural stormwater. As noted above, this low-salinity water could ultimately be used to dilute treated wastewater used for land application and groundwater recharge. The water delivered by MD is imported via state and federally managed canals from the Sacramento-San Joaquin Delta to irrigate agricultural crops. Water imported to the region also brings a large quantity of salt into the San Joaquin Valley. A lack of export can concentrate salinity in the Central Valley's surface and groundwater. In addition, intensive agriculture in the region has led to high nitrate levels in surface and groundwater, in some cases exceeding the maximum contamination level for drinking water (10 mg-N/L) regulated for the California Regional Water Quality Control Board (*2018*). Farmers and agricultural operations are also concerned with salt concentrations in the water because high salt concentrations retard plant growth.

The aim of this report is to present water quality information from MD, the source water for the southeast treatment wetland that will potentially be built by Newman City. Moreover, we present a comparison between the water quality measured in MD and available recent information from Newman Wasteway, a nearby drainage canal. Water quality samples have been collected in the prospected wetland in different locations along MD since September 2019 for nutrients, salinity, and pesticides. This information will be used in our treatment report (Memorandum 4) to model the effectiveness of pollutant removal of nutrients in the treatment wetland.

3. METHODS

To have a background water quality dataset of the incoming concentrations of compounds of interest to any future treatment wetland, water samples were taken starting in September 2019. Samples were analyzed at UC Merced's Environmental Analytical Laboratory (EAL) for ammonia, nitrate, total phosphorus (TP), dissolved phosphate (PO4), and total suspended solids (TSS) for sampling events 1-3 using the standard methods outlined in *Table 1*. Due to the "covid" situation and the shutdown of EAL, samples for events 4-6 were sent to a professional lab, Caltest Analytical Laboratory, and methods are outlined in the lab's analytical report included in Appendix A. Conductivity was also measured in all samples for events 1-6 using a calibrated HACH meter and conductivity probe. Water samples have not yet been analyzed for event 7, but we did start monitoring for an expanded set of field water quality parameters during event 7 (dissolved oxygen, conductivity, temperature, and pH) using calibrated HACH meter and probes (*Fig. 3d;* see *Table 4* in Results and Discussion).

Samples were collected in 500 ml plastic bottles cleaned with weak hydrochloric acid. The dissolved nutrient samples (ammonia, nitrate, phosphate) were 0.45 µm filtered and frozen. TP samples were frozen unfiltered. TSS was measured on fresh samples by filtering a known volume through a glass fiber filter and measuring weight of filter before and after solids collection (after air drying for one day). Finally, a pesticide sample collected on September 27, 2019 in MD was sent to the Environmental Micro Analysis Inc. laboratory for assessment of pyrethroid, organophosphates and organochlorines. Methods and results are included in the lab's report in Appendix B.

ANALYSIS	PRESERVATION METHOD	ANALYTICAL METHOD	METHOD DETECTION LIMIT
Ammonia	0.45 µm filtered and frozen	Phenate colorimetric	20 µg-N/L
Nitrate	0.45 µm filtered and frozen	NED dihydrochloride colorimetric	50 µg-N/L
Dissolved Phosphate	0.45 µm filtered and frozen	Ascorbic acid colorimetric	20 µg-P/L
Total Phosphorus	Frozen	Persulfate digestion; Ascorbic acid colorimetric	20 µg-P/L

Table 1. Methods used for the measurement of nutrients in Miller Ditch, Newman City, California

Monitoring events summary

Monitoring stations on MD are tabulated below in *Table 2* and are shown in *Fig. 2.* Sites with the MD1 designation include stations upstream of the City stormwater pump. This station pumps City stormwater and agricultural drainage from north of the city to MD at the northwest corner of the study area. On the other hand, stations with the MD2 designation are located downstream of the same pump.

Sample site	Description
MD1A	Miller Ditch at southwest corner of site upstream of stormwater pump station input
MD1B	Miller Ditch at northwest corner of site upstream of stormwater pump station input
MD2A	Stormwater pump station input to Miller Ditch
MD2B	Miller Ditch downstream of stormwater input

Table 2. Description of the sampling points shown in Fig. 1 and Table 5

To date a total of seven monitoring events have been performed and are summarized below *(Table 3)*:

DATE	STATION	NOTES
09/12/19	**MD1A**	High sediment in the water in MD1A (TSS)
	MD2B	
09/27/19	**MD1A**	High flow measurement estimate
	MD2B	
10/25/19	**MD1A**	
	MD2A	High salinity and nitrate and TSS
03/13/20	**MD1B**	Low flow measurements estimate
	MD2B	
03/16/20	**MD1B**	Some rain. Pump station was discharging every ~15 minutes
	MD2A*	
04/06/20	**MD1B**	Some rain. pump station was discharging every ~5 minutes. Water appear to have more sediment than usual
	MD2A	
	MD2A*	
5/29/20	**MD1A**	Emergent vegetation and algae in MD. The water looked clear (clean). Flow from pump station 5 min after we arrived, but did not turn on again
	MD2A	
	MD2B	

Table 3. Summary of the sampling events at Miller Ditch, Newman City, CA

- Events 1 & 2: September 12th and 27th, 2019

Samples were collected in stations MD1A and MD2B. These monitoring events were for reconnaissance purposes and to start developing some sample stations. No rain events occurred near that time; however, high flow was seen in MD (*Fig. 4a and 5a)*. The water velocity was estimated using a small floating object and measuring the distance and time traveled *(Fig. 3c*). For the flow estimation, the velocity was multiplied by the area of water occupied in the canal. When filtering the water, in September 12th, the color of the filters had an intense brown showing elevated concentration of suspended solids (TSS) in the water for MD1A compared to MD2B (*Fig. 3b, Table 5*). Samples had relatively low salinity measured as conductivity.

- Event 3: October 25th, 2019

On the contrary to the previous events, the flow estimated in MD resulted in a low flow value which velocity was measured with a velocity sensor *(Fig. 4b).* In this case, the samples were collected in the stations MD1A and MD2A. Samples had high nitrate and salinity values, which differs from the previous measurements, and MD2A had high TSS concentration (*Table 5*).

- Event 4: March 13th, 2020

For this event, samples were collected under dry weather before a small storm arrived to assess winter pre-storm conditions. Samples were collected at stations MD1B and MD2B where the flow was low as seen in the previous sampling date (*Fig. 4c*). The velocity was measured with a small floating bottle filled with water and multiplied by the area where the water passes through the Ditch for the flow estimation (*Fig. 3b and Table 5)*.

- Event 5: March 16th, 2020

The samples were collected at stations MD1B and MD2A*. The date is close to the previous sample event because some rain occurred around this period. Even though, the flow was still low in MD upstream of pump station. This time, the activity of the pump station was noticeable every 15 minutes showing gray outcoming water with some septic odor (*Fig. 3c and Table 5)*. Note that MD2A* is designated as a sample collected near MD2A station where the pump station discharge is mixed, but technically not a sample of pumped water in pipe discharge.

- Event 6: April 06th, 2020

Some rain was seen around this period, but the flow in Miller Ditch was still low (*Fig. 4d).* The samples were collected from stations MD1B, MD2A and MD2A* and appeared to have more sediment in it upon filtering (*Fig. 3b*) compared to the previous samples collected. The pump station was discharging more often, every 5 minutes, presenting a septic odor and gray color (*Table 5)*.

- Event 7: May 29th, 2020

Little rain was seen during the month of May, and low flow conditions allowed the formation of a submerged wetland conditions to develop in MD at station MD1B. The water at MD1B was clear and clean and, on the surface, green algae was seen, as well as emergent vegetation. Due to this dense vegetation, flow was not able to be measured. Moreover, a water sample was taken at station MD2A before the pump station shut down and never went on again during our time sampling (~30 minutes). This pumped water presumably was irrigation runoff from area north of the City. Samples and field measurements were also taken at stations MD1A and MD1B (*Table 4 and 5)*. Note water quality analyses have not yet been performed for this monitoring event.

4. RESULTS AND DISCUSSION

MD1A	MD1B	MD2B
pH: 7.21	**pH:** 6.99	**pH:** 7.66
T: 24.8°C	**T:** 24.6°C	**T:** 24°C
Conductivity: 714 µS/cm	**Conductivity:** 856 µS/cm	**Conductivity:** 1648 µS/cm
DO: 5.3 mg/L (64.5% sat)	**DO:** 3.27 mg/L (54.3% sat)	**DO:** 7.6 mg/L (90.7% sat)

Table 4. Field water quality data during May 29th, 2020

Nitrate

The excessive use of nitrogen fertilizer in agriculture in the Central Valley has led to groundwater infiltration and contamination with nitrate; consequently, 250,000 people in the region are at risk of hazardous exposure to nitrates, and 80% of the population is projected to be impacted by nitrates by 2050, given current regulatory trends and fertilizer application rates *(Harter et al., 2012).* The most vulnerable communities are agriculture-

WATER QUALITY								
	09/12/19	**09/27/19**	**10/25/19**	**03/13/20**	**03/16/20**	**04/06/20**		**05/29/20**
Flow at MD1B	high	high	low	low	low	low		medium-low
Dry vs Wet	dry	dry	dry	dry	wet	wet		dry
MD1A								
Total P (mg-P/L)	0.46	0.25	0.06					
PO4 (mg-P/L)	0.22	0.17	0.03					
NH3 (mg-N/L)	0	0	0					
NO3 (mg-N/L)	3.25	0.64	8.35					
Conductivity (µS/cm)	313	447	1239					714
TSS (mg/L)	105	69	87					
MD1B								
Total P (mg-P/L)				0.07	0.10	0.41		
PO4 (mg-P/L)				0.02	0.03	0.28		
NH3 (mg-N/L)				0.04	0.03	0.19		
NO3 (mg-N/L)				1.7	0.28	0.57		
Conductivity (µS/cm)				762	657	783		856
TSS (mg/L)				18	13	27		
			MD2A		**MD2A***	**MD2A**	**MD2A***	
Total P (mg-P/L)			0.17		0.27	0.41	0.54	
PO4 (mg-P/L)			0.14		0.17	0.15	0.13	
NH3 (mg-N/L)			0		0.43	0.69	0.62	
NO3 (mg-N/L)			0.95		1.0	0.56	1.6	
Conductivity (µS/cm)			1323		145	178	190	
TSS (mg/L)			218		38	143	241	
MD2B								
Total P (mg-P/L)	0.36	0.34		0.11				
PO4 (mg-P/L)	0.25	0.21		0.053				
NH3 (mg-N/L)	0	0		0.22				
NO3 (mg-N/L)	1.85	1.03		2.5				
Conductivity (µS/cm)	319	267		860				1648
TSS (mg/L)	31	48		12				

Table 5. Summary of MD water chemistry in Newman City, CA

dependent, low-income townships that relay on groundwater for potable use, such as the City of Newman.

The concentrations of nitrate found in MD at station MD1A ranged from 0.64 to 3.25 mg-N/L during high-flow conditions. However, nitrate from October 25th presented the highest concentration during low flow of 8.35 mg-N/L, probably attributed to groundwater infiltration into MD during times of low flow after the active fertilization agricultural season. Sites MD1B and MD2A presented almost no variations, with nitrate concentrations of around 0.3 to 1.6 mg-N/L, during the multiple days of sampling with low flow wet conditions (*Table 5*). In the same way, low-flow dry conditions present nitrate concentration between 1.5 and 2.5 mg-N/L (at MD1B and MD2B). Nevertheless, waters with nitrate concentrations less than 10 mg-N/L are generally acceptable for human consumption and groundwater use (*Kadlec and Wallace, 2009*), thus nitrate level in MD water are not extreme. However, removal of nitrate in a treatment wetland will ultimately benefit the regional environment by lowering the potential for nitrate to stimulate eutrophication in surface waters and to contaminate groundwater.

Treatment wetlands can generate anoxic conditions where anaerobic denitrifying microbes can transform nitrate into harmless gaseous N_2, a process called denitrification. These reduced conditions can be enhanced by restricting aeration into the water and sediment, which can be accomplished by increasing the density of emergent macrophytes or by increasing the depth of the wetland. Emergent macrophytes suppress the amount of air exchange at the wetland waster surface. Emergent plants also block light from the water column, which impact the ability of submerged aquatic vegetation (SAV) to perfrom photosynthesis and produce oxygen. Both reduced aeration and reduced photosynthetic activity of SAV lowers the dissolved oxygen (DO) concentration in the water, conditions needed for denitrification. Alternatively, oxygen concentrations are lower deeper in the water column, hence, increasing the depth of the wetland can also provide the reduced conditions. However, emergent macrophytes will not survive if the water is too deep, and thus utilization of these methods must be optimized because emergent macrophytes also provide a physical substrate for development of microbial biofilms like denitrifying bacteria (*Kadlec and Wallace, 2009)*.

Given that nitrate removal is dominated by microbial action, it is necessary to create ideal conditions for denitrifying microbe's establishment and growth. Microbes are sensitive to temperature and pH. At higher temperatures, the activity of denitrifying bacteria increases, leading to higher removal rates during the warm summertime. Additionally, denitrifying bacteria require a slightly basic medium (pH range of 7-7.5 is ideal), though, they can tolerate a pH range of 6-9 (*Kadlec and Wallace, 2009)*. It is therefore necessary that the pH of the incoming water does not exceed the tolerances of denitrifying bacteria as it could result in a significant change in microbial community

composition and inhibition of denitrification. pH values of 7 recently measured in MD are in the ideal range to support microbial denitrification (*Table 4*).

Ammonia

Ammonia is an inorganic, reduced form of nitrogen that can enter wetlands from agricultural applications of synthetic fertilizers or naturally via breakdown of organic matter. Ammonia can exist in water in its unionized (NH_3) and ionized form (NH_4^+) depending on the temperature and pH of the water. pH higher than 9 and high temperature (30°C) favor ammonium formation, which can be toxic to aquatic biota in concentration higher than around 0.02 mg-N/L. Thus, a neutral pH (and 25°C) favors non-toxic NH_4^+ formation, which vegetation and microbes use to grow (*Kadlec and Wallace, 2009)*.

The results of MD showed ammonia concentration was below 0.02 mg-N/L, the method detection limit, during high-flow dry conditions. Thus ammonia appears to be a compound of no concern in the wetland. However, when the conditions changed to low-dry flow, ammonia began to be detectable in the water, in MD1B with 0.04 mg-N/L and in MD2B with 0.22 mg-N/L. Then, during low-flow wet conditions ammonia was observed at MD2A (and MD2A*) from 0.43 to 0.69 mg-N/L, while MD1B concentrations fluctuated between 0.03 and 0.19 mg-N/L *(Table 5).* Comparing the results with typical agricultural waters, ammonia concentration in MD is between the typically observed values of 0.33-0.48 mg/L, except in MD2A which values are slightly higher *(Fig.6).*

The principal mechanism that lowers the concentration of ammonia in wetlands is nitrification, which is the two-step transformation of ammonia to nitrogen oxides, first to nitrite followed by a subsequence reaction that converts it to nitrate. This process is performed by two different types of bacteria, and energy released from the reaction is used for their cell synthesis and can only proceed when oxygen is present in the water. Thus, the nitrification rate is controlled by the flux of dissolved oxygen into the system. Therefore, the effect vegetation plays in the wetland is essential; having areas that allow reaeration and submerged aquatic vegetation is necessary for the O_2 production that is directly supplied to the water. Vegetation also provides surfaces where nitrifying bacteria can reside. Moreover, an interesting effect nitrification has in the water is that it lowers alkalinity and pH in the water; thus, the optimal pH range for an effective nitrification is about 7-9 (*Kadlec and Wallace, 2009)*. An additional sink for ammonia in wetlands is uptake into wetland plants, as well as bacteria and algae. Nitrogen is a key plant nutrient needed for growth. When a plant dies, most of its nitrogen will decay and be related as ammonia back to the wetland. But some of it will be buried in plant biomass in the sediment along with its nitrogen, resulting in the permanent loss of the nitrogen from the system.

In wetland systems highly loaded with ammonia (> 120 g-N/m^2·yr), the net removal of ammonia is controlled by the nitrification reaction; these systems are termed microbial wetlands. In this scenario, water temperature has a large influence in the microbe's performance of the reaction. During warmer months, microbial activity is higher, allowing for better removal compared to the cold season. On the contrary, when the system is lightly loaded, plant uptake and burial will dominate ammonia removal, because the load does not exceed the growth requirements of plants; these wetlands are called agronomic wetlands (*Kadlec and Wallace, 2009)*. Based on our water quality monitoring and the low observed ammonia levels, any future treatment wetland treating MD flow would be categorized as an agronomic wetland with regards to ammonia processing, and the trace amounts of ammonia will be removed by the wetland.

Phosphorus

Phosphorus, along with nitrogen, is another necessary nutrient for plant growth. Like nitrogen, phosphorus pollution is linked to runoff from agricultural fertilizers and too much phosphorus can cause eutrophication of rivers and lakes. Unlike nitrate and ammonia, phosphate tends to sorb to sediment particles, thus processes like erosion and sediment mobilization can enhance phosphorus pollution to surface waters. Thus, collecting or trapping sediment can be an effective means to lower phosphorus pollution. Phosphorus is generally measured in two forms: TP and dissolved phosphates. TP includes phosphates dissolved in the water, phosphate sorbed to particulates, phosphorus in sediment minerals, and organic phosphorus particulates such as small pieces of plant matter. Dissolved phosphates are phosphate molecules dissolved in the water which are highly bioavailable and can directly stimulate plant growth.

The TP concentrations found in MD water samples ranged from around 0.06 to 0.46 mg-P/L during high-dry flow in MD1A. However, under low-dry conditions the concentration decreased to ~0.06 mg-P/L at MD1A and MD1B; although, MD2B was slightly higher with 0.11 mg-P/L. Then, during low-flow wet conditions, TP concentration increased to 0.1 to 0.41 mg-P/L in MD1B and MD2A. MD2A* had the higher concentration of 0.54 mg-P/L under the same conditions (*Table 5).* Phosphate (PO4) concentrations vary from 0.17 to 0.25 mg-P/L at site MD1A and MD2B under high flow dry conditions. Low dry conditions in MD1A and MD1B have low concentrations of ~0.025 mg-P/L and 0.053 mg-P/L at MD2B, while MD2A has the higher values of 0.14 mg-P/L. MD1B has a concentration of 0.03 to 0.28 mg-P/L under low flow wet conditions (from March to April). Finally, MD2A and MD2A* shows a concentration of ~0.15 mg-P/L during the same conditions.

In general, dissolved phosphates accounted for around half of the TP in samples. Hence, flows in MD and from the City pump station include both particulate phosphorus and highly bioavailable dissolved phosphate. Typical values for TP and phosphate in agricultural runoff are 0.34 and 0.13-0.27 mg-P/L, respectively. Thus, concentrations

measured in MD are close in range for TP and slightly smaller for phosphate when compared to typical agricultural runoff (*Kadlec and Wallace, 2009)* (*Fig.6*).

Phosphorus is removed from water in treatment wetlands by plants uptake and burial, the main long-term sink, and sorption onto sediment, a short sink since the sediment has a finite sorption capacity. Phosphorus removal is basically controlled by the plants growing season, having two peaks on its removal, one in spring when plants start growing dramatically, and the second one in fall when roots perform a last uptake of phosphorus to store it for the winter time (*Kadlec and Wallace, 2009)*. Because phosphorus removal is treatment wetlands in agronomic (a slow seasonal process) rather than microbial (a fast temperature-dependent process), a large wetland is generally needed to reduce significant amounts of phosphorus (*Kadlec and Wallace, 2009)*. On the other hand, during the first two years after the development of a new treatment wetland, phosphorus (and nitrogen) removal is generally high, since the new plants are growing and using more nutrients than a mature wetland would need (*Kadlec and Wallace, 2009*).

Conductivity

In the Central Valley, the key source of salinity in surface water is from pumping high-salinity groundwater into surface channels. Groundwater aquifers are high in salinity due to historical saltwater intrusions and intense agricultural water application that leaches salts into the soil to the water table *(State Water Resources Control Board, 2016).* Electrical conductivity was measured at MD to assess for salinity because it measures the dissolved ions (charged particles) that can pass a current through the water, proportional to the amount of dissolved salts in the water. Typical freshwater conductivity values are < 500 µS/cm, which is considered a low salinity value. Plants and crops start suffering the consequences of high salinity with values higher than 1200 µS/cm, and potable water is accepted under 900 µS/cm (*SWRCB, 2016).*

Salinity throughout MD is similar to nitrate behavior; during high-flow dry months values are the lowest. Conductivity (EC) increased from 313 µS/cm (in September 9th, 2019) to 1239 µS/cm (in October 25th, 2019) at MD1A when the flow conditions changed from high to low and no rain events. Moreover, October 25th was the date with higher EC value with 1323 µS/cm at MD2A. A similar behavior was seen in MD2B from September 12th, 2019 to March 13th, 2020, where values changed from 319 µS/cm under high flow to 860 µS/cm under low flow. Also, there is a decrease in conductivity from March 13th to 16th, 2020, from 762 to 657 µS/cm in MD1B after some raining events happened in the area under a low flow. But EC appeared to increase a bit with some rain in April to 783 µS/cm. In May at this site during dry weather, EC was higher at 856 µS/cm. Finally, the conductivity values in MD2A* show the smaller amount (~168 µS/cm) measured in MD under low-flow wet conditions *(Table 5)*. The results showed that small rain events allow some dilution of the salts in MD. In addition, conductivity as well as nitrate tends to increase at the end of the irrigation season (e.g., October), when the flow is the lowest

and might allow some groundwater drainage. On the contrary, low salinity (EC value) is incorporated by surface water inflow to MD during the warmer months with high flow conditions, for example in September, when the irrigation season is still going.

Total Suspended Solids

Total suspended solids (TSS) are solids that do not settle out of slow-moving water and are above around 1 μm in size. Suspended solids can be harmful to a waterbody because they can block light from reaching submerged vegetation, which can cause less dissolved oxygen to be released into the water, potentially creating an anoxic environment. Suspended solids can also increase surface water temperature because of the property of absorption of heat from sunlight (*Kadlec and Wallace, 2009)*. Aesthetically, TSS can increase the turbidity and decrease the clarity of water, which makes waters undesirable in surface recreation, as well as wetlands that are also available to the public. Additionally, suspended solids are sometimes used as a proxy to determine the concentrations of pathogens, nutrients, pesticides, and metals in water since they tend to stick to sediment.

TSS measured in MD1A has a mean value of 87 mg/L, while MD2B has a mean value of 39.5 mg/L under the high-flow dry conditions. Station MD2A has the higher values of 218 mg/L during October 25th, 2019, and a decrement to 143 mg/L by April 2020, both under low-flow conditions but with some rain as a difference. This indicates a relatively high concentration of solids coming from the pump station into MD. Finally, MD1B during low-flow wet conditions (March to May 2020) showed the lowest values with a mean of 19 mg/L (*Table 6).* The average value of all the stations together is around 80 mg/L, slightly higher than the typical values for agricultural runoff of seen of around 55 mg/L (*Kadlec and Wallace, 2009) (Fig. 6)*. These TSS levels are not especially high and should not overwhelm or fill in a constructed treatment wetland, and flow through the wetland will likely remove some fraction of incoming TSS.

Pesticides

Pesticides are a necessary component of industrial agriculture and have been synthesized to have maximum effect on a narrow range of organisms. However, there are unintended human and ecological health consequences associated with even moderate amounts of pesticides in the water. We collected a single sample in MD and tested for pyrethroids, organophosphates, organochlorines and organonitrogen compounds. No pesticides were detected. The complete dataset is included in Appendix B and select data is summarized in *Table 6*.

PESTICIDES MILLER DITCH, NEWMAN CITY		
Type	**Amount [ug/L]**	**Repot limit [ug/L]**
CARFENTRZON	ND	2
CHLORPYRIFOS	ND	0.3
DIMETHOATE	ND	0.5
OXYFLUORFEN	ND	0.04
PENDIMETHALIN	ND	0.02
SIMAZINE	ND	0.5

Table 6. Select pesticides measured in Miller Ditch and used in region as reported by Westside San Joaquin River Watershed Coalition, 2014 Semi-Annual Monitoring Report

5. Comparison with Newman Wasteway data

To better understand the variability in water quality coming into any future wetland, a comparison between water quality in the Newman Wasteway (NWy) and MD is presented. MD is one of many irrigation ditches that discharge into the NWy, which ultimately discharges to the San Joaquin River (*Fig. 7).* The Westside San Joaquin River Watershed Coalition (WSJRWC) performs a wide range of water quality monitoring in the region for field parameters, nutrients, sediment, pathogens, and pesticides. The closest monitoring station to the MD is "Newman Wasteway near Hills Ferry Road." This station is roughly 1 km downstream of where MD discharges into NWy (*Fig. 7*). We corresponded with Orvil McKinnis of the WSJRWC who shared a water quality data set specifically for the Hills Ferry Road station. The data is from 2015 to 2019 and includes dissolved oxygen, flow, ammonia, nitrate, phosphate, total phosphorus, TSS, E. Coli, and metals, pathogens, and pesticides (*Appendix C*).

The general water chemistry of NWy indicates a range of dissolved oxygen (DO) between 1.4 to 8 mg/L with an average value of 4.8 mg/L, a flow of 6 m^3/s, and a pH of 7.43 *(Table 7*). In MD, the values are quite similar, except in the flow estimation, which is smaller, with of 0.1 m^3/s on average. DO measurements at both sites are below saturation, indicating oxygen consumption via respiration exceeds oxygen production via photosynthesis (*Table 7*).

Newman Wasteway at Hills Ferry Road	Miller Ditch
DO = 4.8 mg/L pH = 7.48 Flow = 6 m^3/s EC = 1172 µS/cm	DO = 5.4 mg/L pH = 7.29 Flow ~0.1 m^3/s EC = 1073 µS/cm

Table 7. Water quality field data comparison between Newman Wasteway sample site (fig. 7) and Miller Ditch in Newman City in May 2020. Information taken from WSJRWC, 2014

Regarding nutrients, ammonia concentration in NWy has an average of 0.34 mg-N/L with values ranging from 0 to 1.1 mg-N/L. MD concentration during high-flow dry conditions showed a concentration of 0 mg/L, but increased to 0.69 mg-N/L when the flow decreased and after some raining events were seen in the area, which is still consistent with the results presented for NWy. Likewise, nitrate concentration, in the multiple sites in MD are inside the range of NWy (0.2-3.2 mg-N/L), except for the sample taken in October 25th 2019 in which nitrate concentration is 8.35 mg-N/L at MD1A *(Table 5 and 7).* For phosphorus, NWy concentration was around 0.04 to 0.65 mg-P/L for TP and 0.05 to 0.40 mg-P/L for phosphate; values in MD follow the same ranges. TSS is slightly smaller in NWy, with a range of 6 to 140 mg/L, compared to MD concentration which varies from 13 to 218 mg/L. In summary, general water quality in MD and NWy are very similar, and this builds our confidence that we are adequately assessing water quality in MD with our limited sampling effort.

NEWMAN WASTEWAY NEAR HILLS FERRY ROAD		
Water Chemistry	**Measurement (average from 2016 to 2019)**	**Range**
Dissolved Oxygen (DO) [mg/L]	4.8	1.42 – 8
Flow [cfs]	210.52	0 – 356.4
Ammonia [mg/L]	0.34	0 – 1.1
Nitrate [mg/L]	1.02	0.2 – 3.2
Phosphate [mg/L]	0.13	0.05 – 0.48
Total Phosphorus [mg/L]	0.28	0.04 – 0.65
TSS [mg/L]	48	6 – 140
E.Coli [MPN/100ml]	621.55	4.7 – 2419

Table 8. NWNHFR average reported data from 2015 to 2019 (WSJRWC, 2014 report and WSJRWC data provided by Orvil McKinnis)

Pesticides were not a focus of this study or our ongoing monitoring at the site. But we did collect one sample in MD and no pesticides were detected. The WSJRWC samples for pesticides as part of their comprehensive monitoring effort in the region, but we did not ask them for this data, instead focusing on nutrients. While detailing the level of pesticides in MD is beyond the scope of this study, pesticides appear to be only occasionally detected in NWy. Based on data in the WSJRWC's Semi-Annual Monitoring Report 2013/2014 (see p. 111), which is available on-line, NWy had only 1 exceedances for DDE, diazinon and diuron and 2 exceedances for dimethoate from around 26 tests. Results suggest the frequency of pesticides coming into any future treatment wetland will be very low, and it is likely any trace levels of pesticides would be removed by the treatment wetland.

6. CONCLUSIONS

- Under high flow dry conditions, fairly-clean imported surface water is seen in MD with low concentration of ammonia and phosphorus. However, it seems to have groundwater infiltration at the beginning of the low flow dry conditions, after the active fertilization agronomic season (MD1A), which also has high nitrate and salinity values at the pump station coming into MD (MD2A). Finally, during low-flow wet conditions the water seems to have some dilution with raining water and urban runoff from the pump station, because all the concentrations went down except for ammonia, which is higher, showing some decay of organic matter in urban runoff. TSS appears higher in water coming from the pump station (MD2A) which presents higher amounts of sediment, but low salinity.
- Nitrates concentration in MD is generally low; however, for better removal, anaerobic conditions for denitrifying bacteria must be ensured, as well as high residence time, in the treatment wetland so microbial denitrification can remove the nutrient efficiently. Nitrate removal in the treatment wetland will be modeled in Memo 3.
- Ammonia was probably generated by decaying of organic matter from the urban runoff, which concentration is a relatively high compared to typical agricultural storm waters. Ammonia can be removed by nitrifying bacteria, which transforms ammonia into nitrate, and by plant uptake. With the low amounts of ammonia observed, the prospected wetland will be agronomic in nature, meaning plant uptake and burial will be the main removal mechanism.
- Phosphorus concentration presents typical values seen in agriculture waters. However, to have better removal, a large wetland is generally needed because removal is by plant uptake and burial, a seasonal process and long-term sink, which is not as fast and effective as microbial mediation of the nitrogen cycle. Phosphorus removal in the treatment wetland will be also modeled in Memo 3.
- TSS presented an increment in concentration when the conditions change from high- to low-flow near the pump station area. TSS can be reduced in treatment wetlands via sediments enhanced by low water velocity and physical filtering by plant stems in the wetland. Vegetation can also prevent some resuspension of the solids by decreasing wind mixing of water. The TSS levels are not especially high and suggest sediments will not fill in the wetland in the near term. TSS removal in the treatment wetland will be modeled in Memo 3.
- Medium-high salt concentration measured as conductivity was found through MD, as expected, due to principal activity of agriculture in the region. But summer irrigation flows in MD were generally low in salinity and could be harvested to dilute land application of treated wastewater in the region. Since water evaporates in treatment wetlands, salinity increases through treatment wetlands. Salinity increases in the treatment wetland will be modeled in Memo 3. Initial results indicate that

increases in salinity will be modest and will not impact the ability to reuse low-salinity MD water for land application and ground water recharge.

- Finally, the values compared between NWy and MD are highly similar showing the same agricultural origin of the water in both channels. This similarity indicates we are adequately assessing water quality in MD with our limited sampling effort.

7. REFERENCES

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- Westside San Joaquin River Watershed Coalition. Semi-Annual Monitoring Report 2013/2014 Non-Irrigation Season Report, San Joaquin Valley Drainage Authority. summers Engineering, Inc. Consulting Engineers Hanford California. June 15, 2014. 298pp.
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8. FIGURES

Fig. 1. Modified image from Newman City report showing the four different projects planned for the area: NEWS in northwest corner; natural/restored wetland in middle-east; educational area in southeast corner; Miller Ditch treatment wetland in southeast corner – the focus of this study.

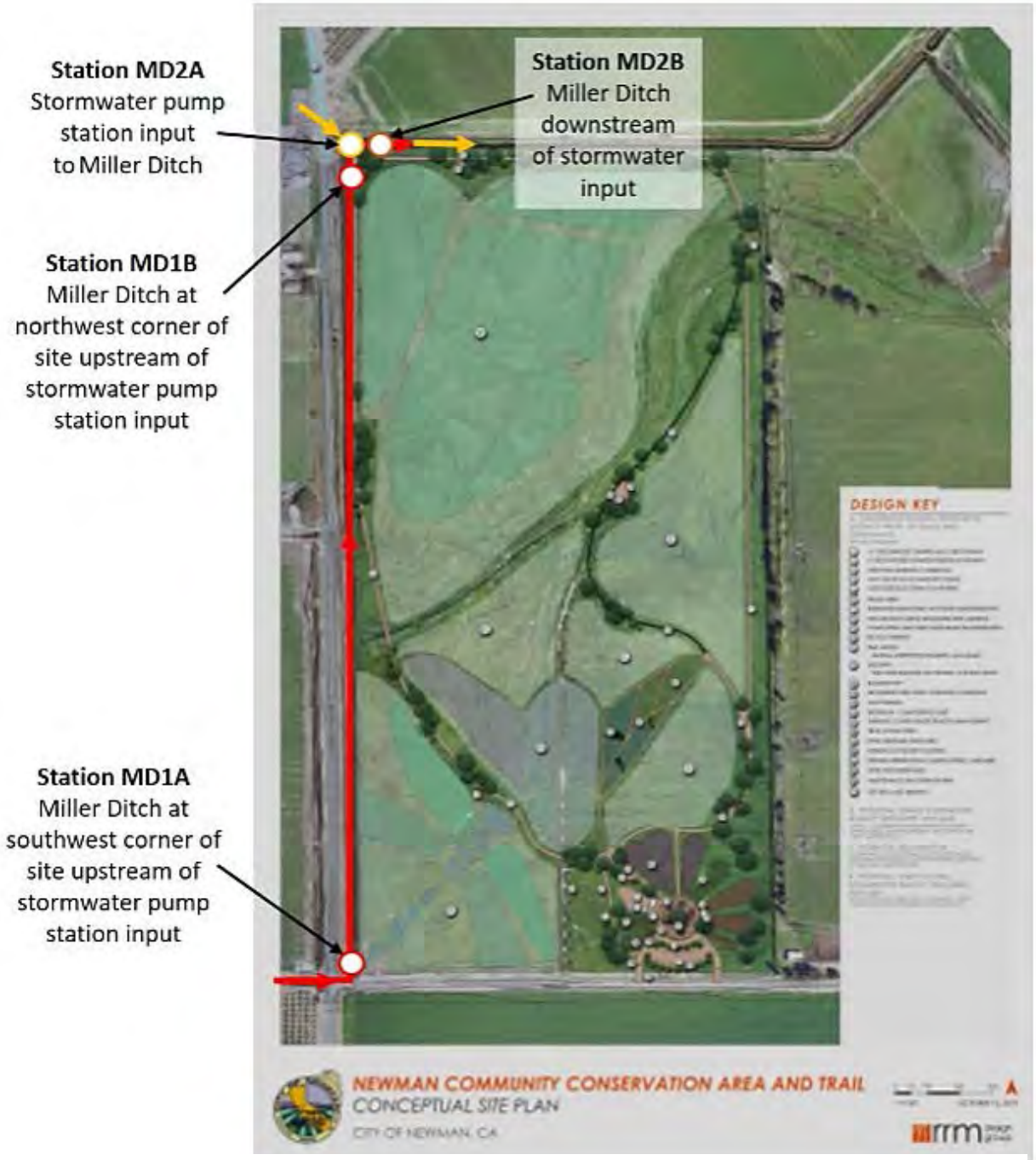

Fig. 2. Modified image from Newman City report where the four sampling locations are identified with a brief description of what the sampling location represents.

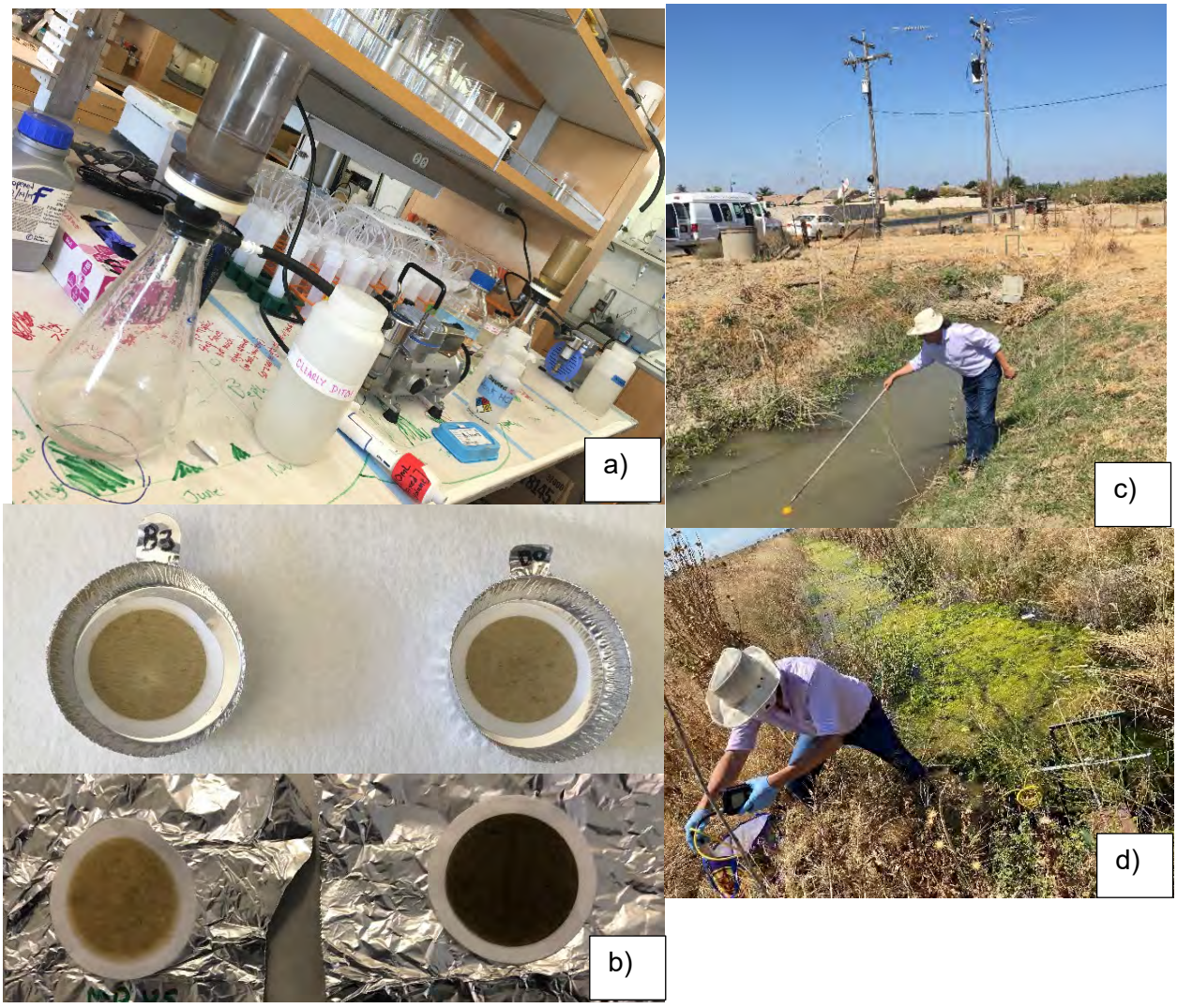

Fig. 3. Picture showing some methods used for the characterization of Miller Ditch water quality and flow. a) Filtering of the samples for the nutrient's analysis. b) Comparison of TSS between September 12th, 2019 and April 6th, 2020. c) Method used for the velocity estimation in Miller Ditch. d) Field data measured (DO, pH, T, and conductivity).

Fig. 4. Pictures from station MD2A at different sampling dates for flow coming into Miller Ditch. a) Picture taken September 12th, 2019 with no flow from the pump station and water gray in color. b) Picture taken on March 13th, 2020. The water presented a greenish color and no flow from pump station. c) Picture taken on March 16th in between the pump station discharge every 15 minutes. d) Picture taken on April 6th during the discharge from the pump station, water gray color.

Fig. 5. Flow comparison at Miller Ditch (MD) during the multiple sampling events. a) MD high flow during September 12th, 2019. b) Decreased flow during October 25th, 2019. c) Low-flow conditions during March 13th, 2020. d) Low-flow conditions at MD during April 6th, 2020.

TABLE 16.8
Composition and Mass Loading Rates for Stormwaters

	Urban		Industrial		Residential/Commercial		Agricultural	
Constituent	Concentration (mg/L)	Load (kg/ha·yr)	Concentration (mg/L)	Load (kg/ha·yr)	Concentration (mg/L)	Load (kg/ha·yr)	Concentration (mg/L)	Load (kg/ha·yr)
BOD_5	20 (7–56)	90	9.6	34–98	3.6–20	31.59–135.2	3.8	11.59
COD	75 (20–275)	—	—	—	—	—	—	—
TSS	150 (20–2890)	360	93.9	672–954.5	18–140	84.28–797	55.3	24.14
VSS	88 (53–122)	—	—	—	—	—	—	—
NH_3N	0.582	—	—	—	—	—	0.33–0.48	—
TKN	1.4 (0.57–4.2)	—	—	—	—	—	2.16–2.27	—
TN	2.0 (0.7–20)	11.2	1.79	7.8–18.06	1.1–2.8	9.144–32.18	2.32	10.61
Ortho-P	0.12	—	0.13	1.321	0.05–0.40	0.568–3.302	0.13–0.227	0.942
TP	0.36 (0.02–4.3)	3.4	0.31	2.2–3.151	0.14–0.51	1.412–4.85	0.344	1.362
Copper	0.05 (0.01–0.40)	0.049	—	0.077	—	0.045	—	—
Lead	0.18 (0.01–1.20)	0.174	0.202	0.269–2.053	0.065–0.214	0.157–2.431	—	—
Zinc	0.20 (0.01–2.9)	0.630	0.122	0.98–1.240	0.046–0.170	0.218–1.88	—	—
Chromium	—	0.28	—	0.044	—	0.026	—	—
Cadmium	0.0015	0.16	—	0.024	—	0.013	—	—
Iron	8.7	—	—	—	—	—	—	—
Mercury	0.00005	0.043	—	0.065	—	0.038	—	—
Nickel	0.022	0.032	—	0.030	—	0.029	—	—
Oil and Grease	2.6	—	—	—	—	—	—	—

Fig 6. Table taken from Kadlec and Wallace (2009) showing typical concentrations for storm water emphasizing agricultural composition.

Fig. 7. Satellite image showing study site (red box), Miller Ditch (red), Newman Wasteway (orange), and Newman Wasteway at Hills Ferry Road sampling station (orange square). Map provided by Drew Guintini of the Central California Irrigation District.

9. APPENDIX

- Appendix A – Caltest Water Analysis Report
- Appendix B – EMA Pesticide Report
- Appendix C – Water Quality Data from WSJRWC for Newman Wasteway at Hills Ferry Road

Tuesday, June 09, 2020

Marc Beutel
UC Merced, School of Engineering
5200 Lake Road
Merced, CA 95343

Re Lab Order: V050820 Collected By: MARC BEUTEL
Project ID: Nutrients PO/Contract #: F100 N XA284 00

Dear Marc Beutel:

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, May 22, 2020. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Enclosures

Project Manager: Melinda F. Kelley

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Caltest ANALYTICAL LABORATORY
ENVIRONMENTAL ANALYSES

SAMPLE SUMMARY

Lab Order: V050820
Project ID: Nutrients

Lab ID	Sample ID	Matrix	Date Collected	Date Received
V050820001	**MD1B**	Water	03/13/2020 00:00	05/22/2020 09:32
V050820002	**MD2B**	Water	03/13/2020 00:00	05/22/2020 09:32
V050820003	**MD1B**	Water	03/16/2020 00:00	05/22/2020 09:32
V050820004	**MD2A***	Water	03/16/2020 00:00	05/22/2020 09:32
V050820005	**MD1B**	Water	04/06/2020 00:00	05/22/2020 09:32
V050820006	**MD2A**	Water	04/06/2020 00:00	05/22/2020 09:32
V050820007	**MD2A***	Water	04/06/2020 00:00	05/22/2020 09:32

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NARRATIVE

Lab Order: V050820
Project ID: Nutrients

General Qualifiers and Notes

Caltest authorizes this report to be reproduced only in its entirety. Results are specific to the sample(s) as submitted and only to the parameter(s) reported.

Caltest certifies that all test results for wastewater and hazardous waste analyses meet all applicable NELAC requirements; all microbiology and drinking water testing meet applicable ELAP requirements, unless stated otherwise.

All analyses performed by EPA Methods or Standard Methods.

Dilution Factors (DF) reported greater than '1' have been used to adjust the result, Reporting Limit (RL), and Method Detection Limit (MDL).

All Solid, sludge, and/or biosolids data is reported in Wet Weight, unless otherwise specified.

Filtrations performed at Caltest for dissolved metals (excluding mercury) and/or pH analysis are not performed within the 15 minute holding time as specified by 40CFR 136.3 table II.

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

ND - indicates analytical result has not been detected at or above the Reporting Limit (RL), or at above the Method Detection Limit (MDL) when it is included on the report and is not otherwise noted.

RL - Reporting Limit is the quantitation limit at which the laboratory is able to detect an analyte. An analyte not detected at or above the RL is reported as ND unless otherwise noted or qualified. For analyses pertaining to the State Implementation Plan of the California Toxics Rule, the Caltest Reporting Limit (RL) is equivalent to the Minimum Level (ML). A standard is always run at or below the ML. Where Reporting Limits are elevated due to dilution, the ML calibration criteria has been met.

MDL - The Method Detection Limit is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results.

J - reflects estimated analytical result value detected below the Reporting Limit (RL) and above the Method Detection Limit (MDL). The 'J' flag is equivalent to the DNQ Estimated Concentration flag.

B - indicates the analyte has been detected in the blank associated with the sample.

SS - compound is a Surrogate Spike used per laboratory quality assurance manual.

NOTE: This document represents a complete Analytical Report for the samples referenced herein and should be retained as a permanent record thereof.

Qualifiers and Compound Notes

1	Sample received and analyzed past the regulatory holding time.

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ANALYTICAL RESULTS

Lab Order: V050820
Project ID: Nutrients

Lab ID **V050820001** Date Collected 3/13/2020 00:00 Matrix Water
Sample ID **MD1B** Date Received 5/22/2020 09:32

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Nitrogen, Ammonia (as N),Low Level,DISS	**Analytical Method:**		SM 4500-NH3 G-11 (LL)					**Analyzed by:**	JDC	
Ammonia (as N)	0.038	mg/L	0.02	0.015	1			06/02/20 17:28	WAT 5341	
OrthoPhosphate Analysis,Diss,Low Level	**Analytical Method:**		SM 4500-P E-99/-11 (LL, Filt)					**Analyzed by:**	DR	
Dissolved Ortho Phosphate as P	0.019	mg/L	0.01	0.0060	1			05/22/20 13:05	WCO 15658	1
Phosphorus Analysis, Low Level	**Analytical Method:**		SM 4500-P B/F-11 (LL)					**Analyzed by:**	DR	
Total Phosphorus as P	0.065	mg/L	0.01	0.0070	1			05/26/20 18:02	WCO 15660	1
Anions by Ion Chromatography	**Analytical Method:**		EPA 300.0					**Analyzed by:**	MYS	
Nitrogen, Nitrate (as N)	1.7	mg/L	0.1	0.040	2			05/23/20 05:12	WIC 7076	1

Lab ID **V050820002** Date Collected 3/13/2020 00:00 Matrix Water
Sample ID **MD2B** Date Received 5/22/2020 09:32

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Nitrogen, Ammonia (as N),Low Level,DISS	**Analytical Method:**		SM 4500-NH3 G-11 (LL)					**Analyzed by:**	JDC	
Ammonia (as N)	0.22	mg/L	0.02	0.015	1			06/02/20 17:30	WAT 5341	
OrthoPhosphate Analysis,Diss,Low Level	**Analytical Method:**		SM 4500-P E-99/-11 (LL, Filt)					**Analyzed by:**	DR	
Dissolved Ortho Phosphate as P	0.053	mg/L	0.01	0.0060	1			05/22/20 13:05	WCO 15658	1
Phosphorus Analysis, Low Level	**Analytical Method:**		SM 4500-P B/F-11 (LL)					**Analyzed by:**	DR	
Total Phosphorus as P	0.11	mg/L	0.01	0.0070	1			05/26/20 18:03	WCO 15660	1
Anions by Ion Chromatography	**Analytical Method:**		EPA 300.0					**Analyzed by:**	MYS	
Nitrogen, Nitrate (as N)	2.5	mg/L	0.1	0.040	2			05/23/20 05:29	WIC 7076	1

Lab ID **V050820003** Date Collected 3/16/2020 00:00 Matrix Water
Sample ID **MD1B** Date Received 5/22/2020 09:32

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Nitrogen, Ammonia (as N),Low Level,DISS	**Analytical Method:**		SM 4500-NH3 G-11 (LL)					**Analyzed by:**	JDC	
Ammonia (as N)	0.027	mg/L	0.02	0.015	1			06/02/20 17:33	WAT 5341	
OrthoPhosphate Analysis,Diss,Low Level	**Analytical Method:**		SM 4500-P E-99/-11 (LL, Filt)					**Analyzed by:**	DR	
Dissolved Ortho Phosphate as P	0.025	mg/L	0.01	0.0060	1			05/22/20 13:05	WCO 15658	1
Phosphorus Analysis, Low Level	**Analytical Method:**		SM 4500-P B/F-11 (LL)					**Analyzed by:**	DR	

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ANALYTICAL RESULTS

Lab Order: V050820
Project ID: Nutrients

Lab ID **V050820003** Date Collected 3/16/2020 00:00 Matrix Water
Sample ID **MD1B** Date Received 5/22/2020 09:32

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Total Phosphorus as P	0.10	mg/L	0.01	0.0070	1			05/26/20 18:08	WCO 15660	1
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:**	MYS	
Nitrogen, Nitrate (as N)	0.28	mg/L	0.1	0.040	2			05/23/20 05:46	WIC 7076	1

Lab ID **V050820004** Date Collected 3/16/2020 00:00 Matrix Water
Sample ID **MD2A*** Date Received 5/22/2020 09:32

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Nitrogen, Ammonia (as N),Low Level,DISS		**Analytical Method:**	SM 4500-NH3 G-11 (LL)					**Analyzed by:**	JDC	
Ammonia (as N)	0.43	mg/L	0.02	0.015	1			06/02/20 17:36	WAT 5341	
OrthoPhosphate Analysis,Diss,Low Level		**Analytical Method:**	SM 4500-P E-99/-11 (LL, Filt)					**Analyzed by:**	DR	
Dissolved Ortho Phosphate as P	0.17	mg/L	0.01	0.0060	1			05/22/20 13:05	WCO 15658	1
Phosphorus Analysis, Low Level		**Analytical Method:**	SM 4500-P B/F-11 (LL)					**Analyzed by:**	DR	
Total Phosphorus as P	0.27	mg/L	0.01	0.0070	1			05/26/20 18:09	WCO 15660	1
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:**	MYS	
Nitrogen, Nitrate (as N)	1.0	mg/L	0.1	0.040	2			05/23/20 06:04	WIC 7076	1

Lab ID **V050820005** Date Collected 4/6/2020 00:00 Matrix Water
Sample ID **MD1B** Date Received 5/22/2020 09:32

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Nitrogen, Ammonia (as N),Low Level,DISS		**Analytical Method:**	SM 4500-NH3 G-11 (LL)					**Analyzed by:**	JDC	
Ammonia (as N)	0.19	mg/L	0.02	0.015	1			06/02/20 17:38	WAT 5341	
OrthoPhosphate Analysis,Diss,Low Level		**Analytical Method:**	SM 4500-P E-99/-11 (LL, Filt)					**Analyzed by:**	DR	
Dissolved Ortho Phosphate as P	0.28	mg/L	0.01	0.0060	1			05/22/20 13:05	WCO 15658	1
Phosphorus Analysis, Low Level		**Analytical Method:**	SM 4500-P B/F-11 (LL)					**Analyzed by:**	DR	
Total Phosphorus as P	0.41	mg/L	0.01	0.0070	1			05/26/20 18:11	WCO 15660	1
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:**	MYS	
Nitrogen, Nitrate (as N)	0.57	mg/L	0.1	0.040	2			05/23/20 06:21	WIC 7076	1

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ANALYTICAL RESULTS

Lab Order: V050820
Project ID: Nutrients

Lab ID **V050820006** Date Collected 4/6/2020 00:00 Matrix Water
Sample ID **MD2A** Date Received 5/22/2020 09:32

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Nitrogen, Ammonia (as N),Low Level,DISS	**Analytical Method:**		SM 4500-NH3 G-11 (LL)					**Analyzed by:**	JDC	
Ammonia (as N)	0.69	mg/L	0.02	0.015	1			06/02/20 17:52	WAT 5341	
OrthoPhosphate Analysis,Diss,Low Level	**Analytical Method:**		SM 4500-P E-99/-11 (LL, Filt)					**Analyzed by:**	DR	
Dissolved Ortho Phosphate as P	0.15	mg/L	0.01	0.0060	1			05/22/20 13:05	WCO 15658	1
Phosphorus Analysis, Low Level	**Analytical Method:**		SM 4500-P B/F-11 (LL)					**Analyzed by:**	DR	
Total Phosphorus as P	0.41	mg/L	0.01	0.0070	1			05/26/20 18:12	WCO 15660	1
Anions by Ion Chromatography	**Analytical Method:**		EPA 300.0					**Analyzed by:**	MYS	
Nitrogen, Nitrate (as N)	0.56	mg/L	0.1	0.040	2			05/23/20 06:38	WIC 7076	1

Lab ID **V050820007** Date Collected 4/6/2020 00:00 Matrix Water
Sample ID **MD2A*** Date Received 5/22/2020 09:32

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Nitrogen, Ammonia (as N),Low Level,DISS	**Analytical Method:**		SM 4500-NH3 G-11 (LL)					**Analyzed by:**	JDC	
Ammonia (as N)	0.62	mg/L	0.02	0.015	1			06/02/20 17:54	WAT 5341	
OrthoPhosphate Analysis,Diss,Low Level	**Analytical Method:**		SM 4500-P E-99/-11 (LL, Filt)					**Analyzed by:**	DR	
Dissolved Ortho Phosphate as P	0.13	mg/L	0.01	0.0060	1			05/22/20 13:05	WCO 15658	1
Phosphorus Analysis, Low Level	**Analytical Method:**		SM 4500-P B/F-11 (LL)					**Analyzed by:**	DR	
Total Phosphorus as P	0.54	mg/L	0.01	0.0070	1			05/26/20 18:14	WCO 15660	1
Anions by Ion Chromatography	**Analytical Method:**		EPA 300.0					**Analyzed by:**	MYS	
Nitrogen, Nitrate (as N)	1.6	mg/L	0.1	0.040	2			05/23/20 06:55	WIC 7076	1

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QUALITY CONTROL DATA

Lab Order: V050820
Project ID: Nutrients

Analysis Description:	Nitrogen, Ammonia (as N),Low Level,DISS	**QC Batch:**	WAT/5341
Analysis Method:	SM 4500-NH3 G-11 (LL)	**QC Batch Method:**	SM 4500-NH3 G-11 (LL)

METHOD BLANK: 949718

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Ammonia (as N)	ND	0.02	0.015	mg/L	

LABORATORY CONTROL SAMPLE & LCSD: 949719 949720

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% REC Limits	RPD	Max RPD	Qualifier
Ammonia (as N)	mg/L	0.5	0.512	0.511	102	102	80-120	0.2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 949723 949724

Parameter	Units	V050040082 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Ammonia (as N)	mg/L	0.51	0.5	1.04	1.04	106	106	80-120	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 949726 949727

Parameter	Units	V050037019 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Ammonia (as N)	mg/L	0.37	0.5	0.942	0.94	114	114	80-120	0.2	20	

Analysis Description:	OrthoPhosphate Analysis,Diss,Low Level	**QC Batch:**	WCO/15658
Analysis Method:	SM 4500-P E-99/-11 (LL, Filt)	**QC Batch Method:**	SM 4500-P E-99/-11 (LL, Filt)

FILTER BLANK: 948542

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Ortho Phosphate as P	ND	0.01	0.006	mg/L	

METHOD BLANK: 948538

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Ortho Phosphate as P	ND	0.01	0.006	mg/L	

LABORATORY CONTROL SAMPLE: 948539

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% REC Limits	Qualifier
Ortho Phosphate as P	mg/L	0.2	0.197	99	90-110	

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Caltest ANALYTICAL LABORATORY
ENVIRONMENTAL ANALYSES

QUALITY CONTROL DATA

Lab Order: V050820
Project ID: Nutrients

Analysis Description:	OrthoPhosphate Analysis,Diss,Low Level	**QC Batch:**	WCO/15658
Analysis Method:	SM 4500-P E-99/-11 (LL, Filt)	**QC Batch Method:**	SM 4500-P E-99/-11 (LL, Filt)

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 948540 948541

Parameter	Units	V050816001 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Ortho Phosphate as P	mg/L	0.061	0.2	0.26	0.262	100	101	90-110	0.8	20	

Analysis Description:	Phosphorus Analysis, Low Level	**QC Batch:**	WCO/15660
Analysis Method:	SM 4500-P B/F-11 (LL)	**QC Batch Method:**	SM 4500-P B/F-11 (LL)

METHOD BLANK: 948660

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Total Phosphorus as P	ND	0.01	0.007	mg/L	

LABORATORY CONTROL SAMPLE: 948661

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% REC Limits	Qualifier
Total Phosphorus as P	mg/L	1	0.969	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 948662 948663

Parameter	Units	V050040001 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Total Phosphorus as P	mg/L	0.02	1	1.01	1	99	98	90-110	1	20	

Analysis Description:	Anions by Ion Chromatography	**QC Batch:**	WIC/7076
Analysis Method:	EPA 300.0	**QC Batch Method:**	EPA 300.0

METHOD BLANK: 948957

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Nitrogen, Nitrate (as N)	ND	0.1	0.02	mg/L	

LABORATORY CONTROL SAMPLE: 948958

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% REC Limits	Qualifier
Nitrogen, Nitrate (as N)	mg/L	2.5	2.53	101	90-110	

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Caltest ANALYTICAL LABORATORY
ENVIRONMENTAL ANALYSES

QUALITY CONTROL DATA

Lab Order: V050820
Project ID: Nutrients

Analysis Description:	Anions by Ion Chromatography	**QC Batch:**	WIC/7076
Analysis Method:	EPA 300.0	**QC Batch Method:**	EPA 300.0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 948959 948960

Parameter	Units	V050821001 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate (as N)	mg/L	0.5	4	4.61	4.62	103	103	80-120	0.2	20	

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QUALITY CONTROL DATA QUALIFIERS

Lab Order: V050820
Project ID: Nutrients

QUALITY CONTROL PARAMETER QUALIFIERS

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

NS - means not spiked and will not have recoveries reported for Analyte Spike Amounts

QC Codes Keys: These descriptors are used to help identify the specific QC samples and clarify the report.

MB - Method Blank

Method Blanks are reported to the same Method Detection Limits (MDLs) or Reporting Limits (RLs) as the analytical samples in the corresponding QC batch.

LCS/LCSD - Laboratory Control Spike / Laboratory Control Spike Duplicate

DUP - Duplicate of Original Sample Matrix

MS/MSD - Matrix Spike / Matrix Spike Duplicate

RPD - Relative Percent Difference

%Recovery - Spike Recovery stated as a percentage

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab Order: V050820
Project ID: Nutrients

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
V050820001	**MD1B**	SM 4500-NH3 G-11 (LL)	WAT/5341		
V050820002	**MD2B**	SM 4500-NH3 G-11 (LL)	WAT/5341		
V050820003	**MD1B**	SM 4500-NH3 G-11 (LL)	WAT/5341		
V050820004	**MD2A***	SM 4500-NH3 G-11 (LL)	WAT/5341		
V050820005	**MD1B**	SM 4500-NH3 G-11 (LL)	WAT/5341		
V050820006	**MD2A**	SM 4500-NH3 G-11 (LL)	WAT/5341		
V050820007	**MD2A***	SM 4500-NH3 G-11 (LL)	WAT/5341		
V050820001	**MD1B**	SM 4500-P E-99/-11 (LL,	WCO/15658		
V050820002	**MD2B**	SM 4500-P E-99/-11 (LL,	WCO/15658		
V050820003	**MD1B**	SM 4500-P E-99/-11 (LL,	WCO/15658		
V050820004	**MD2A***	SM 4500-P E-99/-11 (LL,	WCO/15658		
V050820005	**MD1B**	SM 4500-P E-99/-11 (LL,	WCO/15658		
V050820006	**MD2A**	SM 4500-P E-99/-11 (LL,	WCO/15658		
V050820007	**MD2A***	SM 4500-P E-99/-11 (LL,	WCO/15658		
V050820001	**MD1B**	SM 4500-P B/F-11 (LL)	WCO/15660		
V050820002	**MD2B**	SM 4500-P B/F-11 (LL)	WCO/15660		
V050820003	**MD1B**	SM 4500-P B/F-11 (LL)	WCO/15660		
V050820004	**MD2A***	SM 4500-P B/F-11 (LL)	WCO/15660		
V050820005	**MD1B**	SM 4500-P B/F-11 (LL)	WCO/15660		
V050820006	**MD2A**	SM 4500-P B/F-11 (LL)	WCO/15660		
V050820007	**MD2A***	SM 4500-P B/F-11 (LL)	WCO/15660		
V050820001	**MD1B**	EPA 300.0	WIC/7076		
V050820002	**MD2B**	EPA 300.0	WIC/7076		
V050820003	**MD1B**	EPA 300.0	WIC/7076		
V050820004	**MD2A***	EPA 300.0	WIC/7076		
V050820005	**MD1B**	EPA 300.0	WIC/7076		
V050820006	**MD2A**	EPA 300.0	WIC/7076		
V050820007	**MD2A***	EPA 300.0	WIC/7076		

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PAGE _____ OF _____

SAMPLE CHAIN OF CUSTODY

PROJECT NAME / PROJECT NUMBER:

P.O. NUMBER: F100NXA28400

LAB ORDER # V050820

CLIENT: UC Merced, School of Engineering

REPORT ATTN: Marc Beutel

MAILING ADDRESS: 5200 Lake Road | CITY: Merced | STATE: CA | ZIP: 95343

BILLING ADDRESS: | ATTN:

PHONE NUMBER: (209) 228-2229 | EMAIL ADDRESS: mbeutel@ucmerced.edu | SAMPLER (PRINT & SIGN NAME): Marc Beutel

TURN-AROUND TIME: [X] STANDARD [ ] RUSH

DUE DATE: _____

CALTEST SAMPLE #	DATE SAMPLED	TIME SAMPLED	SAMPLE MATRIX*	CONTAINER TYPE/ AMOUNT**	PRESERVATIVE	SAMPLE IDENTIFICATION / SITE	CLIENT LAB #	COMP. or GRAB	NH3.I.L.F	NO3N.W	PHOS.O.F.I.L	PHOS.T.I.L	Caltest- Use Profile 313829
1	3/13/2020		W	Falcon Tube	frozen	MD1B						x	Low Volume
2	3/13/2020		W	Falcon Tube	0.45 um filtered, frozen	MD1B			x	x	x		Low Volume
3	3/13/2020		W	Falcon Tube	frozen	MD2B						x	Low Volume
4	3/13/2020		W	Falcon Tube	0.45 um filtered, frozen	MD2B			x	x	x		Low Volume
5	3/16/2020		W	Falcon Tube	frozen	MD1B						x	Low Volume
6	3/16/2020		W	Falcon Tube	0.45 um filtered, frozen	MD1B			x	x	x		Low Volume
7	3/16/2020		W	Falcon Tube	frozen	MD2A*						x	Low Volume
8	3/16/2020		W	Falcon Tube	0.45 um filtered, frozen	MD2A*			x	x	x		Low Volume
9	4/6/2020		W	Falcon Tube	frozen	MD1B						x	Low Volume
10	4/6/2020		W	Falcon Tube	0.45 um filtered, frozen	MD1B			x	x	x		Low Volume
11	4/6/2020		W	Falcon Tube	frozen	MD2A						x	Low Volume
12	4/6/2020		W	Falcon Tube	0.45 um filtered, frozen	MD2A			x	x	x		Low Volume
13	4/6/2020		W	Falcon Tube	frozen	MD2A*						x	Low Volume
14	4/6/2020		W	Falcon Tube	0.45 um filtered, frozen	MD2A*			x	x	x		Low Volume
													Low Volume

RELINQUISHED BY	DATE/TIME	RECEIVED BY	RELINQUISHED BY	DATE/TIME	RECEIVED BY
Marc Beutel	5/21/20 12pm	Fed Ex	Fed Ex	5/22/20 0932	

FOR LAB USE ONLY

TEMP: °C / °C | SEALED: Y / N | INTACT: Y / N | ON ICE: Y / N

Samples: WC ___ MICRO ___ BIO ___ MET ___ SV ___ VOA ___

BD: BIO ___ WC ___ MET ___

SIL: HP ___ PT ___ QT ___ VOA ___

W/HNO_3 ___ H_2SO_4 ___ NaOH ___

PIL: HNO_3 ___ H_2SO_4 ___ NaOH ___ HCl ___

REPORTING OPTIONS (Choose One): X EMAIL ___ MAIL ___ BOTH

COMMENTS: PLEASE RETURN COOLER TO THE ADDRESS BELOW FOR $25 FEE.

Marc Beutel, 4929 Schoolhouse Rd, Cathey's Valley, CA 95306

TEMP 5.4 SJ C

SEALED: (Y) / N INTACT: (Y) / N

ON ICE: (Y) / N

*MATRIX: W = Aqueous Nondrinking Water, Digested Metals; ML = Final Effluent, Minimum-Level/Low-Level R.L.; DW = Drinking Water; SL = Soil, Sludge, Solid ; FP = Free Product

**CONTAINER TYPES: AL = Amber Liter; AHL = 500 mL Amber; PT = Pint (Plastic); QT = Quart (Plastic); HG = Half Gallon (Plastic); SJ = Soil Jar; B4 = 4oz. BACT; BT = Brass Tube; VOA = 40mL VOA; OTC = Other Type Container

05/20/20

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Environmental Micro Analysis, Inc. ISO 17025 accreditation
460 N East Street ELAP Certificate #2819
Woodland, CA 95776

Phone: (530) 666-6890 Fax: (530) 666-2987
e-mail: emalab@emalab.com website: www.emalab.com

Analytical Report

October 11, 2019

Client: Marc Beutel
UC Merced
5200 N. Lake Rd.
Merced , CA 95343
Phone: (209) 228-2229
Fax:
Email: mbeutel@ucmerced.edu

Project No: Newman Treatment Wetland

PO No:

Client Sample ID: Clear Ditch

Sample Date: 9/27/2019
EMA Sample No: 19100117-01
Date Received: 10/1/2019
Sample Matrix: Water

Analytical Method: EPA 8081B (w)(OC's)
Extraction Method: EPA 3510
Date Extracted: 10/4/2019
Date Completed: 10/9/2019
Surrogate: Dibutylchlordenate
Surrogate Level: 0.4
% Recovery: 74.0

Comments:

Analyte	Amount µg/L	RL µg/L
a, b, d-BHC	ND	0.05
Alachlor	ND	0.5
Alert	ND	0.05
Aldrin	ND	0.04
Benfluralin	ND	0.1
Bifenox	ND	0.1
Boscalid	ND	0.1
Bromacil	ND	0.05
Captafol	ND	0.04
Captan	ND	0.02
Chlordane (alpha+gamma)	ND	0.05
Chlorobenzilate	ND	0.1
Chlorothalonil	ND	0.04
Cyanazine	ND	0.1
Dacthal	ND	0.04
p,p'-DDD	ND	0.1
o,p'-DDE	ND	0.04
p,p'-DDE	ND	0.04
o,p'-DDT	ND	0.1
p,p'-DDT	ND	0.1
Dichlobenil	ND	0.3
Dichlone	ND	0.1
Dicloran	ND	0.1
Dicofol	ND	0.1
Dieldrin	ND	0.02
Dyrene	ND	1
Endosulfan alpha	ND	0.04
Endosulfan beta	ND	0.04
Endosulfan sulfate	ND	0.04
Endrin	ND	0.04
Ethafluralin	ND	0.1
Folpet	ND	0.1
Heptachlor	ND	0.03
Heptachlor epoxide	ND	0.05
Indoxacarb	ND	0.1
Iprodione	ND	0.1
Lindane (gamma-BHC)	ND	0.04
Linuron	ND	1
Methoxychlor	ND	1.7
Metribuzin	ND	0.05
Mirex	ND	0.05
Myclobutanil	ND	0.5
Oxadiazon	ND	0.1
Oxyfluorfen	ND	0.04
Pendimethalin	ND	0.02
Pentachloronitrobenzene (PCNB)	ND	0.04
Perthane	ND	0.1
Polychlorinated Biphenyls	ND	1.25
Profluralin	ND	0.1
Procymidone	ND	0.1
Pronamide	ND	0.2
Propiconazole	ND	1
Pyrethrins (Total)	ND	0.25
Tetradifon	ND	0.1
Toxaphene	ND	2.5
Triadimephon	ND	0.1
Triflumizole	ND	0.5
Trifloxystrobin	ND	0.1
Trifluralin	ND	0.1
Vegadex (Diethyldithiocarbamic Acid)	ND	0.1
Vinclozolin	ND	0.1

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Analytical Report

October 11, 2019

Client: Marc Beutel
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Project No: Newman Treatment Wetland

PO No:

Client Sample ID: Clear Ditch

Sample Date: 9/27/2019
EMA Sample No: 19100117-01
Date Received: 10/1/2019
Sample Matrix: Water

Analytical Method: EPA 8081B (w) (Pyrethroids)
Extraction Method: EPA 3510
Date Extracted: 10/4/2019
Date Completed: 10/9/2019
Surrogate: Dibutylchlordenate
Surrogate Level: 0.4
% Recovery: 74.0

Analyte	Amount µg/L	RL µg/L
Bifenthrin	ND	0.1
Cyfluthrin	ND	0.25
Cypermethrin	ND	0.25
Deltamethrin	ND	0.25
Esfenvalerate	ND	0.1
Fenpropathrin	ND	0.05
Fenvalerate	ND	0.2
Fluvalinate	ND	0.25
lambda Cyhalothrin	ND	0.05
Permethrin	ND	0.25

Comments:

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Email: mbeutel@ucmerced.edu

Project No: Newman Treatment Wetland

PO No:

Client Sample ID: Clear Ditch

Sample Date: 9/27/2019
EMA Sample No: 19100117-01
Date Received: 10/1/2019
Sample Matrix: Water

Analytical Method: EPA 8141B (w) (OP's)
Extraction Method: EPA 3510
Date Extracted: 10/4/2019
Date Completed: 10/10/2019
Surrogate: Triphenylphosphate
Surrogate Level: 2.0
% Recovery: 106

Analyte	Amount µg/L	RL µg/L
Azinphos-methyl	ND	0.5
Bolstar	ND	0.5
Bensulide	ND	0.5
Carbofenothion	ND	2
Chlorfenvinphos	ND	0.5
Chlorpyrifos	ND	0.3
Chlorpyrifos-methyl	ND	0.3
Ciodrin	ND	0.5
Coumaphos	ND	1.5
DEF	ND	0.5
Demeton (Systox) O/S Analogues	ND	0.5
Diazinon	ND	0.5
Dibrom	ND	0.5
Dicrotophos	ND	0.5
Dimethoate	ND	0.5
Disulfoton	ND	0.3
EPN	ND	1
Ethion	ND	0.5
Ethoprop	ND	0.5
Fenamiphos	ND	0.5
Fenitrothion	ND	0.5
Fenthion	ND	0.5
Fonofos	ND	0.5
Imidan	ND	0.5
Isofenphos	ND	0.5
Malathion	ND	0.5
Methidathion	ND	0.5
Methyl Parathion	ND	0.5
Mevinphos	ND	0.5
Parathion	ND	0.5
Phorate	ND	0.5
Phosalone	ND	1.5
Phosphamidon	ND	1
Pyrimiphos-methyl	ND	0.5
Profenofos	ND	1
Propetamphos	ND	0.5
Ronnel	ND	0.5
Tetrachlorvinphos	ND	0.5
Thionazin	ND	0.5

Comments:

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Project No: Newman Treatment Wetland

PO No:

Client Sample ID: Clear Ditch

Sample Date: 9/27/2019
EMA Sample No: 19100117-01
Date Received: 10/1/2019
Sample Matrix: Water

Analytical Method: EPA 8141B (w) (ON's)
Extraction Method: EPA 3510
Date Extracted: 10/4/2019
Date Completed: 10/10/2019
Surrogate: Triphenylphosphate
Surrogate Level: 2.0
% Recovery: 106

Analyte	Amount µg/L	RL µg/L
Acetamiprid	ND	2
Ametryn	ND	0.5
Atrazine	ND	0.5
Azoxystrobin	ND	0.5
Benthiocarb	ND	2
Cyanazine	ND	0.5
Cyprodinil	ND	0.5
Diphenyl Amine	ND	2
Hexazinone	ND	1
Imazalil	ND	2
Metalaxyl	ND	2
Metolachlor	ND	1
Metribuzin	ND	1
Molinate	ND	1
Myclobutanil	ND	0.5
Prometon	ND	0.5
Prometryne	ND	0.5
Pyraclostrobin	ND	0.5
Pymetrozine	ND	0.5
Simazine	ND	0.5
Tebuconazole	ND	0.5
Terbacil	ND	5
Thiabendazole	ND	1

Comments:

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Analyte	Amount µg/L	RL µg/L

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Project No: Newman Treatment Wetland

PO No:

Client Sample ID: Clear Ditch

Sample Date: 9/27/2019
EMA Sample No: 19100117-01
Date Received: 10/1/2019
Sample Matrix: Water

Analytical Method: EPA 8318
Extraction Method: EPA 3510
Date Extracted: 10/4/2019
Date Completed: 10/10/2019

Surrogate:
Surrogate Level:
% Recovery:

Comments:

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Project No: Newman Treatment Wetland

PO No:

Client Sample ID: Blank

Sample Date:
EMA Sample No: 19100117-00
Date Received: 10/1/2019
Sample Matrix: Water

Analytical Method: EPA 8081B (w)(OC's)
Extraction Method: EPA 3510
Date Extracted: 10/4/2019
Date Completed: 10/9/2019
Surrogate: Dibutylchlordenate
Surrogate Level: 0.4
% Recovery: 65.6

Comments:

Analyte	Amount µg/L	RL µg/L
a, b, d-BHC	ND	0.05
Alachlor	ND	0.5
Alert	ND	0.05
Aldrin	ND	0.04
Benfluralin	ND	0.1
Bifenox	ND	0.1
Boscalid	ND	0.1
Bromacil	ND	0.05
Captafol	ND	0.04
Captan	ND	0.02
Chlordane (alpha+gamma)	ND	0.05
Chlorobenzilate	ND	0.1
Chlorothalonil	ND	0.04
Cyanazine	ND	0.1
Dacthal	ND	0.04
p,p'-DDD	ND	0.1
o,p'-DDE	ND	0.04
p,p'-DDE	ND	0.04
o,p'-DDT	ND	0.1
p,p'-DDT	ND	0.1
Dichlobenil	ND	0.3
Dichlone	ND	0.1
Dicloran	ND	0.1
Dicofol	ND	0.1
Dieldrin	ND	0.02
Dyrene	ND	1
Endosulfan alpha	ND	0.04
Endosulfan beta	ND	0.04
Endosulfan sulfate	ND	0.04
Endrin	ND	0.04
Ethafluralin	ND	0.1
Folpet	ND	0.1
Heptachlor	ND	0.03
Heptachlor epoxide	ND	0.05
Indoxacarb	ND	0.1
Iprodione	ND	0.1
Lindane (gamma-BHC)	ND	0.04
Linuron	ND	1
Methoxychlor	ND	1.7
Metribuzin	ND	0.05
Mirex	ND	0.05
Myclobutanil	ND	0.5
Oxadiazon	ND	0.1
Oxyfluorfen	ND	0.04
Pendimethalin	ND	0.02
Pentachloronitrobenzene (PCNB)	ND	0.04
Perthane	ND	0.1
Polychlorinated Biphenyls	ND	1.25
Profluralin	ND	0.1
Procymidone	ND	0.1
Pronamide	ND	0.2
Propiconazole	ND	1
Pyrethrins (Total)	ND	0.25
Tetradifon	ND	0.1
Toxaphene	ND	2.5
Triadimephon	ND	0.1
Triflumizole	ND	0.5
Trifloxystrobin	ND	0.1
Trifluralin	ND	0.1
Vegadex (Diethyldithiocarbamic Acid)	ND	0.1
Vinclozolin	ND	0.1

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October 11, 2019

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Project No: Newman Treatment Wetland

PO No:

Client Sample ID: Blank

Sample Date:
EMA Sample No: 19100117-00
Date Received: 10/1/2019
Sample Matrix: Water

Analytical Method: EPA 8081B (w) (Pyrethroids)
Extraction Method: EPA 3510
Date Extracted: 10/4/2019
Date Completed: 10/9/2019
Surrogate: Dibutylchlordenate
Surrogate Level: 0.4
% Recovery: 65.6

Analyte	Amount µg/L	RL µg/L
Bifenthrin	ND	0.1
Cyfluthrin	ND	0.25
Cypermethrin	ND	0.25
Deltamethrin	ND	0.25
Esfenvalerate	ND	0.1
Fenpropathrin	ND	0.05
Fenvalerate	ND	0.2
Fluvalinate	ND	0.25
lambda Cyhalothrin	ND	0.05
Permethrin	ND	0.25

Comments:

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Project No: Newman Treatment Wetland

PO No:

Client Sample ID: Blank

Sample Date:
EMA Sample No: 19100117-00
Date Received: 10/1/2019
Sample Matrix: Water

Analytical Method: EPA 8141B (w) (OP's)
Extraction Method: EPA 3510
Date Extracted: 10/4/2019
Date Completed: 10/10/2019
Surrogate: Triphenylphosphate
Surrogate Level: 2.0
% Recovery: 91.4

Analyte	Amount µg/L	RL µg/L
Azinphos-methyl	ND	0.5
Bolstar	ND	0.5
Bensulide	ND	0.5
Carbofenothion	ND	2
Chlorfenvinphos	ND	0.5
Chlorpyrifos	ND	0.3
Chlorpyrifos-methyl	ND	0.3
Ciodrin	ND	0.5
Coumaphos	ND	1.5
DEF	ND	0.5
Demeton (Systox) O/S Analogues	ND	0.5
Diazinon	ND	0.5
Dibrom	ND	0.5
Dicrotophos	ND	0.5
Dimethoate	ND	0.5
Disulfoton	ND	0.3
EPN	ND	1
Ethion	ND	0.5
Ethoprop	ND	0.5
Fenamiphos	ND	0.5
Fenitrothion	ND	0.5
Fenthion	ND	0.5
Fonofos	ND	0.5
Imidan	ND	0.5
Isofenphos	ND	0.5
Malathion	ND	0.5
Methidathion	ND	0.5
Methyl Parathion	ND	0.5
Mevinphos	ND	0.5
Parathion	ND	0.5
Phorate	ND	0.5
Phosalone	ND	1.5
Phosphamidon	ND	1
Pyrimiphos-methyl	ND	0.5
Profenofos	ND	1
Propetamphos	ND	0.5
Ronnel	ND	0.5
Tetrachlorvinphos	ND	0.5
Thionazin	ND	0.5

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Project No: Newman Treatment Wetland

PO No:

Client Sample ID: Blank

Sample Date:
EMA Sample No: 19100117-00
Date Received: 10/1/2019
Sample Matrix: Water

Analytical Method: EPA 8141B (w) (ON's)
Extraction Method: EPA 3510
Date Extracted: 10/4/2019
Date Completed: 10/10/2019
Surrogate: Triphenylphosphate
Surrogate Level: 2.0
% Recovery: 91.4

Analyte	Amount µg/L	RL µg/L
Acetamiprid	ND	2
Ametryn	ND	0.5
Atrazine	ND	0.5
Azoxystrobin	ND	0.5
Benthiocarb	ND	2
Cyanazine	ND	0.5
Cyprodinil	ND	0.5
Diphenyl Amine	ND	2
Hexazinone	ND	1
Imazalil	ND	2
Metalaxyl	ND	2
Metolachlor	ND	1
Metribuzin	ND	1
Molinate	ND	1
Myclobutanil	ND	0.5
Prometon	ND	0.5
Prometryne	ND	0.5
Pyraclostrobin	ND	0.5
Pymetrozine	ND	0.5
Simazine	ND	0.5
Tebuconazole	ND	0.5
Terbacil	ND	5
Thiabendazole	ND	1

Comments:

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Analyte	Amount µg/L	RL µg/L

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Project No: Newman Treatment Wetland

PO No:

Client Sample ID: Blank

Sample Date:
EMA Sample No: 19100117-00
Date Received: 10/1/2019
Sample Matrix: Water

Analytical Method: EPA 8318
Extraction Method: EPA 3510
Date Extracted: 10/4/2019
Date Completed: 10/10/2019

Surrogate:
Surrogate Level:
% Recovery:

Comments:

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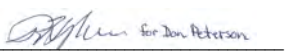
Date: 10/11/19 Reviewed by:  Don Peterson, Laboratory Director

ResultsID	Analyte/Species	Source	Site Code	Sample Date	Results	Units	Matrix	Method
5065746	Est Depth	Field	NWHFR	10-Sep-19		ft		
5065802	pH	Field	NWHFR	10-Sep-19	7.73			
5065690	DO	Field	NWHFR	10-Sep-19	5.37	mg/l		
5065718	EC	Field	NWHFR	10-Sep-19	1017	µmhos/cm		
5065774	Flow	Field	NWHFR	10-Sep-19		cfs		
5065830	Staff Gage	Field	NWHFR	10-Sep-19		ft		
5065858	Temp	Field	NWHFR	10-Sep-19	17.91	c		
5065768	Flow	Field	NWHFR	9-Sep-19		cfs		
5065740	Est Depth	Field	NWHFR	9-Sep-19		ft		
5065796	pH	Field	NWHFR	9-Sep-19	7.1			
5065684	DO	Field	NWHFR	9-Sep-19	5.2	mg/l		
5065712	EC	Field	NWHFR	9-Sep-19	976	µmhos/cm		
5065824	Staff Gage	Field	NWHFR	9-Sep-19		ft		
5065852	Temp	Field	NWHFR	9-Sep-19	18.56	c		
5064503	Est Depth	Field	NWHFR	13-Aug-19		ft		
5064563	Staff Gage	Field	NWHFR	13-Aug-19		ft		
5064583	Temp	Field	NWHFR	13-Aug-19	20.23	c		
5064463	DO	Field	NWHFR	13-Aug-19	5.11	mg/l		
5064483	EC	Field	NWHFR	13-Aug-19	769	µmhos/cm		
5064523	Flow	Field	NWHFR	13-Aug-19	43.1	cfs		
5064543	pH	Field	NWHFR	13-Aug-19	7.1			
5060778	Est Depth	Field	NWHFR	9-Jul-19		ft		
5060838	Staff Gage	Field	NWHFR	9-Jul-19		ft		
5060738	DO	Field	NWHFR	9-Jul-19	6.4	mg/l		
5060758	EC	Field	NWHFR	9-Jul-19	768	µmhos/cm		
5060798	Flow	Field	NWHFR	9-Jul-19	39.5	cfs		
5060818	pH	Field	NWHFR	9-Jul-19	6.88			
5060858	Temp	Field	NWHFR	9-Jul-19	19.96	c		
5058082	EC	Field	NWHFR	11-Jun-19	8.77	µmhos/cm		
5058060	DO	Field	NWHFR	11-Jun-19	4.26	mg/l		
5058104	Est Depth	Field	NWHFR	11-Jun-19		ft		
5058126	Flow	Field	NWHFR	11-Jun-19		cfs		
5058148	pH	Field	NWHFR	11-Jun-19	7.2			
5058170	Staff Gage	Field	NWHFR	11-Jun-19		ft		
5058192	Temp	Field	NWHFR	11-Jun-19	26.86	c		
5055385	Temp	Field	NWHFR	14-May-19	18.13	c		
5055275	EC	Field	NWHFR	14-May-19	979	µmhos/cm		
5055341	pH	Field	NWHFR	14-May-19	7.79			
5055319	Flow	Field	NWHFR	14-May-19		cfs		
5055297	Est Depth	Field	NWHFR	14-May-19		ft		
5055363	Staff Gage	Field	NWHFR	14-May-19		ft		
5055253	DO	Field	NWHFR	14-May-19	4.8	mg/l		
5052972	pH	Field	NWHFR	9-Apr-19	7.75			
5052951	Flow	Field	NWHFR	9-Apr-19	0	cfs		
5052993	Staff Gage	Field	NWHFR	9-Apr-19		ft		
5052909	EC	Field	NWHFR	9-Apr-19	1719	µmhos/cm		
5052888	DO	Field	NWHFR	9-Apr-19	4.43	mg/l		
5052930	Est Depth	Field	NWHFR	9-Apr-19		ft		
5053014	Temp	Field	NWHFR	9-Apr-19	17.16	c		
5051398	Est Depth	Field	NWHFR	12-Mar-19		ft		

5051503	Staff Gage	Field	NWHFR	12-Mar-19		ft		
5051468	pH	Field	NWHFR	12-Mar-19	8.06			
5051538	Temp	Field	NWHFR	12-Mar-19	13.25	c		
5051328	DO	Field	NWHFR	12-Mar-19	5.9	mg/l		
5051363	EC	Field	NWHFR	12-Mar-19	1157	µmhos/cm		
5051433	Flow	Field	NWHFR	12-Mar-19	0	cfs		
5051463	Flow	Field	NWHFR	11-Mar-19		cfs		
5051568	Temp	Field	NWHFR	11-Mar-19		c		
5051428	Est Depth	Field	NWHFR	11-Mar-19		ft		
5051498	pH	Field	NWHFR	11-Mar-19				
5051533	Staff Gage	Field	NWHFR	11-Mar-19		ft		
5051358	DO	Field	NWHFR	11-Mar-19		mg/l		
5051393	EC	Field	NWHFR	11-Mar-19		µmhos/cm		
5051173	EC	Field	NWHFR	14-Feb-19	1002	µmhos/cm		
5051278	Temp	Field	NWHFR	14-Feb-19	9.55	c		
5051194	Est Depth	Field	NWHFR	14-Feb-19		ft		
5051152	DO	Field	NWHFR	14-Feb-19	10.06	mg/l		
5051236	pH	Field	NWHFR	14-Feb-19	7.26			
5051215	Flow	Field	NWHFR	14-Feb-19		cfs		
5051257	Staff Gage	Field	NWHFR	14-Feb-19		ft		
5048996	pH	Field	NWHFR	17-Jan-19	8.05			
5048912	DO	Field	NWHFR	17-Jan-19	9.04	mg/l		
5049017	Staff Gage	Field	NWHFR	17-Jan-19		ft		
5048975	Flow	Field	NWHFR	17-Jan-19	43.9	cfs		
5048954	Est Depth	Field	NWHFR	17-Jan-19		ft		
5048933	EC	Field	NWHFR	17-Jan-19	579	µmhos/cm		
5049038	Temp	Field	NWHFR	17-Jan-19	11.84	c		
5047601	Est Depth	Field	NWHFR	30-Nov-18		ft		
5047685	Temp	Field	NWHFR	30-Nov-18	12.83	c		
5047664	Staff Gage	Field	NWHFR	30-Nov-18	0.25	ft		
5047643	pH	Field	NWHFR	30-Nov-18	7.63			
5047622	Flow	Field	NWHFR	30-Nov-18	306	cfs		
5047559	DO	Field	NWHFR	30-Nov-18	9.63	mg/l		
5047580	EC	Field	NWHFR	30-Nov-18	729	µmhos/cm		
5046219	EC	Field	NWHFR	9-Oct-18	1532	µmhos/cm		
5046282	pH	Field	NWHFR	9-Oct-18	7.31			
5046198	DO	Field	NWHFR	9-Oct-18	9.21	mg/l		
5046303	Staff Gage	Field	NWHFR	9-Oct-18		ft		
5046324	Temp	Field	NWHFR	9-Oct-18	14.25	c		
5046261	Flow	Field	NWHFR	9-Oct-18	15.9	cfs		
5046240	Est Depth	Field	NWHFR	9-Oct-18		ft		
5044182	DO	Field	NWHFR	11-Sep-18	6.68	mg/l		
5044357	Staff Gage	Field	NWHFR	11-Sep-18		ft		
5044217	EC	Field	NWHFR	11-Sep-18	1137	µmhos/cm		
5044252	Est Depth	Field	NWHFR	11-Sep-18		ft		
5044287	Flow	Field	NWHFR	11-Sep-18	19.7	cfs		
5044322	pH	Field	NWHFR	11-Sep-18	7.8			
5044392	Temp	Field	NWHFR	11-Sep-18	18.56	c		
5044376	Staff Gage	Field	NWHFR	10-Sep-18		ft		
5044201	DO	Field	NWHFR	10-Sep-18	7.04	mg/l		
5044236	EC	Field	NWHFR	10-Sep-18	998	µmhos/cm		

5044306	Flow	Field	NWHFR	10-Sep-18	18.6	cfs		
5044341	pH	Field	NWHFR	10-Sep-18	7.49			
5044411	Temp	Field	NWHFR	10-Sep-18	18.81	c		
5044271	Est Depth	Field	NWHFR	10-Sep-18		ft		
5043717	Staff Gage	Field	NWHFR	14-Aug-18		ft		
5043738	Temp	Field	NWHFR	14-Aug-18	21.38	c		
5043696	pH	Field	NWHFR	14-Aug-18	7.46			
5043675	Flow	Field	NWHFR	14-Aug-18	137	cfs		
5043654	Est Depth	Field	NWHFR	14-Aug-18		ft		
5043633	EC	Field	NWHFR	14-Aug-18	660	µmhos/cm		
5043612	DO	Field	NWHFR	14-Aug-18	8.5	mg/l		
5041721	Temp	Field	NWHFR	10-Jul-18	21.96	c		
5041700	Staff Gage	Field	NWHFR	10-Jul-18	0	ft		
5041679	pH	Field	NWHFR	10-Jul-18	7.58			
5041658	Flow	Field	NWHFR	10-Jul-18	15.6	cfs		
5041637	Est Depth	Field	NWHFR	10-Jul-18	0	ft		
5041616	EC	Field	NWHFR	10-Jul-18	923	µmhos/cm		
5041595	DO	Field	NWHFR	10-Jul-18	7.48	mg/l		
5041511	Flow	Field	NWHFR	12-Jun-18	65.8	cfs		
5041574	Temp	Field	NWHFR	12-Jun-18	21.04	c		
5041553	Staff Gage	Field	NWHFR	12-Jun-18	0	ft		
5041490	Est Depth	Field	NWHFR	12-Jun-18	0	ft		
5041448	DO	Field	NWHFR	12-Jun-18	7.2	mg/l		
5041532	pH	Field	NWHFR	12-Jun-18	7.78			
5041469	EC	Field	NWHFR	12-Jun-18	837	µmhos/cm		
5041364	Flow	Field	NWHFR	8-May-18	438	cfs		
5041427	Temp	Field	NWHFR	8-May-18	19.16	c		
5041301	DO	Field	NWHFR	8-May-18	5.13	mg/l		
5041343	Est Depth	Field	NWHFR	8-May-18	0	ft		
5041385	pH	Field	NWHFR	8-May-18	7.94			
5041406	Staff Gage	Field	NWHFR	8-May-18	0	ft		
5041322	EC	Field	NWHFR	8-May-18	749	µmhos/cm		
5041175	EC	Field	NWHFR	10-Apr-18	1724	µmhos/cm		
5041154	DO	Field	NWHFR	10-Apr-18	2.74	mg/l		
5041217	Flow	Field	NWHFR	10-Apr-18	1	cfs		
5041238	pH	Field	NWHFR	10-Apr-18	8.06			
5041259	Staff Gage	Field	NWHFR	10-Apr-18	0	ft		
5041280	Temp	Field	NWHFR	10-Apr-18	19.08	c		
5041196	Est Depth	Field	NWHFR	10-Apr-18	0	ft		
5041072	EC	Field	NWHFR	12-Mar-18	1928	µmhos/cm		
5041059	DO	Field	NWHFR	12-Mar-18	3.18	mg/l		
5041137	Temp	Field	NWHFR	12-Mar-18	14.34	c		
5041124	Staff Gage	Field	NWHFR	12-Mar-18	0	ft		
5041111	pH	Field	NWHFR	12-Mar-18	7.28			
5041098	Flow	Field	NWHFR	12-Mar-18	0	cfs		
5041085	Est Depth	Field	NWHFR	12-Mar-18	0	ft		
5040979	Flow	Field	NWHFR	2-Mar-18	286.3	cfs		
5041000	pH	Field	NWHFR	2-Mar-18	7.64			
5041021	Staff Gage	Field	NWHFR	2-Mar-18	0	ft		
5041042	Temp	Field	NWHFR	2-Mar-18	11.54	c		
5040958	Est Depth	Field	NWHFR	2-Mar-18	0	ft		

5040916	DO	Field	NWHFR	2-Mar-18	6.26	mg/l		
5040937	EC	Field	NWHFR	2-Mar-18	775	µmhos/cm		
5038717	DO	Field	NWHFR	13-Feb-18	8.17	mg/l		
5038738	EC	Field	NWHFR	13-Feb-18	2165	µmhos/cm		
5038759	Est Depth	Field	NWHFR	13-Feb-18	0	ft		
5038780	Flow	Field	NWHFR	13-Feb-18	0	cfs		
5038801	pH	Field	NWHFR	13-Feb-18	7.37			
5038843	Temp	Field	NWHFR	13-Feb-18	9.16	c		
5038822	Staff Gage	Field	NWHFR	13-Feb-18	0	ft		
5038654	pH	Field	NWHFR	9-Jan-18				
5038570	DO	Field	NWHFR	9-Jan-18		mg/l		
5038696	Temp	Field	NWHFR	9-Jan-18		c		
5038675	Staff Gage	Field	NWHFR	9-Jan-18	0	ft		
5038633	Flow	Field	NWHFR	9-Jan-18	0	cfs		
5038612	Est Depth	Field	NWHFR	9-Jan-18	0	ft		
5038591	EC	Field	NWHFR	9-Jan-18		µmhos/cm		
5028188	Staff Gage	Field	NWHFR	10-Oct-17		ft		
5028167	pH	Field	NWHFR	10-Oct-17	7.57			
5028146	Flow	Field	NWHFR	10-Oct-17	34.29	cfs		
5028125	Est Depth	Field	NWHFR	10-Oct-17		ft		
5028104	EC	Field	NWHFR	10-Oct-17	1132	µmhos/cm		
5028083	DO	Field	NWHFR	10-Oct-17		mg/l		
5028209	Temp	Field	NWHFR	10-Oct-17	14.76	c		
5027100	Staff Gage	Field	NWHFR	12-Sep-17		ft		
5026964	EC	Field	NWHFR	12-Sep-17	710	µmhos/cm		
5027134	Temp	Field	NWHFR	12-Sep-17	24.8	c		
5026930	DO	Field	NWHFR	12-Sep-17	9.22	mg/l		
5027066	pH	Field	NWHFR	12-Sep-17	7.45			
5027032	Flow	Field	NWHFR	12-Sep-17	525	cfs		
5026998	Est Depth	Field	NWHFR	12-Sep-17		ft		
5026986	EC	Field	NWHFR	11-Sep-17	815	µmhos/cm		
5027156	Temp	Field	NWHFR	11-Sep-17	25.22	c		
5027122	Staff Gage	Field	NWHFR	11-Sep-17		ft		
5027088	pH	Field	NWHFR	11-Sep-17	6.85			
5027054	Flow	Field	NWHFR	11-Sep-17	447	cfs		
5027020	Est Depth	Field	NWHFR	11-Sep-17		ft		
5026952	DO	Field	NWHFR	11-Sep-17	7.15	mg/l		
5022846	Staff Gage	Field	NWHFR	8-Aug-17		ft		
5022741	DO	Field	NWHFR	8-Aug-17		mg/l		
5022762	EC	Field	NWHFR	8-Aug-17		µmhos/cm		
5022783	Est Depth	Field	NWHFR	8-Aug-17		ft		
5022825	pH	Field	NWHFR	8-Aug-17				
5022867	Temp	Field	NWHFR	8-Aug-17		c		
5022804	Flow	Field	NWHFR	8-Aug-17		cfs		
5017064	pH	Field	NWHFR	11-Jul-17				
5017044	Flow	Field	NWHFR	11-Jul-17		cfs		
5017024	Est Depth	Field	NWHFR	11-Jul-17		ft		
5017004	EC	Field	NWHFR	11-Jul-17		µmhos/cm		
5016984	DO	Field	NWHFR	11-Jul-17		mg/l		
5017084	Staff Gage	Field	NWHFR	11-Jul-17		ft		
5017104	Temp	Field	NWHFR	11-Jul-17		c		

5016933	pH	Field	NWHFR	13-Jun-17	7.49			
5016975	Temp	Field	NWHFR	13-Jun-17	22.19	c		
5016954	Staff Gage	Field	NWHFR	13-Jun-17		ft		
5016849	DO	Field	NWHFR	13-Jun-17	7.25	mg/l		
5016870	EC	Field	NWHFR	13-Jun-17	839	µmhos/cm		
5016891	Est Depth	Field	NWHFR	13-Jun-17		ft		
5016912	Flow	Field	NWHFR	13-Jun-17	0	cfs		
5016691	DO	Field	NWHFR	9-May-17	8.64	mg/l		
5016712	EC	Field	NWHFR	9-May-17	844	µmhos/cm		
5016733	Est Depth	Field	NWHFR	9-May-17		ft		
5016754	Flow	Field	NWHFR	9-May-17	0	cfs		
5016775	pH	Field	NWHFR	9-May-17	7.45			
5016796	Staff Gage	Field	NWHFR	9-May-17		ft		
5016817	Temp	Field	NWHFR	9-May-17	23.19	c		
5015907	DO	Field	NWHFR	11-Apr-17	7	mg/l		
5016033	Temp	Field	NWHFR	11-Apr-17	17.98	c		
5016012	Staff Gage	Field	NWHFR	11-Apr-17		ft		
5015991	pH	Field	NWHFR	11-Apr-17	7.44			
5015970	Flow	Field	NWHFR	11-Apr-17		cfs		
5015949	Est Depth	Field	NWHFR	11-Apr-17		ft		
5015928	EC	Field	NWHFR	11-Apr-17	804	µmhos/cm		
5015697	EC	Field	NWHFR	14-Mar-17	610	µmhos/cm		
5015867	Temp	Field	NWHFR	14-Mar-17	18.21	c		
5015799	pH	Field	NWHFR	14-Mar-17	7.22			
5015783	Flow	Field	NWHFR	14-Mar-17		cfs		
5015663	DO	Field	NWHFR	14-Mar-17	5.58	mg/l		
5015833	Staff Gage	Field	NWHFR	13-Mar-17		ft		
5015885	Temp	Field	NWHFR	13-Mar-17		c		
5015851	Staff Gage	Field	NWHFR	13-Mar-17		ft		
5015817	pH	Field	NWHFR	13-Mar-17				
5015765	Flow	Field	NWHFR	13-Mar-17		cfs		
5015749	Est Depth	Field	NWHFR	13-Mar-17		ft		
5015731	Est Depth	Field	NWHFR	13-Mar-17		ft		
5015715	EC	Field	NWHFR	13-Mar-17		µmhos/cm		
5015681	DO	Field	NWHFR	13-Mar-17		mg/l		
5006548	Temp	Field	NWHFR	14-Feb-17	13.63	c		
5006463	EC	Field	NWHFR	14-Feb-17	377	µmhos/cm		
5006497	Flow	Field	NWHFR	14-Feb-17		cfs		
5006531	Staff Gage	Field	NWHFR	14-Feb-17		ft		
5006480	Est Depth	Field	NWHFR	14-Feb-17		ft		
5006446	DO	Field	NWHFR	14-Feb-17	10.81	mg/l		
5006514	pH	Field	NWHFR	14-Feb-17	7.42			
5003938	Flow	Field	NWHFR	10-Jan-17	0	cfs		
5003894	EC	Field	NWHFR	10-Jan-17	989	µmhos/cm		
5004004	Temp	Field	NWHFR	10-Jan-17	10.92	c		
5003960	pH	Field	NWHFR	10-Jan-17	7.28			
5003916	Est Depth	Field	NWHFR	10-Jan-17		ft		
5003872	DO	Field	NWHFR	10-Jan-17	6.57	mg/l		
5003982	Staff Gage	Field	NWHFR	10-Jan-17		ft		
5002679	Temp	Field	NWHFR	1-Nov-16	15.34	c		
5002658	Staff Gage	Field	NWHFR	1-Nov-16		ft		

5002637	pH	Field	NWHFR	1-Nov-16	2.41			
5002616	Flow	Field	NWHFR	1-Nov-16	102	cfs		
5002595	Est Depth	Field	NWHFR	1-Nov-16		ft		
5002574	EC	Field	NWHFR	1-Nov-16	1219	µmhos/cm		
5002553	DO	Field	NWHFR	1-Nov-16	4.94	mg/l		
4999216	Temp	Field	NWHFR	11-Oct-16	15.67	c		
4999114	DO	Field	NWHFR	11-Oct-16	5.71	mg/l		
4999131	EC	Field	NWHFR	11-Oct-16	982	µmhos/cm		
4999148	Est Depth	Field	NWHFR	11-Oct-16		ft		
4999165	Flow	Field	NWHFR	11-Oct-16	437	cfs		
4999199	Staff Gage	Field	NWHFR	11-Oct-16		ft		
4999182	pH	Field	NWHFR	11-Oct-16	7.57			
4998266	EC	Field	NWHFR	13-Sep-16	1236	µmhos/cm		
4998416	Temp	Field	NWHFR	13-Sep-16	16.52	c		
4998386	Staff Gage	Field	NWHFR	13-Sep-16		ft		
4998356	pH	Field	NWHFR	13-Sep-16	7.62			
4998296	Est Depth	Field	NWHFR	13-Sep-16		ft		
4998236	DO	Field	NWHFR	13-Sep-16	5.63	mg/l		
4998326	Flow	Field	NWHFR	13-Sep-16	455	cfs		
4998334	Flow	Field	NWHFR	12-Sep-16	257.73	cfs		
4998274	EC	Field	NWHFR	12-Sep-16	1219	µmhos/cm		
4998424	Temp	Field	NWHFR	12-Sep-16	18.95	c		
4998304	Est Depth	Field	NWHFR	12-Sep-16		ft		
4998394	Staff Gage	Field	NWHFR	12-Sep-16		ft		
4998364	pH	Field	NWHFR	12-Sep-16	7.26			
4998244	DO	Field	NWHFR	12-Sep-16	4.27	mg/l		
4995590	Staff Gage	Field	NWHFR	9-Aug-16		ft		
4995610	Temp	Field	NWHFR	9-Aug-16	20.37	c		
4995570	pH	Field	NWHFR	9-Aug-16	7.78			
4995490	DO	Field	NWHFR	9-Aug-16	4.41	mg/l		
4995550	Flow	Field	NWHFR	9-Aug-16	389	cfs		
4995530	Est Depth	Field	NWHFR	9-Aug-16		ft		
4995510	EC	Field	NWHFR	9-Aug-16	1035	µmhos/cm		
4992673	DO	Field	NWHFR	12-Jul-16	8.96	mg/l		
4992733	Flow	Field	NWHFR	12-Jul-16	136	cfs		
4992713	Est Depth	Field	NWHFR	12-Jul-16		ft		
4992753	pH	Field	NWHFR	12-Jul-16	7.52			
4992773	Staff Gage	Field	NWHFR	12-Jul-16		ft		
4992693	EC	Field	NWHFR	12-Jul-16	1260	µmhos/cm		
4992793	Temp	Field	NWHFR	12-Jul-16	20.27	c		
4991403	DO	Field	NWHFR	14-Jun-16	3.84	mg/l		
4991529	Temp	Field	NWHFR	14-Jun-16	19.78	c		
4991508	Staff Gage	Field	NWHFR	14-Jun-16		ft		
4991487	pH	Field	NWHFR	14-Jun-16	7.42			
4991466	Flow	Field	NWHFR	14-Jun-16	124.5	cfs		
4991445	Est Depth	Field	NWHFR	14-Jun-16		ft		
4991424	EC	Field	NWHFR	14-Jun-16	1242	µmhos/cm		
4991082	EC	Field	NWHFR	10-May-16	1502	µmhos/cm		
4991282	Staff Gage	Field	NWHFR	10-May-16		ft		
4991132	Est Depth	Field	NWHFR	10-May-16		ft		
4991332	Temp	Field	NWHFR	10-May-16	19.04	c		

4991182	Flow	Field	NWHFR	10-May-16	121	cfs		
4991032	DO	Field	NWHFR	10-May-16	2.62	mg/l		
4991232	pH	Field	NWHFR	10-May-16	7.25			
4991103	Est Depth	Field	NWHFR	12-Apr-16		ft		
4991153	Flow	Field	NWHFR	12-Apr-16	270	cfs		
4991253	Staff Gage	Field	NWHFR	12-Apr-16		ft		
4991203	pH	Field	NWHFR	12-Apr-16	7.2			
4991303	Temp	Field	NWHFR	12-Apr-16	17.4	c		
4991053	EC	Field	NWHFR	12-Apr-16	1285	µmhos/cm		
4991003	DO	Field	NWHFR	12-Apr-16	5.43	mg/l		
4988253	Staff Gage	Field	NWHFR	8-Mar-16		ft		
4988153	EC	Field	NWHFR	8-Mar-16	711	µmhos/cm		
4988278	Temp	Field	NWHFR	8-Mar-16	12.04	c		
4988228	pH	Field	NWHFR	8-Mar-16	7.23			
4988203	Flow	Field	NWHFR	8-Mar-16	69	cfs		
4988128	DO	Field	NWHFR	8-Mar-16	2.04	mg/l		
4988178	Est Depth	Field	NWHFR	8-Mar-16		ft		
4988124	DO	Field	NWHFR	7-Mar-16	4.96	mg/l		
4988274	Temp	Field	NWHFR	7-Mar-16	12.61	c		
4988224	pH	Field	NWHFR	7-Mar-16	7.22			
4988199	Flow	Field	NWHFR	7-Mar-16	0	cfs		
4988249	Staff Gage	Field	NWHFR	7-Mar-16		ft		
4988174	Est Depth	Field	NWHFR	7-Mar-16		ft		
4988149	EC	Field	NWHFR	7-Mar-16	634	µmhos/cm		
4985663	DO	Field	NWHFR	9-Feb-16	2.31	mg/l		
4985680	EC	Field	NWHFR	9-Feb-16	2399	µmhos/cm		
4985714	Flow	Field	NWHFR	9-Feb-16	61	cfs		
4985731	pH	Field	NWHFR	9-Feb-16	7.25			
4985748	Staff Gage	Field	NWHFR	9-Feb-16		ft		
4985765	Temp	Field	NWHFR	9-Feb-16	8.65	c		
4985697	Est Depth	Field	NWHFR	9-Feb-16		ft		
4984558	pH	Field	NWHFR	7-Jan-16	7.3			
4984579	Staff Gage	Field	NWHFR	7-Jan-16		ft		
4984495	EC	Field	NWHFR	7-Jan-16	7.32	µmhos/cm		
4984516	Est Depth	Field	NWHFR	7-Jan-16		ft		
4984537	Flow	Field	NWHFR	7-Jan-16	502	cfs		
4984474	DO	Field	NWHFR	7-Jan-16	5.53	mg/l		
4984600	Temp	Field	NWHFR	7-Jan-16	9.2	c		
4983410	Flow	Field	NWHFR	20-Oct-15	116	cfs		
4983356	DO	Field	NWHFR	20-Oct-15	6.06	mg/l		
4983392	Est Depth	Field	NWHFR	20-Oct-15		ft		
4983428	pH	Field	NWHFR	20-Oct-15	7.39			
4983446	Staff Gage	Field	NWHFR	20-Oct-15		ft		
4983464	Temp	Field	NWHFR	20-Oct-15	14.4	c		
4983374	EC	Field	NWHFR	20-Oct-15	2408	µmhos/cm		
4981218	pH	Field	NWHFR	15-Sep-15	7.58			
4981190	Est Depth	Field	NWHFR	15-Sep-15		ft		
4981162	DO	Field	NWHFR	15-Sep-15	3.18	mg/l		
4981246	Temp	Field	NWHFR	15-Sep-15	19.13	c		
4981204	Flow	Field	NWHFR	15-Sep-15	101	cfs		
4981176	EC	Field	NWHFR	15-Sep-15	1423	µmhos/cm		

4981232	Staff Gage	Field	NWHFR	15-Sep-15		ft		
4981172	EC	Field	NWHFR	14-Sep-15	1441	µmhos/cm		
4981158	DO	Field	NWHFR	14-Sep-15	3.65	mg/l		
4981186	Est Depth	Field	NWHFR	14-Sep-15		ft		
4981200	Flow	Field	NWHFR	14-Sep-15	101	cfs		
4981228	Staff Gage	Field	NWHFR	14-Sep-15		ft		
4981242	Temp	Field	NWHFR	14-Sep-15	19.61	c		
4981214	pH	Field	NWHFR	14-Sep-15	7.36			
4979840	Temp	Field	NWHFR	11-Aug-15	20.06	c		
4979829	Staff Gage	Field	NWHFR	11-Aug-15		ft		
4979818	pH	Field	NWHFR	11-Aug-15	7.82			
4979807	Flow	Field	NWHFR	11-Aug-15	179	cfs		
4979796	Est Depth	Field	NWHFR	11-Aug-15		ft		
4979785	EC	Field	NWHFR	11-Aug-15	1305	µmhos/cm		
4979774	DO	Field	NWHFR	11-Aug-15	3.49	mg/l		
4978305	Temp	Field	NWHFR	14-Jul-15	20.88	c		
4978185	DO	Field	NWHFR	14-Jul-15	3.02	mg/l		
4978265	pH	Field	NWHFR	14-Jul-15	7.32			
4978245	Flow	Field	NWHFR	14-Jul-15	3	cfs		
4978205	EC	Field	NWHFR	14-Jul-15	1427	µmhos/cm		
4978285	Staff Gage	Field	NWHFR	14-Jul-15		ft		
4978225	Est Depth	Field	NWHFR	14-Jul-15		ft		
4974686	DO	Field	NWHFR	9-Jun-15	2.9	mg/l		
4974740	Temp	Field	NWHFR	9-Jun-15	22.26	c		
4974731	Staff Gage	Field	NWHFR	9-Jun-15		ft		
4974722	pH	Field	NWHFR	9-Jun-15	7.34			
4974713	Flow	Field	NWHFR	9-Jun-15	137	cfs		
4974704	Est Depth	Field	NWHFR	9-Jun-15		ft		
4974695	EC	Field	NWHFR	9-Jun-15	1795	µmhos/cm		
4972815	DO	Field	NWHFR	12-May-15	5.54	mg/l		
4972935	Temp	Field	NWHFR	12-May-15	15.81	c		
4972915	Staff Gage	Field	NWHFR	12-May-15		ft		
4972895	pH	Field	NWHFR	12-May-15	7.51			
4972875	Flow	Field	NWHFR	12-May-15	26.14	cfs		
4972855	Est Depth	Field	NWHFR	12-May-15		ft		
4972835	EC	Field	NWHFR	12-May-15	1904	µmhos/cm		
4970946	Flow	Field	NWHFR	14-Apr-15	17.82	cfs		
4970973	Temp	Field	NWHFR	14-Apr-15	13.35	c		
4970955	pH	Field	NWHFR	14-Apr-15	7.71			
4970937	Est Depth	Field	NWHFR	14-Apr-15		ft		
4970928	EC	Field	NWHFR	14-Apr-15	2401	µmhos/cm		
4970919	DO	Field	NWHFR	14-Apr-15	6.08	mg/l		
4970964	Staff Gage	Field	NWHFR	14-Apr-15		ft		
4969121	DO	Field	NWHFR	10-Mar-15	3.75	mg/l		
4969175	Temp	Field	NWHFR	10-Mar-15	13.48	c		
4969166	Staff Gage	Field	NWHFR	10-Mar-15	0	ft		
4969157	pH	Field	NWHFR	10-Mar-15	7.42			
4969148	Flow	Field	NWHFR	10-Mar-15	47.7	cfs		
4969139	Est Depth	Field	NWHFR	10-Mar-15	0.5	ft		
4969130	EC	Field	NWHFR	10-Mar-15	1680	µmhos/cm		
4969025	Flow	Field	NWHFR	9-Mar-15	3	cfs		

4969037	Temp	Field	NWHFR	9-Mar-15	14.16	c		
4969033	Staff Gage	Field	NWHFR	9-Mar-15	0	ft		
4969029	pH	Field	NWHFR	9-Mar-15	7.49			
4969021	Est Depth	Field	NWHFR	9-Mar-15	0	ft		
4969013	DO	Field	NWHFR	9-Mar-15	4.51	mg/l		
4969017	EC	Field	NWHFR	9-Mar-15	1929	µmhos/cm		
4968844	EC	Field	NWHFR	10-Feb-15	1254	µmhos/cm		
4968843	DO	Field	NWHFR	10-Feb-15	4.08	mg/l		
4968845	Est Depth	Field	NWHFR	10-Feb-15	0.5	ft		
4968847	pH	Field	NWHFR	10-Feb-15	7.32			
4968848	Staff Gage	Field	NWHFR	10-Feb-15	0	ft		
4968849	Temp	Field	NWHFR	10-Feb-15	13.21	c		
4968846	Flow	Field	NWHFR	10-Feb-15	275.4	cfs		
4964744	Temp	Field	NWHFR	13-Jan-15	9.8	c		
4964708	Est Depth	Field	NWHFR	13-Jan-15	0.6	ft		
4964690	DO	Field	NWHFR	13-Jan-15	6.08	mg/l		
4964699	EC	Field	NWHFR	13-Jan-15	2512	µmhos/cm		
4964717	Flow	Field	NWHFR	13-Jan-15	20.79	cfs		
4964735	Staff Gage	Field	NWHFR	13-Jan-15		ft		
4964726	pH	Field	NWHFR	13-Jan-15	7.67			

ResultsID	Analyte/Species	Source	Sample ID	Site Code	Sample Date	Time Sampled	Results	Units
5067540	Ammonia as N	CalTest	161-NWHFR-QE	NWHFR	10-Sep-19	8:50:00 AM	-0.04	mg/L
5065423	Ammonia as N	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	-0.04	mg/L
5064758	Ammonia as N	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	0.076	mg/L
5062087	Ammonia as N	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	-0.04	mg/L
5060136	Ammonia as N	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	0.46	mg/L
5055676	Ammonia as N	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	0.37	mg/L
5054085	Ammonia as N	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	0.43	mg/L
5052120	Ammonia as N	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	0.083	mg/L
5051008	Ammonia as N	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	0.32	mg/L
5048510	Ammonia as N	CalTest	R24-NWHFR-QE	NWHFR	30-Nov-18	9:30:00 AM	0.21	mg/L
5047494	Ammonia as N	CalTest	154-NWHFR-QE	NWHFR	9-Oct-18	9:00:00 AM	-0.04	mg/L
5045128	Ammonia as N	CalTest	153-NWHFR-QE	NWHFR	11-Sep-18	9:00:00 AM	-0.04	mg/L
5043998	Ammonia as N	CalTest	152-NWHFR-QE	NWHFR	14-Aug-18	9:00:00 AM	0.088	mg/L
5043425	Ammonia as N	CalTest	151-NWHFR-QE	NWHFR	10-Jul-18	9:00:00 AM	0.19	mg/L
5043005	Ammonia as N	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	0.32	mg/L
5037794	Ammonia as N	CalTest	149-NWHFR-QE	NWHFR	8-May-18	9:05:00 AM	0.32	mg/L
5037410	Ammonia as N	CalTest	148-NWHFR-QE	NWHFR	10-Apr-18	10:00:00 AM	0.14	mg/L
5042127	Ammonia as N	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	0.52	mg/L
5036528	Ammonia as N	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	0.15	mg/L
5027487	Ammonia as N	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		0.19	mg/L
5026572	Ammonia as N	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	0.099	mg/L
5020857	Ammonia as N	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	0.57	mg/L
5018990	Ammonia as N	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	1.1	mg/L
5016468	Ammonia as N	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	0.16	mg/L
5008234	Ammonia as N	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	0.34	mg/L
5009096	Ammonia as N	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	0.21	mg/L
5006604	Ammonia as N	CalTest	137-NWHFR-QE	NWHFR	14-Feb-17	9:45:00 AM	0.34	mg/L
5004593	Ammonia as N	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	0.27	mg/L
5001254	Ammonia as N	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	0.12	mg/L
5000592	Ammonia as N	CalTest	136-NWHFR-QE	NWHFR	11-Oct-16	9:05:00 AM	0.11	mg/L
4999545	Ammonia as N	CalTest	135-NWHFR-QE	NWHFR	13-Sep-16	9:15:00 AM	0.22	mg/L
4997036	Ammonia as N	CalTest	134-NWHFR-QE	NWHFR	9-Aug-16	9:10:00 AM	0.2	mg/L
4995222	Ammonia as N	CalTest	133-NWHFR-QE	NWHFR	12-Jul-16	9:00:00 AM	0.23	mg/L
4994045	Ammonia as N	CalTest	132-NWHFR-QE	NWHFR	14-Jun-16	9:00:00 AM	0.21	mg/L
4994721	Ammonia as N	CalTest	131-NWHFR-QE	NWHFR	10-May-16	9:15:00 AM	0.21	mg/L
4989963	Ammonia as N	CalTest	130-NWHFR-QE	NWHFR	12-Apr-16	10:10:00 AM	0.12	mg/L
4987871	Ammonia as N	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	0.077	mg/L
4985870	Ammonia as N	CalTest	129-NWHFR-QE	NWHFR	9-Feb-16	9:00:00 AM	0.11	mg/L
4987142	Ammonia as N	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	0.21	mg/L
4984399	Ammonia as N	CalTest	128-NWHFR-QE	NWHFR	20-Oct-15	9:00:00 AM	0.055	mg/L
4982933	Ammonia as N	CalTest	127-NWHFR-QE	NWHFR	15-Sep-15	9:20:00 AM	0.077	mg/L
4981008	Ammonia as N	CalTest	126-NWHFR-QE	NWHFR	11-Aug-15	9:00:00 AM	0.11	mg/L
4979576	Ammonia as N	CalTest	125-NWHFR-QE	NWHFR	14-Jul-15	9:00:00 AM	0.2	mg/L
4976875	Ammonia as N	CalTest	124-NWHFR-QE	NWHFR	9-Jun-15	8:30:00 AM	0.22	mg/L
4975065	Ammonia as N	CalTest	123-NWHFR-QE	NWHFR	12-May-15	9:00:00 AM	0.16	mg/L
4973190	Ammonia as N	CalTest	122-NWHFR-QE	NWHFR	14-Apr-15	9:06:00 AM	0.13	mg/L
4970695	Ammonia as N	CalTest	121-NWHFR-QE	NWHFR	10-Mar-15	9:15:00 AM	0.14	mg/L
4968696	Ammonia as N	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	0.45	mg/L
4967695	Ammonia as N	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	0.099	mg/L
5067466	Arsenic	CalTest	161-NWHFR-QE	NWHFR	10-Sep-19	8:50:00 AM	2	ug/L
5065210	Arsenic	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	1.6	ug/L
5064638	Arsenic	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	1.5	ug/L
5061874	Arsenic	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	3.3	ug/L
5060030	Arsenic	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	3.2	ug/L
5055459	Arsenic	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	3.3	ug/L
5054224	Arsenic	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	2.6	ug/L
5052154	Arsenic	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	1.8	ug/L
5050911	Arsenic	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	2.5	ug/L
5048578	Arsenic	CalTest	R24-NWHFR-QE	NWHFR	30-Nov-18	9:30:00 AM	2.2	ug/L
5047353	Arsenic	CalTest	154-NWHFR-QE	NWHFR	9-Oct-18	9:00:00 AM	2.3	ug/L
5044996	Arsenic	CalTest	153-NWHFR-QE	NWHFR	11-Sep-18	9:00:00 AM	2.1	ug/L
5043951	Arsenic	CalTest	152-NWHFR-QE	NWHFR	14-Aug-18	9:00:00 AM	2.8	ug/L
5043323	Arsenic	CalTest	151-NWHFR-QE	NWHFR	10-Jul-18	9:00:00 AM	2.2	ug/L
5042822	Arsenic	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	3.2	ug/L
5037721	Arsenic	CalTest	149-NWHFR-QE	NWHFR	8-May-18	9:05:00 AM	2.3	ug/L
5037351	Arsenic	CalTest	148-NWHFR-QE	NWHFR	10-Apr-18	10:00:00 AM	5.3	ug/L
5041795	Arsenic	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	2.8	ug/L
5036225	Arsenic	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	2.6	ug/L
5027227	Arsenic	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		1.6	ug/L
5026263	Arsenic	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	2.5	ug/L
5020713	Arsenic	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	4.2	ug/L
5018677	Arsenic	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	7.3	ug/L

5016141	Arsenic	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	4.7	ug/L
5007700	Arsenic	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	3.2	ug/L
5008708	Arsenic	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	2.8	ug/L
5004325	Arsenic	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	2.3	ug/L
5001127	Arsenic	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	2.4	ug/L
4987550	Arsenic	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	1.7	ug/L
4986901	Arsenic	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	1.5	ug/L
4968217	Arsenic	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	2.6	ug/L
4967452	Arsenic	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	1.6	ug/L
5067467	Boron	CalTest	161-NWHFR-QE	NWHFR	10-Sep-19	8:50:00 AM	500	ug/L
5065211	Boron	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	453	ug/L
5064639	Boron	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	440	ug/L
5061957	Boron	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	150	ug/L
5060031	Boron	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	470	ug/L
5055460	Boron	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	920	ug/L
5054225	Boron	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	470	ug/L
5052155	Boron	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	380	ug/L
5050912	Boron	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	330	ug/L
5048579	Boron	CalTest	R24-NWHFR-QE	NWHFR	30-Nov-18	9:30:00 AM	340	ug/L
5047354	Boron	CalTest	154-NWHFR-QE	NWHFR	9-Oct-18	9:00:00 AM	760	ug/L
5044997	Boron	CalTest	153-NWHFR-QE	NWHFR	11-Sep-18	9:00:00 AM	460	ug/L
5043952	Boron	CalTest	152-NWHFR-QE	NWHFR	14-Aug-18	9:00:00 AM	320	ug/L
5043324	Boron	CalTest	151-NWHFR-QE	NWHFR	10-Jul-18	9:00:00 AM	490	ug/L
5042823	Boron	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	410	ug/L
5037722	Boron	CalTest	149-NWHFR-QE	NWHFR	8-May-18	9:05:00 AM	370	ug/L
5037352	Boron	CalTest	148-NWHFR-QE	NWHFR	10-Apr-18	10:00:00 AM	930	ug/L
5041796	Boron	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	430	ug/L
5036226	Boron	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	1200	ug/L
5027228	Boron	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		620	ug/L
5026264	Boron	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	360	ug/L
5020714	Boron	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	290	ug/L
5018678	Boron	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	450	ug/L
5016142	Boron	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	470	ug/L
5007701	Boron	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	410	ug/L
5008709	Boron	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	410	ug/L
5004326	Boron	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	330	ug/L
5001128	Boron	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	610	ug/L
4987551	Boron	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	420	ug/L
4986902	Boron	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	350	ug/L
4968218	Boron	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	620	ug/L
4967453	Boron	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	1400	ug/L
5036734	Bromide	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	0.68	mg/L
5027737	Bromide	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		0.39	mg/L
5026802	Bromide	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	0.38	mg/L
5021035	Bromide	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	-0.2	mg/L
5019179	Bromide	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	-0.2	mg/L
5016652	Bromide	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	0.29	mg/L
5008389	Bromide	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	0.24	mg/L
5009235	Bromide	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	0.2	mg/L
5007112	Bromide	CalTest	137-NWHFR-QE	NWHFR	14-Feb-17	9:45:00 AM	-0.2	mg/L
5004627	Bromide	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	0.26	mg/L
5000873	Bromide	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	0.36	mg/L
5000572	Bromide	CalTest	136-NWHFR-QE	NWHFR	11-Oct-16	9:05:00 AM	0.44	mg/L
4999466	Bromide	CalTest	135-NWHFR-QE	NWHFR	13-Sep-16	9:15:00 AM	0.45	mg/L
4997108	Bromide	CalTest	134-NWHFR-QE	NWHFR	9-Aug-16	9:10:00 AM	0.38	mg/L
4995412	Bromide	CalTest	133-NWHFR-QE	NWHFR	12-Jul-16	9:00:00 AM	0.42	mg/L
4994115	Bromide	CalTest	132-NWHFR-QE	NWHFR	14-Jun-16	9:00:00 AM	0.43	mg/L
4994885	Bromide	CalTest	131-NWHFR-QE	NWHFR	10-May-16	9:15:00 AM	0.54	mg/L
4990110	Bromide	CalTest	130-NWHFR-QE	NWHFR	12-Apr-16	10:10:00 AM	-0.2	mg/L
4988054	Bromide	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	-0.2	mg/L
4986010	Bromide	CalTest	129-NWHFR-QE	NWHFR	9-Feb-16	9:00:00 AM	0.44	mg/L
4987312	Bromide	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	-0.2	mg/L
4984280	Bromide	CalTest	128-NWHFR-QE	NWHFR	20-Oct-15	9:00:00 AM	0.41	mg/L
4983080	Bromide	CalTest	127-NWHFR-QE	NWHFR	15-Sep-15	9:20:00 AM	0.29	mg/L
4981130	Bromide	CalTest	126-NWHFR-QE	NWHFR	11-Aug-15	9:00:00 AM	0.38	mg/L
4979757	Bromide	CalTest	125-NWHFR-QE	NWHFR	14-Jul-15	9:00:00 AM	0.41	mg/L
4977066	Bromide	CalTest	124-NWHFR-QE	NWHFR	9-Jun-15	8:30:00 AM	0.57	mg/L
4975281	Bromide	CalTest	123-NWHFR-QE	NWHFR	12-May-15	9:00:00 AM	0.57	mg/L
4973475	Bromide	CalTest	122-NWHFR-QE	NWHFR	14-Apr-15	9:06:00 AM	0.85	mg/L
4970843	Bromide	CalTest	121-NWHFR-QE	NWHFR	10-Mar-15	9:15:00 AM	0.59	mg/L
4968547	Bromide	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	0.43	mg/L
4967893	Bromide	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	0.77	mg/L
5065341	Cadmium	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	-0.05	ug/L

5064912	Cadmium	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	-0.05	ug/L
5061986	Cadmium	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	-0.05	ug/L
5060085	Cadmium	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	-0.05	ug/L
5055603	Cadmium	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	-0.05	ug/L
5054391	Cadmium	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	-0.05	ug/L
5052028	Cadmium	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	-0.05	ug/L
5050822	Cadmium	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	-0.05	ug/L
5041969	Cadmium	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	-0.05	ug/L
5036227	Cadmium	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	-0.05	ug/L
5027229	Cadmium	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		-0.05	ug/L
5026265	Cadmium	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	-0.05	ug/L
5020715	Cadmium	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	-0.05	ug/L
5018679	Cadmium	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	0.13	ug/L
5016143	Cadmium	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	0.1	ug/L
5007702	Cadmium	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	0.09	ug/L
5008710	Cadmium	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	-0.05	ug/L
5004327	Cadmium	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	0.09	ug/L
5001129	Cadmium	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	-0.05	ug/L
4987552	Cadmium	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	-0.05	ug/L
4986903	Cadmium	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	-0.05	ug/L
4968219	Cadmium	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	-0.05	ug/L
4967454	Cadmium	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	0.09	ug/L
5036430	Cadmium (Dissolved)	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	-0.05	ug/L
5027834	Cadmium (Dissolved)	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		-0.05	ug/L
5026484	Cadmium (Dissolved)	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	-0.05	ug/L
5020588	Cadmium (Dissolved)	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	-0.05	ug/L
5018882	Cadmium (Dissolved)	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	-0.05	ug/L
5016359	Cadmium (Dissolved)	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	-0.05	ug/L
5008003	Cadmium (Dissolved)	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	-0.05	ug/L
5008926	Cadmium (Dissolved)	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	-0.05	ug/L
5004228	Cadmium (Dissolved)	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	-0.05	ug/L
5001198	Cadmium (Dissolved)	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	-0.05	ug/L
4987764	Cadmium (Dissolved)	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	-0.05	ug/L
4987050	Cadmium (Dissolved)	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	-0.05	ug/L
4968265	Cadmium (Dissolved)	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	-0.05	ug/L
4967621	Cadmium (Dissolved)	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	0.07	ug/L
5065342	Copper	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	0.65	ug/L
5064913	Copper	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	0.67	ug/L
5061987	Copper	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	0.7	ug/L
5060086	Copper	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	0.41	ug/L
5055604	Copper	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	0.47	ug/L
5054392	Copper	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	1.9	ug/L
5052029	Copper	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	1.9	ug/L
5050823	Copper	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	2.2	ug/L
5048496	Copper	CalTest	R24-NWHFR-QE	NWHFR	30-Nov-18	9:30:00 AM	3	ug/L
5047308	Copper	CalTest	154-NWHFR-QE	NWHFR	9-Oct-18	9:00:00 AM	0.43	ug/L
5045091	Copper	CalTest	153-NWHFR-QE	NWHFR	11-Sep-18	9:00:00 AM	0.95	ug/L
5043889	Copper	CalTest	152-NWHFR-QE	NWHFR	14-Aug-18	9:00:00 AM	1.2	ug/L
5043237	Copper	CalTest	151-NWHFR-QE	NWHFR	10-Jul-18	9:00:00 AM	0.72	ug/L
5042892	Copper	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	1.1	ug/L
5037640	Copper	CalTest	149-NWHFR-QE	NWHFR	8-May-18	9:05:00 AM	0.54	ug/L
5037283	Copper	CalTest	148-NWHFR-QE	NWHFR	10-Apr-18	10:00:00 AM	1.2	ug/L
5041970	Copper	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	1.8	ug/L
5036228	Copper	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	1.8	ug/L
5027230	Copper	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		1.6	ug/L
5026266	Copper	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	2.2	ug/L
5020716	Copper	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	3.6	ug/L
5018680	Copper	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	11	ug/L
5016299	Copper	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	2.1	ug/L
5007703	Copper	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	1.7	ug/L
5008711	Copper	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	3	ug/L
5004328	Copper	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	5.9	ug/L
5001130	Copper	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	2.8	ug/L
4987553	Copper	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	2.7	ug/L
4986904	Copper	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	4	ug/L
4968220	Copper	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	8	ug/L
4967455	Copper	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	1.6	ug/L
5036431	Copper (Dissolved)	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	0.67	ug/L
5027835	Copper (Dissolved)	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		0.48	ug/L
5026485	Copper (Dissolved)	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	1.4	ug/L
5020589	Copper (Dissolved)	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	0.68	ug/L
5018883	Copper (Dissolved)	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	1.1	ug/L
5016360	Copper (Dissolved)	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	0.6	ug/L

5008004	Copper (Dissolved)	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	0.99	ug/L
5008927	Copper (Dissolved)	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	1.1	ug/L
5004229	Copper (Dissolved)	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	2.1	ug/L
5001199	Copper (Dissolved)	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	1.6	ug/L
4987765	Copper (Dissolved)	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	1.2	ug/L
4987051	Copper (Dissolved)	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	1.9	ug/L
4968266	Copper (Dissolved)	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	2	ug/L
4967622	Copper (Dissolved)	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	0.495	ug/L
5067701	Dissolved Organic Carl	CalTest	161-NWHFR-QE	NWHFR	10-Sep-19	8:50:00 AM	3.9	mg/L
5065493	Dissolved Organic Carl	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	3.5	mg/L
5065003	Dissolved Organic Carl	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	4.8	mg/L
5062167	Dissolved Organic Carl	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	5.5	mg/L
5060252	Dissolved Organic Carl	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	5	mg/L
5055751	Dissolved Organic Carl	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	8.2	mg/L
5054187	Dissolved Organic Carl	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	9.1	mg/L
5052314	Dissolved Organic Carl	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	4.8	mg/L
5051013	Dissolved Organic Carl	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	5.7	mg/L
5048638	Dissolved Organic Carl	CalTest	R24-NWHFR-QE	NWHFR	30-Nov-18	9:30:00 AM	8.2	mg/L
5047394	Dissolved Organic Carl	CalTest	154-NWHFR-QE	NWHFR	9-Oct-18	9:00:00 AM	3.5	mg/L
5045156	Dissolved Organic Carl	CalTest	153-NWHFR-QE	NWHFR	11-Sep-18	9:00:00 AM	3.8	mg/L
5044073	Dissolved Organic Carl	CalTest	152-NWHFR-QE	NWHFR	14-Aug-18	9:00:00 AM	5.8	mg/L
5043510	Dissolved Organic Carl	CalTest	151-NWHFR-QE	NWHFR	10-Jul-18	9:00:00 AM	4.8	mg/L
5042859	Dissolved Organic Carl	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	5.4	mg/L
5037888	Dissolved Organic Carl	CalTest	149-NWHFR-QE	NWHFR	8-May-18	9:05:00 AM	5	mg/L
5037497	Dissolved Organic Carl	CalTest	148-NWHFR-QE	NWHFR	10-Apr-18	10:00:00 AM	8.6	mg/L
5042216	Dissolved Organic Carl	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	5.9	mg/L
5036669	Dissolved Organic Carl	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	4.3	mg/L
5027596	Dissolved Organic Carl	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		3.7	mg/L
5026708	Dissolved Organic Carl	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	6.7	mg/L
5020943	Dissolved Organic Carl	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	7.1	
5019075	Dissolved Organic Carl	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	8.8	
5016561	Dissolved Organic Carl	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	9.9	
5008183	Dissolved Organic Carl	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	10	
5009052	Dissolved Organic Carl	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	7	
5006981	Dissolved Organic Carl	CalTest	137-NWHFR-QE	NWHFR	14-Feb-17	9:45:00 AM	8.6	mg/L
5004473	Dissolved Organic Carl	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	4.5	mg/L
5001380	Dissolved Organic Carl	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	6.1	mg/L
5000739	Dissolved Organic Carl	CalTest	136-NWHFR-QE	NWHFR	11-Oct-16	9:05:00 AM	3.4	mg/L
4999648	Dissolved Organic Carl	CalTest	135-NWHFR-QE	NWHFR	13-Sep-16	9:15:00 AM	3.9	mg/L
4997161	Dissolved Organic Carl	CalTest	134-NWHFR-QE	NWHFR	9-Aug-16	9:10:00 AM	4.4	mg/L
4995338	Dissolved Organic Carl	CalTest	133-NWHFR-QE	NWHFR	12-Jul-16	9:00:00 AM	4.7	mg/L
4994341	Dissolved Organic Carl	CalTest	132-NWHFR-QE	NWHFR	14-Jun-16	9:00:00 AM	5.8	mg/L
4994815	Dissolved Organic Carl	CalTest	131-NWHFR-QE	NWHFR	10-May-16	9:15:00 AM	9.4	mg/L
4990072	Dissolved Organic Carl	CalTest	130-NWHFR-QE	NWHFR	12-Apr-16	10:10:00 AM	9.3	mg/L
4987408	Dissolved Organic Carl	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	4.3	mg/L
4986143	Dissolved Organic Carl	CalTest	129-NWHFR-QE	NWHFR	9-Feb-16	9:00:00 AM	4.8	mg/L
4987246	Dissolved Organic Carl	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	5.3	mg/L
4984440	Dissolved Organic Carl	CalTest	128-NWHFR-QE	NWHFR	20-Oct-15	9:00:00 AM	4.8	mg/L
4983010	Dissolved Organic Carl	CalTest	127-NWHFR-QE	NWHFR	15-Sep-15	9:20:00 AM	3.1	mg/L
4981062	Dissolved Organic Carl	CalTest	126-NWHFR-QE	NWHFR	11-Aug-15	9:00:00 AM	4.2	mg/L
4979699	Dissolved Organic Carl	CalTest	125-NWHFR-QE	NWHFR	14-Jul-15	9:00:00 AM	4.3	mg/L
4976929	Dissolved Organic Carl	CalTest	124-NWHFR-QE	NWHFR	9-Jun-15	8:30:00 AM	5.1	mg/L
4975208	Dissolved Organic Carl	CalTest	123-NWHFR-QE	NWHFR	12-May-15	9:00:00 AM	4.5	mg/L
4973427	Dissolved Organic Carl	CalTest	122-NWHFR-QE	NWHFR	14-Apr-15	9:06:00 AM	4.6	mg/L
4970793	Dissolved Organic Carl	CalTest	121-NWHFR-QE	NWHFR	10-Mar-15	9:15:00 AM	3.2	mg/L
4968645	Dissolved Organic Carl	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	5.9	mg/L
4967825	Dissolved Organic Carl	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	4.1	mg/L
5067450	E. coli	CalTest	161-NWHFR-QE	NWHFR	10-Sep-19	8:50:00 AM	24.3	MPN/10
5065259	E. coli	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	13.4	MPN/10
5064860	E. coli	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	81.3	MPN/10
5061838	E. coli	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	65	MPN/10
5059928	E. coli	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	231	MPN/10
5055419	E. coli	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	29.2	MPN/10
5054355	E. coli	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	11	MPN/10
5051993	E. coli	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	172.2	MPN/10
5050792	E. coli	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	2419.6	MPN/10
5048382	E. coli	CalTest	R24-NWHFR-QE	NWHFR	30-Nov-18	9:30:00 AM	866.4	MPN/10
5047259	E. coli	CalTest	154-NWHFR-QE	NWHFR	9-Oct-18	9:00:00 AM	83.9	MPN/10
5044909	E. coli	CalTest	153-NWHFR-QE	NWHFR	11-Sep-18	9:00:00 AM	145	MPN/10
5043781	E. coli	CalTest	152-NWHFR-QE	NWHFR	14-Aug-18	9:00:00 AM	201.4	MPN/10
5043166	E. coli	CalTest	151-NWHFR-QE	NWHFR	10-Jul-18	9:00:00 AM	104.6	MPN/10
5043030	E. coli	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	770.1	MPN/10
5037564	E. coli	CalTest	149-NWHFR-QE	NWHFR	8-May-18	9:05:00 AM	307.6	MPN/10

5037045	E. coli	CalTest	148-NWHFR-QE	NWHFR	10-Apr-18	10:00:00 AM	90.9	MPN/10
5041754	E. coli	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	2419.6	MPN/10
5036174	E. coli	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	85.7	MPN/10
5027723	E. coli	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		119.8	MPN/10
5026870	E. coli	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	461.1	MPN/10
5020515	E. coli	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	920.8	MPN/10
5018574	E. coli	CalTest	141-NWHFR-QE	NWHFR	Spec	9:00:00 AM	35	MPN/10
5016070	E. coli	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	14.5	MPN/10
5007938	E. coli	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	44.8	MPN/10
5008677	E. coli	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	2	MPN/10
5006706	E. coli	CalTest	137-NWHFR-QE	NWHFR	14-Feb-17	9:45:00 AM	47.3	MPN/10
5004099	E. coli	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	488.4	MPN/10
5000777	E. coli	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	1203.3	MPN/10
5000390	E. coli	CalTest	136-NWHFR-QE	NWHFR	11-Oct-16	9:05:00 AM	920.8	MPN/10
4999259	E. coli	CalTest	135-NWHFR-QE	NWHFR	13-Sep-16	9:15:00 AM	1986.3	MPN/10
4996720	E. coli	CalTest	134-NWHFR-QE	NWHFR	9-Aug-16	9:10:00 AM	2419.6	MPN/10
4994999	E. coli	CalTest	133-NWHFR-QE	NWHFR	12-Jul-16	9:00:00 AM	461.1	MPN/10
4993894	E. coli	CalTest	132-NWHFR-QE	NWHFR	14-Jun-16	9:00:00 AM	54.6	MPN/10
4994417	E. coli	CalTest	131-NWHFR-QE	NWHFR	10-May-16	9:15:00 AM	280.9	MPN/10
4989721	E. coli	CalTest	130-NWHFR-QE	NWHFR	12-Apr-16	10:10:00 AM	18.7	MPN/10
4987463	E. coli	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	86	MPN/10
4985920	E. coli	CalTest	129-NWHFR-QE	NWHFR	9-Feb-16	9:00:00 AM	68.2	MPN/10
4986827	E. coli	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	1413.6	MPN/10
4984177	E. coli	CalTest	128-NWHFR-QE	NWHFR	20-Oct-15	9:00:00 AM	579.4	MPN/10
4982553	E. coli	CalTest	127-NWHFR-QE	NWHFR	15-Sep-15	9:20:00 AM	48.6	MPN/10
4980768	E. coli	CalTest	126-NWHFR-QE	NWHFR	11-Aug-15	9:00:00 AM	1553.1	MPN/10
4979265	E. coli	CalTest	125-NWHFR-QE	NWHFR	14-Jul-15	9:00:00 AM	1732.9	MPN/10
4976771	E. coli	CalTest	124-NWHFR-QE	NWHFR	9-Jun-15	8:30:00 AM	178.5	MPN/10
4974781	E. coli	CalTest	123-NWHFR-QE	NWHFR	12-May-15	9:00:00 AM	290.9	MPN/10
4972990	E. coli	CalTest	122-NWHFR-QE	NWHFR	14-Apr-15	9:06:00 AM	122.3	MPN/10
4970421	E. coli	CalTest	121-NWHFR-QE	NWHFR	10-Mar-15	9:15:00 AM	228.2	MPN/10
4968138	E. coli	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	122.3	MPN/10
4967426	E. coli	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	365.4	MPN/10
5067421	Hardness as CaCO3	CalTest	161-NWHFR-QE	NWHFR	10-Sep-19	8:50:00 AM	290	mg/L
5065566	Hardness as CaCO3	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	210	mg/L
5065046	Hardness as CaCO3	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	200	mg/L
5062214	Hardness as CaCO3	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	68	mg/L
5060281	Hardness as CaCO3	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	250	mg/L
5055809	Hardness as CaCO3	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	460	mg/L
5054329	Hardness as CaCO3	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	300	mg/L
5052337	Hardness as CaCO3	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	240	mg/L
5051123	Hardness as CaCO3	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	190	mg/L
5048443	Hardness as CaCO3	CalTest	R24-NWHFR-QE	NWHFR	30-Nov-18	9:30:00 AM	220	mg/L
5047437	Hardness as CaCO3	CalTest	154-NWHFR-QE	NWHFR	9-Oct-18	9:00:00 AM	450	mg/L
5045278	Hardness as CaCO3	CalTest	153-NWHFR-QE	NWHFR	11-Sep-18	9:00:00 AM	290	mg/L
5044130	Hardness as CaCO3	CalTest	152-NWHFR-QE	NWHFR	14-Aug-18	9:00:00 AM	180	mg/L
5043555	Hardness as CaCO3	CalTest	151-NWHFR-QE	NWHFR	10-Jul-18	9:00:00 AM	250	mg/L
5043120	Hardness as CaCO3	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	220	mg/L
5037926	Hardness as CaCO3	CalTest	149-NWHFR-QE	NWHFR	8-May-18	9:05:00 AM	190	mg/L
5037519	Hardness as CaCO3	CalTest	148-NWHFR-QE	NWHFR	10-Apr-18	10:00:00 AM	390	mg/L
5042241	Hardness as CaCO3	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	220	mg/L
5036757	Hardness as CaCO3	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	680	mg/L
5027751	Hardness as CaCO3	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		320	mg/L
5026828	Hardness as CaCO3	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	190	mg/L
5021057	Hardness as CaCO3	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	150	mg/L
5019205	Hardness as CaCO3	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	250	mg/L
5016674	Hardness as CaCO3	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	230	mg/L
5008420	Hardness as CaCO3	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	200	mg/L
5009258	Hardness as CaCO3	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	140	mg/L
5007136	Hardness as CaCO3	CalTest	137-NWHFR-QE	NWHFR	14-Feb-17	9:45:00 AM	150	mg/L
5004651	Hardness as CaCO3	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	170	mg/L
5000896	Hardness as CaCO3	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	420	mg/L
5000586	Hardness as CaCO3	CalTest	136-NWHFR-QE	NWHFR	11-Oct-16	9:05:00 AM	240	mg/L
4999668	Hardness as CaCO3	CalTest	135-NWHFR-QE	NWHFR	13-Sep-16	9:15:00 AM	390	mg/L
4997122	Hardness as CaCO3	CalTest	134-NWHFR-QE	NWHFR	9-Aug-16	9:10:00 AM	320	mg/L
4995426	Hardness as CaCO3	CalTest	133-NWHFR-QE	NWHFR	12-Jul-16	9:00:00 AM	380	mg/L
4994379	Hardness as CaCO3	CalTest	132-NWHFR-QE	NWHFR	14-Jun-16	9:00:00 AM	340	mg/L
4994907	Hardness as CaCO3	CalTest	131-NWHFR-QE	NWHFR	10-May-16	9:15:00 AM	460	mg/L
4990124	Hardness as CaCO3	CalTest	130-NWHFR-QE	NWHFR	12-Apr-16	10:10:00 AM	380	mg/L
4988087	Hardness as CaCO3	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	190	mg/L
4986190	Hardness as CaCO3	CalTest	129-NWHFR-QE	NWHFR	9-Feb-16	9:00:00 AM	790	mg/L
4987326	Hardness as CaCO3	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	280	mg/L
4984448	Hardness as CaCO3	CalTest	128-NWHFR-QE	NWHFR	20-Oct-15	9:00:00 AM	830	mg/L

4982899	Hardness as CaCO3	CalTest	127-NWHFR-QE	NWHFR	15-Sep-15	9:20:00 AM	460	mg/L
4981145	Hardness as CaCO3	CalTest	126-NWHFR-QE	NWHFR	11-Aug-15	9:00:00 AM	370	mg/L
4979771	Hardness as CaCO3	CalTest	125-NWHFR-QE	NWHFR	14-Jul-15	9:00:00 AM	430	mg/L
4977088	Hardness as CaCO3	CalTest	124-NWHFR-QE	NWHFR	9-Jun-15	8:30:00 AM	580	mg/L
4975295	Hardness as CaCO3	CalTest	123-NWHFR-QE	NWHFR	12-May-15	9:00:00 AM	580	mg/L
4973497	Hardness as CaCO3	CalTest	122-NWHFR-QE	NWHFR	14-Apr-15	9:06:00 AM	790	mg/L
4970865	Hardness as CaCO3	CalTest	121-NWHFR-QE	NWHFR	10-Mar-15	9:15:00 AM	540	mg/L
4968575	Hardness as CaCO3	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	380	mg/L
4967907	Hardness as CaCO3	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	710	mg/L
5065343	Lead	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	-0.06	ug/L
5064914	Lead	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	-0.06	ug/L
5061988	Lead	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	-0.06	ug/L
5060087	Lead	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	-0.06	ug/L
5055605	Lead	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	-0.06	ug/L
5054393	Lead	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	-0.06	ug/L
5052030	Lead	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	-0.06	ug/L
5050824	Lead	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	-0.06	ug/L
5041971	Lead	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	-0.06	ug/L
5036432	Lead	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	-0.06	ug/L
5036229	Lead	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	0.25	ug/L
5027231	Lead	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		0.41	ug/L
5026267	Lead	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	0.48	ug/L
5020717	Lead	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	1.2	ug/L
5018681	Lead	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	2	ug/L
5016144	Lead	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	0.52	ug/L
5007704	Lead	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	0.4	ug/L
5008712	Lead	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	0.7	ug/L
5004329	Lead	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	1.4	ug/L
5001131	Lead	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	0.35	ug/L
4987554	Lead	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	0.52	ug/L
4986905	Lead	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	0.95	ug/L
4968221	Lead	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	1.7	ug/L
4967456	Lead	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	0.29	ug/L
5027836	Lead (Dissolved)	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		-0.06	ug/L
5026486	Lead (Dissolved)	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	-0.06	ug/L
5020590	Lead (Dissolved)	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	-0.06	ug/L
5018884	Lead (Dissolved)	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	-0.06	ug/L
5016361	Lead (Dissolved)	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	-0.06	ug/L
5008005	Lead (Dissolved)	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	-0.06	ug/L
5008928	Lead (Dissolved)	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	0.07	ug/L
5004230	Lead (Dissolved)	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	-0.06	ug/L
5001200	Lead (Dissolved)	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	-0.06	ug/L
4987766	Lead (Dissolved)	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	0.04	ug/L
4987052	Lead (Dissolved)	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	0.08	ug/L
4968267	Lead (Dissolved)	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	-0.03	ug/L
4967623	Lead (Dissolved)	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	-0.03	ug/L
5067468	Molybdenum	CalTest	161-NWHFR-QE	NWHFR	10-Sep-19	8:50:00 AM	2.1	ug/L
5065212	Molybdenum	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	2.1	ug/L
5064640	Molybdenum	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	2.2	ug/L
5061875	Molybdenum	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	2.1	ug/L
5060032	Molybdenum	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	2.5	ug/L
5055461	Molybdenum	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	4	ug/L
5054226	Molybdenum	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	3.7	ug/L
5052156	Molybdenum	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	4	ug/L
5050913	Molybdenum	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	1.9	ug/L
5048580	Molybdenum	CalTest	R24-NWHFR-QE	NWHFR	30-Nov-18	9:30:00 AM	1.8	ug/L
5047355	Molybdenum	CalTest	154-NWHFR-QE	NWHFR	9-Oct-18	9:00:00 AM	3	ug/L
5044998	Molybdenum	CalTest	153-NWHFR-QE	NWHFR	11-Sep-18	9:00:00 AM	2.3	ug/L
5043953	Molybdenum	CalTest	152-NWHFR-QE	NWHFR	14-Aug-18	9:00:00 AM	1.5	ug/L
5043325	Molybdenum	CalTest	151-NWHFR-QE	NWHFR	10-Jul-18	9:00:00 AM	1.9	ug/L
5042824	Molybdenum	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	1.4	ug/L
5037723	Molybdenum	CalTest	149-NWHFR-QE	NWHFR	8-May-18	9:05:00 AM	1.6	ug/L
5037353	Molybdenum	CalTest	148-NWHFR-QE	NWHFR	10-Apr-18	10:00:00 AM	6.1	ug/L
5041797	Molybdenum	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	2.7	ug/L
4987555	Molybdenum	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	2.7	ug/L
5065344	Nickel	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	1.8	ug/L
5064915	Nickel	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	2.1	ug/L
5061989	Nickel	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	1	ug/L
5060088	Nickel	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	2	ug/L
5055606	Nickel	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	2.6	ug/L
5054394	Nickel	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	2.4	ug/L
5052031	Nickel	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	2.4	ug/L
5050825	Nickel	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	2.6	ug/L

5041972	Nickel	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	2.9	ug/L
5036230	Nickel	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	4.1	ug/L
5036433	Nickel	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	2.8	ug/L
5027232	Nickel	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		3.1	ug/L
5026268	Nickel	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	3.9	ug/L
5020718	Nickel	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	7.1	ug/L
5018682	Nickel	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	16	ug/L
5016145	Nickel	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	4.4	ug/L
5007705	Nickel	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	3.4	ug/L
5008713	Nickel	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	4.8	ug/L
5004330	Nickel	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	9.5	ug/L
5001132	Nickel	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	5.2	ug/L
4987556	Nickel	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	4.6	ug/L
4986906	Nickel	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	5.9	ug/L
4968222	Nickel	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	14	ug/L
4967457	Nickel	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	4.5	ug/L
5027837	Nickel (Dissolved)	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		1.6	ug/L
5026487	Nickel (Dissolved)	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	2.4	ug/L
5020591	Nickel (Dissolved)	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	2.4	ug/L
5018885	Nickel (Dissolved)	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	2.6	ug/L
5016362	Nickel (Dissolved)	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	2.4	ug/L
5008006	Nickel (Dissolved)	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	2.8	ug/L
5008929	Nickel (Dissolved)	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	1.7	ug/L
5004231	Nickel (Dissolved)	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	2.5	ug/L
5001201	Nickel (Dissolved)	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	3.3	ug/L
4987767	Nickel (Dissolved)	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	2	ug/L
4987053	Nickel (Dissolved)	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	2.5	ug/L
4968268	Nickel (Dissolved)	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	4.2	ug/L
4967624	Nickel (Dissolved)	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	2.7	ug/L
5067775	Nitrate + Nitrite as N	CalTest	161-NWHFR-QE	NWHFR	10-Sep-19	8:50:00 AM	0.63	mg/L
5065468	Nitrate + Nitrite as N	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	0.29	mg/L
5064807	Nitrate + Nitrite as N	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	0.2	mg/L
5062128	Nitrate + Nitrite as N	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	-0.07	mg/L
5059985	Nitrate + Nitrite as N	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	0.4	mg/L
5055710	Nitrate + Nitrite as N	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	0.11	mg/L
5054041	Nitrate + Nitrite as N	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	0.49	mg/L
5052246	Nitrate + Nitrite as N	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	1.3	mg/L
5051062	Nitrate + Nitrite as N	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	1.1	mg/L
5048526	Nitrate + Nitrite as N	CalTest	R24-NWHFR-QE	NWHFR	30-Nov-18	9:30:00 AM	1.1	mg/L
5047128	Nitrate + Nitrite as N	CalTest	154-NWHFR-QE	NWHFR	9-Oct-18	9:00:00 AM	0.69	mg/L
5045199	Nitrate + Nitrite as N	CalTest	153-NWHFR-QE	NWHFR	11-Sep-18	9:00:00 AM	1.1	mg/L
5044034	Nitrate + Nitrite as N	CalTest	152-NWHFR-QE	NWHFR	14-Aug-18	9:00:00 AM	0.45	mg/L
5043466	Nitrate + Nitrite as N	CalTest	151-NWHFR-QE	NWHFR	10-Jul-18	9:00:00 AM	0.28	mg/L
5043067	Nitrate + Nitrite as N	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	0.34	mg/L
5037840	Nitrate + Nitrite as N	CalTest	149-NWHFR-QE	NWHFR	8-May-18	9:05:00 AM	1.1	mg/L
5037453	Nitrate + Nitrite as N	CalTest	148-NWHFR-QE	NWHFR	10-Apr-18	10:00:00 AM	0.68	mg/L
5041879	Nitrate + Nitrite as N	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	1.3	mg/L
5036597	Nitrate + Nitrite as N	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	1.2	mg/L
5027547	Nitrate + Nitrite as N	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		1	mg/L
5026639	Nitrate + Nitrite as N	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	0.45	mg/L
5020902	Nitrate + Nitrite as N	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	0.35	mg/L
5019051	Nitrate + Nitrite as N	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	0.35	mg/L
5016527	Nitrate + Nitrite as N	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	0.3	mg/L
5008297	Nitrate + Nitrite as N	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	1	mg/L
5009139	Nitrate + Nitrite as N	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	0.26	mg/L
5007023	Nitrate + Nitrite as N	CalTest	137-NWHFR-QE	NWHFR	14-Feb-17	9:45:00 AM	1.2	mg/L
5004429	Nitrate + Nitrite as N	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	1.3	mg/L
5000852	Nitrate + Nitrite as N	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	0.55	mg/L
5000658	Nitrate + Nitrite as N	CalTest	136-NWHFR-QE	NWHFR	11-Oct-16	9:05:00 AM	0.41	mg/L
4999489	Nitrate + Nitrite as N	CalTest	135-NWHFR-QE	NWHFR	13-Sep-16	9:15:00 AM	1.6	mg/L
4997060	Nitrate + Nitrite as N	CalTest	134-NWHFR-QE	NWHFR	9-Aug-16	9:10:00 AM	1.2	mg/L
4995296	Nitrate + Nitrite as N	CalTest	133-NWHFR-QE	NWHFR	12-Jul-16	9:00:00 AM	0.074	mg/L
4994092	Nitrate + Nitrite as N	CalTest	132-NWHFR-QE	NWHFR	14-Jun-16	9:00:00 AM	0.038	mg/L
4994755	Nitrate + Nitrite as N	CalTest	131-NWHFR-QE	NWHFR	10-May-16	9:15:00 AM	0.042	mg/L
4990021	Nitrate + Nitrite as N	CalTest	130-NWHFR-QE	NWHFR	12-Apr-16	10:10:00 AM	0.039	mg/L
4987943	Nitrate + Nitrite as N	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	0.74	mg/L
4986105	Nitrate + Nitrite as N	CalTest	129-NWHFR-QE	NWHFR	9-Feb-16	9:00:00 AM	0.43	mg/L
4987204	Nitrate + Nitrite as N	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	1.4	mg/L
4984214	Nitrate + Nitrite as N	CalTest	128-NWHFR-QE	NWHFR	20-Oct-15	9:00:00 AM	0.32	mg/L
4982959	Nitrate + Nitrite as N	CalTest	127-NWHFR-QE	NWHFR	15-Sep-15	9:20:00 AM	0.46	mg/L
4981044	Nitrate + Nitrite as N	CalTest	126-NWHFR-QE	NWHFR	11-Aug-15	9:00:00 AM	0.62	mg/L
4979526	Nitrate + Nitrite as N	CalTest	125-NWHFR-QE	NWHFR	14-Jul-15	9:00:00 AM	0.18	mg/L
4976983	Nitrate + Nitrite as N	CalTest	124-NWHFR-QE	NWHFR	9-Jun-15	8:30:00 AM	0.069	mg/L

4975143	Nitrate + Nitrite as N	CalTest	123-NWHFR-QE	NWHFR	12-May-15	9:00:00 AM	0.36	mg/L
4973359	Nitrate + Nitrite as N	CalTest	122-NWHFR-QE	NWHFR	14-Apr-15	9:06:00 AM	0.46	mg/L
4970735	Nitrate + Nitrite as N	CalTest	121-NWHFR-QE	NWHFR	10-Mar-15	9:15:00 AM	2.2	mg/L
4968601	Nitrate + Nitrite as N	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	2.2	mg/L
4967770	Nitrate + Nitrite as N	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	2.2	mg/L
5042720	Nitrogen, Total Kjeldal	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	1.6	mg/L
5036513	Nitrogen, Total Kjeldal	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	0.7	mg/L
5027466	Nitrogen, Total Kjeldal	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		0.92	mg/L
5026593	Nitrogen, Total Kjeldal	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	0.83	mg/L
5020834	Nitrogen, Total Kjeldal	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	2.9	mg/L
5018969	Nitrogen, Total Kjeldal	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	6	mg/L
5016447	Nitrogen, Total Kjeldal	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	3.1	mg/L
5008211	Nitrogen, Total Kjeldal	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	2.3	mg/L
5009074	Nitrogen, Total Kjeldal	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	2.2	mg/L
5007000	Nitrogen, Total Kjeldal	CalTest	137-NWHFR-QE	NWHFR	14-Feb-17	9:45:00 AM	1.6	mg/L
5004494	Nitrogen, Total Kjeldal	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	1.9	mg/L
5001273	Nitrogen, Total Kjeldal	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	0.88	mg/L
5000616	Nitrogen, Total Kjeldal	CalTest	136-NWHFR-QE	NWHFR	11-Oct-16	9:05:00 AM	0.92	mg/L
4999459	Nitrogen, Total Kjeldal	CalTest	135-NWHFR-QE	NWHFR	13-Sep-16	9:15:00 AM	1.1	mg/L
4996905	Nitrogen, Total Kjeldal	CalTest	134-NWHFR-QE	NWHFR	9-Aug-16	9:10:00 AM	1.4	mg/L
4995241	Nitrogen, Total Kjeldal	CalTest	133-NWHFR-QE	NWHFR	12-Jul-16	9:00:00 AM	0.88	mg/L
4994243	Nitrogen, Total Kjeldal	CalTest	132-NWHFR-QE	NWHFR	14-Jun-16	9:00:00 AM	1.4	mg/L
4994704	Nitrogen, Total Kjeldal	CalTest	131-NWHFR-QE	NWHFR	10-May-16	9:15:00 AM	1.7	mg/L
4989978	Nitrogen, Total Kjeldal	CalTest	130-NWHFR-QE	NWHFR	12-Apr-16	10:10:00 AM	1.7	mg/L
4987895	Nitrogen, Total Kjeldal	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	1.1	mg/L
4985883	Nitrogen, Total Kjeldal	CalTest	129-NWHFR-QE	NWHFR	9-Feb-16	9:00:00 AM	1.1	mg/L
4987123	Nitrogen, Total Kjeldal	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	2	mg/L
4984117	Nitrogen, Total Kjeldal	CalTest	128-NWHFR-QE	NWHFR	20-Oct-15	9:00:00 AM	0.7	mg/L
4982846	Nitrogen, Total Kjeldal	CalTest	127-NWHFR-QE	NWHFR	15-Sep-15	9:20:00 AM	0.79	mg/L
4980995	Nitrogen, Total Kjeldal	CalTest	126-NWHFR-QE	NWHFR	11-Aug-15	9:00:00 AM	1.1	mg/L
4979521	Nitrogen, Total Kjeldal	CalTest	125-NWHFR-QE	NWHFR	14-Jul-15	9:00:00 AM	0.44	mg/L
4976887	Nitrogen, Total Kjeldal	CalTest	124-NWHFR-QE	NWHFR	9-Jun-15	8:30:00 AM	1.4	mg/L
4975085	Nitrogen, Total Kjeldal	CalTest	123-NWHFR-QE	NWHFR	12-May-15	9:00:00 AM	1.3	mg/L
4973209	Nitrogen, Total Kjeldal	CalTest	122-NWHFR-QE	NWHFR	14-Apr-15	9:06:00 AM	1.7	mg/L
4970676	Nitrogen, Total Kjeldal	CalTest	121-NWHFR-QE	NWHFR	10-Mar-15	9:15:00 AM	0.97	mg/L
4968370	Nitrogen, Total Kjeldal	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	1.9	mg/L
4967714	Nitrogen, Total Kjeldal	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	0.97	mg/L
5067674	OrthoPhosphate as P	CalTest	161-NWHFR-QE	NWHFR	10-Sep-19	8:50:00 AM	0.066	mg/L
5065446	OrthoPhosphate as P	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	0.026	mg/L
5064786	OrthoPhosphate as P	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	0.023	mg/L
5062108	OrthoPhosphate as P	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	0.094	mg/L
5060144	OrthoPhosphate as P	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	0.17	mg/L
5055542	OrthoPhosphate as P	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	0.48	mg/L
5054106	OrthoPhosphate as P	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	0.21	mg/L
5052227	OrthoPhosphate as P	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	0.14	mg/L
5051031	OrthoPhosphate as P	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	0.2	mg/L
5048540	OrthoPhosphate as P	CalTest	R24-NWHFR-QE	NWHFR	30-Nov-18	9:30:00 AM	0.15	mg/L
5047501	OrthoPhosphate as P	CalTest	154-NWHFR-QE	NWHFR	9-Oct-18	9:00:00 AM	0.043	mg/L
5045148	OrthoPhosphate as P	CalTest	153-NWHFR-QE	NWHFR	11-Sep-18	9:00:00 AM	0.054	mg/L
5044016	OrthoPhosphate as P	CalTest	152-NWHFR-QE	NWHFR	14-Aug-18	9:00:00 AM	0.05	mg/L
5043446	OrthoPhosphate as P	CalTest	151-NWHFR-QE	NWHFR	10-Jul-18	9:00:00 AM	0.072	mg/L
5042741	OrthoPhosphate as P	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	0.14	mg/L
5037821	OrthoPhosphate as P	CalTest	149-NWHFR-QE	NWHFR	8-May-18	9:05:00 AM	0.12	mg/L
5037430	OrthoPhosphate as P	CalTest	148-NWHFR-QE	NWHFR	10-Apr-18	10:00:00 AM	0.1	mg/L
5042151	OrthoPhosphate as P	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	0.2	mg/L
5036559	OrthoPhosphate as P	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	0.25	mg/L
5027507	OrthoPhosphate as P	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		0.05	mg/L
5026628	OrthoPhosphate as P	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	0.071	mg/L
5020883	OrthoPhosphate as P	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	0.16	
5019011	OrthoPhosphate as P	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	0.32	
5016489	OrthoPhosphate as P	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	0.53	
5008256	OrthoPhosphate as P	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	0.39	
5009118	OrthoPhosphate as P	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	0.17	
5006687	OrthoPhosphate as P	CalTest	137-NWHFR-QE	NWHFR	14-Feb-17	9:45:00 AM	0.21	mg/L
5004543	OrthoPhosphate as P	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	0.23	mg/L
5001293	OrthoPhosphate as P	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	0.11	mg/L
5000636	OrthoPhosphate as P	CalTest	136-NWHFR-QE	NWHFR	11-Oct-16	9:05:00 AM	0.059	mg/L
4999512	OrthoPhosphate as P	CalTest	135-NWHFR-QE	NWHFR	13-Sep-16	9:15:00 AM	0.066	mg/L
4997072	OrthoPhosphate as P	CalTest	134-NWHFR-QE	NWHFR	9-Aug-16	9:10:00 AM	0.033	mg/L
4995260	OrthoPhosphate as P	CalTest	133-NWHFR-QE	NWHFR	12-Jul-16	9:00:00 AM	0.025	mg/L
4994066	OrthoPhosphate as P	CalTest	132-NWHFR-QE	NWHFR	14-Jun-16	9:00:00 AM	0.052	mg/L
4994738	OrthoPhosphate as P	CalTest	131-NWHFR-QE	NWHFR	10-May-16	9:15:00 AM	1.6	mg/L
4989993	OrthoPhosphate as P	CalTest	130-NWHFR-QE	NWHFR	12-Apr-16	10:10:00 AM	0.57	mg/L

4987919	OrthoPhosphate as P	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	0.29	mg/L
4985991	OrthoPhosphate as P	CalTest	129-NWHFR-QE	NWHFR	9-Feb-16	9:00:00 AM	0.4	mg/L
4987166	OrthoPhosphate as P	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	0.14	mg/L
4984135	OrthoPhosphate as P	CalTest	128-NWHFR-QE	NWHFR	20-Oct-15	9:00:00 AM	0.1	mg/L
4982942	OrthoPhosphate as P	CalTest	127-NWHFR-QE	NWHFR	15-Sep-15	9:20:00 AM	0.038	mg/L
4981020	OrthoPhosphate as P	CalTest	126-NWHFR-QE	NWHFR	11-Aug-15	9:00:00 AM	0.037	mg/L
4979592	OrthoPhosphate as P	CalTest	125-NWHFR-QE	NWHFR	14-Jul-15	9:00:00 AM	0.054	mg/L
4976964	OrthoPhosphate as P	CalTest	124-NWHFR-QE	NWHFR	9-Jun-15	8:30:00 AM	0.45	mg/L
4975105	OrthoPhosphate as P	CalTest	123-NWHFR-QE	NWHFR	12-May-15	9:00:00 AM	0.47	mg/L
4973323	OrthoPhosphate as P	CalTest	122-NWHFR-QE	NWHFR	14-Apr-15	9:06:00 AM	0.65	mg/L
4970714	OrthoPhosphate as P	CalTest	121-NWHFR-QE	NWHFR	10-Mar-15	9:15:00 AM	0.095	mg/L
4968718	OrthoPhosphate as P	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	0.1	mg/L
4967732	OrthoPhosphate as P	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	0.097	mg/L
5042169	Phosphorus as P	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	0.4	mg/L
5036578	Phosphorus as P	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	0.3	mg/L
5027527	Phosphorus as P	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		0.11	mg/L
5026661	Phosphorus as P	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	0.16	mg/L
5020923	Phosphorus as P	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	0.47	mg/L
5019031	Phosphorus as P	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	0.81	mg/L
5016508	Phosphorus as P	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	0.79	mg/L
5008278	Phosphorus as P	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	0.6	mg/L
5009162	Phosphorus as P	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	0.37	mg/L
5007043	Phosphorus as P	CalTest	137-NWHFR-QE	NWHFR	14-Feb-17	9:45:00 AM	0.38	mg/L
5004556	Phosphorus as P	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	0.39	mg/L
5001320	Phosphorus as P	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	0.16	mg/L
5000677	Phosphorus as P	CalTest	136-NWHFR-QE	NWHFR	11-Oct-16	9:05:00 AM	0.11	mg/L
4999597	Phosphorus as P	CalTest	135-NWHFR-QE	NWHFR	13-Sep-16	9:15:00 AM	0.11	mg/L
4997089	Phosphorus as P	CalTest	134-NWHFR-QE	NWHFR	9-Aug-16	9:10:00 AM	0.068	mg/L
4995278	Phosphorus as P	CalTest	133-NWHFR-QE	NWHFR	12-Jul-16	9:00:00 AM	0.044	mg/L
4994082	Phosphorus as P	CalTest	132-NWHFR-QE	NWHFR	14-Jun-16	9:00:00 AM	0.1	mg/L
4994773	Phosphorus as P	CalTest	131-NWHFR-QE	NWHFR	10-May-16	9:15:00 AM	1.6	mg/L
4990007	Phosphorus as P	CalTest	130-NWHFR-QE	NWHFR	12-Apr-16	10:10:00 AM	0.65	mg/L
4987969	Phosphorus as P	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	0.33	mg/L
4985997	Phosphorus as P	CalTest	129-NWHFR-QE	NWHFR	9-Feb-16	9:00:00 AM	0.43	mg/L
4987185	Phosphorus as P	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	0.21	mg/L
4984152	Phosphorus as P	CalTest	128-NWHFR-QE	NWHFR	20-Oct-15	9:00:00 AM	0.11	mg/L
4982979	Phosphorus as P	CalTest	127-NWHFR-QE	NWHFR	15-Sep-15	9:20:00 AM	0.084	mg/L
4981032	Phosphorus as P	CalTest	126-NWHFR-QE	NWHFR	11-Aug-15	9:00:00 AM	0.058	mg/L
4979655	Phosphorus as P	CalTest	125-NWHFR-QE	NWHFR	14-Jul-15	9:00:00 AM	0.092	mg/L
4977003	Phosphorus as P	CalTest	124-NWHFR-QE	NWHFR	9-Jun-15	8:30:00 AM	0.54	mg/L
4975124	Phosphorus as P	CalTest	123-NWHFR-QE	NWHFR	12-May-15	9:00:00 AM	0.55	mg/L
4973341	Phosphorus as P	CalTest	122-NWHFR-QE	NWHFR	14-Apr-15	9:06:00 AM	0.77	mg/L
4970753	Phosphorus as P	CalTest	121-NWHFR-QE	NWHFR	10-Mar-15	9:15:00 AM	0.16	mg/L
4968507	Phosphorus as P	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	0.26	mg/L
4967750	Phosphorus as P	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	0.14	mg/L
5067469	Selenium	CalTest	161-NWHFR-QE	NWHFR	10-Sep-19	8:50:00 AM	0.34	ug/L
5065213	Selenium	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	-0.3	ug/L
5064641	Selenium	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	0.38	ug/L
5061876	Selenium	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	-0.3	ug/L
5060033	Selenium	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	0.6	ug/L
5055462	Selenium	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	0.87	ug/L
5054227	Selenium	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	0.5	ug/L
5052157	Selenium	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	1.4	ug/L
5050959	Selenium	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	0.77	ug/L
5048581	Selenium	CalTest	R24-NWHFR-QE	NWHFR	30-Nov-18	9:30:00 AM	0.77	ug/L
5047356	Selenium	CalTest	154-NWHFR-QE	NWHFR	9-Oct-18	9:00:00 AM	0.65	ug/L
5044999	Selenium	CalTest	153-NWHFR-QE	NWHFR	11-Sep-18	9:00:00 AM	0.49	ug/L
5043954	Selenium	CalTest	152-NWHFR-QE	NWHFR	14-Aug-18	9:00:00 AM	0.42	ug/L
5043326	Selenium	CalTest	151-NWHFR-QE	NWHFR	10-Jul-18	9:00:00 AM	0.49	ug/L
5042825	Selenium	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	0.57	ug/L
5037724	Selenium	CalTest	149-NWHFR-QE	NWHFR	8-May-18	9:05:00 AM	0.45	ug/L
5037354	Selenium	CalTest	148-NWHFR-QE	NWHFR	10-Apr-18	10:00:00 AM	0.91	ug/L
5041798	Selenium	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	0.73	ug/L
5036231	Selenium	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	1.1	ug/L
5027233	Selenium	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		0.37	ug/L
5026269	Selenium	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	0.43	ug/L
5020719	Selenium	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	0.4	ug/L
5018683	Selenium	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	1.1	ug/L
5016146	Selenium	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	0.36	ug/L
5007706	Selenium	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	0.43	ug/L
5008714	Selenium	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	0.53	ug/L
5004331	Selenium	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	0.53	ug/L
5001133	Selenium	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	0.41	ug/L

4987557	Selenium	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	0.65	ug/L
4986907	Selenium	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	0.75	ug/L
4968223	Selenium	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	0.77	ug/L
4967458	Selenium	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	1.4	ug/L
5036711	Total Dissolved Solids	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	1300	mg/L
5027658	Total Dissolved Solids	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		710	mg/L
5026777	Total Dissolved Solids	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	420	mg/L
5021013	Total Dissolved Solids	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	340	mg/L
5019156	Total Dissolved Solids	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	500	mg/L
5016629	Total Dissolved Solids	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	520	mg/L
5008356	Total Dissolved Solids	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	480	mg/L
5009209	Total Dissolved Solids	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	350	mg/L
5007080	Total Dissolved Solids	CalTest	137-NWHFR-QE	NWHFR	14-Feb-17	9:45:00 AM	270	mg/L
5004568	Total Dissolved Solids	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	380	mg/L
5001410	Total Dissolved Solids	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	770	mg/L
5000494	Total Dissolved Solids	CalTest	136-NWHFR-QE	NWHFR	11-Oct-16	9:05:00 AM	620	mg/L
4999548	Total Dissolved Solids	CalTest	135-NWHFR-QE	NWHFR	13-Sep-16	9:15:00 AM	850	mg/L
4997094	Total Dissolved Solids	CalTest	134-NWHFR-QE	NWHFR	9-Aug-16	9:10:00 AM	630	mg/L
4995378	Total Dissolved Solids	CalTest	133-NWHFR-QE	NWHFR	12-Jul-16	9:00:00 AM	750	mg/L
4994366	Total Dissolved Solids	CalTest	132-NWHFR-QE	NWHFR	14-Jun-16	9:00:00 AM	700	mg/L
4994864	Total Dissolved Solids	CalTest	131-NWHFR-QE	NWHFR	10-May-16	9:15:00 AM	960	mg/L
4990093	Total Dissolved Solids	CalTest	130-NWHFR-QE	NWHFR	12-Apr-16	10:10:00 AM	780	mg/L
4987433	Total Dissolved Solids	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	390	mg/L
4986173	Total Dissolved Solids	CalTest	129-NWHFR-QE	NWHFR	9-Feb-16	9:00:00 AM	1600	mg/L
4987284	Total Dissolved Solids	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	420	mg/L
4984261	Total Dissolved Solids	CalTest	128-NWHFR-QE	NWHFR	20-Oct-15	9:00:00 AM	1600	mg/L
4983059	Total Dissolved Solids	CalTest	127-NWHFR-QE	NWHFR	15-Sep-15	9:20:00 AM	640	mg/L
4981115	Total Dissolved Solids	CalTest	126-NWHFR-QE	NWHFR	11-Aug-15	9:00:00 AM	780	mg/L
4979730	Total Dissolved Solids	CalTest	125-NWHFR-QE	NWHFR	14-Jul-15	9:00:00 AM	840	mg/L
4977024	Total Dissolved Solids	CalTest	124-NWHFR-QE	NWHFR	9-Jun-15	8:30:00 AM	1100	mg/L
4975243	Total Dissolved Solids	CalTest	123-NWHFR-QE	NWHFR	12-May-15	9:00:00 AM	1200	mg/L
4973453	Total Dissolved Solids	CalTest	122-NWHFR-QE	NWHFR	14-Apr-15	9:06:00 AM	1500	mg/L
4970819	Total Dissolved Solids	CalTest	121-NWHFR-QE	NWHFR	10-Mar-15	9:15:00 AM	1000	mg/L
4968675	Total Dissolved Solids	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	800	mg/L
4967858	Total Dissolved Solids	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	1600	mg/L
5067566	Total Organic Carbon	CalTest	161-NWHFR-QE	NWHFR	10-Sep-19	8:50:00 AM	4.2	mg/L
5065519	Total Organic Carbon	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	3.8	mg/L
5064985	Total Organic Carbon	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	4.9	mg/L
5062191	Total Organic Carbon	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	6.4	mg/L
5060330	Total Organic Carbon	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	4.9	mg/L
5055767	Total Organic Carbon	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	9	mg/L
5054133	Total Organic Carbon	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	10	mg/L
5052290	Total Organic Carbon	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	5	mg/L
5051100	Total Organic Carbon	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	6.2	mg/L
5048423	Total Organic Carbon	CalTest	R24-NWHFR-QE	NWHFR	30-Nov-18	9:30:00 AM	7.5	mg/L
5047172	Total Organic Carbon	CalTest	154-NWHFR-QE	NWHFR	9-Oct-18	9:00:00 AM	3.8	mg/L
5045177	Total Organic Carbon	CalTest	153-NWHFR-QE	NWHFR	11-Sep-18	9:00:00 AM	4	mg/L
5044094	Total Organic Carbon	CalTest	152-NWHFR-QE	NWHFR	14-Aug-18	9:00:00 AM	6.3	mg/L
5043533	Total Organic Carbon	CalTest	151-NWHFR-QE	NWHFR	10-Jul-18	9:00:00 AM	4.9	mg/L
5043078	Total Organic Carbon	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	5.5	mg/L
5037908	Total Organic Carbon	CalTest	149-NWHFR-QE	NWHFR	8-May-18	9:05:00 AM	4.6	mg/L
5037483	Total Organic Carbon	CalTest	148-NWHFR-QE	NWHFR	10-Apr-18	10:00:00 AM	9.5	mg/L
5041921	Total Organic Carbon	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	5.6	mg/L
5036651	Total Organic Carbon	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	4.7	mg/L
5027611	Total Organic Carbon	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		3.8	mg/L
5026723	Total Organic Carbon	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	7.5	mg/L
5020965	Total Organic Carbon	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	7.7	mg/L
5019097	Total Organic Carbon	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	10	mg/L
5016584	Total Organic Carbon	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	10	mg/L
5008151	Total Organic Carbon	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	9.6	mg/L
5009020	Total Organic Carbon	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	7.1	mg/L
5006598	Total Organic Carbon	CalTest	137-NWHFR-QE	NWHFR	14-Feb-17	9:45:00 AM	9.4	mg/L
5004406	Total Organic Carbon	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	4.1	mg/L
5001356	Total Organic Carbon	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	5.8	mg/L
5000720	Total Organic Carbon	CalTest	136-NWHFR-QE	NWHFR	11-Oct-16	9:05:00 AM	3.5	mg/L
4999640	Total Organic Carbon	CalTest	135-NWHFR-QE	NWHFR	13-Sep-16	9:15:00 AM	3.7	mg/L
4996947	Total Organic Carbon	CalTest	134-NWHFR-QE	NWHFR	9-Aug-16	9:10:00 AM	4.4	mg/L
4995317	Total Organic Carbon	CalTest	133-NWHFR-QE	NWHFR	12-Jul-16	9:00:00 AM	5.1	mg/L
4994319	Total Organic Carbon	CalTest	132-NWHFR-QE	NWHFR	14-Jun-16	9:00:00 AM	6.2	mg/L
4994796	Total Organic Carbon	CalTest	131-NWHFR-QE	NWHFR	10-May-16	9:15:00 AM	11	mg/L
4990057	Total Organic Carbon	CalTest	130-NWHFR-QE	NWHFR	12-Apr-16	10:10:00 AM	9.6	mg/L
4988022	Total Organic Carbon	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	4.3	mg/L
4986131	Total Organic Carbon	CalTest	129-NWHFR-QE	NWHFR	9-Feb-16	9:00:00 AM	4.6	mg/L

4987251	Total Organic Carbon	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	5.4	mg/L
4984422	Total Organic Carbon	CalTest	128-NWHFR-QE	NWHFR	20-Oct-15	9:00:00 AM	4.8	mg/L
4982876	Total Organic Carbon	CalTest	127-NWHFR-QE	NWHFR	15-Sep-15	9:20:00 AM	3.2	mg/L
4981077	Total Organic Carbon	CalTest	126-NWHFR-QE	NWHFR	11-Aug-15	9:00:00 AM	4.2	mg/L
4979680	Total Organic Carbon	CalTest	125-NWHFR-QE	NWHFR	14-Jul-15	9:00:00 AM	4.5	mg/L
4976900	Total Organic Carbon	CalTest	124-NWHFR-QE	NWHFR	9-Jun-15	8:30:00 AM	5.3	mg/L
4975186	Total Organic Carbon	CalTest	123-NWHFR-QE	NWHFR	12-May-15	9:00:00 AM	5.9	mg/L
4973381	Total Organic Carbon	CalTest	122-NWHFR-QE	NWHFR	14-Apr-15	9:06:00 AM	4.8	mg/L
4970906	Total Organic Carbon	CalTest	121-NWHFR-QE	NWHFR	10-Mar-15	9:15:00 AM	2.9	mg/L
4968533	Total Organic Carbon	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	6	mg/L
4967839	Total Organic Carbon	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	3.9	mg/L
5067394	Total Suspended Solid	CalTest	161-NWHFR-QE	NWHFR	10-Sep-19	8:50:00 AM	5	mg/L
5065180	Total Suspended Solid	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	7	mg/L
5064602	Total Suspended Solid	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	18	mg/L
5061814	Total Suspended Solid	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	4	mg/L
5059958	Total Suspended Solid	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	23	mg/L
5055396	Total Suspended Solid	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	8	mg/L
5054351	Total Suspended Solid	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	5	mg/L
5051968	Total Suspended Solid	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	20	mg/L
5050771	Total Suspended Solid	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	62	mg/L
5048357	Total Suspended Solid	CalTest	R24-NWHFR-QE	NWHFR	30-Nov-18	9:30:00 AM	30	mg/L
5047235	Total Suspended Solid	CalTest	154-NWHFR-QE	NWHFR	9-Oct-18	9:00:00 AM	95	mg/L
5044887	Total Suspended Solid	CalTest	153-NWHFR-QE	NWHFR	11-Sep-18	9:00:00 AM	26	mg/L
5043760	Total Suspended Solid	CalTest	152-NWHFR-QE	NWHFR	14-Aug-18	9:00:00 AM	50	mg/L
5043140	Total Suspended Solid	CalTest	151-NWHFR-QE	NWHFR	10-Jul-18	9:00:00 AM	23	mg/L
5042689	Total Suspended Solid	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	125	mg/L
5037540	Total Suspended Solid	CalTest	149-NWHFR-QE	NWHFR	8-May-18	9:05:00 AM	37	mg/L
5037026	Total Suspended Solid	CalTest	148-NWHFR-QE	NWHFR	10-Apr-18	10:00:00 AM	25	mg/L
5041732	Total Suspended Solid	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	58	mg/L
5036148	Total Suspended Solid	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	11	mg/L
5027694	Total Suspended Solid	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		11	mg/L
5026206	Total Suspended Solid	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	18	mg/L
5020494	Total Suspended Solid	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	89	mg/L
5018547	Total Suspended Solid	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	41	mg/L
5016037	Total Suspended Solid	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	17	mg/L
5007906	Total Suspended Solid	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	12	mg/L
5008653	Total Suspended Solid	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	29	mg/L
5006566	Total Suspended Solid	CalTest	137-NWHFR-QE	NWHFR	14-Feb-17	9:45:00 AM	17	mg/L
5004076	Total Suspended Solid	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	22	mg/L
5000760	Total Suspended Solid	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	12	mg/L
5000327	Total Suspended Solid	CalTest	136-NWHFR-QE	NWHFR	11-Oct-16	9:05:00 AM	25	mg/L
4999239	Total Suspended Solid	CalTest	135-NWHFR-QE	NWHFR	13-Sep-16	9:15:00 AM	18	mg/L
4996700	Total Suspended Solid	CalTest	134-NWHFR-QE	NWHFR	9-Aug-16	9:10:00 AM	23	mg/L
4994980	Total Suspended Solid	CalTest	133-NWHFR-QE	NWHFR	12-Jul-16	9:00:00 AM	15	mg/L
4994262	Total Suspended Solid	CalTest	132-NWHFR-QE	NWHFR	14-Jun-16	9:00:00 AM	6	mg/L
4994397	Total Suspended Solid	CalTest	131-NWHFR-QE	NWHFR	10-May-16	9:15:00 AM	9	mg/L
4989706	Total Suspended Solid	CalTest	130-NWHFR-QE	NWHFR	12-Apr-16	10:10:00 AM	8	mg/L
4987436	Total Suspended Solid	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	-2	mg/L
4985905	Total Suspended Solid	CalTest	129-NWHFR-QE	NWHFR	9-Feb-16	9:00:00 AM	4	mg/L
4986803	Total Suspended Solid	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	17	mg/L
4984162	Total Suspended Solid	CalTest	128-NWHFR-QE	NWHFR	20-Oct-15	9:00:00 AM	5	mg/L
4982535	Total Suspended Solid	CalTest	127-NWHFR-QE	NWHFR	15-Sep-15	9:20:00 AM	18	mg/L
4980713	Total Suspended Solid	CalTest	126-NWHFR-QE	NWHFR	11-Aug-15	9:00:00 AM	15	mg/L
4979296	Total Suspended Solid	CalTest	125-NWHFR-QE	NWHFR	14-Jul-15	9:00:00 AM	28	mg/L
4976567	Total Suspended Solid	CalTest	124-NWHFR-QE	NWHFR	9-Jun-15	8:30:00 AM	11	mg/L
4974760	Total Suspended Solid	CalTest	123-NWHFR-QE	NWHFR	12-May-15	9:00:00 AM	32	mg/L
4972965	Total Suspended Solid	CalTest	122-NWHFR-QE	NWHFR	14-Apr-15	9:06:00 AM	31	mg/L
4970400	Total Suspended Solid	CalTest	121-NWHFR-QE	NWHFR	10-Mar-15	9:15:00 AM	40	mg/L
4968114	Total Suspended Solid	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	45	mg/L
4967405	Total Suspended Solid	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	30	mg/L
5067542	Turbidity	CalTest	161-NWHFR-QE	NWHFR	10-Sep-19	8:50:00 AM	1.6	NTU
5065544	Turbidity	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	4.4	NTU
5064829	Turbidity	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	6.8	NTU
5062146	Turbidity	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	2.8	NTU
5060307	Turbidity	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	20	NTU
5055730	Turbidity	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	4.2	NTU
5054148	Turbidity	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	3.2	NTU
5052268	Turbidity	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	36	NTU
5051079	Turbidity	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	130	NTU
5048348	Turbidity	CalTest	R24-NWHFR-QE	NWHFR	30-Nov-18	9:30:00 AM	50	NTU
5047416	Turbidity	CalTest	154-NWHFR-QE	NWHFR	9-Oct-18	9:00:00 AM	50	NTU
5045220	Turbidity	CalTest	153-NWHFR-QE	NWHFR	11-Sep-18	9:00:00 AM	14	NTU
5044053	Turbidity	CalTest	152-NWHFR-QE	NWHFR	14-Aug-18	9:00:00 AM	26	NTU

5043487	Turbidity	CalTest	151-NWHFR-QE	NWHFR	10-Jul-18	9:00:00 AM	12	NTU
5042775	Turbidity	CalTest	150-NWHFR-QE	NWHFR	12-Jun-18	9:00:00 AM	55	NTU
5037867	Turbidity	CalTest	149-NWHFR-QE	NWHFR	8-May-18	9:05:00 AM	33	NTU
5037466	Turbidity	CalTest	148-NWHFR-QE	NWHFR	10-Apr-18	10:00:00 AM	19	NTU
5042192	Turbidity	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	80	NTU
5036626	Turbidity	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	9.4	NTU
5027567	Turbidity	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		14	NTU
5026684	Turbidity	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	16	NTU
5020991	Turbidity	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	39	NTU
5019118	Turbidity	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	36	NTU
5016605	Turbidity	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	13	NTU
5008333	Turbidity	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	8.5	NTU
5009177	Turbidity	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	2.5	NTU
5007060	Turbidity	CalTest	137-NWHFR-QE	NWHFR	14-Feb-17	9:45:00 AM	80	NTU
5004503	Turbidity	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	50	NTU
5001338	Turbidity	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	10	NTU
5000695	Turbidity	CalTest	136-NWHFR-QE	NWHFR	11-Oct-16	9:05:00 AM	10	NTU
4999619	Turbidity	CalTest	135-NWHFR-QE	NWHFR	13-Sep-16	9:15:00 AM	11	NTU
4997180	Turbidity	CalTest	134-NWHFR-QE	NWHFR	9-Aug-16	9:10:00 AM	8.9	NTU
4995358	Turbidity	CalTest	133-NWHFR-QE	NWHFR	12-Jul-16	9:00:00 AM	8	NTU
4994300	Turbidity	CalTest	132-NWHFR-QE	NWHFR	14-Jun-16	9:00:00 AM	4.4	NTU
4994845	Turbidity	CalTest	131-NWHFR-QE	NWHFR	10-May-16	9:15:00 AM	7	NTU
4990037	Turbidity	CalTest	130-NWHFR-QE	NWHFR	12-Apr-16	10:10:00 AM	3	NTU
4987997	Turbidity	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	16	NTU
4986154	Turbidity	CalTest	129-NWHFR-QE	NWHFR	9-Feb-16	9:00:00 AM	2.3	NTU
4987223	Turbidity	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	22	NTU
4984405	Turbidity	CalTest	128-NWHFR-QE	NWHFR	20-Oct-15	9:00:00 AM	3.5	NTU
4983028	Turbidity	CalTest	127-NWHFR-QE	NWHFR	15-Sep-15	9:20:00 AM	23	NTU
4981088	Turbidity	CalTest	126-NWHFR-QE	NWHFR	11-Aug-15	9:00:00 AM	7.4	NTU
4979632	Turbidity	CalTest	125-NWHFR-QE	NWHFR	14-Jul-15	9:00:00 AM	12	NTU
4977043	Turbidity	CalTest	124-NWHFR-QE	NWHFR	9-Jun-15	8:30:00 AM	12	NTU
4975164	Turbidity	CalTest	123-NWHFR-QE	NWHFR	12-May-15	9:00:00 AM	17	NTU
4973405	Turbidity	CalTest	122-NWHFR-QE	NWHFR	14-Apr-15	9:06:00 AM	15	NTU
4970771	Turbidity	CalTest	121-NWHFR-QE	NWHFR	10-Mar-15	9:15:00 AM	18	NTU
4968623	Turbidity	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	45	NTU
4967793	Turbidity	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	16	NTU
5065345	Zinc	CalTest	160-NWHFR-QE	NWHFR	13-Aug-19	9:00:00 AM	-0.7	ug/L
5064916	Zinc	CalTest	159-NWHFR-QE	NWHFR	9-Jul-19	9:00:00 AM	0.8	ug/L
5061990	Zinc	CalTest	158-NWHFR-QE	NWHFR	11-Jun-19	9:00:00 AM	27	ug/L
5060089	Zinc	CalTest	157-NWHFR-QE	NWHFR	14-May-19	8:45:00 AM	7.9	ug/L
5055607	Zinc	CalTest	156-NWHFR-QE	NWHFR	9-Apr-19	9:00:00 AM	13	ug/L
5054395	Zinc	CalTest	155-NWHFR-QE	NWHFR	12-Mar-19	9:30:00 AM	11	ug/L
5052032	Zinc	CalTest	R26-NWHFR-QE	NWHFR	14-Feb-19	10:00:00 AM	29	ug/L
5050826	Zinc	CalTest	R25-NWHFR-QE	NWHFR	17-Jan-19	9:45:00 AM	5.4	ug/L
5041973	Zinc	CalTest	R23-NWHFR-QE	NWHFR	2-Mar-18	9:40:00 AM	3.5	ug/L
5036232	Zinc	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	4.2	ug/L
5036434	Zinc	CalTest	146-NWHFR-QE	NWHFR	13-Feb-18	9:30:00 AM	-0.7	ug/L
5027234	Zinc	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		3.4	ug/L
5026270	Zinc	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	2.7	ug/L
5020720	Zinc	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	32	ug/L
5018684	Zinc	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	14	ug/L
5016147	Zinc	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	33	ug/L
5007707	Zinc	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	30	ug/L
5008715	Zinc	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	7.2	ug/L
5004332	Zinc	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	14	ug/L
5001134	Zinc	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	2.6	ug/L
4987558	Zinc	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	4.4	ug/L
4986908	Zinc	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	10	ug/L
4968224	Zinc	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	12	ug/L
4967459	Zinc	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	1.8	ug/L
5027838	Zinc (Dissolved)	CalTest	145-NWHFR-QE	NWHFR	10-Oct-17		-0.7	ug/L
5026488	Zinc (Dissolved)	CalTest	144-NWHFR-QE	NWHFR	12-Sep-17	10:10:00 AM	-0.7	ug/L
5020592	Zinc (Dissolved)	CalTest	142-NWHFR-QE	NWHFR	11-Jul-17	9:00:00 AM	11	ug/L
5018886	Zinc (Dissolved)	CalTest	141-NWHFR-QE	NWHFR	13-Jun-17	9:00:00 AM	1.4	ug/L
5016363	Zinc (Dissolved)	CalTest	140-NWHFR-QE	NWHFR	9-May-17	9:20:00 AM	2.2	ug/L
5008007	Zinc (Dissolved)	CalTest	139-NWHFR-QE	NWHFR	11-Apr-17	10:15:00 AM	14	ug/L
5008930	Zinc (Dissolved)	CalTest	138-NWHFR-QE	NWHFR	14-Mar-17	9:00:00 AM	2.1	ug/L
5004232	Zinc (Dissolved)	CalTest	R21-NWHFR-QE	NWHFR	10-Jan-17	10:15:00 AM	2.6	ug/L
5001202	Zinc (Dissolved)	CalTest	R20-NWHFR-QE	NWHFR	1-Nov-16	10:10:00 AM	1	ug/L
4987768	Zinc (Dissolved)	CalTest	R19-NWHFR-QE	NWHFR	8-Mar-16	10:00:00 AM	0.7	ug/L
4987054	Zinc (Dissolved)	CalTest	R18-NWHFR-QE	NWHFR	7-Jan-16	10:10:00 AM	3.1	ug/L
4968269	Zinc (Dissolved)	CalTest	R17-NWHFR-QE	NWHFR	10-Feb-15	10:20:00 AM	1.4	ug/L
4967625	Zinc (Dissolved)	CalTest	120-NWHFR-QE	NWHFR	13-Jan-15	9:15:00 AM	-0.7	ug/L

UNIVERSITY OF CALIFORNIA
MERCED

NEWMAN CONSTRUCTED TREATMENT WETLAND POLLUTANT REMOVAL MODELING REPORT (Memorandum 4)

August 2020

DRAFT

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1. SUMMARY

This report (Memorandum 4) covers modeling pollutant removal for the 30-acres constructed treatment wetland in the southwest corner of the study site in Newman City. Constructed wetlands are effective treatment systems that utilize biological processes, vegetation, and soil properties to treat waterborne pollutants. The City of Newman aims to reduce incoming pollutants (nitrate and total phosphorus (TP)), so that the treated water can be reused in agricultural fields. At the same time, the City looks for low salinity increment after the treatment, as the watershed of the area already has high salinity concentration that affects agriculture of the region.

Pollutant removal was developed using the P-k-C* model by *Kadlec and Wallace* (*2009*) that requires hydrologic and water quality information of the area, presented in detail in Memorandum 2 and 3, to determine the outlet concentration of the pollutants in the proposed wetland. Thus, this report presents three monthly yearly-averaged scenarios, normal, dry, and wet year, showing percentage reduction, percentage mass removal, and areal mass removal for nitrogen and phosphorus. The report also includes a comparison between a 30-acres and a 10-acres normal year wetland to access the important effect of wetland area on pollutant removal. Likewise, it presents a normal year 30-acres salinity model to show salinity behavior in the wetland.

The results indicate that the percentage removal for nitrate is 73% (outlet concentration C_o = 0.49 mg/L) and for TP is 62% (C_o = 0.11 mg/L) in a normal year 30-acres with a 9 days residence time. When comparing wet and dry years, both nitrate and TP have higher percentage reduction during the dry year with 79% and 68%, respectively, due to a hydraulic residence time increment (14 days). Although, wet year removal is still high with 65% for nitrate and 59% for TP. However, nitrate has higher areal mass removal during the wet year of 45 g/m^{2}yr as the loading rate in the inflow (LRI) to the wetland increased (71 g/m^{2}yr), compared to the dry year value of 39 g/m^{2}yr and 43 g/m^{2}yr LRI. These values confirm the relation between high LRI and high areal mass removal for nitrate, even though a high LRI also tends to correspond with a higher C_o. Finally, nitrate has a 45%reduction and a TP 19% reduction in the 10-acres wetland, which is much lower than the 30-acres wetland. These last comparison shows better removal with larger areas as it is favored by high residence times.

Likewise, the models showed different seasonality for the compounds. Nitrate is highly dependent on temperature as it is microbially mediated. Thus, denitrification reactions, where bacteria convert nitrate to harmless nitrogen gas, are favored under warmer conditions. Thus, removal is better during summertime. On the contrary, TP follows the plant seasonal cycle of uptake and burial, having two peaks of removal.

The first one during spring-summer and the second peak during autumn time. The lowest removal is in summer when plants die, and they are biodegraded and release much of their stored phosphorus back to the wetland water column.

The last pollutant, salinity, shows a small increment of 14% during the 30-acres normal year scenario. The results presented for TP and nitrate and the small salinity increment demonstrate that the constructed wetland is a good solution for City purposes.

2. INTRODUCTION

Newman City is located in Stanislaus county in Central Valley, California where agriculture is the dominant industry and occupation. The soils are formed by sandy clays promotes high infiltration rates, according with the measurements made by RICK Engineering (*190156001 Geo. Report, Infiltration Tests, 2019*). The City has Mediterranean weather and an annual minimum and maximum temperature of 9°C and 27°C (48°F and 80°F) respectively, and an average annual precipitation of 29.4 cm (11.59 inch) *(US Climate data).* Finally, Newman City is part of the Delta-Mendota Canal Hydrologic Unit in San Joaquin Hydrologic Basin, which is considered as high priority category for water management (*California Regional Water Quality Control Board, 2018*). Therefore, the City of Newman is planning to build a constructed wetland, which is a sustainable technique to treat agricultural runoff and agricultural delivery through-flow and potentially reuse it for irrigation and groundwater recharge purposes.

Agricultural runoff tends to be a source of nitrogen and phosphorus pollution to lakes and rivers causing eutrophication, in which algae blooms proliferate and then die, causing deoxygenation of waters and death of aquatic biota as the algae is biodegraded. Nitrate pollution from agricultural actives can also contaminate groundwater used for potable uses, which can cause blue baby syndrome at elevated concentrations *(Center for Watershed Sciences, 2012).* However, due to their high biogeochemical activity, constructed wetland systems can be an effective and economical eco-technology to treat agricultural runoff by transforming pollutants, such as nitrate and phosphate, into less harmful substances. Likewise, wetlands provide important areas for wildlife habitat and human recreation (*Kadlec and Wallace, 2009*). The designated area for the prospected treatment wetland is 30-acres of land localized in the southwest corner of the study site, adjacent to Canal School Rd and Baraza Rd *(Fig. 1).* The modeled wetland will be a free water surface type (FWS) which has the main characteristic of open water and floating and emergent vegetation. FWS wetlands are suitable in all climates and allow for high

removal rates for nitrogen and phosphorus, making them a perfect treatment, habitat, and recreation alternative for the City purposes (*Kadlec and Wallace, 2009*).

The main objective of the study is to model and predict the amount of nitrate and TP that can be removed in the 30-acres of area using the P-k-C* model developed by *Kadlec and Wallace (2009*).The model, which couples hydrologic processes with pollutant removal dynamics, was assessed for monthly pollutant removal under three different hydraulic scenarios: normal year, dry year, and wet year. In addition, to assess the impact of wetland area on pollutant removal, we compared a normal year model using 10-acres of area against the normal year 30-acres model. In general, the larger the wetland the more time the water is in the wetland. Holding time results in enhanced pollutant removal. Thus, removal is better in low-flow dry years and in larger wetlands. In addition, FWS treatment wetlands are generally better at removing nitrogen which can be removed via relatively fast microbial process, compared to phosphorus which is mainly removed via the slower process of plant uptake and burial of plant litter. Note that recommendations related to design of the wetland, including consideration of inlets and outlets, layout, flow paths and the vegetation type, will be present in a later memorandum.

Modeling was based on hydrologic and water quality monitoring and assessment by the project team as detailed in previously submitted Memorandum 2 (*Water Budget*) and Memorandum 3 (*Water Quality*). The hydraulic results presented estimated flow for Miller Ditch (MD) of 4,117 m^3/day, with apparently higher flow at the beginning and at the end of the irrigation season; and a total inflow to the prospected wetland of 8,192 m^3/day, which represents flow from MD and possible runoff from the agriculture south land, with an average hydraulic residence time of 9 days (*Table 1*). Moreover, monthly water samples were taken to measure nutrients, including ammonia (NH_4^+), nitrate (NO_3^-), total phosphorus (TP) and dissolved phosphate (PO_4^{3-}); for sediment in the water via total suspended solids (TSS); and for salinity in the water via electrical conductivity (EC). Salinity is another important goal to be modeled as groundwater of the watershed has a high salinity concentration that affects agriculture of Newman City. On average, the measured concentrations coming into the treatment wetland from MD showed 0.27 mg-P/L for TP, 0.14 mg-P/L for PO_4^{3-}, 0.16 mg-N/L for NH_4^+, 1.91 mg-N/L for nitrate, 662 uS/cm for EC, and 81 mg/L for TSS (*Table 2*), which corresponds to normal agricultural water values.

3. METHODS

3.1 Model Equations

When modeling pollutant removal, there are two possible ways to develop the model. The first approach uses a target outflow pollutant concentration to calculate the required wetland area, while the second approach uses a target area and models for the wetland´s outlet concentration. For both approaches, key model inputs are inflow concentration, water budget metrics (e.g., inflow, precipitation, evapotranspiration), flow and mixing characteristics of the wetland, and the removal rate of a given pollutant. For this study, we have assumed 30-acres of land to use for the wetland. Thus, the pollutant mass balance was developed using the second approach, a target area and calculating the estimated C_o.

The model used was the P-k-C* for nitrate and TP presented by *Kadlec and Wallace* (*2009*). We start with a mass balance of a given pollutant as presented in *Eq. 1* which assumes a fully mixed compartment of water.

$$Q_1 C_1 = (Q_{in} C_{in}) - (I \cdot A_1 C_1) - (\alpha ET \cdot A_1 C_1) - \left(k \cdot A_1 \cdot (C_1 - C^*)\right) \qquad \textit{(Eq. 1)}$$

The first term on the left describes the mass leaving the wetland (Q_1 term), while the terms on the right demonstrate the mass entering the wetland (Q_{in} term), as well as the mass leaving the wetland due to infiltration (I term), transpiration flux (α term) and transformations (k term) inside the wetland. Transpiration is the loss of water vapor by plants that move from the water column through the sediment to the roots, then out the leaves and flowers. As the water moves through the sediment and root zone, nutrients and mobile elements in water susceptible to filtration and bioreactions are transformed and lost from the wetland (*Kadlec and Wallace, 2009*). On the other hand, the transformation term represents the concentration removal, dependent on the first areal loss rate k, which shows better removal rate with higher concentration. For nitrate the k term would account for the rate of biological transformation to nitrogen gas. For TP the k term would account for the rate of plant uptake and burial. Another factor included with this term is the background concentration (C*), which accounts for possible internal sources the pollutant in the wetland, such as resuspended sediment, floating particles and release from plant decay. Thus, for some pollutants the model does not allow for full removal (*Kadlec and Wallace, 2009)*.

Next, we solve *Eq. 1* for the outflow concentration C_1 as shown in *Eq. 2*:

$$C_1 = \frac{Q_i C_{in} + (k \cdot A_1 \cdot C^*)}{Q_1 + \left((\alpha ET) A_1\right) + (I \cdot A_1) + (k \cdot A_1)} \qquad \textit{(Eq. 2)}$$

where C_1 is outflow pollutant concentration (g/m^3), Q_{in} is the inflow to the wetland (m^3/d), C_{in} the inflow concentration to the wetland (g/m^3), k the areal-based first order removal rates (m/d), C* the background concentration (g/m^3), α the transpiration fraction, ET evapotranspiration (m/d), I the infiltration rate (m/d), and A_1 the area of the tank (m^2).

We break the wetland into hypothetical "tanks" to better model the flow of water through an actual wetland. Shallow wetlands do not act as a fully mixed tank, instead, they are better modelled as separate "tanks in series" (*Fig. 2*). Treatment wetlands have been shown to typically act like 3-4 tanks in series. For our model we split the wetland into 4 hypothetic tanks, each with an area of 30 acres divided by 4 (7.5 acres, 30,352 m^2). In this scheme, C_1 is both the outlet concentration from tank 1 and the inflow concentration (C_{in}) to tank 2. *Eq. 2* is then solved sequentially for each tank, with C_4, the outflow concentration from the last tank, being equal to the concentration in the outflow concentration from the wetland.

3.2 Hydrology

The hydrologic information was collected for the different scenarios: normal, dry, and wet monthly years, as summarized in *Tables 1 and 3,* which present precipitation, evapotranspiration, and inflow values to the wetland. For a dry year, the 20^{th} percentile of the median precipitation from NOAA was used, while for the wet year the 80^{th} percentile. In the three scenarios, the evapotranspiration values were the same as we considered there is no variation throughout the years. Infiltration was assumed to be zero for modeling purposes after the suggestion of an impermeable layer on top of soil to control the high infiltration rates. Hydrologic information is presented in more detail in Memorandum 2, a draft of which was submitted in July 2020.

3.3 Inflow Water Quality

As noted earlier, inlet concentration was needed for the model. Sampling at MD gave the background information of the estimated incoming concentration of nitrate and TP to the proposed wetland during the dry season (C_{MD}). These values averaged 1.91 mg-N/L for nitrate and 0.27 mg-P/L for TP (*Table 2*). However, as there were few sampling events that captured wet-season storm-flow events, we did not have sufficient data to model wet-season water quality. So, we used typical concentration found in agricultural runoff (C_{AR}) of 2.2 mg-N/L for nitrate and 0.34 mg-P/L for TP based on *Kadlec and Wallace (2009)*. We then estimated, on a monthly basis, a flow-weighted average concentration from both MD and from wet-season agricultural runoff using Eq. 3, where Q_{MD} is estimated flow in MD and Q_{AR} is wet-

season agricultural runoff flow. The results are presented in *Table 4* and were used for the three scenarios to model the monthly removal. Water quality information is presented in more detail in Memorandum 3, a draft of which was submitted in June 2020.

$$Ci = \frac{(Q_{MD} * C_{MD}) + (Q_{AR} * C_{AR})}{Q_{MD} + Q_{AR}} \qquad \textit{(Eq. 3)}$$

3.4 Removal Rates

The last two parameters for the model are the background concentration (C*) and the areal first-order rate constants (k), which for nitrate is highly dependent on temperature, and TP which is more dependent on the seasonal growth cycle of plants. To determine C*, we used recommended values from *Kadlec and Wallace* (*2009*). Because phosphorus has two sinks, one short-term by co-precipitation with iron minerals, and the second one long-term by plant uptake and burial, it has two C* values depending on the time of the year. During summer we use the value of 0.01 g/m^3. During winter, when the plants uptake and burial activity is less effective and some minerals can be re-dissolved in the water, we use the higher value of 0.04 g/m^3. For nitrate, the sink is due to microbial activity via denitrification. In this case, C* is zero during summer but 0.01 g/m^3 during wintertime when temperatures are lower and microbial removal effectiveness is lower.

Monthly values of k, the areal first order removal coefficient, were determined differently for nitrate and TP. For nitrate we assumed a k_{20} value, the rate at 20 ˚C, for nitrate of 40 m/yr based on values reported for similar lightly loaded treatment systems, including a similar treatment wetland in Washington state studied by Dr. Beutel (*Beutel et al., 2009*). This value was equivalent to the 80 percentile value suggested by *Kadlec and Wallace (2009).* To model monthly k values for nitrate, we note that nitrate follows the Arrhenius equation (*Eq. 4)* because microbial activity is strongly sensitive to temperature. Therefore, the mean monthly air temperature at Newman City (*US Climate data*) was used to adjust the k value using a typical θ value of 1.11 (*Table 5):*

$$k = k_{20}\theta^{T-20°C} \qquad \textit{(Eq. 4)}$$

For TP, k values were estimated according to values reported for similar lightly loaded treatment systems, including a similar treatment wetland in Washington state studied by Dr. Beutel *(Beutel et al., 2014)*. Thus, we used a mean k value of 25 m/yr, which represents the 80th percentile k value suggested by *Kadlec and Wallace*

(2009). We then used professional judgement and results from studies of similar treatment wetlands to develop a monthly k values based on patterns of plant seasonality. Hence, due to the type of weather the City has, Mediterranean with medium cold winters, and the relatively low concentration of TP in wetland inflow, the values selected for the different months varied seasonally. Winter values fluctuate between 10 m/yr, when plant growth is low, to 27 m/yr, in late fall/early winter when roots take up P to overwinter. Summer values typically range from 20-26 my/yr, when the uptake is not as high as the decay and recycling rates of the death plants. However, there are two peaks in k values, one during spring of 45 m/yr that corresponds to high plant growth rates, and the second one during fall of 35 m/yr when plants tend to store nutrients in the roots over the winter *(Table 5*).

Finally, salinity for a normal year for a 30-acre wetland was calculated by the ratio between the inflow and outflow of each tank multiplied by the previous tank´s concentration: $S_1 = S_i*(Q_{in}/Q_o)$ in µS/cm. Salinity concentration removal is based on the amount of water each tank contained (volume) after evapotranspiration (ET) and the precipitation (PP) mechanisms. During spring-summer time higher temperatures induces higher ET rates that reduces the volume of water and concentrate amount of salts in water. Likewise, due to Mediterranean weather, during fall and winter, precipitation allows some dilution of the salts as the volume of water increases in the wetland.

4. RESULTS

For the P-K-C* model, the total area of 121,406 m^2 (30-acres) was divided into four equal tanks of 30,352 m^2 for the normal, wet, and dry year scenarios. The normal year model with 10-acres was also divided into four equal tanks of 10,117 m^2 for the calculation's purposes. The results include the following metrics: percent reduction, percent mass removal, areal mass removal, loading rate in the inflow (LRI) and outflow concentration (C_o). We also assessed the 90^{th} percentile C_o, which accounts for unpredictable intra-system variability of pollutant removal. The value of C_o is predicted to be below this value 90% of the time. On rare occasions due to unforeseen and uncontrollable events and processes, C_o will exceed this value.

Nitrate

Nitrate is a nutrient used for plant growth which in excess can migrate in agricultural runoff into the surface and groundwater causing eutrophication and the contamination of groundwater supply for potable use *(Kadlec and Wallace, 2009)*. The toxicity of the groundwater affects infants generating the blue baby health condition called "methylglobanemia", a blue skin coloration due to the lack of oxygen

in the blood (*USEPA 2002, Center for Watershed Sciences, 2012).* In wetlands, nitrate is transformed into dinitrogen gas (N_2) via denitrification reaction, which is a microbial reduction favored under anaerobic low dissolved oxygen (DO) conditions. Denitrification is highly sensitive to temperature (*Kadlec and Wallace, 2009*). Loading rates also affect removal rates. When wetlands have high areal nitrate loading, the areal removal rate tends to increase, while percent concentration removal decreases (*Beutel et, al. 2009).* Lastly, a potenital source of nitrate in wetlands is nitrification, the biological conversion of ammonia to nitrite (*Kadlec and Wallace, 2009*). For the scenarios modeled, the production of nitrate due to ammonia transformation was not considered due to the low ammonia in inflow from MD to the wetland, which is mostly going to be used for plants to grow *(Table 2).*

The models show that nitrate has a percentage of mass removal higher than typical book values of around 60%. Nitrate enters to the wetland with an initial average concentration of 1.97 mg-N/L and has an outlet concentration of 0.5 mg-N/L (0.96 mg-N/L after applying the 90^{th} percentile assessment) during the normal year model. This is a reduction of the 73% which is equivalent to a 75% mass removal and a 36 g-N/m^2yr areal mass removal. The model also shows a residence time of 9 days and a mean LRI of 48 g-N/m^2yr (*Table 6)*. However, removal efficiency decreases during winter months with 57% on average and has a peak removal from June to August of 95% (*Fig 5*). The lowest outlet concentrations are found during the summer months and are due to nitrate reduction acceleration under warmer conditions *(Fig. 3).* This microbial seasonality is due to the relation between temperature and rate constant, which peaks in July and matches the peak temperature of 28°C, showing higher microbial mediation of the wetland during summer months (*Fig.4*).

Looking at the differences between nitrate removal in dry and wet year scenarios, the percentage reduction and mass removal was higher during the dry year with 79% and 81%, respectively, when the LRI was around 42 g-N/m^2yr. In comparison, the wet year percentage reduction is 65%, the mass removal is 63% and 66 g-N/m^2yr for LRI. However, the areal mass removal was higher during the wet year with 66 g-N/m^2yr (dry year of 37 g-N/m^2yr) *(Table 7)*. This relation confirms the dependence between high LRI and high areal mass removal. Comparing these two scenarios with the normal year *(Fig. 6)*, the dry year has a similar outlet concentration to the normal year due to the increment in residence time of 17 days. Nitrates reduced by denitrifying bacteria also accelerates under high residence time.

Lastly, the comparison of the effect of nitrate removal between 30 and 10-acres wetlands showed a lower outlet concentration for the 10-acres wetland *(Fig. 7).* The 10-acres normal year model in average has lowest mass removal and

percentage reduction, 47% and 45%, respectively, compared to the 30-acres model of 78% and 76%. But it has higher areal mass removal of 67 g-N/m^2yr due to its high LRI of 144 g-N/m^2yr (*Table 8).* NICE WORK HERE

Total Phosphorus

Phosphorus (P) is greatly found in pesticides since it is a micronutrient needed by plants and algae to grow. However, agricultural runoff leads to P pollution to lakes and rivers causing eutrophication. In wetlands, P removal has two forms, a short-term sink and a long-term sink. Short-term removal includes precipitation of minerals and sorption to soil surfaces, while the long-term and the most important mechanism is plant uptake and burial which results in the accretion of soil and peat (*Kadlec and Wallace, 2009*). The short-term mechanisms have finite P retention capacities and combined with the asynchronous seasonal patterns of plant uptake and release from plants, known as the flywheel effect, control the timing and magnitude of P removal in the wetlands, and make it complex to study. The flywheel effect is the uptake and P storage (~10%) during the springtime when vegetation is growing, followed by the release back to the water column by decay of plant material in summer when the aboveground vegetation dies. Moreover, roots (belowground vegetation) during fall time store P to support the winter season before the spring growth (*Beutel et al., 2014).*

The initial TP concentration found at MD entering the wetland is 0.30 mg-P/L having an outlet concentration of 0.11 mg-P/L (0.26 after the 90th percentile is applied) in the normal year model, which is a 62% removal and 66% mass removal. The model also shows an areal mass removal of 5 g-P/m^2yr with LRI of 11 g-P/m^2yr and a residence time of 9 days (*Table 9*). These mass removal and areal mass removal are higher than typical values of 40 to 50% and 1 to 4 g-P/m^2yr. Moreover, the monthly rate constant variation shows that temperature is not really affecting P cycle. On the contrary, it is highly dependent on the plant uptake and burial behavior with is more seasonal in nature (*Fig. 8).* The model shows two peaks in the removal, one strong uptake during the growing season (spring), and a second high peak before winter, when the roots have the last uptake of nutrients to prepare for the cold winter conditions (*Fig. 9, 10*).

The comparison between dry and wet scenarios (*Table 9)* shows a better percentage reduction of 68% and mass removal of 74% during the dry year than 59% reduction and 53% mass removal of the wet year. However, the areal mass removal is almost equal, even if the LRI was higher for the wet year (22 g-P/m^2yr), showing that TP is not so dependent on the wetland´s loading. On the contrary, P removal mechanisms, sorption to particles, and accretion of soil can variate

depending on the hydrologic conditions. Hence, during the wet year, the amount of water entering the wetland does not allow a better removal because the residence time is low (7 days) compared to dry year which has a residence time of 14 days. More residence time of the water in the wetland allows the particles to settle down and P to be removed (*Fig. 11).*

The last comparison between the monthly 30-acres and 10-acres model *(Fig. 12)* shows a better mass removal (66%) and areal mass removal (5 g-P/m^2yr) for TP with the bigger area. The mass removal for the 10-acres model is 20%, and the areal mass removal is 2 g-P/m^2yr, which are fairly low values for wetland TP removal (*Table 11).* Moreover, the HRT of the 10-acres wetland was equal to the wet year model, 7 days. As mentioned before, hydrology is important for TP removal since it allows a better removal and controls some of P short-term mechanisms (sorption to soil surfaces) as turbidity is being reduced.

Conductivity

The key source of salinity in surface waters in Central Valley, CA is from pumping high salinity groundwater into surface channels. Groundwater was contaminated by saltwater intrusions and intense agricultural water application that leaches salts into the soil to the water table (State Water Resources Control Board, 2016). As a result, due to the weather conditions at Newman City, it is expected to see an increment in salinity concentration after the implementation of the wetland. Wetlands are mainly open areas that have evapotranspiration (ET) as one strong parameter that reduces the water volume. Thus, ET increments salinity concentration, while precipitation decreases it as salinity gets diluted. However, salinity (EC) during normal conditions was modeled to predict salinity behavior with the construction of the 30-acres wetland. The results show an income concentration of 662 µS/cm and an outlet concentration of 767 µS/cm. This is a 14% increment (*Table 12*), which makes both values below the 900 µS/cm limit for potable purposes (SWRCB, 2016), therefore, an acceptable value for the City purposes.

5. CONCLUSIONS

- Results from the normal year model showed a high mass removal of 78% for nitrate with a residence time of 9 days. The model also showed a huge dependence on temperature for nitrogen removal as it controls microbial activity. Therefore, denitrification, the transformation of nitrate to dinitrogen by bacteria is higher during summertime, the warmer months.

- Nitrogen removal is affected by high LRI generating high areal mass removal. This is seen during the wet year with 66 g-N/m^2yr (LRI of 71 g-N/m^2yr), compared to the dry year of 37 g-N/m^2yr, when the LRI was around 42 g-N/m^2yr. However, nitrate reduced by denitrifying bacteria also accelerates under high residence time. The dry year model showed similar removal compared to the normal year due to the increment in residence time from 9 days (normal year) to 17 days (dry year).

- For TP, the normal year scenario showed a 66% mass removal. Likewise, it was seen that plant uptake and burial is TP principal sink mechanism. Thus, P follows the annual plant seasonal cycle showing better removal during spring and autumn. However, P short-term mechanisms also have an influence in P removal, hence, there was a decrement in mass removal during the wet year.

- There is better removal for nitrate and TP under the 30-acres constructed wetland scenario compared to the 10-acres wetland scenario.

- The City of Newman has problems controlling salinity, not just due to agriculture, but because of the groundwater/watershed that has a naturally high concentration of salts. In the normal year model, conductivity increased by 14%, which should not impair the potential reuse of the water.

6. REFERENCES

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7. APPENDIX

Tables

NORMAL YEAR	Median Precipitation from NOAA (m/month)	Evapotranspiration from WRCC (m/month)	Total inflow (Qi) (m3/month)	Hydraulic retention time (τ) normal year (day)
January	0.05	0.04	226186	8
February	0.04	0.07	163643	11
March	0.03	0.14	365822	5
April	0.02	0.24	327991	6
May	0.00	0.36	269487	8
June	0.00	0.42	255989	8
July	0.00	0.45	264522	8
August	0.00	0.40	264522	8
September	0.00	0.30	255989	8
October	0.01	0.19	292826	7
November	0.03	0.08	117942	16
December	0.03	0.05	144252	13
Average	**0.02**	**0.23**	**245,764**	**9**

Table 1. Normal year hydraulic model for Newman City prospected wetland

Water Quality Summary	
Total P (mg-P/L)	0.27
PO4 (mg-P/L)	0.14
NH3 (mg-N/L)	0.17
NO3 (mg-N/L)	1.87
Conductivity (us/cm)	662
TSS (mg/L)	81
Do (mg/L)	5.39
pH	7.29
T (°C)	24

Table 2. Averge water quality concentration at Miller Ditch in Newman City, CA.

Month	Total inflow (Qi) 20% (m3/month)	Precipitation 20% (m/month)	Total inflow (Qi) 80% (m3/month)	Precipitation 80% (m/month)
January	102540	0.022	401476	0.099
February	52212	0.010	349360	0.086
March	290343	0.007	514793	0.064
April	277838	0.006	396021	0.036
May	264522	0	321727	0.015
June	255989	0	261550	0.001
July	264522	0	264522	0
August	264522	0	264522	0
September	255989	0	278831	0.006
October	264522	0	358870	0.024
November	40279	0.007	216859	0.052
December	56856	0.011	308915	0.075
Average	**199,178**	**0.005**	**328,120**	**0.038**

Table 3. Dry (20%) and wet (80%) year hydraulic scenarios used for the P-K-C*model for pollutant removal in Newman City, CA (NOAA)

MONTHS	Miller Ditch flow (Q_{MD}) (m^3/month)	Agriculture land runoff (Q_{AR}) (m^3/month)	C_{in} averaged Nitrate (mg/L)	C_{in} averaged TP (mg/L)
January	15,144	211,042	2.14	0.34
February	13,679	149,964	2.13	0.34
March	264,522	101,300	1.95	0.29
April	255,989	72,003	1.93	0.29
May	264,522	4,966	1.87	0.27
June	255,989	0	1.87	0.27
July	264,522	0	1.87	0.27
August	264,522	0	1.87	0.27
September	255,989	0	1.87	0.27
October	264,522	28,304	1.90	0.28
November	14,656	103,287	2.12	0.34
December	15,144	129,108	2.13	0.34
Average			**1.97**	**0.30**

Table 4. Inlet concentration to the prospected wetland at Newman City

	Temperature [°C]	Nitrate k-values (m/yr)	TP k-values (m/yr)
January	9	13	10
February	12	17	12
March	14	21	18
April	17	29	45
May	21	44	40
June	25	67	26
July	28	92	20
August	26	75	25
September	24	61	28
October	19	36	35
November	13	19	27
December	9	13	11
Average	**18**	**41**	**25**

Table 5. Nitrate and TP rate constants values (k) for prospected wetland in Newman City, CA

Nitrate Normal Year	Total inflow (Qi) (m3/month)	Cin (mg/L)	K (m/yr)	Co (mg/L)	% REDUCTION	%MASS REMOVAL	AREAL MASS REMOVAL (g/m2*day)	LRI [q*Ci] (g/m2*yr)	90th percentile Co
January	226,186	2.1	13	1.2	42	42	20	47	2.1
February	163,643	2.1	17	0.9	60	61	21	35	1.5
March	365,822	2.0	21	1.0	50	53	38	72	1.7
April	327,991	1.9	29	0.7	64	68	43	64	1.2
May	269,487	1.9	44	0.3	83	87	44	51	0.6
June	255,989	1.9	67	0.1	92	94	45	48	0.2
July	264,522	1.9	92	0.1	96	97	48	50	0.1
August	264,522	1.9	75	0.1	93	95	47	50	0.2
September	255,989	1.9	61	0.2	91	92	44	48	0.3
October	292,826	1.9	36	0.5	75	77	43	56	0.8
November	117,942	2.1	19	0.5	74	76	19	25	1.0
December	144,252	2.1	13	1.0	54	55	17	31	1.7
Average	**245,764**	**1.97**	**41**	**0.5**	**73**	**75**	**36**	**48**	**0.96**

Table 6. Monthly normal year for nitrate reoval using the P-K-C* model for the prospected treatment wetland at Newman City, CA

Wet Year Annual	
NO3	
Ci	1.97
Co	0.77
% REDUCTION	64
%MASS REMOVAL	62
LRI [q] (g/m2*yr)	71
90th percentile	1.35
AREAL MASS REMOVAL (g/m2*yr)	45

Dry Year Annual	
NO3	
Ci	1.97
Co	0.43
% REDUCTION	80
%MASS REMOVAL	82
LRI [q] (g/m2*yr)	43
90th percentile	0.76
AREAL MASS REMOVAL (g/m2*yr)	39

Table 7. Summary of the monthly dry and wet scenarios in a year using the P-K-C* model for the prospected treatment wetland at Newman City, CA

Normal Year Annual, 10-acres	
NO3	
Ci	1.97
Co	1.10
% REDUCTION	45
%MASS REMOVAL	47
LRI [q] (g/m2*yr)	144
90th percentile	1.92
AREAL MASS REMOVAL (g/m2*yr)	67

Normal Year Annual, 30-acres	
NO3	
Ci	1.97
Co	0.49
% REDUCTION	76
%MASS REMOVAL	78
LRI [q] (g/m2*yr)	48
90th percentile	0.85
AREAL MASS REMOVAL (g/m2*yr)	37

Table 8. Summary of the monthly normal year scenarios in a year with 10 and 30-acres using the P-K-C* model for the prospected treatment wetland at Newman City, CA

TP	Cin (mg/L)	K (m/yr)	Co (mg/L)	% REDUCTION	%MASS REMOVAL	AREAL MASS REMOVAL (g/m2*day)	LRI [q*Ci] (g/m2*yr)	90th percentile
January	0.34	10	0.22	34	34	3	10	0.51
February	0.34	12	0.16	52	53	3	17	0.37
March	0.29	18	0.17	44	46	5	15	0.38
April	0.29	45	0.07	75	78	7	13	0.16
May	0.27	40	0.06	78	82	6	10	0.14
June	0.27	26	0.09	66	75	5	9	0.21
July	0.27	25	0.10	64	73	5	9	0.23
August	0.27	25	0.10	64	72	5	9	0.23
September	0.27	28	0.09	69	75	5	9	0.20
October	0.28	35	0.08	71	74	6	11	0.18
November	0.34	25	0.06	83	84	3	15	0.13
December	0.34	11	0.16	53	54	3	8	0.36
Average	**0.30**	**25**	**0.11**	**63**	**67**	**5**	**11**	**0.26**

Table 9. Monthly normal year scenario for TP removal using the P-K-C* model for the prospected treatment wetland at Newman City, CA

Dry Year Model	
TP	
Ci	0.30
Co	0.09
%REDUCTION	68
%MASS REMOVAL	74
LRI [q] (g/m2*yr)	6
90th percentile	0.22
AREAL MASS REMOVAL (g/m2*yr)	4

Wet Year Model	
TP	
Ci	0.30
Co	0.12
%REDUCTION	59
%MASS REMOVAL	53
LRI [q] (g/m2*yr)	22
90th percentile	0.29
AREAL MASS REMOVAL (g/m2*yr)	5

Table 10. Monthly dry and wet scenario yearly averaged for TP removal using the P-K-C* model for the prospected treatment wetland at Newman City, CA

Normal Year 10-acres Model	
TP	
Ci	0.30
Co	0.19
%REDUCTION	19
%MASS REMOVAL	20
LRI [q] (g/m2*yr)	11
90th percentile	0.44
AREAL MASS REMOVAL (g/m2*yr)	2

Normal Year 30-acres Model	
TP	
Ci	0.30
Co	0.11
%REDUCTION	62
%MASS REMOVAL	66
LRI [q] (g/m2*yr)	11
90th percentile	0.26
AREAL MASS REMOVAL (g/m2*yr)	5

Table 11. Normal monthly scenario yearly averaged for TP removal using the P-K-C* model for the prospected treatment wetland varying the area between 30 and 10 acres at Newman City, CA

Normal Year Salinity			
	Qin (m3/mo)	Qin (m3/d)	
	245764	8192	
	S (µS/cm)	Qin (m3/day)	Qout (m3/day)
Sin (mg/L)	662		
Tank 1	685	8192	7912
Tank 2	711	7912	7633
Tank 3	738	7633	7353
Tank 4	767	7353	7074
So (mg/L)	767		
LRI (g/m2yr)	16305		
% REDUCTION	-16		
%MASS REMOVAL	-4		
AREAL MASS REMOVAL (g/m2*yr)	-78257539		

Table 12. Normal year salinity model for the prospected treatment wetland at Newman City, CA

Figures

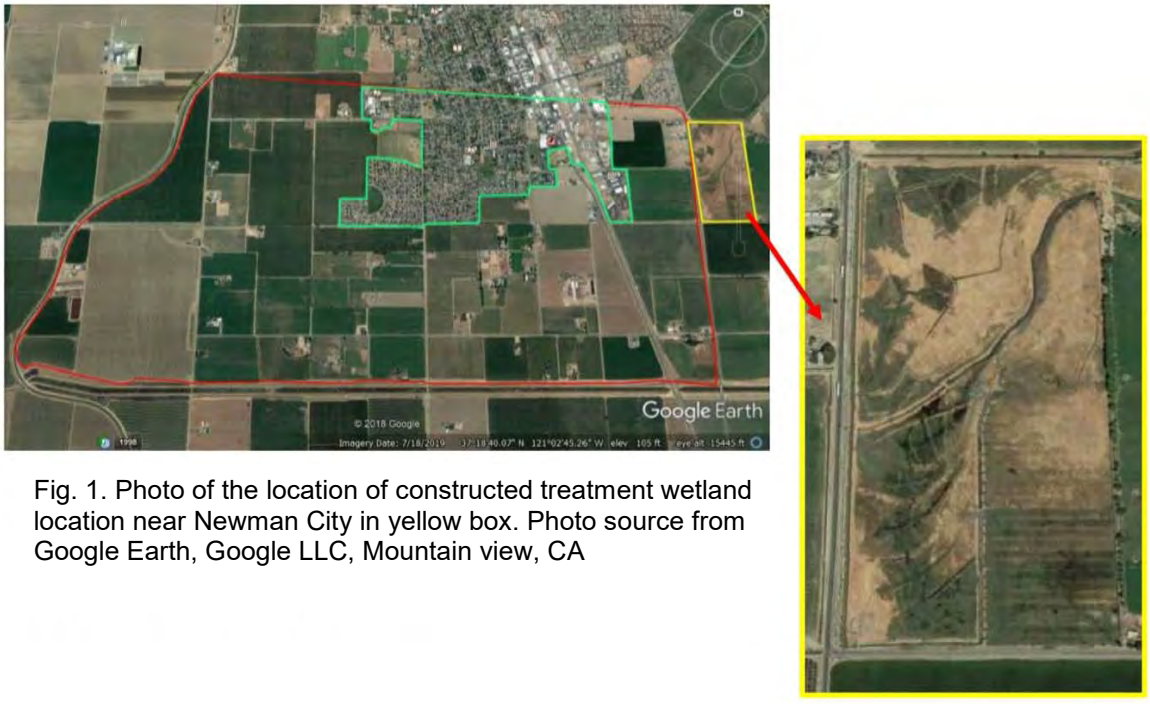


Fig. 1. Photo of the location of constructed treatment wetland location near Newman City in yellow box. Photo source from Google Earth, Google LLC, Mountain view, CA

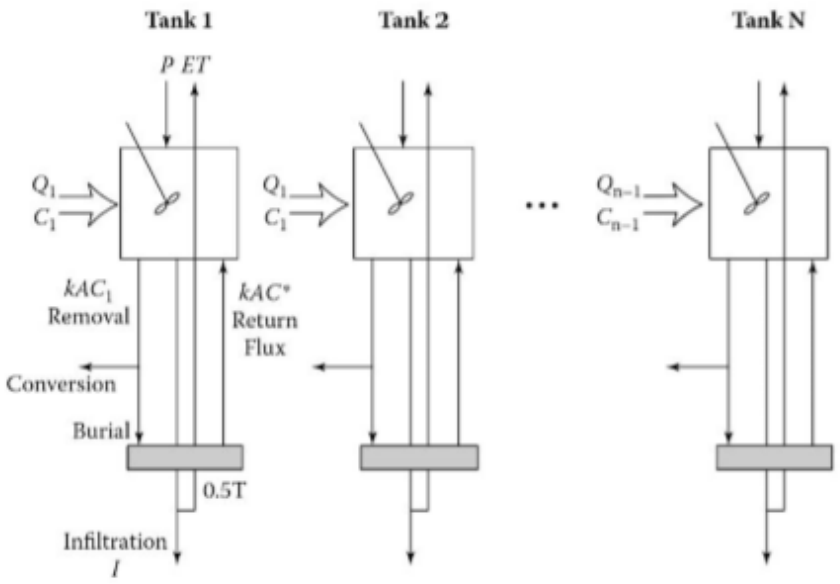


Fig. 2. Tank and series model for pollutant removal P-K-C* (Kadlec and Wallace, 2009)

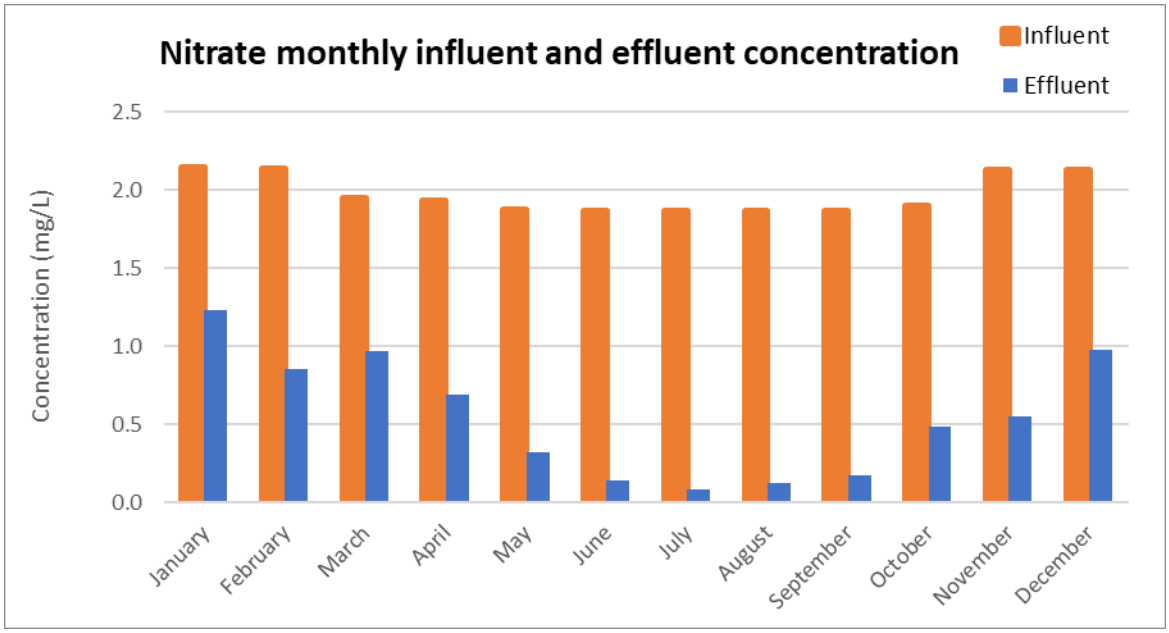


Fig. 3. Monthly normal yearly averaged model showing nitrate inlet and outlet concentration for a year in the prospected treatment wetland at Newman City, CA.

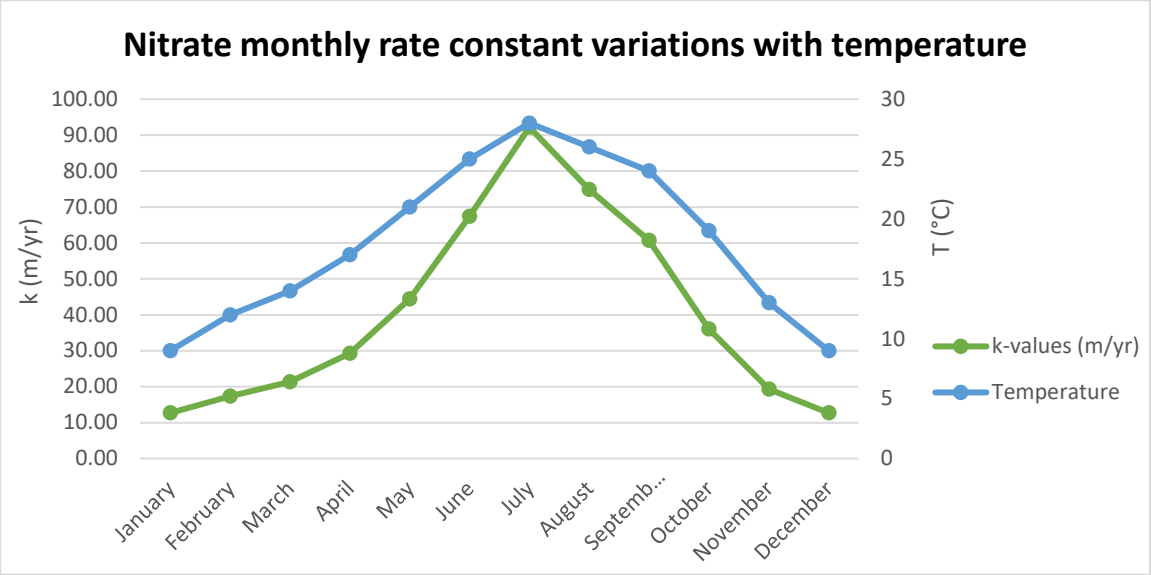


Fig. 4. Nitrate monthly rate constant variation with temperature for the prospected treatment wetland at Newman City, CA.

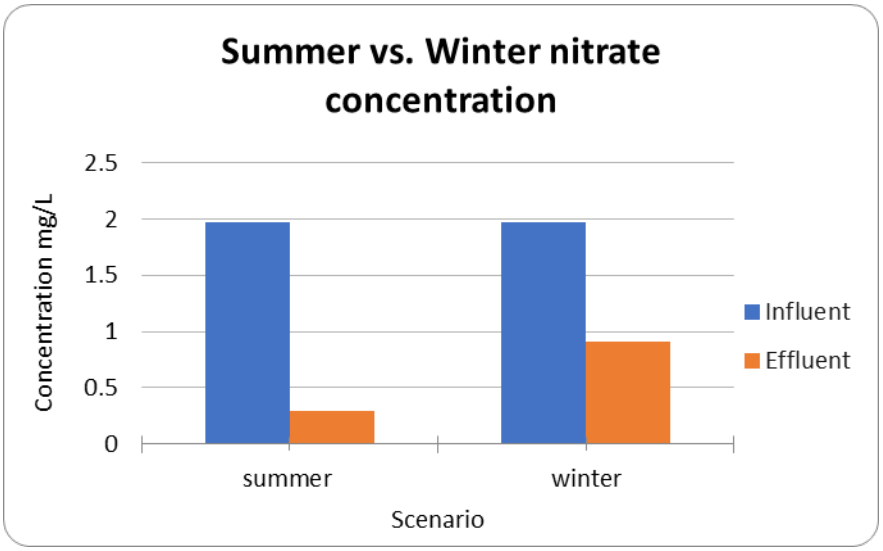


Fig. 5. Nitrate monthly normal scenario showing the seasonality between summer and winter time for the prospected treatment wetland at Newman City, CA.

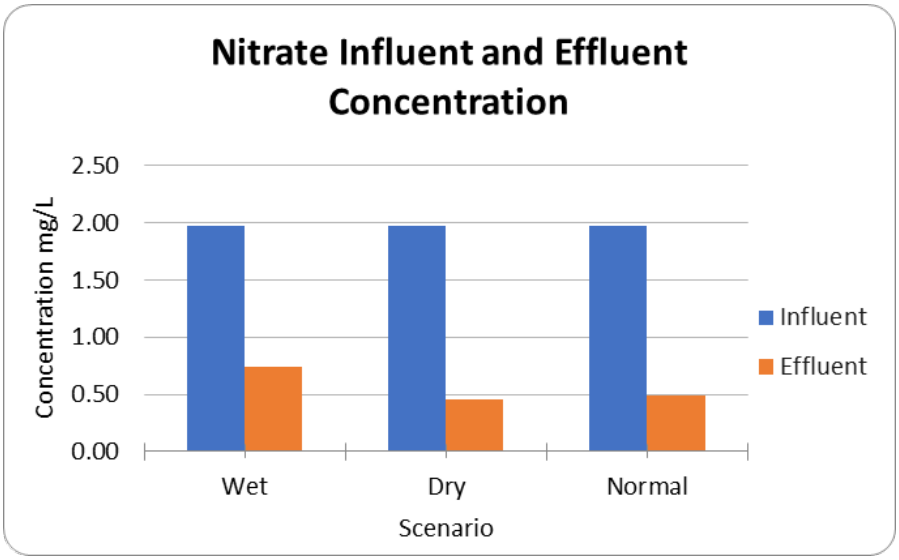


Fig. 6. Nitrate monthly yearly averaged scenarios showing the difference between wet, dry, and normal models for the prospected treatment wetland at Newman City, CA.

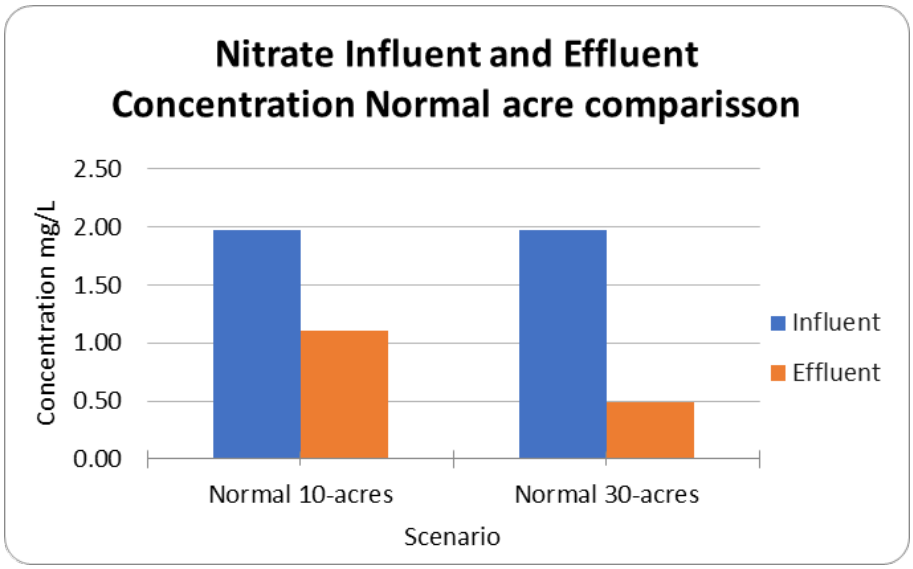


Fig. 7. Nitrate monthly normal scenarios yearly averaged showing the difference between 10-acreas and 30-acres of area of the outlet concentration for the prospected treatment wetland at Newman City, CA.

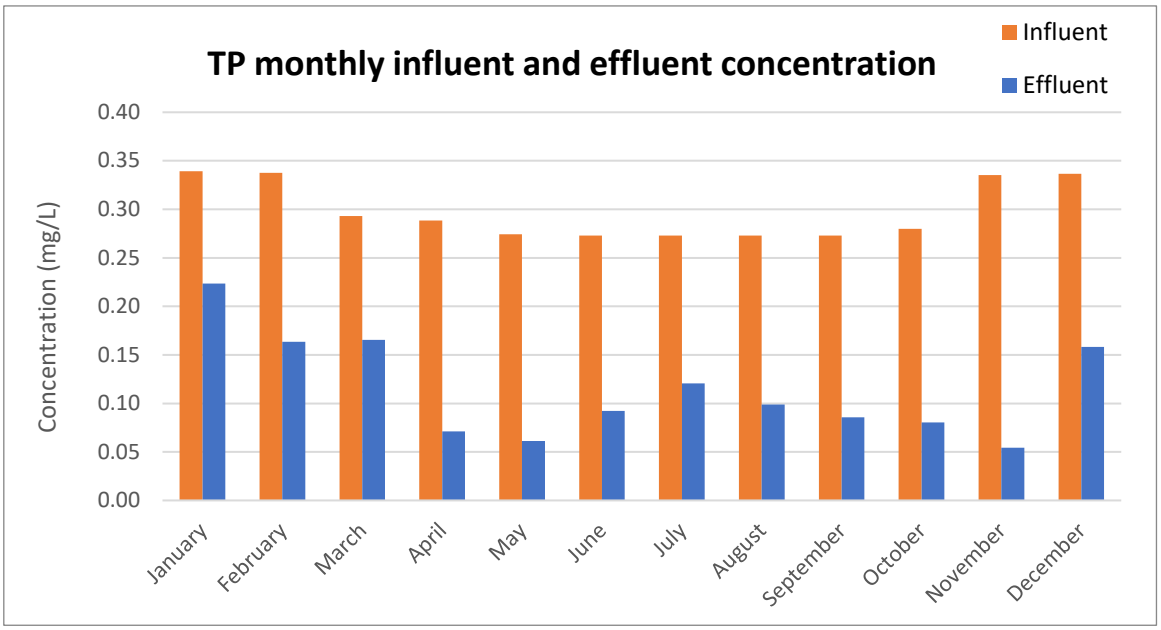


Fig. 8. Monthly normal yearly averaged model showing TP inlet and outlet concentration for a year in the prospected treatment wetland at Newman City, CA.

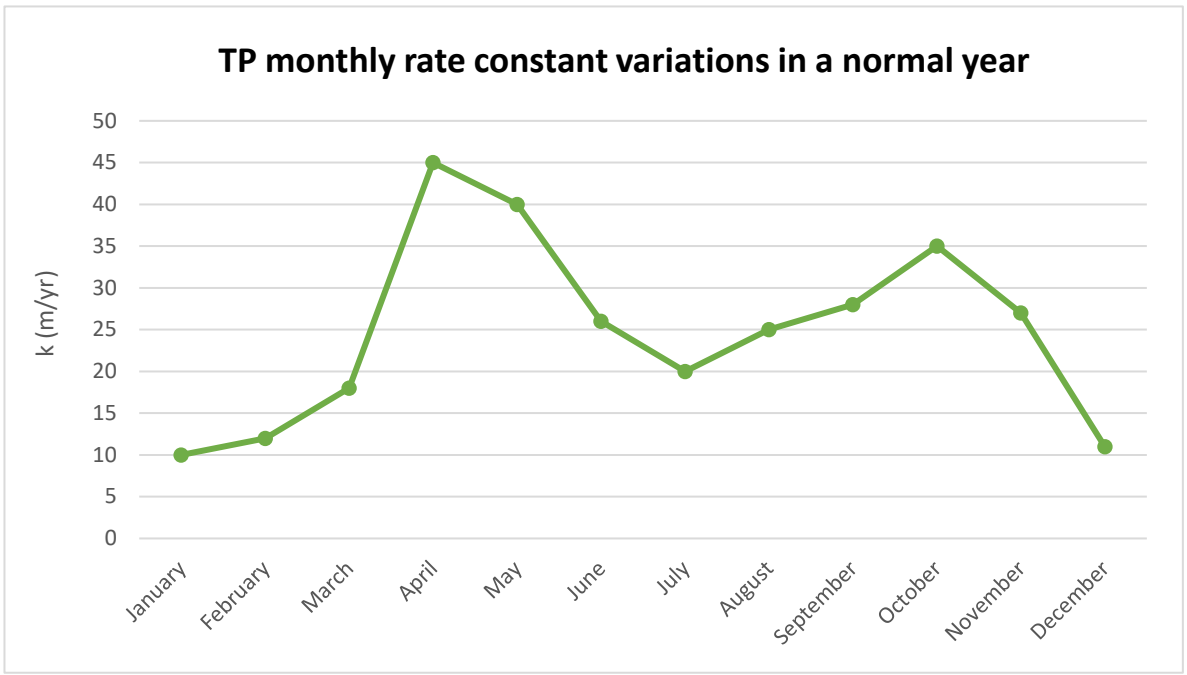


Fig. 9. TP monthly rate constant variation for the prospected treatment wetland at Newman City, CA.

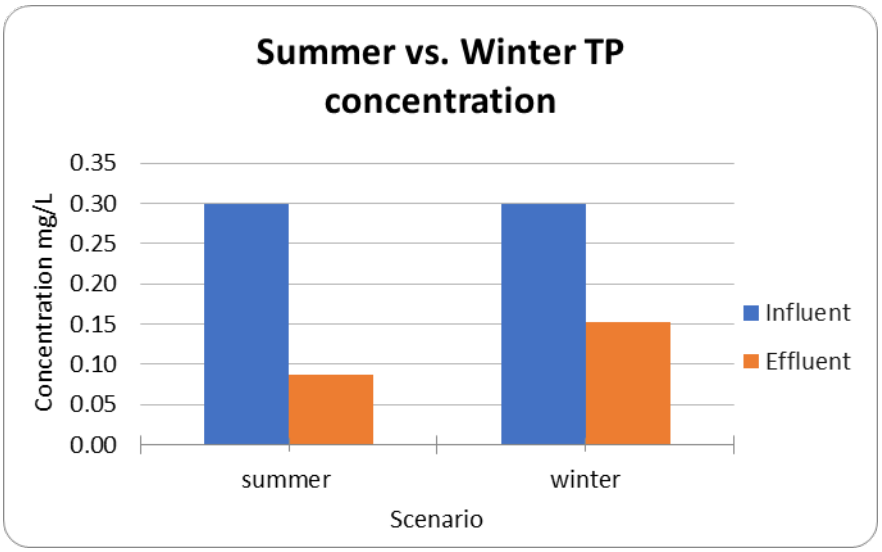


Fig. 10. TP monthly normal scenario showing the seasonality between summer and winter time for the prospected treatment wetland at Newman City, CA.

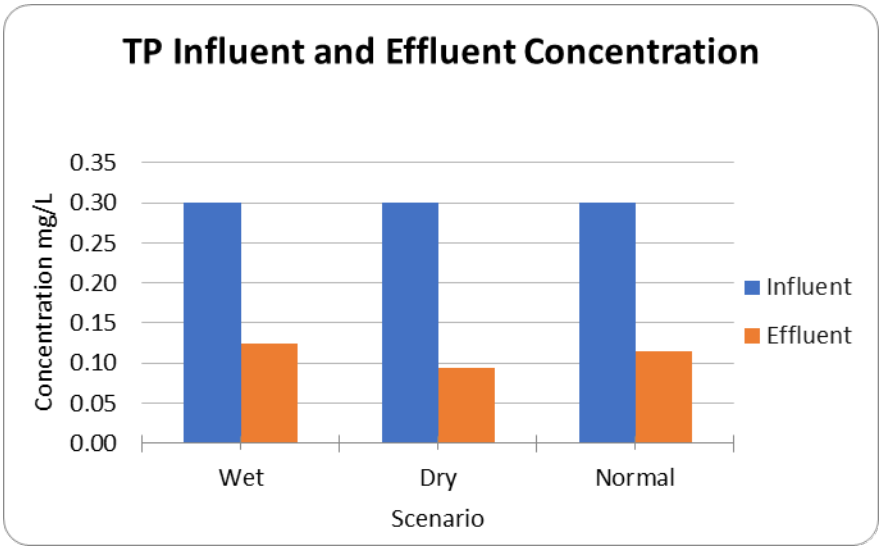


Fig. 11. TP monthly yearly averaged scenarios showing the difference between wet, dry, and normal models for the prospected treatment wetland at Newman City, CA.

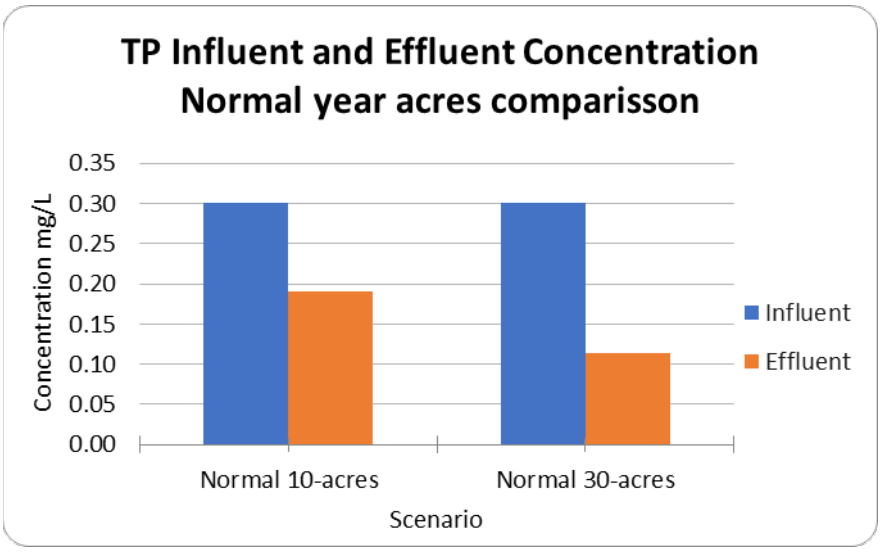


Fig. 12. TP monthly normal scenarios yearly averaged showing the difference between 10-acreas and 30-acres of area of the outlet concentration for the prospected treatment wetland at Newman City, CA.

MILLER DITCH TREATMENT WETLAND (MDTW)

HYDROLOGY MASS BALANCE AND POLLUTANT REMOVAL MODELING

Naivy Dennise Rodal Morales and Dr. Marc Beutel

**TABLES UPDATED NEW AREA: 15.8-ACRES.

Month	Irrigation flow (QIR) (m3/day)	Agriculture land runoff (QAR) (m3/day)	Total inflow Miller Ditch (QMD) (m3/day)	Precipitation into wetland (PP) (m3/day)	Evapotranspiration from wetland (ET) (m3/day)	Outflow (Qo) (m3/day)	Hydraulic retention time (τ) (day)
January	0	6,808	6808	112	83	6837	4
February	0	5,356	5356	88	158	5286	5
March	0	3,268	3268	54	286	3035	9
April	500	2,400	2900	39	507	2432	10
May	484	160	644	3	745	0	-
June	500	0	500	0	900	0	-
July	2,419	0	2419	0	938	1481	14
August	7,097	0	6774	0	821	5953	4
September	7,333	0	7000	0	645	6355	4
October	484	913	1397	15	394	1018	23
November	0	3,443	3443	56	181	3318	8
December	0	4,165	4165	68	96	4137	6
Annual average	**1,568**	**2,209**	**3,723**	**36**	**479**	**3,321**	**9**

Table 1. Calculated normal year water balance for the 15.8-acres MDTW new coneptual design

Normal Year- Sinuosity 15.8-acres			
	NO3	TP	Salinity [uS/cm]
Ci [mg/L]	2.03	0.31	711
Co [mg/L]	0.75	0.15	800
% Reduction	66	53	
Salinity Increment %			12
Residence time [day]	9		
Inflow [m3/day]	3,723		
Outflow [m3/day]	3,321		

Table 2. Summary of the monthly models averaged in a year for the 15.8-acres MDTW with sinuosity design

February 10th, 2021

Appendix G

Proposed Mitigated Negative Declaration

California Environmental Quality Act (CEQA)

Proposed Mitigated Negative Declaration

Project Title and Contact Information

Project title:	Newman Community Conservation Area Master Plan
Lead agency name and address:	City of Newman Public Works Department 938 Fresno Street Newman, CA 95360
Project proponent name and address:	*Same as above*
Contact person and phone number:	Kathryn Reyes Director of Public Works 209.862.4448

Project Location and Description

The attached Initial Study analyzes the environmental impacts of implementing four separate but complementary projects under the Newman Community Conservation Area (NCCA) Master Plan (City of Newman 2020). Because the purpose of the Master Plan is to define and describe the projects that will implement the Master Plan vision, analyzing the impacts of constructing, operating, and maintaining the NCCA projects analyzes the impacts of the Master Plan.

As shown in Figure 1, the NCCA site comprises two parcels immediately outside City limits: a 78-acre parcel located southeast of the intersection of Canal School Road and Inyo Avenue (APNs 054-050-019, 054-050-020) and a 24-acre parcel located to the east along Brazo Road (APN 054-05-010). The NCCA parcels are City-owned.

Figure 2 shows the approximate footprints of the four projects, which include the following.

- in the northwest portion of the 78-acre parcel, the Newman Environmental Wetland System **(NEWS project)**, an approximately 21-acre constructed wetland complex that will treat stormwater and dry season runoff from the City and surrounding agricultural lands prior to discharge to the Newman Wasteway and, ultimately, the San Joaquin River
- in the central and east portions of the 78-acre parcel, extending to the central and south portions of the 24-acre parcel, an approximately 11-acre seasonal wetland, riparian, and grassland restoration project **(wetland project)** emphasizing natural sequestration of greenhouse gases (GHGs)
- in the southwest portion of the 78-acre parcel, an additional approximately 16-acre constructed wetland project that is being planned in collaboration with the Environmental Systems Graduate Group at the University of California, Merced (UC Merced) Department of Civil and Environmental

Engineering to treat water from the Miller Ditch, with a focus on removing agricultural pollutants **(Miller Ditch Treatment Wetland project)** (MDTW, MDTW project)

- in the east and southeast portions of the 78-acre parcel, the **Newman Nature Park,** which is being planned with community input and may include a wide range of facilities such as a community gathering plaza, outdoor classroom areas, a nature-themed play area, and native plant, rainwise garden, and low-impact development demonstration areas, as well as an unpaved trail network and interpretive signage extending throughout the 78-acre parcel to enable appropriate public recreational access and, ultimately, tie all of the projects together

The attached Initial Study also analyzes the effects of extending City water service to the 78-acre parcel to serve limited uses at the NEWS project and Newman Nature Park. Potential alignments for water service extension are shown in Figure 3. For CEQA purposes because the extension of water service to each project would serve only that project and has no separate, independent utility, each water service extension is technically part of the project it would serve. However, the water service extension could involve a footprint outside the NCCA parcels, and would entail different construction activities. This Initial Study thus addresses the water service extension separately, to make sure all impacts are accounted for, even though construction of the water service extension would be coordinated with the NEWS and/or Nature Park projects, and the City would not proceed with the extension unless the corresponding NCCA projects also move forward.

As of the preparation of the Initial Study, the NEWS project and wetland projects are the farthest along in the planning process; the wetland project has been funded by a DFW Wetlands Restoration for Greenhouse Gas Reduction Program grant awarded in 2019 and the NEWS project will be funded by a State Water Resources Control Board (SWRCB) Proposition 1 Storm Water Grant Program Round 2 Implementation Projects grant awarded in early 2021. The NEWS project is currently at the 60% level of design and the wetland project is approaching the 65% design milestone. These two projects are analyzed to the project level.

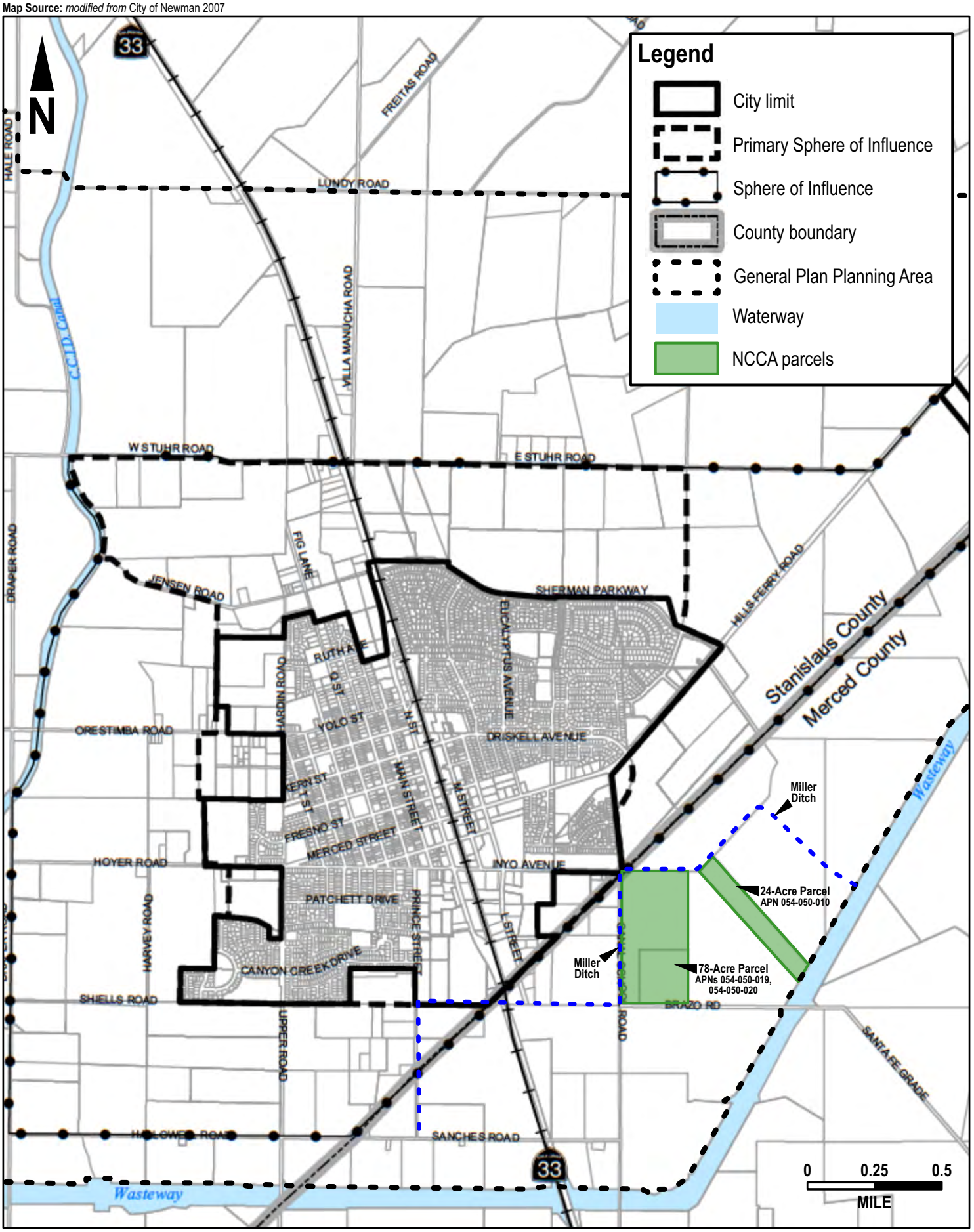
The City intends to apply for California Department of Parks and Recreation Proposition 68 Statewide Park Development and Community Revitalization Program Round Four funding for the Newman Nature Park in spring 2021. To the extent feasible with community dialogue still ongoing, the Newman Nature Park is also analyzed to the project level.

Project-level analysis is intended to enable prompt implementation, unless conditions, or the project themselves, change significantly. For instance, if elements not analyzed in this IS/MND are added to the Nature Park based on community input, additional CEQA review may be needed for the Nature Park project.

The MDTW project is the farthest out on the planning horizon; it has been developed in concept, and baseline technical studies are in progress but some details are not available at this time. The MDTW project is therefore analyzed to a more general, programmatic level, with as much information as possible provided. As planning proceeds and more detail on the MDTW project becomes available, the City may also need to conduct a second round of project-level CEQA review for the MDTW project.

Avoidance & Minimization Measures:	The City has committed to a suite of Avoidance and Minimization Measures (AMMs)—laid out in the NCCA Master Plan—that will be implemented to reduce the potential for adverse effects on sensitive habitats, water bodies, and the special-status plants and wildlife that may be present on the NCCA parcels. The AMMs will apply to initial construction of the NCCA projects and will be incorporated into the construction documents for each of the NCCA projects to ensure that requirements and limitations are clear and binding for contractor staff.

Map Source: *modified from* City of Newman 2007



Redtail Consulting
Environment & Community

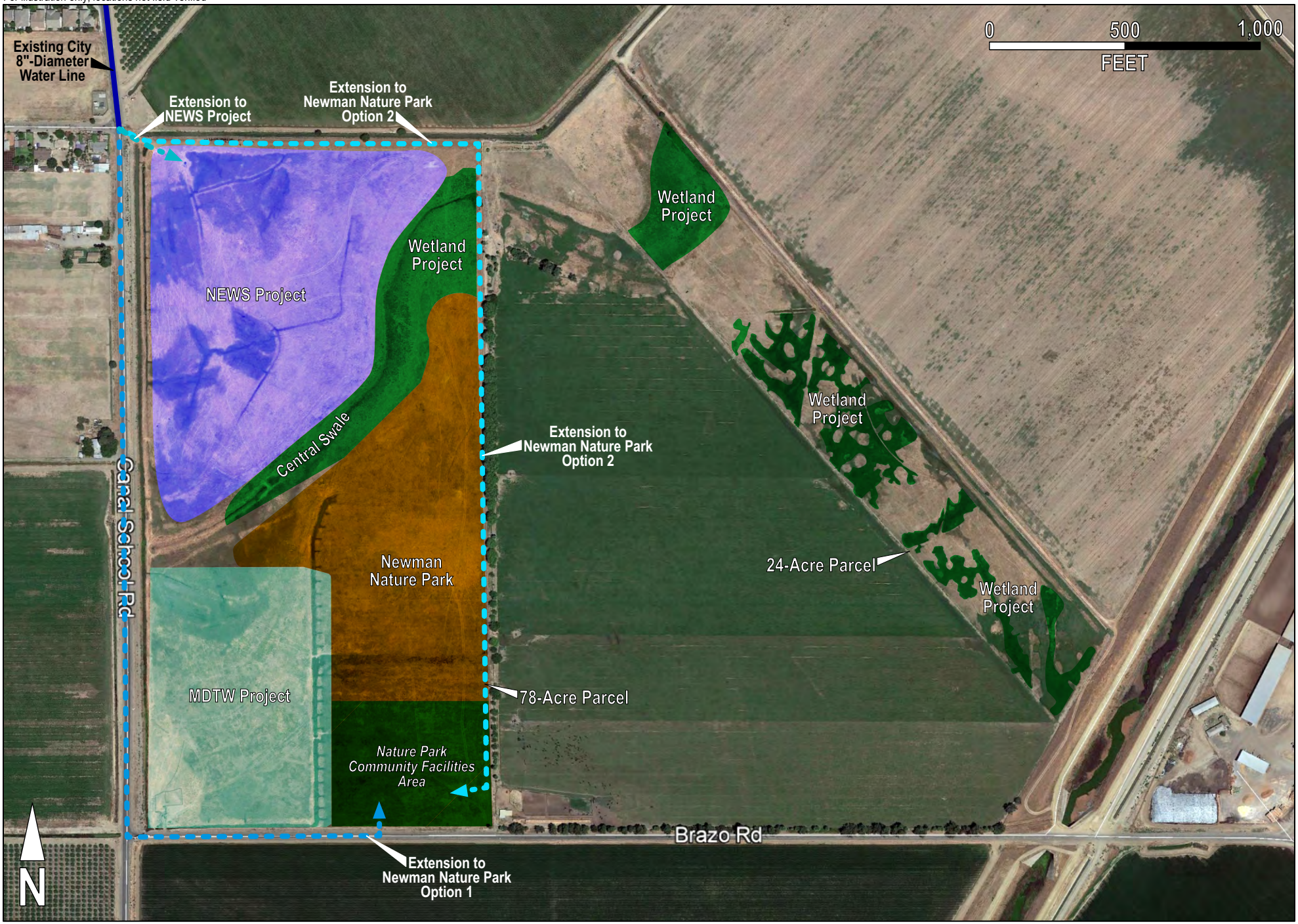
Figure 1. NCCA Location and Extent
Newman Community Conservation Area Master Plan Mitigated Negative Declaration
City of Newman

Aerial Photograph Source: GoogleEarth (imagery date 07/18/2019, downloaded 03/16/2020)

Redtail Consulting
Environment & Community

Figure 2. Conceptual NCCA Site Layout
Newman Community Conservation Area Master Plan Mitigated Negative Declaration
City of Newman

Aerial Photograph Source: GoogleEarth (imagery date 07/18/2019, downloaded 03/16/2020)
For illustration only; locations not field-verified



Redtail Consulting
Environment & Community

Figure 3. Options for Water Service Extension to NEWS and Newman Nature Park Projects
Newman Community Conservation Area Master Plan Mitigated Negative Declaration
City of Newman

The AMMs will also apply to the installation of the water service extension to serve the NEWS project and Newman Nature Park.

Additionally, the AMMs will continue to be in effect for future maintenance or repair activities that have the potential to disturb habitat or otherwise affect special-status species. As individual operations and maintenance (O&M) plans are developed for the each of the NCCA projects, they will incorporate the AMMs, with additional detail as appropriate to facilitate straightforward and effective implementation on a project-specific basis. New AMMs may also need to be developed as the details of project O&M are further developed.

It should be noted that the AMMs are intended to dovetail with the requirements of resource agency permits authorizing the NCCA projects. In particular, in the years immediately following completion of each project, permit terms and conditions may require more frequent and intensive monitoring of restored and created habitat. In that case, the permit terms and conditions for each project will temporarily supersede the NCCA-wide AMMs within that project's footprint; elsewhere at the NCCA, the AMMs will continue to apply in their most current form.

AMM-1. Routine Reassessment & AMM Updates

At the completion of each NCCA project, GIS-based habitat mapping for the Plan Area parcels will be updated to document changes in habitat distribution as a result of the project.

Over the long term, the Plan Area parcels will be reevaluated for habitat conditions and potential special-status species use every other year. Reevaluation will also include updating maps delineating populations of rare plant species (i.e., plants assigned a California Rare Plant Rank by the California Native Plant Society and plants state- or federally listed as Threatened or Endangered). The evaluation will be conducted by a qualified biologist/ecologist who has experience with wetland and upland habitats in the west-central San Joaquin Valley, will cover both Plan Area parcels in their entirety, and will include, at a minimum, the following activities.

- Assessment of habitat distribution to determine whether the most recent habitat and rare plant mapping is still accurately representative of conditions on the Plan Area parcels
- California Rapid Assessment Method (CRAM) assessment of wetland health and performance

Results will be documented in an NCCA Habitat Assessment Report for City records. The Habitat Assessment Report will also identify the date of the next routine re-survey, enabling survey frequency to be adjusted (increased or decreased) if appropriate based on the rate and nature of change in conditions on the Plan Area parcels. In addition, depending on the extent and nature of changes in Plan Area conditions and the City's planned activities during the next few years, the Survey Report may recommend more detailed reassessment, potentially including re-mapping of habitat, updated delineation of state and federally jurisdictional habitat (wetlands and waters of the United States and State of California), and/or focused surveys for special-status plant and/or wildlife species.

In addition to documenting current Plan Area Conditions, the Habitat Assessment Report will include an evaluation of the AMMs in place at the time of the reassessment, and will identify any needed changes to the AMMs, potentially including modification or discontinuation of existing AMMs and/or establishment of new AMMs. Changes to AMMs will only be instituted in the interests of better preserving and protecting habitat values on the Plan Area parcels, in balance with appropriate O&M and recreational/educational access. If adverse changes in habitat conditions or the status of rare plant populations are identified, the Habitat Assessment Report will also include recommendations for corrective action(s).

The City will maintain Habitat Assessment Reports and other relevant documentation such as habitat and jurisdictional delineation mapping and special-status species sighting reports (see AMM-6) on file for ongoing reference in managing the NCCA. If corrective actions are identified as necessary, the City will be responsible for ensuring that they are promptly implemented by qualified personnel.

AMM-2. Appropriate Long-Term Public Access

All public access, including access roadways opened for public trail use, will incorporate appropriate measures to prevent accidental incursions—and discourage intentional access—into sensitive habitat. Measures will be designed for aesthetic consistency with their natural surroundings, such that they foster a positive and welcoming user experience while protecting sensitive resources to the extent possible. Measures may include carefully selected trail routing as well as split-rail or other suitable fencing, strategically located plantings, and the use of elevated boardwalks. Signage will also be used to inform the public of sensitive resources and foster appreciation for the need to protect them. All signage will be bilingual in English and Spanish to reflect the City's diverse population. Wildlife-proof trash and recycling receptacles will be provided at regular intervals along all trails to discourage littering.

AMM-3. Worker Awareness Training

All construction personnel will be required to attend environmental awareness training before beginning work. All O&M staff and any future interns, student employees, and volunteers will also receive environmental awareness training as part of their routine City training. Training will be provided bilingually in English and Spanish if appropriate.

Training will be delivered by a qualified biologist/ecologist and will provide information on the sensitive habitats within the Plan Area (based on the most recent surveys of the Plan Area per AMM-1), the special-status species that are known or potentially present, and measures required to protect water quality and sensitive habitats under AMM-4.

For each special-status species, training will include information on listing status, habitat preferences, distinguishing physical characteristics, causes of decline, and measures required to protect the species within the Plan Area. Training will include a hard copy handout that summarizes information presented in the training and includes photographs of habitat resources and species to facilitate identification in the field by construction and O&M personnel.

AMM-4. Wetland & Water Quality Protection

Best management practices will be implemented for all ground-disturbing activities to prevent siltation and contaminated runoff to wetlands and water bodies within and adjacent to the Plan Area. During construction, this may take the form of a SWPPP prepared and implemented by appropriately qualified/certified personnel. For O&M activities that involve ground disturbance, similar measures will be implemented by City staff. BMPs will also be implemented for all O&M activities that require handling of fuels, lubricants, paints, solvents, and other substances with the potential to degrade water quality.

BMPs will include, but will not necessarily be limited to, the following.

- Before work begins, a qualified biologist/ecologist will delineate sensitive areas to be avoided, using pin flags, temporary construction fencing, or another appropriate low-impact medium. No entry (personnel, equipment, or materials) will be permitted into delineated avoidance areas
- If excavation or ground disturbance is necessary, runoff control measures such as straw wattles, filter rolls, filter fences, or silt fences will be installed to contain disturbed soil materials. Runoff control will be in place prior to groundbreaking. If straw wattles are used, they will consist of certified sterile, weed-free rice straw or similar, suitable for use in sensitive habitat. If filter fences or mesh are used, they will consist of materials, and employ a design, approved by DFW and USFWS as safe for amphibians and reptiles
- If ground disturbance occurs in a vegetated area, the disturbed area will be reseeded immediately following the completion of repairs, using a certified weed-free native species seed mix appropriate to the location and approved by a qualified biologist/ecologist
- Excavated materials will be stockpiled away from sensitive habitat, in areas that are relatively level, and relatively free of vegetation. Stockpiles will be located as far as reasonably feasible from the limits of sensitive habitat, and runoff control measures as described above will be used to prevent delivery of sediment to wetlands and ditches. If wattles are used, they will consist of certified sterile, weed-free materials, as identified above. Any excavated materials not reused on site will be promptly removed to appropriate permanent disposal locations following the completion of work
- All diesel- and gasoline-powered construction equipment and tools, including generator units, will be inspected for leaks and damage prior to mobilization
- Fueling, lubrication, and maintenance of vehicles and equipment will be conducted as far as reasonably feasible from wetlands and waterbodies, and will take place offsite if possible. Equipment staging will also be located as far as reasonably feasible from wetlands and water bodies. If onsite fueling, maintenance, or repairs are required, containment measures such as drip pans will be required
- To the maximum extent possible, materials staging will also be restricted to paved, surfaced, or upland areas away from wetlands and watercourses

- During all work, appropriate types and quantities of materials will be maintained onsite to contain any spills or releases of materials and prevent them from entering sensitive habitat and jurisdictional waters
- In the event of a spill, appropriate spill response procedures will be initiated as soon as the incident is discovered. If contractor staff are involved, the contractor will be required to notify City staff as soon as feasible, and in no case more than 24 hours after the occurrence; a designated City contact will be specified in the project construction documents for this purpose. If there is any potential for the spill to enter jurisdictional waters, the City will notify the RWQCB
- Food waste will be appropriately contained and disposed, and trash generated during construction and O&M activities will be promptly and properly removed from the site.

AMM-5. Special-Status Plant Protection

Before any work begins at the NCCA site, existing occurrences of rare plant taxa (as defined in AMM-1) will be delineated on GIS-based maps for future reference, based on the results of protocol-level peak blooming period surveys.[1] Mapping will be regularly updated as part of the routine re-surveys required under AMM-1.

Work will be planned to avoid delineated rare plant occurrences to the extent feasible. Prior to the start of construction and O&M work in the vicinity of delineated occurrences of rare plants, a qualified biologist/ecologist will define the current extent of the occurrence in the field using pin flags, temporary construction fencing, or another appropriate low-impact medium. The delineated avoidance area will include a setback buffer appropriate to the species involved and the nature of the work planned. No entry, staging, or other activity within delineated avoidance areas will be permitted.

If an occurrence of rare plants cannot be entirely avoided, the following additional measures will apply.

(1) Plants that can be avoided will be demarcated by an exclusion area as described above

(2) If possible, work will be scheduled for timeframes when the special-status taxa occurring in the work area are senescent and/or after seed has set

(3) If an individual or group of individuals must be removed, one of two options may be employed, followed by monitoring, and, if needed, further corrective action to ensure that over the long term no net loss of the species occurs

i. Seeds from the affected species may be collected from existing onsite populations or from another population within the Bennett Valley – San Joaquin River watershed and distributed in the work area following completion of work, or, if the work area cannot be reseeded, in another appropriate location within the Plan Area. Appropriate locations will be

[1] Initial mapping was completed in 2020.

identified based on currently prevailing soil characteristics, site hydrology, and overall habitat conditions at the time of the restoration

ii. A nursery with experience growing special-status plants of the western San Joaquin Valley region may be contracted to grow seedlings of the species from locally native seeds (collected from the work area or from another population in the Bennett Valley – San Joaquin River watershed). Seedlings may be planted in the work area following completion of work, or, if this is not possible, may be planted in another appropriate location within the Plan Area. As identified in (i) above, appropriate locations will be identified based on currently prevailing soil characteristics, site hydrology, and overall habitat conditions at the time of the restoration

Note that seeds derived from plants in the Bennett Valley – San Joaquin River watershed may be available from local nurseries, and local nurseries may also be able to propagate seeds from adults grown from locally native collected seeds. In this case, seeds do not need to be collected from the work area.

Prior to impacts and reseeding or replanting, a qualified biologist/ecologist will develop a monitoring and corrective action plan for the revegetated area. The plan will include at least the following components.

- Interim and final success criteria for the revegetated area. The goal will be to match or exceed pre-disturbance population levels in the Plan Area over the long term. Due to normal variations in population from year to year, average population data for annual taxa can be calculated from several years of data collected
- Procedures for annual monitoring for a minimum of 3 years or until final success criteria are met
- Low-disturbance methods for as-needed invasive species control within the replanted area, suitable to site conditions and the rare plant species involved
- Corrective actions (additional seeding or planting) in the event interim success criteria are not met

The City will be responsible for ensuring that the monitoring plan is implemented by qualified personnel, and that any corrective action identified as necessary is properly carried out.

AMM-6. Special-Status Wildlife Protection (General)

In the event of a known or potential sighting of special-status wildlife in or near any construction or O&M work area, the following requirements will apply.

- Personnel will avoid the animal and will immediately notify designated City staff and the City's on-call biologist, who will advise them on how to proceed; if warranted (depending on the species involved), the biologist will consult with resource (DFW and/or USFWS) staff for guidance
- The biologist will respond onsite to relocate the animal or assist in implementing other protective measures, guided by agency input

- If the sighting is confirmed by the biologist, the species and location will be reported to DFW for inclusion in the California Natural Diversity Database (CNDDB). The biologist will be responsible for making the report

The biologist will also provide a brief memorandum documenting the sighting and any follow-up actions, including CNDDB documentation, for City records.

AMM-7. Western Spadefoot Protection

To the extent feasible, construction and O&M activities will be conducted during the dry season (May – October), or will avoid entry into and disturbance of ponded features.

If work within or in proximity to ponded features occurs during the rainy season, a qualified biologist will delineate areas to be avoided to prevent impacts on breeding special-status amphibians, using pin flags, temporary construction fencing, or another appropriate low-impact medium. No entry (personnel, equipment, or materials) will be permitted into delineated avoidance areas.

If work would impact areas with burrows, a qualified biologist will evaluate the burrows to determine whether they are suitable for use by western spadefoot, and will scope any suitable burrows. If any western spadefoot individuals are found within burrows to be impacted, they will be safely excavated from the burrow by hand or small excavator, either by the biologist or under biologist oversight, and will be relocated to a suitable burrow location outside the disturbance area and far enough away that they would not be expected to return.

AMM-8. Giant Garter Snake Protection

To the extent feasible, all construction and O&M activities will avoid impacting or working within 200 feet of the drainage ditches in the Study Area. Once the NEWS and MDTW projects become operational, the same precautions will apply to created water bodies. Appropriate silt fencing, flagging, and/or other measures will be employed to protect the drainage ditches and other aquatic habitat from direct and indirect impacts, as described in AMM-4.

If work within 200 feet of suitable habitat for giant garter snake is necessary (e.g., for NEWS and MDTW project O&M), the following additional measures will be required.

(1) If possible, work within 200 feet of suitable habitat will be conducted between May 1 and October 1, when the species is more active and mortality is less likely

(2) At all times of year, prior to work within 200 feet of suitable habitat, before work begins, a qualified biologist will conduct a pre-construction survey of the work area (including access and staging) for giant garter snake. If the species is present, the biologist will notify the City and work will be delayed until the biologist can consult USFWS regarding next steps. Work will not proceed until USFWS has recommended appropriate next steps and these have been implemented. Once work has begun, if activity is suspended for 2 weeks or more, the survey—and, if needed, follow-up—will be repeated

AMM-9. Northwestern Pond Turtle Protection

Prior to the start of construction or O&M activities, a qualified biologist will conduct a pedestrian preconstruction survey for northwestern pond turtle. The survey will be conducted no more than 24 hours prior to start of work, and will include walking the work area limits and interior and investigating all areas that could be used by the species. If northwestern pond turtle individuals are found, the biologist will relocate them to suitable habitat outside the disturbance area and far enough away that they would not be expected to return.

AMM-10. Nesting Bird Protection

To the extent feasible, construction will be scheduled outside the February 1 – September 15 nesting season. O&M activities reasonably expected to generate substantial sustained disturbance above Plan Area baseline levels and O&M activities that would involve ground disturbance or vegetation removal or trimming will also be scheduled outside the nesting period if possible.

If the types of activities identified above would commence during the nesting season, a qualified biologist will conduct a preconstruction survey for nesting birds. The survey will be conducted within 2 weeks of the start of work, and will cover the entire work footprint, including access and staging, plus a 500-foot-wide buffer. If active nests are found within the survey area, a no-disturbance zone will be established around the nest for the duration of the nesting season, or until the biologist determines that the young have fledged and left the nest, or that the nest has been abandoned. No entry into the no-disturbance zone will be permitted. The no-disturbance zone will be delineated in the field by or under the supervision of the biologist, using temporary construction fencing or another suitable low-impact medium. The width of the no-disturbance zone will be determined by the biologist, based on

- the location of the nest and the amount of vegetative and other screening between the nest and areas where work will take place
- noise and human disturbance levels at the site at the time of the survey and the noise and disturbance expected during the work
- the sensitivity of the species involved and behaviors of the nesting birds, and, if appropriate,
- other site- or species-specific factors

If special-status species are involved, the biologist will consult with the appropriate resource agency(ies) (DFW and/or USFWS) in determining the width of the no-disturbance zone.

If work during the nesting season is suspended for more than 1 week and then recommences, an additional survey will be conducted before work is reinitiated, and the same no-disturbance zone requirements will apply in the event active nests are found.

AMM-11. Western Burrowing Owl Protection

If construction will take place during the western burrowing owl breeding season (February 1 – August 31), protocol-level preconstruction surveys will be conducted for this species. O&M activities reasonably expected to generate substantial sustained disturbance above Plan

	Area baseline levels and O&M activities that would involve ground disturbance will also be subject to this requirement. Surveys will be conducted by a qualified biologist and will follow the methodology described in DFW's current Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game 2012, or future reports that supersede the 2012 version). Four surveys will be conducted within 2 hours of sunrise or sunset, with the final survey occurring 24 hours prior to the start of construction activities. If active nest burrows are found, the no-disturbance zone requirements described in AMM-10 will apply. If work during the burrowing owl nesting season is suspended for more than 1 week and then recommences, an additional survey will be conducted before work is reinitiated, and the same no-disturbance zone requirements will apply in the event active nests are found.
Mitigation Measures:	Based on analysis in the attached Initial Study, the NCCA projects will incorporate the following mitigation measures to avoid, reduce, or compensate for potentially significant environmental impacts. Aesthetics **Mitigation Measure AES-1. Construction Site Housekeeping and Visual Screening** In order to reduce adverse effects related to vegetation removal, earthwork, civil construction, construction staging, and other project-related activities, all NCCA project construction documents will require "good construction site housekeeping" measures such that visual disruption is minimized and the appearance of the active work site is as orderly as possible. At a minimum, this will include the following requirements. • Work and staging areas will be maintained in a clean, orderly condition at all times • When not in use, equipment and materials will be stored in construction staging areas • To the extent feasible, staging areas will be located away from public view; visual/aesthetic factors will be considered in locating staging areas • Staging areas will be visually screened, using 8-foot-high chainlink fencing covered with a fabric or other non-reflective material of a neutral color • Debris such as excavation spoils and vegetation slash not slated for onsite reuse will be removed promptly at regular intervals and properly disposed of **Mitigation Measure AES-2. Visual Disturbance Coordinator** During construction of each of the NCCA projects, informational signage posted at the work site will include the name and contact information for a City staff person to serve as the designated Visual Disturbance Coordinator. The Visual Disturbance Coordinator will be available during regular business hours to monitor concerns and will be responsible for responding to public complaints regarding construction visual disturbance. In the event a visual disturbance complaint is received, they will be responsible for determining the cause of the complaint and ensuring that reasonable measures are implemented to correct the problem.

Mitigation Measure AES-3. Use of Non-Glare Finishes

In order to minimize glare generated by new built elements at the NCCA site, all NCCA project construction documents will stipulate the use of low-sheen, non-glare, and non-reflective surface materials. Unpainted metal surfaces will not be permitted unless they have been treated for a low-glare weathered or rusted appearance, and gloss paints will not be used. Wall surfaces and hardscape will be matte and roughened; smooth trowelled surfaces will not be permitted.

The operations and maintenance plan for each of the NCCA projects will also be written to require periodic assessments of the appearance of hard surfaces, with touch-up or replacement of the finish when necessary. The City will be responsible for long-term assessment and maintenance to ensure that the new built elements at the NCCA do not generate excess glare.

Mitigation Measure AES-4. Standards for Nighttime Security Lighting

To minimize effects of nighttime security lighting on the community and on wildlife, all NCCA project construction documents will require that any exterior lighting installed at the NCCA meet the following standards.

- Use of nighttime lighting limited to the minimum needed to provide for public and facility safety
- Lighting equipped with photosensor or timer switches, such that lighting is on only when needed (dark hours)
- Full cut-off, shielded luminaires to reduce light spill
- Downward-directing lighting only; no use of uplights
- Lighting sources restricted to those that provide good color rendering such as light-emitting diodes (LEDs) and metal halide lamps; no use of high- or low- pressure sodium lamps or mercury vapor lamps

Biological Resources

Mitigation Measure BIO-1. Protection and Recovery of Parry's Rough Tarplant at NCCA Site

Design of the wetland project will be configured to avoid removal of existing Parry's tarplant populations to the extent feasible while still accomplishing the project's habitat objectives, based on the mapping developed during the 2020 protocol-level surveys, or the most current updated mapping.

Prior to construction of the NEWS and wetland projects, the City will retain a qualified biologist, botanist, or ecologist with experience in western San Joaquin Valley special-status plants to demarcate avoidance zones around the existing populations of Parry's tarplant that are planned to remain in place, using temporary construction fencing or another appropriate low-impact medium. The avoidance zone around each occurrence will include a 20-foot-wide buffer to reduce the potential for inadvertent and indirect impacts. Entry into Parry's rough

tarplant avoidance zones will be prohibited and all construction and staging activity will be excluded.

Additionally, prior to construction of the NEWS project, which is expected to remove occurrences of Parry's rough tarplant, seed will be collected from existing onsite populations of the species and will be included in the seed mix used for the wetland project's native grassland restoration. This requirement will also apply if the wetland project would remove Parry's rough tarplant occurrences. Monitoring protocols and interim and final success criteria for recovery of Parry's rough tarplant in the wetland project native grassland area will be included in the Monitoring Plan developed for the wetland project and will thus be subject to DFW review and approval. Corrective actions in the event Parry's rough tarplant within the native grassland area fails to meet interim success criteria will also be stipulated in the Monitoring Plan, potentially including, but not necessarily restricted to, reseeding in place with seed from onsite sources, and reseeding with onsite seed in other portions of the NCCA site that offer suitable habitat and can be protected over the long term. If corrective action includes reseeding outside the wetland project footprint, the additional reseeded area will be added to the area protected under the wetland project grant contract with DFW and will be monitored and maintained under the wetland project Monitoring Plan.

The City will be responsible for ensuring proper implementation of avoidance, protection, and recovery measures for Parry's rough tarplant.

Mitigation Measure BIO-2. Long-Term Protection and Restoration of Coastal and Valley Freshwater Marsh and Other Sensitive Habitats

If areas of Coastal and Valley Freshwater Marsh or another sensitive habitat at the NCCA site are disturbed or damaged by human incursion or other causes, the City will contract with a qualified biologist or ecologist to develop and implement a restoration plan appropriate to the extent and nature of the damage. Restoration measures may include, but will not necessarily be limited to, trash and debris removal, reseeding, replanting from onsite or container stock, and if appropriate, localized recontouring. Exclusion fencing and/or hand watering may also be included, if the biologist/ecologist considers it appropriate to support vegetation reestablishment.

If the damage involves habitat recognized as a sensitive natural community by DFW, the restoration plan will be developed in consultation with DFW and will be required to meet with DFW approval. For all habitats, the restoration plan will be consistent with current best practices for restoration ecology, and will include provisions for follow-up monitoring, interim and final success criteria, and corrective action such as additional replanting to ensure that damage is successfully restored and habitat function and value are maintained over the long term. The City will be responsible for proper development and implementation of the restoration plan and any follow-up monitoring and corrective action(s) it requires.

Cultural Resources

Mitigation Measure CUL-1. Protection of Old Santa Fe Grade

The footprint of the wetland project will be developed to ensure that all physical impacts on the historic Santa Fe Grade are avoided. The project construction documents will define the extent of the Santa Fe Grade in the vicinity of the wetland project and will show the footprint

of the Grade as a "No Disturbance" exclusion area where earthwork and equipment staging will be prohibited. The City's construction management staff will be responsible for enforcing this measure during construction. Similar avoidance will be required during O&M activities, and will be enforced by Public Works staff overseeing O&M at the NCCA site.

Mitigation Measure CUL-2. Retention of On-Call Archaeologist

Prior to construction of each of the NCCA projects, the City will retain a qualified professional archaeologist (City's Archaeologist) who meets Secretary of the Interior standards and has experience in San Joaquin Valley archaeology on an on-call basis for the duration of all ground-disturbing activities. The City's Archaeologist will be responsible for reviewing, identifying, and evaluating cultural resources (if any) exposed during construction, for determining whether they qualify as *historic resource(s)* and/or *unique archaeological resource(s)* under CEQA, and, if needed, recommending and implementing appropriate follow-up treatment.

Mitigation Measure CUL-3. Worker Awareness Training for Cultural Resources

Prior to groundbreaking for each of the NCCA projects, the City's Archaeologist (defined in Mitigation Measure Cul-3) will develop and present in-person, hands-on worker awareness training for historical resources. Training will include information on the possibility of encountering resources during construction; the types of resources that could be seen and how to recognize them; and proper procedures in the event resources are encountered. All field management and supervisory personnel and construction workers involved with ground-disturbing activities will be required to take this training prior to beginning work on the project. Upon completion of the training, workers will be required to sign a form stating that they attended the training, understand, and will comply with the information presented. The same type of worker awareness training will be required for all City and contract staff engaged in O&M activities that would entail ground disturbance in areas not already disturbed by construction. It will be provided by the City's Archaeologist, or another on-call specialist meeting the same qualifications. The City's Public Works Department will be responsible for ensuring that training is provided for both construction and O&M staff.

Mitigation Measure CUL-4. Evaluation and Treatment of Unanticipated Archaeological Discoveries

If known or suspected cultural resources are discovered during construction or O&M, work in the immediate area of the find will cease and the contractor or O&M staff will be required to notify the City before the end of the work day. The find will be protected in place until the City's Archaeologist (or another specialist meeting the same qualifications) and a trained and qualified Native American monitor who can prove genealogical relationship to at least one of the tribes of the western San Joaquin Valley region have evaluated it and identified appropriate follow-up measures, if any. If the City's Archaeologist determines that the resource qualifies as a *historical resource* and/or *unique archaeological resource* under CEQA, they will notify the City and other appropriate parties and recommend follow-up measures to reduce impacts, in accordance with Section 15064.5 of the *CEQA Guidelines*. Depending on the nature of the find, follow-up measures may include avoidance, preservation in place, recordation, monitoring during ongoing work, additional archaeological testing, and data recovery, among other options. The City's Archaeologist may recommend completion of a formal Archaeological Monitoring Plan (AMP) and/or Archaeological

Treatment Plan (ATP), potentially including data recovery, if significant archaeological deposits are exposed during ground- disturbing activities. The City will be responsible for proper implementation of the AMP and ATP. If an AMP or ATP is implemented for a project that requires federal permit authorization (for example, Clean Water Act Section 404 permitting), the City will consult with the federal lead agency and, if appropriate, other regulatory agencies, in developing and implementing the AMP and ATP.

If archaeological evaluation, monitoring, or treatment is required, the City's Archaeologist will prepare and file a Monitoring Closure Report with the City, documenting the nature of the find(s), evaluation methods, and outcomes.

Mitigation Measure CUL-5. Procedures for Discovery of Human Remains

The treatment of human remains and funerary objects discovered during ground-disturbing construction and O&M activity will comply with all applicable state laws. If known or potential human remains are encountered during activities at the NCCA site, work within 50 feet of the discovery and in any nearby areas reasonably suspected to overlie adjacent remains will cease, the find will be protected in place, and the contractor/O&M staff will be required to notify the City before the end of the work day. The City will promptly notify the Merced County Coroner, who will be responsible for determining whether the remains are Native American. If the Coroner determines that the remains are Native American and are not subject to Coroner authority, the Coroner will notify the Native American Heritage Commission, which is responsible for identifying and notifying descendant(s) of the deceased so they can make recommendations regarding the treatment of the remains. The City will be responsible for facilitating the disposition of remains recommended by the Most Likely Descendant(s). If no satisfactory agreement can be reached as to the disposition of the remains pursuant to state law, the City will respectfully reinter the human remains and items associated with the burial on City property in a location not subject to further subsurface disturbance. A final report detailing the find, follow-up activities, and disposition of remains will be prepared by the City's Archaeologist or other qualified staff, and will be submitted to the City Manager promptly following disposition of the remains. The report will be subject to review and approval by the City Manager.

Geology & Soils

Mitigation Measure GEO-1. Topsoil Protection

To minimize impacts on topsoil resources, construction documents for all NCCA projects will require the following measures for work in vegetated areas.

- The area of disturbance will be limited to the minimum needed to accomplish the necessary grading/recontouring

- Revegetation will reuse onsite topsoil to the extent feasible. In areas where topsoil is present, topsoil will be removed and sidecast separate from other excavation spoils, and will be assessed for reuse in habitat restoration/creation by a qualified biologist or ecologist with local native plant expertise. If the topsoil is determined to be suitable for onsite reuse in habitat restoration/creation, it will be maintained in a separate stockpile and will be replaced during revegetation. If site topsoil is determined to be unsuitable—for example, due to the presence of excessive

invasive species seed bank—clean imported topsoil will be used. If possible, import topsoil will be obtained from a local source or sources within the project watershed, with soil properties generally consistent with those of the NCCA site. Import topsoil will also be assessed and approved by the qualified biologist/ecologist prior to use on the site

If operational or maintenance activities require topsoil disturbance or removal, the same measures will apply.

Mitigation Measure GEO-2. Final Design Evaluation and PRMP Development

For each of the NCCA projects, the City will retain qualified staff to review the 90% or 100% design submittal and supporting geotechnical report(s). As used here, *qualified staff* refers to an individual meeting the *qualified professional paleontologist* criteria defined by the Society of Vertebrate Paleontology (SVP) (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010).

The purpose of the design review will be to determine the potential for ground disturbance to involve paleontologically sensitive geologic units (San Luis Ranch alluvium, Los Banos alluvium, and/or Tulare Formation), based on final design, anticipated depth of disturbance, and construction techniques. As such, the design review may include field reconnaissance, if warranted in the opinion of qualified staff. If there is reasonably foreseeable potential for any of these units to be affected by project-related ground disturbance, the City will require qualified staff (as defined above) to develop a Paleontological Resources Mitigation Plan (PRMP). The PRMP will be consistent with the SVP's *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources* (SVP Impact Mitigation Guidelines Revision Committee 2010) and *Conditions of Receivership for Paleontologic Salvage Collections* (SVP Conformable Impact Mitigation Guidelines Committee 1996). As such, it will provide for at least the following.

- Implementation by qualified personnel, including a supervising paleontologist who meets the requirements for a *qualified professional paleontologist* as defined by the SVP and monitor(s) who satisfy the SVP's requirements for *paleontological resource monitors* (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010)
- Pre-construction survey with salvage or protection in place, in any areas where there would be surface disturbance of the geologic units identified as highly sensitive for paleontological resources (San Luis Ranch alluvium, Los Banos alluvium, Tulare Formation) ("highly sensitive units")
- Pre-construction and construction-period coordination procedures and communications protocols
- Monitoring of ground-disturbing activities known to involve, or potentially involving, the highly sensitive units. In all areas subject to monitoring, monitoring will initially be conducted full-time for grading and excavation, but the PRMP may provide for monitoring frequency in any given location to be reduced once 50% of the ground-

disturbing activity has been completed, based on the professional judgment of the supervising paleontologist

- Provisions for a "stop work, evaluate, and treat appropriately" response in the event of a paleontological discovery, with appropriate treatment identified by the supervising paleontologist (see Mitigation Measure GEO-3) based on the nature of the find and prevailing standards for paleontological resources protection
- Sampling and data recovery procedures consistent with SVP protocols (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010, Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1996)
- A repository agreement providing for appropriate curation of any recovered materials, consistent with SVP requirements (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1996)
- Procedures for the preparation, identification, and analysis of fossil specimens and data recovered, consistent with SVP Requirements (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1996) and any additional requirements of the designated repository institution
- Reporting procedures consistent with SVP requirements (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010)

Mitigation Measure GEO-3. PRMP Implementation

Prior to groundbreaking for any of the NCCA projects that are determined to warrant a PRMP (see Mitigation Measure GEO-2), the City will retain a supervising paleontologist meeting SVP standards for a *qualified professional paleontologist* (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010) to implement the requirements of the PRMP. This person may, but will not necessarily, be the same individual who prepared the PRMP. The City will be responsible for ensuring proper implementation of the PRMP.

Mitigation Measure GEO-4. Worker Awareness Training for Paleontological Resources

To support effective PRMP implementation and address the potential for unanticipated discoveries where a PRMP is not required, the City will retain qualified staff to present in-person, hands-on worker awareness training for paleontological resources to ensure that construction staff can recognize fossils in the field. Training will be delivered prior to groundbreaking for each of the NCCA projects. As used here, *qualified staff* refers to an individual who satisfies one or both of the following criteria.

- A qualified professional paleontologist as defined by the SVP (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010) who is experienced in delivering training to nonspecialists
- A California-licensed professional geologist (PG) who has expertise in San Joaquin Valley stratigraphy and paleontology and is experienced in delivering training to nonspecialists

Training will be concise and substantive. It will include information on the possibility of encountering fossils during construction; the types of fossils that may be seen and how to recognize them; and proper procedures in the event fossils are encountered. All field management and supervisory personnel and construction workers involved with ground-disturbing activities will be required to take this training prior to beginning work on the project. Upon completion of the training, workers will be required to sign a form stating that they attended the training, understand, and will comply with the information presented.

Mitigation Measure GEO-5. Paleontological Consultation for Ground-Disturbing O&M Activities

Prior to ground-disturbing O&M activities in areas not previously disturbed by construction, the City will retain a qualified professional paleontologist as defined by the Society of Vertebrate Paleontology (Society of Vertebrate Paleontology Impact Mitigation Guidelines Revision Committee 2010) to review the proposed O&M activities. The purpose of the review will be to determine the level of risk to paleontological resources as a result of the intended ground disturbance and provide advice regarding appropriate risk reduction measures. If the paleontologist considers it warranted, Mitigation Measures GEO-2, GEO-3, and GEO-4 will be implemented. Alternately, the professional paleontologist may identify a reduced approach consistent with the SVP's *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources* (SVP Impact Mitigation Guidelines Revision Committee 2010) and *Conditions of Receivership for Paleontologic Salvage Collections* (SVP Conformable Impact Mitigation Guidelines Committee 1996). The City will be responsible for ensuring that the paleontologist's recommendations are properly implemented.

Hazards & Hazardous Materials

Mitigation Measure HAZ-1. Testing and Appropriate Disposal of Forebay Sediment

Prior to removal of sediment from the NEWS project and MDTW project forebays, the City will sample the sediment and test it for hazardous constituents. Sampling and testing will follow current applicable best practices consistent with the federal Environmental Protection Agency's Test Methods for Evaluating Solid Waste (SW-846), or current alternate approved under California law. If the sediment is found to qualify as hazardous per State of California standards, it will be handled and treated as a hazardous material, in compliance with all applicable federal, state, and local requirements. Reuse of sediment that qualifies as hazardous will not be permitted; it will be transported by an appropriately qualified and licensed hauler and will be disposed appropriately at either a Class II ("designated" wastes that are non-hazardous but may pose a risk to the environment) or Class I (hazardous wastes) landfill, depending on the nature and level of contamination.

Once sediment from each project's forebay has been tested in at least 3 normal water years, 3 wet years, and 3 dry years, testing may be discontinued if sediment has consistently been shown not to qualify as hazardous per State of California standards.

Mitigation Measure HAZ-2. Hazardous Materials Response

In the event known or suspected hazardous materials are encountered during construction or O&M, work in the vicinity of the find will be suspended until qualified staff (i.e., staff meeting the Environmental Professional qualifications in ASTM E1527-13) retained by the City can assess the nature of the find and stipulate appropriate follow-up and protective measures.

Work may proceed elsewhere on the site, assuming the discovery appears to be localized. If qualified staff consider it warranted, the City will conduct a Phase II hazardous materials investigation or appropriate equivalent procedure to determine the nature and extent of contamination, evaluate potential risks, and, if appropriate, stipulate additional precautions and/or response measures. Work in areas of known and potential contamination will not resume until the measures stipulated by qualified staff are implemented. If waste disposal is necessary, materials will be handled and disposed of by a licensed waste-disposal contractor and transported by a licensed hauler to an appropriately licensed and permitted disposal or recycling facility, in accordance with local, state, and federal requirements. Project contract documents for all NCCA projects will stipulate contractor responsibilities in accommodating and assisting with the implementation of these commitments, and these requirements will remain in force for all O&M activities at the NCCA.

See also Mitigation Measure C-1 (Pre- and Post-Construction Soil Testing for Mercury) in Cumulative Impacts below.

Noise

Mitigation Measure NOI-1. Reduced Construction Hours in Vicinity of Residences

To reduce the potential for disturbance, no construction activity at or adjacent to the NCCA site will be permitted within 1,500 feet of residences on any weekend days or before 8 AM or after 5 PM on weekdays.

Mitigation Measure NOI-2. Noise Disturbance Coordinator

During construction of each of the NCCA projects, informational signage posted at the work site will include the name and contact information for a City staff person to serve as the designated Noise Disturbance Coordinator. This person may, but will not necessarily, be the same person designated as the Visual Disturbance Coordinator under Mitigation Measure AES-2. The Noise Disturbance Coordinator will be available during regular business hours to monitor concerns and will be responsible for responding to public complaints regarding construction noise and vibration disturbance. In the event a noise/vibration disturbance complaint is received, they will be responsible for determining the cause of the complaint and ensuring that reasonable measures are implemented to correct the problem.

Mitigation Measure NOI-3. Limits on Use of Impact and Vibratory Equipment Near Residences

No construction equipment or activities reasonably anticipated to generate vibration levels in excess of 94 vibration decibels (VdB) or a peak particle velocity of 0.2 inches per second at a distance of 25 feet from the source will be permitted within 100 feet of existing residences. Prohibited equipment will include vibratory rollers.

Transportation

Mitigation Measure TR-1. NCCA Usage Monitoring

Prior to construction of the Newman Nature Park, the City will take the following actions to monitor NCCA usage

- At least monthly, the City will conduct one weekday and one weekend user poll at peak use hours to determine the number of visitors onsite, identify whether they are

local or from outside the area, and if they are from outside the City's Sphere of Influence, how far they travelled to visit the NCCA. Information on number of visitors per car will also be collected to calibrate understanding of visitors/car trips ratio, supporting more accurate projections of future VMT generation

- Data will be maintained by the Public Works Department and will be summarized, reviewed, and evaluated annually to determine whether NCCA usage is generating in excess of 110 trips per day. Data analysis will include projections of coming-year usership and trip generation

When the Newman Nature Park is constructed, the City will ensure that the entrance to the parking area is equipped with a vehicle detection loop or similar technology such that vehicles entering the parking area are counted. The City will also continue to conduct user surveys as described above, and all data will continue to be maintained, and evaluated annually, by the Public Works Department, also as described above.

If or when usership is found to exceed 110 trips per day or alternate screening criteria adopted by the City of Newman through a process consistent with *CEQA Guidelines* requirements and applicable recommendations of the Office of Planning and Research, or is projected to exceed this threshold in the coming year, the City will implement Mitigation Measure TR-2. Alternately, if at some time in the future a regional VMT reduction program meeting Office of Planning and Research (2018 or future-current) standards is developed and offers other opportunities to address VMT generation (such as in-lieu fees to support mitigation actions that can reasonably be expected to occur), the City may elect to participate in this program rather than implementing Mitigation Measure TR-2, assuming an appropriate offset for NCCA-generated VMT can be demonstrated.

The Public Works Department will also monitor and track VMT associated with O&M at the NCCA site and will seek to minimize VMT where this is feasible without compromising the function, value, or community benefits of the NCCA facilities.

Mitigation Measure TR-2. Reservations System and Usage Management

The City will install an automatic gate on NCCA parking lot access and will develop and implement an online reservations system to limit site visitation. This may be used to maintain overall usership at a trip generation level that represents a Less than Significant transportation impact per current guidance from the Office of Planning and Research or other relevant entity, *and/or* to prioritize local over regional users such that projected VMT generation is maintained at a level below current applicable significance thresholds. If VMT generation is selected as the metric to guide usership management, it will be projected using current prevailing methods as of the time the relevant analysis is prepared. Management of regional usership may use any of several methods to control trip and/or VMT generation, potentially including but not necessarily limited to

- prioritizing group visits that access the NCCA by bus or van, such as school field trips and senior excursions
- promoting and facilitating carpools and ridesharing for NCCA visitors
- prioritizing local usage over regional usage

- other methods developed by the City based on usership surveys and community priorities and needs

Mitigation Measure TR-3. Overflow Parking Improvements on Inyo Avenue and Brazo Road

If the NEWS project is constructed before the Newman Nature Park, as part of the NEWS project the City will provide improvements to the north shoulder (only) of Inyo Avenue to provide for safe accomodation of overflow parking. The shoulder will be graded if necessary and will be graveled and/or paved for parking. Existing utilities will be protected in place. Improvements will initially be equal to 20 parking spaces (500 feet), but the City will continue to monitor usage at the NCCA per Mitigation Measure TR-1, and will extend the graveled and/or paved shoulder if necessary, taking into account the anticipated timing of Newman Nature Park construction and increased availability of onsite parking. *No Parking* signage meeting City standards will be installed along the south side of Inyo Avenue to prevent overflow parking from encroaching on residential frontages and access.

In conjunction with improvements to the shoulders of Inyo Avenue, the City will also coordinate with the County Public Works Department to install *No Parking* signs along both sides of Canal School Road adjacent to the NCCA, to prevent overflow parking from encroaching on travel and residential frontages and access along Canal School Road. Installation of signage will be the City's responsibility.

If the NEWS project is constructed after the Newman Nature Park, the City may reevaluate the need for overflow parking along Inyo Avenue based on usage monitoring conducted per Mitigation Measure TR-1. Improvements as described above will be provided if warranted.

As part of the Newman Nature Park project, the City will provide improvements to the shoulders of Brazo Road to provide for safe accommodation of overflow parking. Shoulders on both sides of the road will be graded if necessary, and graveled and/or paved for parking. The length of the improvements will initially be equal to 30 parking spaces (750 feet), but the City will continue to monitor usage at the NCCA per Mitigation Measure TR-1, and will expand the graveled and/or paved shoulder length as needed. If the Newman Nature Park is constructed before the NEWS project, *No Parking* signage along both sides of Canal School Road adjacent to the NCCA will be installed at the time the Nature Park is constructed.

All improvements along Inyo Avenue and Brazo Road will be the City's responsibility but Brazo Road improvements will be coordinated with the County Public Works Department and will meet County roadway standards as laid out in the current version of the *Merced County Department of Public Works Improvement Standards and Specifications*.

Cumulative Impacts

Mitigation Measure C-1. Pre- and Post-Construction Soil Testing for Mercury

Prior to construction of the NEWS, wetland, and MDTW projects, the City will conduct further testing to characterize mercury levels in soils involved in project earthwork. Samples will be collected from at least 3 locations within each proposed habitat type within each project footprint. Soil testing will also be conducted in the footprint of the Newman Nature Park, with samples collected from at least 3 locations within each area planned for earthwork and/or

	future public use. At each location within each project, samples from surface, mid-depth, and maximum anticipated depths of excavation will be collected. Sample locations will be areally distributed to maximize coverage, and sample locations at the NEWS, wetland, and MDTW projects will be coordinated with RWQCB staff and subject to RWQCB approval. Sample collection will conform to Chapter 3 (*Inorganic Analytes*) of EPA's SW-846 Compendium. Testing will conform to EPA Method 7473. Site soils found to exceed the 0.1 mg/kg total mercury (dry weight) threshold will be removed from the site and disposed of appropriately, consistent with all applicable state and federal protocols. Alternately, they may be separately stockpiled for onsite reuse in lower fill lifts that will not be exposed at the surface and will not be subject to surface water flow or ponding when the project is complete. If soils are stockpiled for reuse, stockpiles will be covered and soils will be watered during placement, to prevent the generation of fugitive dust with elevated mercury levels, and runoff control will be in place to prevent offsite transport. Appropriate personal protective equipment will be required for all construction-site personnel working with or potentially exposed to these soils, consistent with any applicable California state requirements. At the NEWS, wetland, and MDTW projects, once construction is complete, and before new water flows are introduced to the project, at least one soil sample will be collected and analyzed from each habitat type/land use within the project footprint (including wetland habitat, uplands, and—if any—access roadways and parking area). At the Newman Nature Park, at least one sample will be collected within each public use area that has exposed soils (i.e., is not paved or surfaced); multiple samples will be collected from each trail, covering and characterizing the length of the trail. Sample locations at the NEWS, wetland, and MDTW projects will be coordinated with RWQCB staff and will be subject to RWQCB approval, and sampling and analysis protocols will be the same as those identified above. The purpose of this second round of analysis will be to verify that all surface-exposed soils and soils exposed to surface water flow or ponding are below the 0.1 mg/kg total mercury (dry weight) threshold. If this is confirmed, no further action with regard to soils will be required. If any soils are found to exceed the 0.1 mg/kg total mercury (dry weight) threshold, remedial action will be taken. Remedial action at the NEWS, wetland, and MDTW projects will be coordinated with RWQCB staff and a remedial action plan will be submitted to the RWQCB and must be approved by the RWQCB before action is taken. At all of the projects, remedial actions may include, but will not necessarily be limited to, the following: capping with clean imported fill verified to contain levels below the 0.1 mg/kg total mercury (dry weight) limit, removal, appropriate disposal, and replacement with clean imported fill verified to contain levels below the 0.1 mg/kg total mercury (dry weight) limit, or—where feasible without impeding the function of the project—capping with rock or permeable paving media. At all four NCCA projects, unless preconstruction soil testing has shown that soils within the project footprint are consistently below the 0.1 mg/kg total mercury threshold throughout the site, future modifications requiring earthwork in areas not previously disturbed by construction will be subject to the same testing and remedial action requirements laid out for construction.

Mitigation Measure C-2. Aqueous Mercury Monitoring and Management

Following construction completion at the NEWS, wetland, and MDTW projects, the City will conduct testing for aqueous methylmercury levels in input, onsite, and effluent waters. Testing will be initiated once vegetation is established and each project is determined by the design team or other appropriately qualified personnel to be functioning at a mature level. Samples will be collected from the following locations.

- NEWS project: Miller Ditch input to project, at least one location within each wetland cell within project, micropool, discharge to Miller Ditch
- Wetland project: Miller Ditch input to project, at least one location within each wetland habitat type on 78-acre parcel, at least one location within each wetland habitat type on 24-acre parcel
- MDTW project: Miller Ditch input to project, at least one location in each wetland cell within project, discharge from project

Sample collection will follow EPA Method 1669 or updated EPA equivalent. Samples will be analyzed consistent with EPA Method 1631 or updated EPA equivalent. Sample locations will be coordinated with RWQCB staff and will be subject to RWQCB approval.

The goal of sampling and analysis will be to show that wetlands on the NCCA site are not increasing methyl mercury above input levels. Testing and analysis will be conducted each year for a minimum of 3 consecutive years. If the methylmercury level in any of the tested samples is found to substantially exceed the level in input waters to the project (as determined by the City in consultation with RWQCB staff), corrective action will be taken. A corrective action plan will be submitted to RWQCB staff for review and feedback, and may include, but will not necessarily be limited to, the following: managing wetland inputs seasonally, managing wetland throughput to modify residence times, and capping of bottom sediment in the location producing exceedance. If/when sampling has shown that NCCA wetlands are not increasing methlymercury above input levels over 3 consecutive years of testing, no further action with regard to aqueous methylmercury will be required.

To enable the NCCA projects to contribute to long-term increased understanding of mercury cycling in enhanced and restored wetlands, the City will provide the RWQCB with annual reports describing that year's (1) sampling and analysis activities, (2) results, and (3) corrective actions implemented, if any. Activities and results will be detailed on a project-specific basis, but monitoring reports for all three projects may be combined for efficiency.

Mitigation Measure C-3. Integrated Pest Management and Limited Use of Chemical Pesticides

Pest and invasive species control at the NCCA—whether conducted by City staff or by contractor(s) retained by the City—will emphasize Integrated Pest Management (IPM) practices consistent with prevailing best practices and current guidance of the Integrated Pest Management Institute of North America. The City's Public Works Department will be responsible for ensuring that IPM is the go-to standard operating procedure for the NCCA.

	Use of chemical pesticides and herbicides will be avoided to the extent practicable at the NCCA while maintaining habitat function and quality and appropriate public recreation values. Pesticides and herbicides for which impairments have been identified in immediate downstream receiving waters (the Newman Wasteway and San Joaquin River) will not be used under any circumstances. As of 2021, prohibited substances are Group A pesticides, chlorpyrifos, diazinon, diuron, and simazine, in addition to all substances banned in the United States. The City's Public Works Department will be responsible for reviewing the State Water Resources Control Board's Clean Water Act Section 303[d] list as it is updated and ensuring that if additional pesticide or herbicide impairments are identified in the Newman Wasteway or San Joaquin River downstream of Mud Slough, these substances are added to the list of substances prohibited at the NCCA.
Reference Cited:	City of Newman. 2021. Newman Community Conservation Area Master Plan. (Third Administrative Draft.) (February.) Prepared for City of Newman by Redtail Consulting, Fremont, CA. Appendix A to the attached Initial Study.

Determination

In accordance with local procedures for compliance with the California Environmental Quality Act (CEQA), the Public Works Department has completed the attached Initial Study to evaluate the potential for the NCCA Master Plan and the projects it comprises to result in significant adverse effect(s) on the environment, and on the basis of analysis in the Initial Study recommends the following determination.

- Although the projects have the potential to result in significant effects on the environment, there would not be a significant effect in this case because revisions in the project (in the form of mitigation measures) have been made by or agreed to by the project proponent
- A Mitigated Negative Declaration should be prepared
- An Environmental Impact Report (EIR) is not required

Findings

Based on the analysis and findings presented in the project Initial Study (attached), implementation of the NCCA Master Plan and the projects it comprises will not have a significant effect on the environment, for the following reasons.

- As discussed in Section 3 of the Initial Study, with the identified Avoidance and Minimization Measures and mitigation measures incorporated, potential short- and long-term environmental impacts would be avoided or reduced to Less than Significant levels
- The NCCA Master Plan and projects would not substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory
- For the most part, the NCCA Master Plan and projects would not make Considerable contributions to existing Significant cumulative impacts nor would they individually or collectively create new Significant

cumulative impacts over time. Thus, for the most part, they would not have impacts that are individually limited, but Cumulatively Considerable.

However, as with many wetland projects in California, there is a possibility that the NEWS, wetland, and MDTW projects could result in increased mercury methylation. Offsite discharges from the NEWS and MDTW projects could thus exacerbate existing downstream levels of bioavailable mercury, potentially rising to the level of a Cumulatively Considerable contribution to the existing Significant impact related to impairment of downstream waters for mercury. All three projects could also increase bioaccumulation of methylmercury, potentially making a Cumulatively Considerable contribution to existing mercury bioaccumulation documented regionally, and/or, over time, creating a new Significant impact with regard to local bioaccumulation of methylmercury. To address these concerns, the City has committed to implementing Mitigation Measures C-1 (Pre- and Post-Construction Soil Testing for Mercury) and C-2 (Aqueous Mercury Monitoring and Management).

Mitigation Measure C-1 provides for pre-construction mercury testing of soils in the NEWS, wetland, and MDTW footprints and requires the City to offhaul and appropriately dispose of any soils exceeding a mercury content threshold approved by the RWQCB, *or* to limit the use of such soils use to lower lifts of fill where they will not be exposed at the surface and will not be subject to surface water flow or ponding when the project is complete. Mitigation Measure C-1 also requires the City to conduct post-construction soil testing before water flows are introduced to the NEWS, wetland, and MDTW projects to verify that soils with elevated mercury levels have successfully been excluded or contained, and prescribes corrective actions under RWQCB oversight in the event this is not the case. Mitigation Measure C-2 requires ongoing aqueous mercury monitoring and management at the NEWS, wetland, and MDTW projects until it has been shown that the projects are not increasing methylmercury levels above values in input waters.

With these measures in place, the three projects' individual and collective contributions to existing downstream impairments for mercury and to existing regional bioaccumulation of methylmercury would be reduced to the extent feasible and would be under RWQCB oversight. The projects' individual and collective potential to result in a new, localized cumulative impact with regard to mercury bioaccumulation would also be reduced to the extent feasible and would be under RWQCB oversight. In addition, with Mitigation Measure C-2 incorporated, the NEWS, wetland, and MDTW projects stand to provide a Benefit to understanding of mercury presence and cycling in constructed and restored San Joaquin Valley wetlands. Residual contributions, and residual impacts, if any, are considered Less than Cumulatively Considerable and Less than Significant respectively.

Additionally, there is some potential that O&M at the NCCA could make a Cumulatively Considerable contribution to existing impairments for pesticides and herbicides in the Newman Wasteway and San Joaquin River, which also represent a Significant existing cumulative impact. However, Mitigation Measure C-3 (Integrated Pest Management and Limited Use of Chemical Pesticides) will require O&M activities to emphasize Integrated Pest Management (IPM) techniques and avoid of the use of chemical pesticides and herbicides to the extent feasible. It also prohibits the use of the specific pesticides and herbicides for which impairments have been identified in the Newman Wasteway and San Joaquin River under any circumstances. As of 2020, prohibited substances are Group A pesticides, chlorpyrifos, diazinon, diuron, and simazine. Under Mitigation Measure C-3, the City's Public Works Department will be responsible for reviewing the State Water Resources Control Board's Clean Water Act Section 303[d] list as it is updated and ensuring that if additional pesticide or herbicide impairments are identified in the Newman Wasteway or San Joaquin River downstream of Mud Slough, these substances are added to the list of pesticides and herbicides prohibited at the NCCA. With Mitigation

Measure C-3 in place, the NCCA projects' contributions to existing identified impairments for pesticides and herbicides in the Newman Wasteway and San Joaquin River would be reduced to a Less than Cumulatively Considerable level.

Per *CEQA Guidelines* Section 15065[b][1], if, prior to public review of an environmental document, a project proponent agrees to mitigation that would clearly avoid impacts that are individually limited, but Cumulatively Considerable, or would mitigate the impact to a level that is clearly Less than Significant, the lead agency is not obligated to prepare an Environmental Impact Report solely because the impact at issue would have been Significant without mitigation. Mitigation Measures C-1, C-2, and C-3 satisfy this requirement for their respective impacts, and an Environmental Impact Report is not required as a result of this finding

- The NCCA Master Plan and projects would not result in environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly

This determination reflects the independent judgment of the City.

Kathryn Reyes
Director of Public Works

Date

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