5080 California Avenue, Ste. 220 I Bakersfield, CA 93309

April 22, 2022

Cedric Irving
Environmental Scientist
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814

RE: Reaffirmation of California Environmental Quality Act (CEQA) Compliance for the McFarland Wastewater Treatment Plant Project Funded through the State Revolving Fund Loan Program (C-06-8276-110)

Dear Mr. Irving,

The City of McFarland (City) applied for and anticipates the receipt of funding agreements for a wastewater infrastructure project to be administered through the Clean Water State Revolving Fund (CWSRF) loan program. The projects being reaffirmed, along with the CWSRF project and State Clearinghouse numbers, are as follows.

- McFarland Wastewater Master Plan and associated Initial Study/Mitigated Negative Declaration (2014)
- McFarland Wastewater Treatment Plant Expansion Project Initial Study/Mitigated Negative Declaration (2016)

The City completed and directly financed the first two construction phases (including the planning and design) of the plant expansion. These two phases included the construction of a new Headworks facility (to replace older dual facilities) and the aeration basin, centralized blower and motor control center. The two initial projects included a new SCADA system with the hardware and software backbone for the final plant process. The aeration basin project included an electrical motor control center building to accommodate the remaining future phases. The headworks project construction was completed in August 2015. The aeration basin and blowers project was completed in August 2016. As the aeration basin, blowers and motor control center project was being finalized, the City decided to pursue State Revolving Fund Loan monies for all the remaining phases.

These projects have demonstrated compliance with CEQA requirements under CEQA and the CWSRF program for the adopted Initial Study/Mitigated Negative Declaration (IS/MND) encompassing all phases of the Wastewater Master Plan projects was originally filed with the State Clearinghouse (SCH) on July 2014, (SCH# 2014051073). A subsequent IS/MND was prepared to increase the capacity of the facility and convert the existing treatment process from aerated lagoons to an extended aeration-activated sludge process. A Notice of Determination was posted on June 10, 2016. We do not have a copy of that document. The posted Notice of Determination and Cultural Resources Assessment is included as an attachment.

Due to the delay in construction of the last phases of the Project, a new biological resources survey and report and a cultural resources records search and technical memo were prepared. Based on the results as outlined in these documents, it was determined that there are no new impacts beyond what was originally analyzed in the two previous IS/MND documents. These documents are included with this letter as evidence of compliance with CEQA and the CWSRF program.

Since these projects have not secured a funding agreement within five years of the original posting date, QK, on behalf of the City, is reaffirming that no project or regulatory changes have occurred and there are no new potential impacts since the original adoption date in July 2014.

If there are any questions regarding this reaffirmation, please do not hesitate to contact me at (661) 616-2600 or by e-mail at Jaymie.brauer@qkinc.com. .

Sincerely,

Jaymie L. Brauer
Principal Planner/Project Manager

Attachments

Attachments

IS/MND and Final IS/MND 2014

Draft
Mitigated Negative Declaration
McFarland Wastewater Treatment Plant Expansion Project

The City of McFarland has reviewed the proposed project described below to determine whether it could have a significant effect on the environment as a result of project completion. "Significant effect on the environment" means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.

Name of Project: McFarland Wastewater Treatment Plant Expansion Project

Project File Number: 00022.14

Project Description: The project would increase the capacity at the WWTP from 1.55 million gallons per day (mgd) to 2.5 mgd. The City proposes to convert the existing treatment process from aerated lagoons to an extended aeration-activated sludge process. The project would replace the existing dual headworks with a single headworks (with lift pump) and construct two new secondary clarifiers, a new return activated sludge (RAS) and waste activated sludge (WAS) pump station, and a new effluent pump station. Lagoons 3 and 1-A would be converted into sludge drying beds.

Project Location and Assessor's Parcel Number: The existing wastewater treatment plant (WWTP) is located approximately 2.5 miles west of the City of McFarland (City) on Melcher Avenue between Sherwood Road and Elmo Highway. The project site's Assessor's Parcel Number is 060-050-24.

Mailing Address and Phone Number of Applicant Contact Person: Mario Gonzales, Public Works Director, 401 West Kern Avenue, McFarland, CA 93250

Findings

The City of McFarland finds the project described above will not have a significant effect on the environment in that the attached initial study identifies one or more potentially significant effects on the environment for which the project applicant, before public release of this Draft Mitigated Negative Declaration, has made or agrees to make project revisions that clearly mitigate the effects to a less-than-significant level. The City of McFarland further finds that there is no substantial evidence that this project may have a significant effect on the environment.

Mitigation Measures Included in the Project to Reduce Potentially Significant Effects to a Less-Than-Significant Level

Resource Topic:

<u>Biological Resources</u>

MM BIO-1. Pre-Disturbance San Joaquin Kit Fox Surveys. The City shall have a qualified biologist conduct pre-disturbance surveys for the kit fox no less than 14 days and no more than 30 days prior to any construction-related activities. The primary objective is to identify kit fox habitat features (potential dens and refuges) on the project site and within a 200-foot buffer zone, and to evaluate them sufficiently to ascertain if a kit fox is using them. If an active kit fox den is detected within the area of work or the 200-foot buffer zone, the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS) shall be contacted immediately to determine the best course of action. If no kit fox activity is detected, the project work shall continue as planned, and a brief written report shall be submitted to the CDFW and USFWS within 5 days of completion of the surveys.

MM BIO-2. Pre-Disturbance Burrowing Owl Surveys and Exclusion. The City shall retain a qualified biologist to conduct pre-disturbance burrowing owl surveys on the project site prior to construction or site preparation activities. The surveys shall be conducted no more than 30 days prior to commencement of construction activities. Occupied burrows should not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by CDFW verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation, or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. If burrowing owls are observed using burrows during the surveys, owls shall be excluded from all active burrows through the use of exclusion devices placed in occupied burrows in accordance with CDFW protocols. In such case, exclusion devices shall not be placed until the young have fledged, as determined by a qualified biologist, and found to be no longer dependent upon the burrow. Specifically, exclusion devices, utilizing one-way doors, shall be installed in the entrance of all active burrows. The devices shall be left in the burrows for at least 48 hours to ensure that all owls have been excluded from the burrows. Each of the burrows shall then be excavated by hand and backfilled to prevent reoccupation. Exclusion shall continue until the owls have been successfully excluded from the site, as determined by a qualified biologist.

MM BIO-3. Pre-Disturbance Nesting Surveys and No Active Nest Disruptions. The City shall have pre-disturbance surveys conducted by a qualified biologist (e.g., experienced with the nesting behavior of bird species of the region) within 30 days prior to ground disturbance activities associated with construction or grading, which would occur during the nesting/breeding season of native bird species potentially nesting on the site (typically February through September in the project region). These surveys would determine if active nests of bird species protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are present in the construction zone or within 300 feet (500 feet for raptors) of the construction zone.

If active nests are found, clearing and construction within 300 feet of the nest (500 feet for raptors), or at a distance deemed sufficient by the qualified biologist, shall be postponed or halted until the nest is vacated and juveniles have fledged, and there is no

evidence of a subsequent attempt at nesting. Limits of construction to avoid an active nest shall be established in the field with flagging, fencing, or other appropriate barrier; and construction personnel shall be instructed on the sensitivity of nest areas. The biologist shall serve as a construction monitor during those periods when construction activities shall occur near active nest areas to ensure that no inadvertent impacts on these nests shall occur. The results of the survey and any avoidance measures taken shall be submitted to the City and CDFW within 30 days of completion of the pre-disturbance surveys and/or construction monitoring to document compliance with applicable state and federal laws pertaining to the protection of native birds.

MM CUL-1. Previously Unknown Cultural Resources. If previously unknown archaeological and/or paleontological resources are discovered during construction activities, such activities shall cease after discovery and a qualified cultural resources specialist shall be contacted to determine the significance of a find and next steps.

MM GEO-1. Geotechnical Hazards Report. Prior to project plan approval, a site-specific geotechnical hazards investigation shall be prepared for the proposed project by a qualified engineer, and recommendations for earthwork shall be described in a report. The report shall include potential for seismic-related ground failure as well as whether the project site is located on a geologic unit or soil that is unstable, or could become unstable, as a result of the proposed project. The report shall also describe whether the project site is located on expansive soil as defined in the Uniform Building Code. Earthwork recommendations to mitigate for described geotechnical hazards in the report shall be incorporated into project plans to be submitted to the City of McFarland Building Department for approval.

MM GHG-1. Non-Residential On-Site Mitigation Checklist. To the greatest extent feasible, the San Joaquin Valley Air Pollution Control District's "Non-Residential On-Site Mitigation Checklist" shall be incorporated into the project design.

MM WQ-1. Best Management Practices. Prepare a SWPPP and implement BMPs for the proposed project to capture and treat polluted runoff from the proposed project site during the construction period. Recommended BMPs include proper stockpiling and disposal of demolition debris, concrete, and soil; protection of existing storm drain inlets; stabilization of disturbed areas; erosion controls; proper management of construction materials; waste management; aggressive litter control; and sediment controls.

Public Review Period

Before June 26, 2014 any person may:

(1) Review the Draft Mitigated Negative Declaration (MND); and

(2) Submit written comments regarding the information, analysis, and mitigation measures in the Draft MND to the contact person above.

Name: Mario Gonzales

Title: Public Works Director

Signed: 

Circulated on: May 27 through June 26, 2014

Title

Adopted on: _____

_____

FINAL

MCFARLAND WASTEWATER TREATMENT PLANT EXPANSION PROJECT INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION

PREPARED FOR:

City of McFarland
401 West Kern Avenue, McFarland, CA 93250
Contact: Mario Gonzales, Public Works Director
661-792-3091

PREPARED BY:

ICF International
4900 California Avenue, Tower B, Suite 210
Bakersfield, CA 93309
Contact: Steve Esselman, Project Manager
661-377-2151

May 2014

ICF International. 2014. McFarland Wastewater Treatment Plan Expansion Project Initial Study/Mitigated Negative Declaration. Final. May. (ICF 00022.14.) Bakersfield, CA. Prepared for City of McFarland, McFarland, CA.

Contents

Tables and Figures

Acronyms and Abbreviations

AB 32	Assembly Bill 32
BAU	business-as-usual
BMPs	best management practices
CARB	California Air Resources Board
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CE	California Endangered
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	methane
City	City of McFarland
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalencies
CSC	California Species of Concern
CT	California Threatened
dBA	A-weighted decibels
EIR	Environmental Impact Report
FE	Federal Endangered
FMMP	Farmland Mapping and Monitoring Program
FSC	Federal Species of Concern
FT	Federal Threatened
GAMAQI	Guide for Assessing and Mitigating Air Quality Impacts
GHG	Greenhouse Gas
HAPs	hazardous air pollutants
HARP	Hotspots Analysis and Reporting Program
HFCs	hydrofluorocarbons
IS/MND	Initial Study/Mitigated Negative Declaration
MBTA	Migratory Bird Treaty Act
mgd	million gallons per day
msl	mean sea level
N_2O	nitrous oxide
NA	not applicable
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
PFCs	perfluorocarbons
PM2.5	particulate matter less than or equal to 2.4 microns in diameter
PM10	particulate matter less than or equal to 10 microns in diameter
PRC	Public Resources Code

RAS	return activated sludge
ROG	reactive organic gas
RWQCB	Regional Water Quality Control Board
SF_6	sulfur hexafluoride
SJVAPCD	San Joaquin Valley Air Pollution Control District's
SO_X	sulfur oxides
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resource Control Board
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WAS	waste activated sludge
WDR	waste discharge requirements
WWTP	wastewater treatment plant

Chapter 1
Introduction

Overview

The City of McFarland (City) is proposing to expand their existing wastewater treatment plant (WWTP) to achieve compliance with future waste discharge requirements (WDR) and improve water quality of the plant's effluent. The proposed project will require discretionary approval by the City and, therefore, is required to undergo an environmental review pursuant to the California Environmental Quality Act (CEQA). The City is the lead agency under CEQA and has prepared this Initial Study/Mitigated Negative Declaration (IS/MND) to evaluate the potential environmental consequences associated with the expansion of the existing WWTP. The main objective of CEQA is to fully disclose to the public and decision makers the potential environmental effects of proposed activities that require discretionary approval.

California Environmental Quality Act

The preparation of this IS/MND is governed by two principal sets of documents: CEQA (Public Resources Code [PRC] Section 21000, et seq.) and the State CEQA Guidelines (California Code of Regulations [CCR] Section 15000, et seq.). Specifically, IS preparation is guided by Section 15063 of the State CEQA Guidelines, and MND preparation is guided by Sections 15070–15075 of Article 6. Where appropriate and supportive to an understanding of the issues, reference will be made either to the statute, the State CEQA Guidelines, or appropriate case law.

This IS/MND contains all of the contents required by CEQA: a project description; a description of the environmental setting, potential environmental impacts, and mitigation measures for any significant effects; a discussion of consistency with applicable plans and policies; and a list of IS/MND preparers.

Scope of the Initial Study/Mitigated Negative Declaration

This IS/MND evaluates the proposed project's effects on the following resource topics.

- Aesthetics
- Agricultural and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions

- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems.

Impact Terminology

The following terminology is used to describe the level of significance of impacts.

- A finding of *no impact* is appropriate if the analysis concludes that the project would not affect the particular topic area in any way.
- An impact is considered *less than significant* if the analysis concludes that it would cause no substantial adverse change to the environment and requires no mitigation.
- An impact is considered *less than significant with mitigation incorporated* if the analysis concludes that it would cause no substantial adverse change to the environment with the inclusion of environmental commitments that have been agreed to by the applicant.
- An impact is considered *potentially significant* if the analysis concludes that it could have a substantial adverse effect on the environment.

Organization of the Initial Study/Mitigated Negative Declaration

The content and format of this report are designed to meet the requirements of CEQA. The report contains the following sections.

- Chapter 1, "Introduction," identifies the purpose and scope of the IS/MND and the terminology used in the report.
- Chapter 2, "Environmental Checklist," includes the project description, which identifies the location, background, and planning objectives of the project, and describes the proposed project in detail. This chapter also presents the checklist responses for each resource topic, identifies the impacts of implementing the proposed project, and provides mitigation, if necessary, to reduce project impacts to a level of less than significant.
- Chapter 3, "List of Preparers," identifies the individuals who prepared the IS/MND.

Chapter 2
Environmental Checklist

1.	**Project Title:**	McFarland Wastewater Treatment Plant Expansion Project
2.	**Lead Agency Name and Address:**	City of McFarland, 401 West Kern Avenue, McFarland, CA 93250
3.	**Contact Person and Phone Number:**	Mario Gonzales, 661-792-3091
4.	**Project Location:**	The existing wastewater treatment plant (WWTP) is located approximately 2.5 miles west of the City of McFarland (City) on Melcher Avenue between Sherwood Road and Elmo Highway.
5.	**Project Sponsor's Name and Address:**	Same as Lead Agency
6.	**General Plan Designation:**	Public and Institutional (PI)
7.	**Zoning:**	Heavy Industrial (M-3)

8. Description of Project:

Existing Conditions

The City owns and operates the existing WWTP, which is located on 80 acres of 320 total acres of City-owned land. The remaining 240 acres are farmland where the treated effluent[1] from the plant is used to irrigate feed and fodder crops at an agronomic rate.[2] Figure 1 provides a regional vicinity map for the project and Figure 2 provides a project location map.

In 1977, the City constructed Lagoons 1, 2, and 3, equipped with diffused air piping; a manual bar screen headworks[3]; blower building (now maintenance building); and control building. In 1986, the plant was modified with surface aerators in Lagoon 1. In 1989, a mechanical bar screen was added to the headworks and the blowers were replaced. Lagoons 1, 2, and 3 were also converted to surface aeration. Lagoon 1A was added in 2000 to operate parallel with Lagoon 1, and this addition increased the capacity of the WWTP to its current permitted capacity of 1.55 million gallons per day (mgd). In 2003, a second parallel headworks was installed to service the newly installed Perkins/Garzoli sewer trunk lines. Both headworks' bar screens remove inert material and drop it into a washer compactor that compresses the material, which is then dumped into a trash bin and hauled to a sanitary landfill. In 2006, an emergency back-up generator was installed. The aerators were replaced with a series of blowers and fine bubble diffusers, and an additional 18-acre Irrigation Reservoir was constructed in 2010. Figure 3 shows the existing facilities at the WWTP.

Since 1977, the City has disposed of the recycled undisinfected secondary effluent at the plant by irrigating crops on Parcels A, B, and C (240 total acres) adjacent to the WWTP. Prior to 2013, feed and fodder crops were irrigated on Parcel C and vineyards on Parcels A and B (160 acres). Parcels A and B were converted to feed and fodder crops in late 2013 and will be used to irrigate feed and fodder crops with undisinfected secondary effluent for the foreseeable future. The treated influent from the Lagoons is pumped via pond pump stations to existing Effluent Ponds 1, 2, and 3 where it is stored before being pumped to the three Parcels via an existing irrigation pump station. Effluent

[1] Effluent is water that leaves a wastewater treatment plant.

[2] Agronomic rate is the additional amount of nutrients (nitrogen and phosphorus) required to meet the expected crop requirements after considering the nutrients currently available in the soil.

[3] The headworks is where untreated water enters the plant and larger inert materials are screened away and disposed.

Ponds 1 and 2 were installed sometime after 1977 and Effluent Pond 3 was installed in 2008. Figure 4 shows the existing Effluent Ponds and Parcels.

Sludge[4] that has settled in the Lagoons is periodically (and not simultaneously) dredged from their bottoms and either left within an unused Lagoon to dry during the summer and then hauled away by a licensed hauler or dredged, dewatered, and then immediately hauled.

The City installed approximately 3 acres of solar panels around August of 2013 between the plant and the ponds to the west. The solar panels are for operating the plant.

Proposed Expansion

The purpose of the proposed expansion is to meet the current and expected WDR of the Central Valley Regional Water Quality Control Board (RWQCB) and to accommodate anticipated growth through 2036. The project would increase the capacity at the WWTP from 1.55 mgd to 2.5 mgd. Figure 5 shows the proposed components of the expansion.

The City proposes to convert the existing treatment process from aerated lagoons to an extended aeration-activated sludge process by converting Lagoon 1 into a Biolac Wave-Ox basin, which also has the capability to develop anoxic[5] zones for simultaneous nitrification and denitrification. The Biolac basin would be lined with either high-density polyethylene, concrete, or the existing soil cement. The ponds are currently soil-cement lined. The use of an extended aeration-activated sludge process results in an undisinfected secondary effluent of higher water quality than the current aerated lagoon treatment process.

The project would replace the existing dual headworks with a single headworks (with lift pump) sized for a peak hour flow of 9.2 mgd. The proposed headworks includes two influent[6] channels with one new mechanical bar screen and a fixed manual bar screen. The screened material would be compressed in a compactor and dumped into a trash bin to be hauled away to a sanitary landfill. The lift pump would include a magnetic flow meter for measuring influent flow.

The project would also require two new secondary clarifiers, a new return activated sludge (RAS) and waste activated sludge (WAS) pump station,[7] and a new effluent pump station. Below grade piping would be placed to connect the clarifiers, RAS/WAS pump station, and effluent pump station to the existing plant. Lagoons 3 and 1-A would be converted into sludge drying beds. These new sludge beds would use the existing soil-cement lining found in Lagoons 3 and 1-A. The WAS sludge from the Biolac basin would be pumped directly to either a screw press in the new blower and dewatering facility or to the new sludge drying beds. Sludge would continue to be hauled to McCarthy Farms for composting and disposal. Other proposed support facilities include a new motor control center and upgrades to the amperage connection.

9. Surrounding Land Uses and Setting:

Land use in the vicinity of the WWTP is comprised of agricultural lands and dairies.

10. Other Public Agencies Whose Approval is Required:

- State Water Resources Control Board—Statewide General Construction National Pollutant Discharge Elimination System permit and Notice of Intent.

[4] Sludge is biological solids found in wastewater.

[5] Anoxic means absent of oxygen.

[6] Influent is untreated water that enters a wastewater treatment plant.

[7] The RAS/WAS pump station pumps part of the sludge (return activated sludge or RAS) back to the head of the aeration system to re-seed the new wastewater entering the Biolac basin and pumps excess sludge (waste activated sludge or WAS) to the screw press or sludge beds.

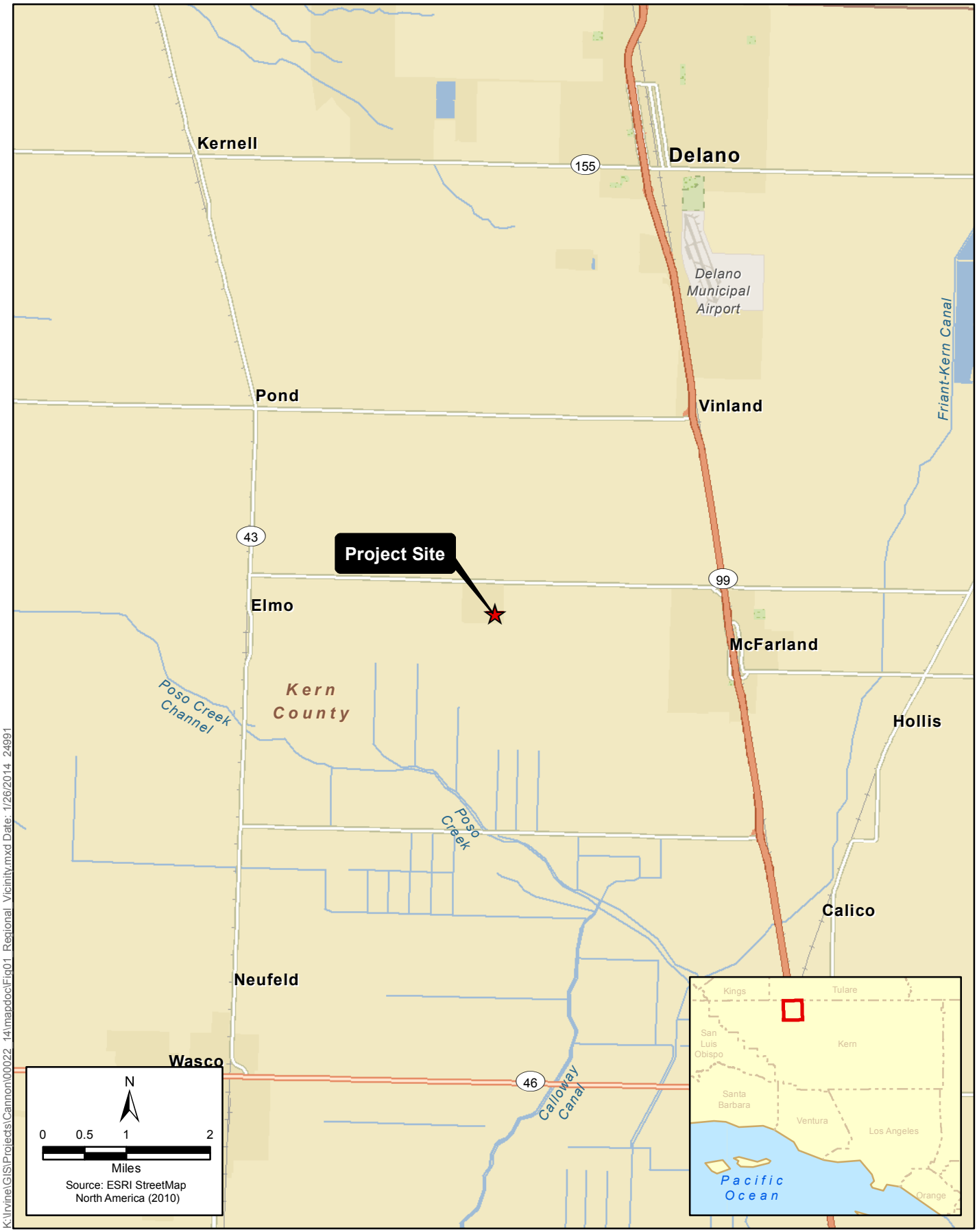

Figure 1
Regional Location Map
McFarland Wastewater Treatment Plant Expansion Project

Figure 2
Project Location
McFarland Wastewater Treatment Plant Expansion Project

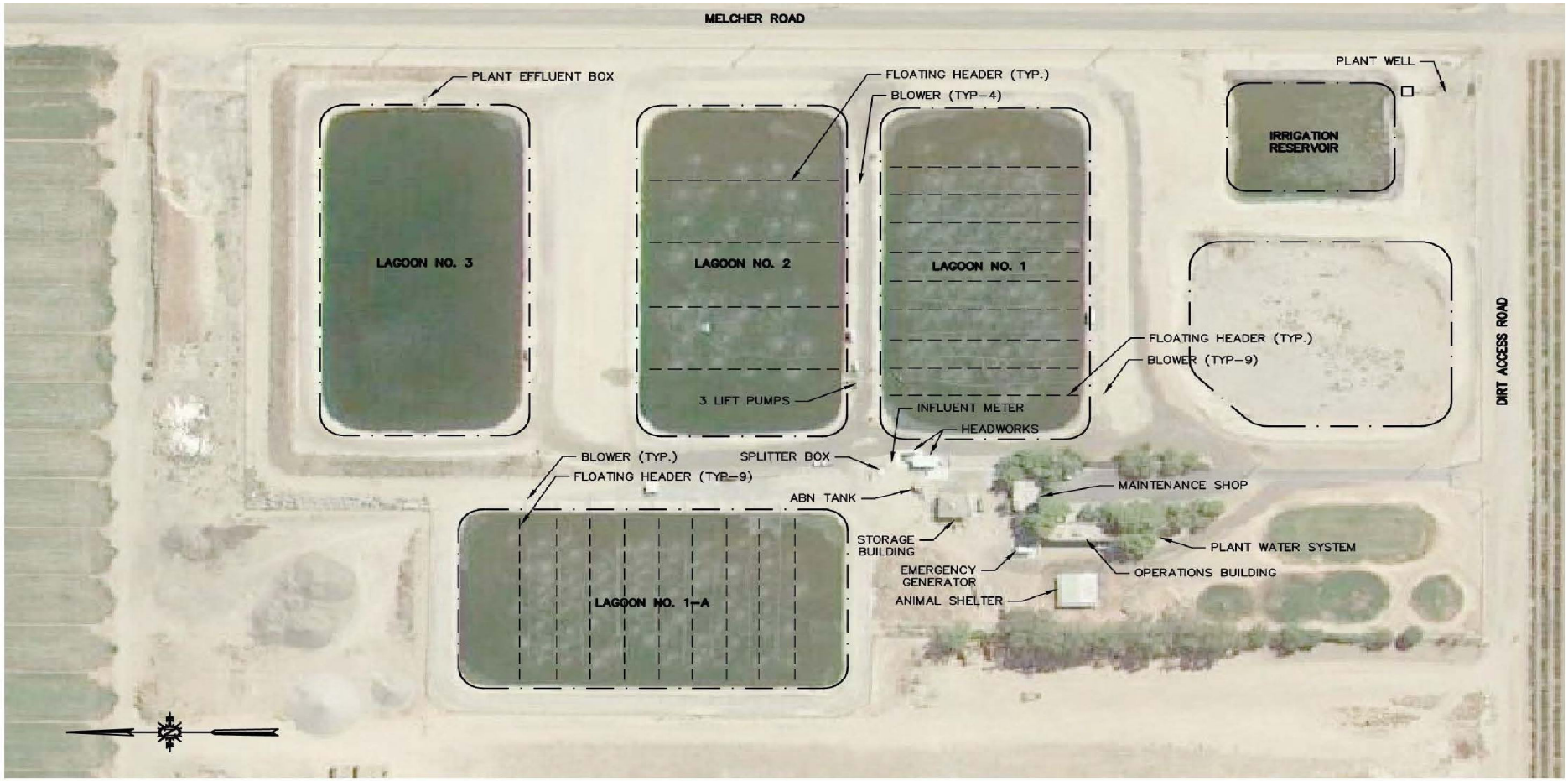

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Figure 3
Existing WWTP Facilities
McFarland Wastewater Treatment Plant Expansion Project

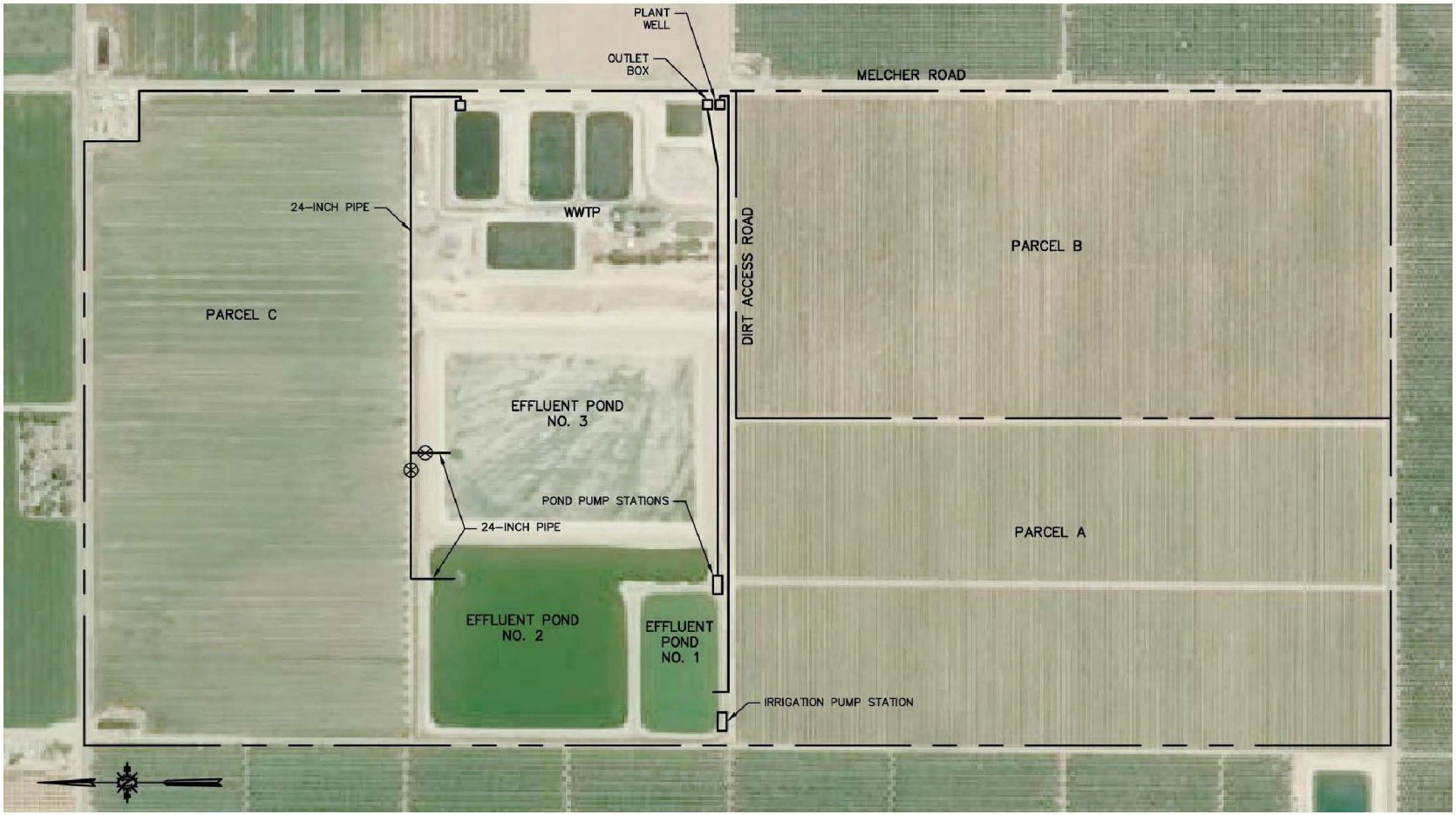

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Figure 4
Existing Effluent Ponds and Parcels
McFarland Wastewater Treatment Plant Expansion Project

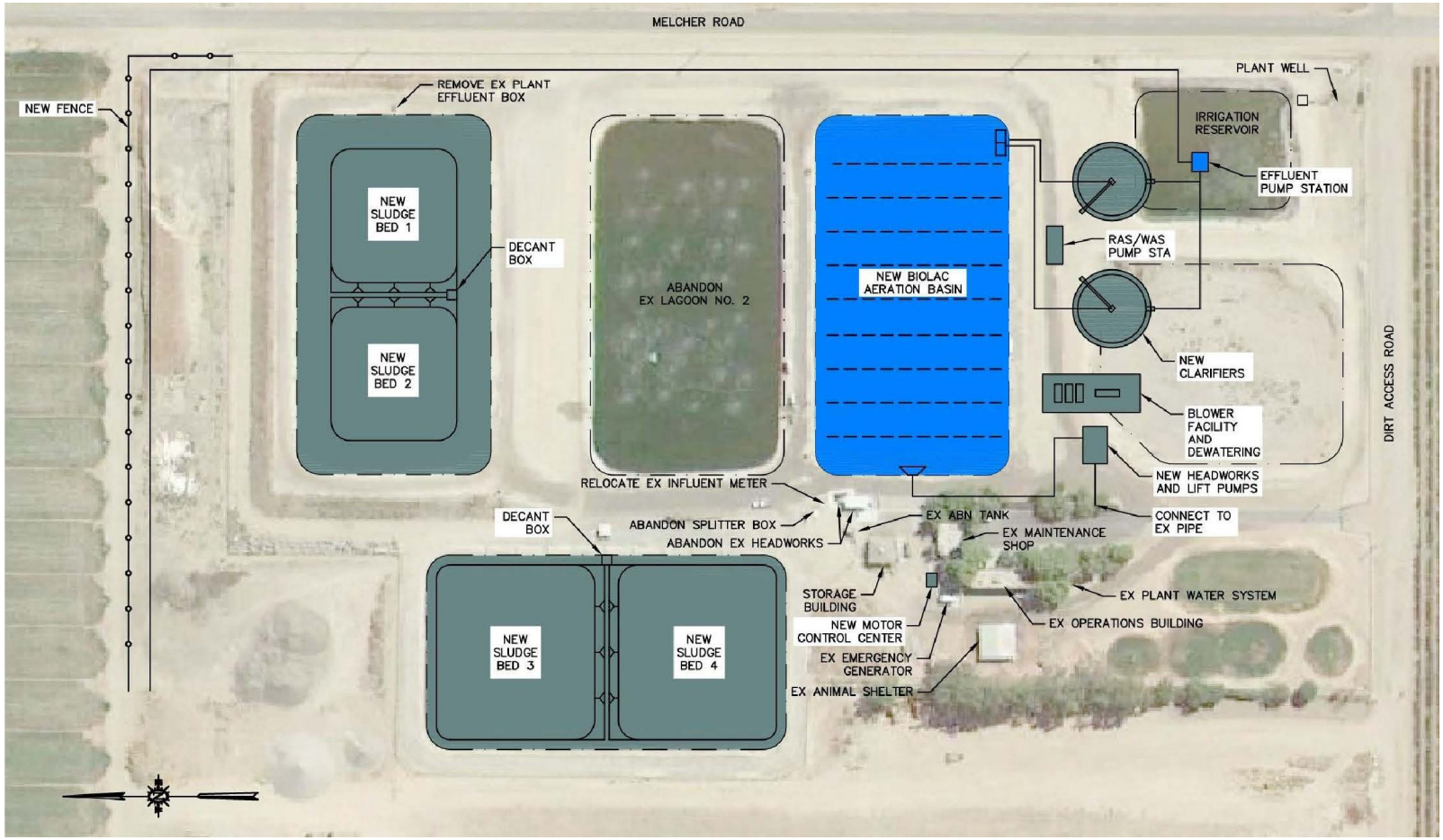

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Figure 5
Proposed Expansion Components
McFarland Wastewater Treatment Plant Expansion Project

Environmental Factors Potentially Affected

The environmental factors checked below would potentially be affected by this project (i.e., the project would involve at least one impact that is a "Potentially Significant Impact"), as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agricultural and Forestry	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials	☐ Hydrology/Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☐ Transportation/Traffic	☐ Utilities/Service Systems	☐ 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 proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions to 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 an impact on the environment that is "potentially significant" or "potentially significant unless mitigated" 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 project, nothing further is required.

Mario Gonzales — May 27, 2014

Signature — Date

Mario Gonzales — City of McFarland

Printed Name — For

Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained if it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including offsite as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an Environmental Impact Report (EIR) is required.
4. "Negative Declaration: Less than Significant with Mitigation Incorporated" applies when the incorporation of mitigation measures has reduced an effect from a "Potentially Significant Impact" to a "Less-than-Significant Impact." The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less-than-significant level. (Mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced.)
5. Earlier analyses may be used if, pursuant to tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration (Section 15063(c)(3)(D)). In this case, a brief discussion should identify the following:
    a. Earlier Analysis Used. Identify and state where earlier analyses are available for review.
    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Incorporated," describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, when appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
    a. the significance criteria or threshold, if any, used to evaluate each question; and
    b. the mitigation measure identified, if any, to reduce the impact to a less-than-significant level.

I. Aesthetics	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?	☐	☐	☐	☒
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d. Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	☐	☐	☐	☒

Discussion:

a. **Less-than-Significant Impact.** The construction of the proposed expansion components would occur within the existing fence line of the WWTP. Some of the proposed new equipment would replace existing equipment (i.e., new headworks and aeration system) or would be placed underground (such as new piping). New aboveground equipment and structures include the two new secondary clarifiers, RAS/WAS pump station, effluent pump station, and blower and dewatering facility. The new aboveground equipment and structures would not have a larger profile than the existing equipment and structures within the footprint of the WWTP, and would look similar to existing equipment and structures at the plant. The conversion of Lagoons 3 and 1-A to sludge beds would be below grade. The surrounding topography is nearly flat with a 0.2% (1 foot per 500 feet) north-to-south slope and lies about 330 feet above mean sea level (msl). The closest viewer is a rural residence about 0.25 mile north of the WWTP's northern perimeter on Elmo Highway. Another nearby rural residence is located about 0.5 mile to the east of the plant's eastern perimeter on Hiett Avenue. These viewers already see the existing WWTP, and the proposed expansion's components would not appreciably change the existing condition for the affected viewers. Therefore, the proposed project would not have a substantial adverse effect on a scenic vista. Impacts would be less than significant.

b. **No Impact.** The proposed project is not located along a designated or proposed scenic highway, and it would not damage any scenic resources viewed along a state scenic highway. There are no trees, rock outcroppings, or historic buildings in the WWTP's footprint. Additionally, the proposed project would not have the capability to prevent distant views of scenic resources. There would be no impact.

c. **Less-than-Significant Impact.** The proposed project would not substantially degrade the existing visual character of the site and its surroundings. Minimal visual change would occur as a result of installing the proposed expansion components within the existing WWTP fence line because the proposed equipment and structures would not have a larger profile, require the use of dissimilar materials, or be out of scale with the existing equipment and structures. Therefore, the proposed

project would not substantially degrade the existing visual character or quality of the site and its surroundings. Impacts would be less than significant.

d. **No Impact.** The proposed project would not change the existing interior and security lighting at the WWTP. Therefore, the proposed project would not create a new source of substantial light or glare. There would be no impact.

II. Agricultural and Forestry Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts on forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project, and forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. Would the project:				
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 conflict with 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 that, 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:

a. **No Impact.** According to the Farmland Mapping and Monitoring Program (FMMP) maps, the existing WWTP's footprint is designated as "Vacant or Disturbed Land." The WWTP's effluent is currently being land-applied over 240 acres of City-owned farmland to cultivate feed and fodder

crops. This baseline condition for effluent disposal would not change as a result of the project. Additionally, the proposed upgrades would occur within the existing fence line of the WWTP, and there are no farming activities that occur within the fence line. Therefore, the proposed project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. There would be no impact.

b. **No Impact.** No portion of the WWTP's footprint is enrolled in the Williamson Act program. The project site is zoned Heavy Industrial (M-3), which permits water treatment facilities as an allowable use. Therefore, the proposed project would not conflict with existing zoning for agricultural use or conflict with a Williamson Act contract. There would be no impact.

c. **No Impact.** No portion of the WWTP's footprint is zoned as forest land, timberland, or Timberland Production. The WWTP's footprint is zoned Heavy Industrial (M-3) and there are only ornamental trees associated with irrigated landscaping within the footprint. Therefore, the project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned as Timberland Production. There would be no impact.

d. **No Impact.** Please refer to response II.c above. The project would not result in the loss of forest land or conversion of forest land to non-forest use. There would be no impact.

e. **No Impact.** The WWTP's footprint is not designated by the FMMP as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, or under a Williamson Act contract. There are also no lands zoned as forest land, timberland, or Timberland Production within the footprint. The WWTP's footprint is on lands zoned M-3, and the WWTP is an allowable use under such a zoning designation. Therefore, the proposed project would not involve other changes in the existing environment that, due to their location or nature, could result in conversion of farmland to non-agricultural use or forest land to non-forest use. There would be no impact.

III. Air Quality	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
When available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e. Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Discussion:

a. **Less-than-Significant Impact.** The project's potential emissions were calculated in accordance with the San Joaquin Valley Air Pollution Control District's (SJVAPCD) *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI), January 10, 2002 Revision. GAMAQI does not necessarily require a quantification of construction emissions for all projects, typically only requiring emissions quantification at the request of the lead agency. The SJVAPCD generally assumes that implementation of any construction-related mitigation measures would result in construction emissions impacts that are less than significant.

Thresholds of significance are established in the SJVAPCD's GAMAQI, and those thresholds separate a project's short-term emissions from its long-term emissions. According to these thresholds, a project's emissions within the San Joaquin Valley Air Basin would be significant if they exceed one or more of the following annual emission rates: 10 tons per year of oxides of nitrogen (NO_X), 10 tons per year of reactive organic gas (ROG), and/or 15 tons per year of particulate matter less than 10 microns (PM10).

Construction and Operational Emissions

The proposed project would result in construction emissions only during upgrades to the existing wastewater treatment plant. The project's electrical consumption will be virtually identical pre- and post-project and may be less because the City's recently installed solar array would be used by the project facility. There would not be an increase in employees or additional criteria pollutant

emitting equipment proposed by this project. Therefore, this project would not result in additional air quality emissions during the operational period beyond the baseline condition.

In order to estimate emissions associated with the proposed project, several changes were made to the standard defaults provided in the CalEEMod v2013.2.2 (CalEEMod). These changes are detailed in the modeling program results provided in Appendix B.

The anticipated construction details of the proposed project were provided by the City. The equipment values were input into the CalEEMod program and were used to estimate the (short-term) construction emissions. Although emissions from the project are expected to vary substantially from day to day, they are expected to be approximately equal over the course of the construction period.

Many variables are factored into the calculation of construction emissions, such as length of the construction period, number of each type of equipment, site characteristics, area climate, and construction personnel activities. The construction period is expected to comprise five construction phases over 5 years of construction. The modeled construction period began in June 2014 and ended in May 2019 (actual construction dates may vary from these modeled dates). All equipment was assumed to be in use 8 hours per day in order to be conservative. It is anticipated that 20 construction employees would be needed during the construction period. Table 1 presents the project's unmitigated and mitigated short-term emissions based on the expected full construction period.

Table 1. Construction-Related Emissions

Parameter	ROG	NO_X	CO[1]	SO_X[1]	PM10	PM2.5[1]
Unmitigated Emissions						
Construction Emissions 2014	0.35	3.65	2.25	0.003	0.48	0.34
Construction Emissions 2015	0.54	5.44	3.32	0.005	0.58	0.43
Construction Emissions 2016	0.51	5.13	3.25	0.005	0.55	0.41
Construction Emissions 2017	0.47	4.72	3.15	0.005	0.53	0.39
Construction Emissions 2018	0.41	4.11	3.03	0.005	0.49	0.35
Construction Emissions 2019	0.13	1.28	0.95	0.002	0.07	0.06
SJVAPCD Annual Thresholds	10	10	N/A	N/A	15	N/A
Threshold Exceeded before Mitigation?	No	No	--	--	No	--
Mitigated Emissions						
Construction Emissions 2014	0.35	3.65	2.25	0.003	0.32	0.25
Construction Emissions 2015	0.54	5.44	3.32	0.005	0.42	0.35
Construction Emissions 2016	0.51	5.13	3.25	0.005	0.39	0.32
Construction Emissions 2017	0.47	4.72	3.15	0.005	0.36	0.30
Construction Emissions 2018	0.41	4.11	3.03	0.005	0.32	0.26
Construction Emissions 2019	0.13	1.28	0.95	0.002	0.07	0.06
SJVAPCD Annual Thresholds	10	10	N/A	N/A	15	N/A
Threshold Exceeded before Mitigation?	No	No	--	--	No	--

[1] SJVAPCD has not established significance thresholds for these emissions.

As calculated (see Appendix B) the mitigated short-term emissions are predicted to be less than SJVAPCD significance threshold levels for all criteria pollutants. Therefore, project construction and operational emissions are considered less than significant.

Ambient Air Quality Standards

Because there would not be an incremental increase in the project's long-term criteria pollutant emissions, an ambient air quality analysis was not performed to determine if the proposed project has the potential to impact ambient air quality through a violation of the ambient air quality standards or a substantial contribution to an existing or projected air quality standard. Therefore, the project would not conflict with or obstruct implementation of the applicable air quality plan, and impacts are considered to be less than significant.

b. **Less-than-Significant Impact.** Please refer to response III.a. The project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. Impacts would be less than significant.

c. **Less-than-Significant Impact.** As discussed in response III.a, unmitigated construction-related emissions for the project would not result in significant air quality impacts. Additionally, because the project would not increase the operational employees or equipment at the WWTP or appreciably change the operational energy requirements in comparison to the existing condition, the project would not result in additional air quality emissions during the operational period beyond the baseline condition. Therefore, the project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard. Impacts would be less than significant.

d. **Less-than-Significant Impact.** The proposed project would not result in increased emissions of hazardous air pollutants (HAPs) (diesel particulate matter); therefore, an assessment of the potential risk to the population attributable to project emissions of HAPs is not required because the project would remain below the significance threshold for both acute and chronic risk of cancer. Consequently, this project would not expose sensitive receptors to substantial pollutant concentrations. Please also refer to response III.a. Impacts would be less than significant.

e. **No Impact.** An odor evaluation is typically conducted for both of the following situations: (1) a potential source of objectionable odors is proposed for a location near existing sensitive receptors, and (2) sensitive receptors are proposed to be located near an existing source of objectionable odors. The criteria for this evaluation are based on the Lead Agency's determination of the proximity of the proposed project to the sensitive receptors. A sensitive receptor is a location where human populations, especially children, senior citizens, and sick persons, are present and where there is a reasonable expectation of continuous human exposure to pollutants, according to the averaging period for ambient air quality standards, i.e., the 24-hour, 8-hour, or 1-hour standards. Commercial and industrial sources are not considered sensitive receptors.

Although the facility is considered a source of potentially objectionable odors to nearby businesses and public roadways, the proposed project would not create any additional odors or increase odors at the existing facility. The current baseline of potential odor nuisance from the existing facility remains unchanged by the proposed project. Therefore, the project would not create objectionable odors affecting a substantial number of people beyond the baseline condition. There would be no impact.

IV. Biological Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
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 Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Discussion:

a. **Less than Significant with Mitigation Incorporated.** The existing WWTP footprint is void of any vegetation except landscape trees and shrubs associated with the existing operations building and maintenance shop. The entire plant is fenced off from the adjacent properties with an 8-foot-high chain-link fence. Treated effluent is pumped to existing Parcels A, B, and C in order to irrigate feed and fodder crops at an agronomic rate.

The area adjacent to the WWTP's footprint is a mixture of agricultural fields that contain a variety of row crops and orchards. Agricultural areas can be utilized by mammalian predators such as coyote (*Canis latrans*) and foxes (*Vulpes* spp.). Small mammals including house mice (*Mus musculus*), deer mice (*Peromyscus maniculatus*), California voles (*Microtus californica*), and western harvest mice

(*Reithrodontomys maniculatus*) may occur, although the intensive agricultural practices and nearby urban development would tend to restrict their abundance due to disturbance and use of rodenticides. Coyotes and San Joaquin kit foxes (*Vulpes macrotis mutica*), which are common mammalian predators in the region, may occasionally forage for small mammals near the WWTP and within Parcels A, B, and C.

A search of the California Natural Diversity Database (CNDDB) and California Native Plant Society (CNPS) database for the McFarland and eight surrounding U.S. Geological Survey (USGS) 7.5-minute quadrangles revealed that 10 special-status plant species and 14 special-status animal species have the potential to occur within the proposed project's vicinity. There are also three "natural communities" tracked by the CNDDB that are found within the vicinity of the project site. Table 2 provides a list of the special-status species that have the potential to occur in the vicinity of the WWTP.

Table 2. Special-Status Species Reported to Occur in the McFarland and Eight Surrounding 7.5-Minute Quadrangles

Scientific Name Common Name	Status Federal	 State	 CNPS	Habitat Requirements	Potential Onsite Occurrence
Plants					
Atriplex cordulata var. *erecticaulis* Earlimart orache	--	--	1B.2	Grows in low-lying, sparsely-vegetated grasslands and on the mounds between vernal pools.	*Not Expected:* no suitable habitat present.
Calochortus striatus alkali mariposa lily	--	--	List 1B.2	Chaparral, chenopod scrub, Mojavean desert scrub, meadows, and seeps (alkaline, mesic).	*Not Expected:* no suitable habitat present.
Caulanthus californicus California jewel-flower	FE	CE	List 1B.1	Sandy soils within chenopod scrub, pinyon and juniper woodland, and grasslands.	*Not Expected:* no suitable habitat present.
Delphinium recurvatum recurved larkspur	FSC	--	List 1B.2	Alkaline soils in chenopod scrub, cismontane woodlands, and grasslands.	*Not Expected:* no suitable habitat present.
Eriastrum hooveri Hoover's eriastrum	FT	--	List 4.2	Chenopod scrub, valley and foothill grasslands, and pinyon and juniper woodlands.	*Not Expected:* no suitable habitat present.
Eryngium spinosepalum spiny-sepaled button-celery	--	--	List 1B.2	Found in vernal pool habitat.	*Not Expected:* no suitable habitat present.
Layia munzii Munz's tidy-tips	--	--	List 1B.2	Grows on alkaline clay in low-lying scrublands and on hillsides in grasslands.	*Not Expected:* no suitable habitat present.
Monolopia congdonii San Joaquin woollythreads	FE	--	List 1B.2	Chenopod scrub and sandy valley and foothill grassland.	*Not Expected:* no suitable habitat present.

Scientific Name Common Name	Status Federal	 State	 CNPS	Habitat Requirements	Potential Onsite Occurrence
Opuntia basilaris var. *treleasei* Bakersfield cactus	FE	CE	List 1B.1	Soils supporting Bakersfield cactus typically are sandy, although gravel, cobbles, or boulders also may be present. Known populations occur on flood plains, ridges, bluffs, and rolling hills.	*Not Expected:* no suitable habitat present.
Pseudobahia peirsonii San Joaquin adobe sunburst	FT	CE	List 1B.1	Grows in grassland and oak woodland habitat. It prefers heavy adobe clay soils.	*Not Expected:* no suitable habitat present.
Animals					
Athene cunicularia western burrowing owl	MBTA	CSC	--	Open, dry grasslands, deserts, and, sometimes, ruderal areas along ditch levees. Requires burrows, principally those made by California ground squirrels.	***Low-Moderate:*** potential for burrowing owl burrows to be present within the WWTP's existing fence line.
Buteo swainsoni Swainson's hawk	MBTA	CT	--	Breeds in stands with few trees, in juniper-sage flats, riparian areas, and in oak savannah. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	*Not Expected:* surroundings have been heavily disturbed by agricultural use for many years. Seasonal foraging habitat does exist; however, habitat for nesting does not exist.
Chaetodipus californicus femoralis Dulzura pocket mouse	--	CSC	--	Occupies a wide variety of habitats year-round. These include montane hardwood, valley foothill hardwood-conifer, valley foothill hardwood, annual grassland, sagebrush, chamise-redshank and montane chaparral, and coastal scrub. Occurs in greatest abundance in habitats where grassland and chaparral are close by.	*Not Expected:* no suitable habitat present.

Scientific Name Common Name	Status Federal	 State	 CNPS	Habitat Requirements	Potential Onsite Occurrence
Dipodomys nitratoides nitratoides Tipton kangaroo rat	FE	CE	--	Saltbush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley. Requires soft friable soils, which escape seasonal flooding where it will dig burrows in elevated soil mounds at the base of shrubs.	*Not Expected:* no suitable habitat present.
Entosphenus hubbsi Kern brook lamprey	--	CSC	--	Tend to occupy slow backwaters of foothill streams	*Not Expected:* no suitable habitat present.
Gambelia sila blunt-nosed leopard lizard	FE	CE	--	Inhabits sparsely vegetated alkali and desert scrub habitats in areas of low topographic relief. Preferred habitat includes semiarid grasslands, alkali flats, and washes.	*Not Expected:* no suitable habitat present.
Lytta hoppingi Hopping's blister beetle	--	--	--	Inhabits the foothills at the southern end of the Central Valley.	*Not Expected*: No suitable habitat present.
Lytta molesta molestan blister beetle	--	--	--	Associated with dried vernal pools.	*Not Expected*: No suitable habitat present.
Masticophis flagellum ruddocki San Joaquin whipsnake	--	CSC	--	Open, dry habitats with little or no tree cover. Found in valley grasslands and saltbush scrub in the San Joaquin Valley.	*Not Expected*: No suitable habitat present.
Perognathus inornatus inornatus San Joaquin pocket mouse	--	--	--	Typically found in grasslands and blue oak savannas. Needs friable soils.	*Not Expected:* no suitable habitat present.
Phrynosoma blainvillii coast horned lizard	--	CSC	--	Distributed throughout the foothills and coastal plains from Los Angeles area to northern Baja California. It frequents areas with abundant, open vegetation such as chaparral or coastal sage scrub.	*Not Expected:* no suitable habitat present.
Spea (=Scaphiopus) hammondii western spadefoot	--	CSC	--	Vernal pools and other wet areas within grasslands.	*Not Expected:* no suitable habitat present.
Taxidea taxus American badger	--	CSC	--	Herbaceous, shrub and open stages of most habitats with dry, friable soils.	*Not Expected:* no suitable habitat present.

Scientific Name Common Name	Status Federal	 State	 CNPS	Habitat Requirements	Potential Onsite Occurrence
Vulpes macrotis mutica San Joaquin kit fox	FE	CT	--	Chenopod scrub, grasslands, sometimes forages in agricultural areas.	***Low-Moderate**:* kit fox likely not present within project site, but due to their resilience to human disturbance, absence cannot be ruled out.
Natural Communities					
Coastal and Freshwater Marsh	NA	NA	NA	--	*Not Present*
Valley Saltbush Scrub	NA	NA	NA	--	*Not Present*
Valley Sink Scrub	NA	NA	NA	--	*Not Present*

STATUS KEY:

Federal:
- FE = Federal Endangered
- FSC = Federal Species of Concern
- FT = Federal Threatened
- MBTA = Migratory Bird Treaty Act

State:
- CE = California Endangered
- CT = California Threatened
- CSC = California Species of Concern

CNPS
- List 1B = Plants Rare and Endangered in California and elsewhere
- List 4 = Limited distribution (Watch List)
- -- = None

NA = Not applicable

None of the 10 plant species are expected to occur on the proposed project site because suitable habitat is not present. Of the 14 special-status animal species with potential to occur at the WWTP, two have a low-to-moderate potential to utilize the WWTP's footprint: (1) San Joaquin kit fox and (2) western burrowing owl (*Athene cunicularia*).

The existing WWTP footprint provides little to no foraging for mammalian predator species. However, it is possible that an individual kit fox could move onto the site prior to construction, and, if so, activities that would result in harm or injury to that kit fox would constitute a significant impact. Kit fox are known to frequent agricultural areas in Kern County and utilize such lands for foraging and denning opportunities. Implementation of mitigation measure MM BIO-1 would reduce kit fox impacts to a level of less than significant.

Burrowing owl is a common bird species found within agricultural areas of Kern County. This species could occur within the WWTP footprint during project construction, which could result in a

significant impact regarding the potential loss of birds or active nests. Implementation of mitigation measure MM BIO-2 would reduce burrowing owl impacts to a level of less than significant.

MM BIO-1. Pre-Disturbance San Joaquin Kit Fox Surveys. The City shall have a qualified biologist conduct pre-disturbance surveys for the kit fox no less than 14 days and no more than 30 days prior to any construction-related activities. The primary objective is to identify kit fox habitat features (potential dens and refuges) on the project site and within a 200-foot buffer zone, and to evaluate them sufficiently to ascertain if a kit fox is using them. If an active kit fox den is detected within the area of work or the 200-foot buffer zone, the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS) shall be contacted immediately to determine the best course of action. If no kit fox activity is detected, the project work shall continue as planned, and a brief written report shall be submitted to the CDFW and USFWS within 5 days of completion of the surveys.

MM BIO-2. Pre-Disturbance Burrowing Owl Surveys and Exclusion. The City shall retain a qualified biologist to conduct pre-disturbance burrowing owl surveys on the project site prior to construction or site preparation activities. The surveys shall be conducted no more than 30 days prior to commencement of construction activities. Occupied burrows should not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by CDFW verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation, or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. If burrowing owls are observed using burrows during the surveys, owls shall be excluded from all active burrows through the use of exclusion devices placed in occupied burrows in accordance with CDFW protocols. In such case, exclusion devices shall not be placed until the young have fledged, as determined by a qualified biologist, and found to be no longer dependent upon the burrow. Specifically, exclusion devices, utilizing one-way doors, shall be installed in the entrance of all active burrows. The devices shall be left in the burrows for at least 48 hours to ensure that all owls have been excluded from the burrows. Each of the burrows shall then be excavated by hand and backfilled to prevent reoccupation. Exclusion shall continue until the owls have been successfully excluded from the site, as determined by a qualified biologist.

b. **No Impact.** The CNDDB search identified three tracked natural communities within the vicinity of the WWTP: (1) Coastal and Freshwater Marsh, (2) Valley Saltbush Scrub, and (3) Valley Saltbush Scrub. None of these three natural communities are present at the project site. There are no blue-line streams within the project site or its vicinity. Therefore, the project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community. There would be no impact.

c. **No Impact.** The entire area within the WWTP's fence line does not contain the proper vegetation (i.e., hydrophytes or water-loving plants), soil (i.e., hydric or waterlogged soils), and hydrology (i.e., inundated or saturated where anaerobic conditions occur) to be defined as a jurisdictional wetland according to the U.S. Army Corps of Engineers' *Wetland Delineation Manual*. Therefore, the project would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means. There would be no impact.

d. **Less than Significant with Mitigation Incorporated.** The proposed expansion within the existing WWTP fence line would not further affect wildlife movement because the existing fence already

deters movement. The proposed upgrades within the WWTP's fence line would not change this baseline condition.

Project construction may interfere with resident waterfowl utilizing the existing lagoons at the WWTP during project activities. Resident waterfowl are not protected except during the nesting period. Additionally, other migratory birds, raptors, and resident birds could utilize the areas within the existing WWTP's fence line as a nursery site for nesting purposes. If construction activities were to result in noise levels or fugitive dust emissions severe enough to cause harassment and nest abandonment, this would be a violation of the federal Migratory Bird Treaty Act and California Fish and Game Code, and would represent a potentially significant impact. However, incorporation of mitigation measure MM BIO-3 below would reduce this potential impact to a level of less than significant.

The following mitigation would be implemented to reduce potential impacts on nesting birds and raptors to a less-than-significant level:

MM BIO-3. Pre-Disturbance Nesting Surveys and No Active Nest Disruptions. The City shall have pre-disturbance surveys conducted by a qualified biologist (e.g., experienced with the nesting behavior of bird species of the region) within 30 days prior to ground disturbance activities associated with construction or grading, which would occur during the nesting/breeding season of native bird species potentially nesting on the site (typically February through September in the project region). These surveys would determine if active nests of bird species protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are present in the construction zone or within 300 feet (500 feet for raptors) of the construction zone.

If active nests are found, clearing and construction within 300 feet of the nest (500 feet for raptors), or at a distance deemed sufficient by the qualified biologist, shall be postponed or halted until the nest is vacated and juveniles have fledged, and there is no evidence of a subsequent attempt at nesting. Limits of construction to avoid an active nest shall be established in the field with flagging, fencing, or other appropriate barrier; and construction personnel shall be instructed on the sensitivity of nest areas. The biologist shall serve as a construction monitor during those periods when construction activities shall occur near active nest areas to ensure that no inadvertent impacts on these nests shall occur. The results of the survey and any avoidance measures taken shall be submitted to the City and CDFW within 30 days of completion of the pre-disturbance surveys and/or construction monitoring to document compliance with applicable state and federal laws pertaining to the protection of native birds.

e. **No Impact.** The project site does not contain any protected trees or other biological resources that are protected by local policies or ordinances. Therefore, the project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. There would be no impact.

f. **No Impact.** The proposed project site is not within an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan area. Therefore, the project would not conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. There would be no impact.

V. Cultural Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☐	☐	☒
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

Discussion:

a. **No Impact.** The existing WWTP was built in 1977 (37 years ago); no structures within the WWTP are more than 50 years old, and, therefore, none are eligible for the California Register of Historical Resources or the National Register of Historic Places. Consequently, the project would not cause a substantial adverse change in the significance of a historical resource. There would be no impact.

b. **Less Than Significant With Mitigation Incorporated.** The construction of the proposed expansion components would occur within the existing fence line of the WWTP. Continual disturbance (such as dredging activities) has occurred within the existing fence line since 1977 when the plant was first constructed. It is likely that such disturbance has already destroyed any surficial archaeological resources present within the footprint. Shallow trenches would be created to place piping underground, and some minor grading may be necessary to construct equipment and structures, such as the clarifiers, RAS/WAS pump station, effluent pump station, and/or blower and dewatering facility. Although unlikely, there is a chance that trenching and grading activities could unearth previously unknown archaeological resources. However, with implementation of mitigation measure MM CUL-1, potentially significant impacts on previously unknown archaeological resources would be reduced to less than significant.

> **MM CUL-1. Previously Unknown Cultural Resources.** If previously unknown archaeological and/or paleontological resources are discovered during construction activities, such activities shall cease after discovery and a qualified cultural resources specialist shall be contacted to determine the significance of a find and next steps.

c. **Less Than Significant With Mitigation Incorporated.** Please refer to response V.b above. There are no unique geologic features within the plant's footprint. Although unlikely, there is a chance that trenching and grading activities could unearth previously unknown paleontological resources. However, with implementation of mitigation measure MM CUL-1, potentially significant impacts on previously unknown paleontological resources would be reduced to less than significant.

d. **No Impact.** No formal cemeteries or other places of human interment are known to exist within the proposed project area. If human remains were exposed during construction, the Kern County Coroner would be contacted in accordance with Section 7050.5 of the State Health and Safety Code, which states that no further disturbance will occur at the site until the County Coroner has made the necessary findings as to origin and disposition of the remains. The proposed project is not anticipated to disturb human remains. Therefore, the project would not disturb any human remains, including those interred outside of formal cemeteries. There would be no impact.

VI. Geology and Soils	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
1. 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? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
2. Strong seismic ground shaking?	☐	☐	☒	☐
3. Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
4. Landslides?	☐	☐	☐	☒
b. Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
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 an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☒	☐	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☒	☐	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Discussion:

a. The following numbered items discuss whether the project would expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving earthquake-related geologic hazards:

1. **No Impact.** The proposed project would not expose any people or structures to adverse effects associated with fault rupture. Damage due to surface rupturing is limited to the actual location of the fault-line break, unlike damage from ground shaking, which can occur at great distances from the fault. No known active fault systems are located within the fence line of the plant, and the WWTP's site has not been designated under the Alquist-Priolo Act as an Earthquake Fault

Zone. Because no Earthquake Fault Zones have been delineated at the project site, there would be no impact due to fault ruptures.

2. **Less-than-Significant Impact.** The WWTP is subject to seismic hazard potential due to its proximity to known active faults such as the San Andreas Fault. Compliance with applicable building codes (including the California Building Code) and incorporation of seismic safety features would minimize the potential for significant impacts. Compliance with these codes is required for development of all structures by the City of McFarland's Building Department. The Building Department reviews plans, issues building permits, and conducts building inspections to make sure that all new construction complies with City regulations. Project plans would be reviewed during the plan check process, which would ensure that these seismic safety measures are incorporated. Incorporation of seismic safety measures required by the Building Department would minimize the potential for significant impacts. Therefore, impacts would be less than significant.

3. **Less than Significant with Mitigation Incorporated.** The project site's soils include Kimberlina sandy loam, Wasco sandy loam, and McFarland loam. These soils vary from sandy to loam and in texture from coarse to moderately coarse. Generally, these soils have good to high drainage and are permeable, deep, even, and fertile. The groundwater depth at the site was estimated in 2010 at 96 to 111 feet below grade. Liquefaction is a phenomenon whereby, during periods of ground motion typically caused by an earthquake, the pore water in saturated soils increases to the point where the soils liquefy and shift, sometimes causing structural damage. Liquefaction is most common in clayey soils with a groundwater table at or near the surface. Due to the nature of the soils on site and the depth to groundwater, the potential for liquefaction and other seismic-related ground failures is considered low. As described in response VI.a-2, the City would review project plans during the plan check process to ensure that the proposed project would not result in seismic-related ground failure, including liquefaction. Prior to the plan check review, the City would prepare a site-specific geotechnical hazards report that would include earthwork recommendations to be incorporated into project plans. Implementation of mitigation measure MM GEO-1 would reduce impacts as a result of seismic-related ground failure to a less-than-significant level.

   MM GEO-1. Geotechnical Hazards Report. Prior to project plan approval, a site-specific geotechnical hazards investigation shall be prepared for the proposed project by a qualified engineer, and recommendations for earthwork shall be described in a report. The report shall include potential for seismic-related ground failure as well as whether the project site is located on a geologic unit or soil that is unstable, or could become unstable, as a result of the proposed project. The report shall also describe whether the project site is located on expansive soil as defined in the Uniform Building Code. Earthwork recommendations to mitigate for described geotechnical hazards in the report shall be incorporated into project plans to be submitted to the City of McFarland Building Department for approval.

4. **No Impact.** The project site is located on relatively flat land away from any hillsides. Therefore, the project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. There would be no impact.

b. **Less than Significant with Mitigation Incorporated.** The project would require excavation work but would not require excavation on the steeper slopes, which are more prone to erosion. Any earthmoving could loosen soil and contribute to future soil loss and erosion by wind and stormwater runoff. As described in Section IX, "Hydrology and Water Quality" below, in compliance

with the Clean Water Act and regulations of the State Water Resources Control Board, the proposed project would be required to prepare and implement a construction Storm Water Pollution Prevention Plan (SWPPP), which would include site-specific best management practices (BMPs) to address erosion and sediment control (see mitigation measure MM WQ-1 below). The proposed project would be required to submit grading plans to the City's Building Department, accompanied by a geotechnical hazards report (see mitigation measure MM GEO-1 above), to obtain the required grading permits. Given the relatively flat nature of the WWTP footprint, it is unlikely that soil erosion from runoff would occur. It is more likely that runoff at the site percolates to ground. Therefore, the project would not result in substantial soil erosion or the loss of topsoil. Impacts would be less than significant with incorporation of mitigation measures MM GEO-1 and MM WQ-1.

c. **Less than Significant with Mitigation Incorporated.** As described in response VI.a-3, the proposed project is located on sandy to loam soils. Such soils are not likely subject to hydrocompaction, settlement, or soil subsidence. Therefore, the proposed project would likely not be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project. Nonetheless, mitigation measure MM GEO-1 requires that the site-specific geotechnical hazards investigation include an analysis of whether the site is located on such geologic unit or soil and to provide earthwork recommendations for site, if needed. Impacts would be less than significant with incorporation of mitigation measure MM GEO-1.

d. **Less than Significant with Mitigation Incorporated.** It is currently unknown whether the proposed project site is located on expansive soils as defined by the Uniform Building Code. Mitigation measure GEO-1 requires that the site-specific geotechnical hazards investigation include an analysis of whether the site is located on expansive soils and to provide earthwork recommendations for site, if needed. With implementation of mitigation measure MM GEO-1, impacts would be less than significant.

e. **No Impact**. Septic tanks and alternative wastewater disposal systems are not a part of the proposed upgrades to the existing WWTP. There would be no impact.

VII. Greenhouse Gas Emissions	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
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:

a. **Less than Significant with Mitigation Incorporated.** The primary source of greenhouse gas (GHG) emissions from the proposed project would be from mobile sources during construction. Operationally, the project would emit roughly the same amount of GHG as the existing plant because no increase in employees, equipment, and energy usage at the plant is proposed by the project. The recently installed solar array may actually reduce energy usage during the operational phase.

Not all GHGs exhibit the same ability to induce climate change; as a result, GHG contributions are commonly quantified in carbon dioxide (CO_2) equivalencies (CO_2e). The proposed project's construction CO_2, methane (CH_4), and nitrous oxide (N_2O)emissions were estimated using the CalEEMod program. Table 3 provides project construction GHG emissions calculated for the project.

Table 3. Project Construction GHG Emissions

Emissions	Emissions (metric tons)	Conversion Factor to CO_2e	CO_2e Emissions (metric tons)
CO_2	2,319	1	2,319
CH_4	0.57	21	12
N_2O	0.00	310	0
		Total CO_2e	**2,331**

The project would not result in the emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), or sulfur hexafluoride (SF_6), the other gases identified as GHGs in Assembly Bill 32 (AB 32). However, the impacts on global warming and climate change are indirect, and the emissions cannot be correlated with specific impacts. Although climate change may be presumed to have global impacts, local government has yet to select a CEQA significance threshold for climate change or greenhouse gas emissions for this type of project. The proposed project would be subject to regulations and limitations, if any, developed under AB 32 as determined by the California Air Resources Board (CARB).

In order to comply with AB 32 a project must reduce its business-as-usual (BAU) GHG emissions. BAU is a term used by California agencies to describe the rate of greenhouse gas emissions assuming no climate regulations. It is a projection into the future of the greenhouse gases that could foreseeably be emitted by projects based on current technologies and existing regulations in the

absence of other reductions. AB 32 required a 29% reduction from 2008 levels by 2020. This project would not increase GHG emissions from operations and is therefore considered in compliance with AB 32 thresholds and would have a less-than-significant impact.

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce the impacts from construction and operations on air quality. Implementation of mitigation measure MM GHG-1, which requires use of the SJVAPCD's "Non-Residential On-Site Mitigation Checklist" when evaluating the project's features, would adhere to the regulations and limitations developed under AB 32 as determined by CARB and would reduce impacts to less than significant. The checklist includes measures that limit the exhaust from construction equipment and proposes the use of alternatives to diesel when possible. Appendix C provides the checklist in its entirety.

Because impacts on global warming are based on long-term changes and because the project's construction emissions are short-term and are not considered significant, the project's impacts on global warming and generation of GHGs should be considered less than significant as well with implementation of mitigation measure MM GHG-1. Therefore, the project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

MM GHG-1. Non-Residential On-Site Mitigation Checklist. To the greatest extent feasible, the San Joaquin Valley Air Pollution Control District's "Non-Residential On-Site Mitigation Checklist" shall be incorporated into the project design.

b. **Less-than-Significant Impact.** Please refer to response VII.a. The project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Impacts would be less than significant.

VIII. Hazards and Hazardous Materials	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
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 involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d. Be located on a site that 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?	☐	☐	☐	☒
e. Be located within an airport land use plan area or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f. Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

Discussion:

a. **Less-than-Significant Impact.** As part of the construction phase for the proposed project, contractors would use a variety of petrochemicals—including fuels and lubricants—to operate the heavy equipment used for site preparation. Grading and construction activities, such as the fueling of construction equipment, would require the transport, storage, and use of hazardous materials. The presence and use of these materials, which are classified as hazardous materials, would create the potential for accidental spillage and exposure of workers and plant employees to these substances. Compliance with the requirements set forth in U.S. Code and California Health and

Safety Code would be required, and would reduce construction impacts to a less-than-significant level.

The proposed project would result in upgrades to the existing WWTP using forced aeration via the proposed Biolac aeration system. The emphasis on using extensive oxidation during the treatment process and the lack of tertiary (chemical) processing avoids the use of excessive amounts of hazardous materials necessary to achieve the required level of treatment. As with the baseline condition, any chemicals considered hazardous that are used in conjunction with the operation of the proposed WWTP would be transported, stored, and used only in accordance with the manufacturer's instructions contained in the applicable material safety data sheet for a given product. Any hazardous chemical would be disposed of in accordance with Kern County Fire Department standards. Effluent would be compliant with the current WDR, and the biosolids produced by the wastewater treatment process would continue to be disposed of in accordance with Code of Federal Regulations (CFR), Title 40, Section 503. Therefore, the project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts would be less than significant.

b. **Less-than-Significant Impact.** Please see response VIII.a. The project would not 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. Impacts would be less than significant.

c. **No Impact.** The nearest school (Kern Avenue School, 356 West Kern Avenue) is about 2.5 miles east of the eastern perimeter of the existing plant. Neither the existing WWTP nor the proposed expansion components would significantly emit hazardous emissions or substances as to affect any schools. Also, please see response VIII.a. There would be no impact.

d. **No Impact.** The proposed project is not located on a list of hazardous materials sites pursuant to Government Code Section 65962.5 (Cortese) and would not create a significant hazard to the public or the environment. There would be no impact.

e. **Less-than-Significant Impact.** The proposed project is not located within 2 miles of a public airport or public use airport or within an airport land use plan area. Given that the proposed expansion components would not be larger in height than the existing structures at the plant, and because the proposed project is a sufficient distance from the closest runway (Delano Municipal Airport—about 4.8 miles north–northeast of the site), the proposed project would not result in structure heights in proximity that could affect landing and takeoff approaches that would result in safety hazards. Therefore, the project would not be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area. Impacts would be less than significant.

f. **No Impact.** The proposed project is not within the vicinity of a private airstrip. There would be no impact.

g. **No Impact.** The proposed site is located away from transportation corridors. Construction staging would occur entirely within the existing WWTP footprint, and ingress and egress for the plant would not be impeded by staging activities. Therefore, the project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. There would be no impact.

h. **Less-than-Significant Impact.** During construction, all vehicles and crews working at the project site would have access to functional fire extinguishers at all times. In addition, crews are required to have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks.

The WWTP is completely surrounded by agricultural lands and dairies, which are not generally prone to wildland fires because they are frequently cleared and maintained as part of farming and dairy activities. There is nothing inherent to the operations of the project that requires the extensive use of flammable substances. The area within the WWTP fence line is devoid of appreciable vegetation, and flammable debris is not stockpiled. Therefore, the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. Impacts would be less than significant.

IX. Hydrology and Water Quality	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite?	☐	☐	☒	☐
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?	☐	☐	☒	☐
e. 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?	☐	☐	☐	☒
f. Otherwise substantially degrade water quality?	☐	☐	☐	☒
g. Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h. Place within a 100-year flood hazard area structures that would impede or redirect floodflows?	☐	☐	☐	☒
i. Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j. Contribute to inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion:

a. **Less than Significant with Mitigation Incorporated.** The proposed project would disturb more than 1 acre of soil. Therefore, the City would be required to obtain a Statewide General Construction National Pollutant Discharge Elimination System (NPDES) permit and submit a Notice of Intent to the State Water Resource Control Board (SWRCB) prior to commencement of construction activities. The proposed project construction and groundbreaking activities have the potential to cause erosion, sedimentation, and discharge of construction debris from the project site. Clearing of vegetation and grading activities, for example, could lead to exposed or stockpiled soils susceptible to peak stormwater runoff flows. Also, the compaction of soils by heavy equipment may minimally reduce the infiltration capacity of soils (exposed during construction) and increase runoff and erosion potential. Demolition activities and the presence of significant amounts of raw materials for construction, including concrete, asphalt, and slurry, may lead to stormwater runoff contamination. If uncontrolled, these materials could lead to water quality problems, including sediment-laden runoff, prohibited non-stormwater discharges, and ultimately the degradation of downstream receiving water bodies. Consequently, short-term impacts on surface waters during construction activities are considered potentially significant. Implementation of mitigation measure MM WQ-1 would reduce potential short-term water quality impacts to a level of less than significant.

   One of the primary purposes of the proposed project is to enable the WWTP to achieve compliance with the current and future WDRs. Improvements to the WWTP would not violate water quality standards or water discharge requirements. The proposed upgrades would achieve compliance with the current WDR, and the proposed project is in conformance with the applicable Basin Plan. The groundwater underneath the WWTP and the entire City is of good quality. Due to the good water quality, degradation due to treatment plant effluent is a concern. However, as with the baseline condition, the WWTP would have to continue to comply with the current and future WDRs (which provide mandates for groundwater protection) and the plant's treated effluent would continue to be land-applied to irrigate feed and fodder crops at an agronomic rate. Irrigating at an agronomic rate ensures that additional nutrients (such as nitrogen) leftover in the effluent are taken up by the crops at the surface prior to leaching into the groundwater. The project's surface or groundwater water quality impacts are expected to be less than significant because water quality would improve as a result of the project and because the groundwater basin is protected from degradation through the current and future WDRs and by land-applying the effluent at an agronomic rate.

   > **MM WQ-1. Best Management Practices.** Prepare a SWPPP and implement BMPs for the proposed project to capture and treat polluted runoff from the proposed project site during the construction period. Recommended BMPs include proper stockpiling and disposal of demolition debris, concrete, and soil; protection of existing storm drain inlets; stabilization of disturbed areas; erosion controls; proper management of construction materials; waste management; aggressive litter control; and sediment controls.

b. **Less-than-Significant Impact.** The project proposes the upgrade of facilities at the existing plant and would not result in appreciable impervious surfaces that would hinder ground percolation, and the project does not require the use of groundwater for the construction or operational phases. As with the baseline condition, effluent would be sent to the effluent disposal area to irrigate feed and fodder crops and would percolate through the soil, which helps to replenish the aquifer beneath the site. Consequently, the project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level. Impacts would be less than significant.

c. **Less-than-Significant Impact.** Proposed project operations would not alter the existing drainage pattern of the existing WWTP site or surrounding area. With the implementation of mitigation measure MM WQ-1 (see above), project-related erosion or siltation on- or off site is not anticipated. Surface water drainage in the area is by sheet flow to natural or human-made drainage; this drainage would not be altered as part of the proposed project. The project area is relatively flat and well drained with a mostly unpaved surface, and would not substantially increase the amount of impermeable surfaces at the project site through the installation of the proposed equipment. Therefore, the project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off site. Impacts would be less than significant.

d. **Less-than-Significant Impact.** The proposed project would not alter the existing drainage pattern of the site or surrounding area. The site is currently relatively flat and well drained with a mostly unpaved surface. Development of the proposed project would not substantially increase the amount of impermeable surfaces at the project site or alter grading at the site. Therefore, the project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off site. Impacts would be less than significant.

e. **No Impact.** The proposed project would not contribute runoff water that would exceed the capacity of existing stormwater drainage systems. Development of the proposed project would not substantially increase the amount of impermeable surfaces at the project site or alter grading at the site. The current stormwater conveyance system at the plant is adequate to meet the needs of the existing facilities and the proposed upgrades within the fence line. No substantial additional sources of polluted stormwater runoff would occur due to development of the proposed project beyond the baseline condition. Therefore, the project would not 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. There would be no impact.

f. **No Impact.** The WWTP is expected to produce secondary effluent that is of a higher water quality than existing effluent produced by the plant. The existing stormwater conveyance system is adequate at the plant given the modest increase in impermeable surfaces that would result with project implementation. Therefore, the project would not otherwise substantially degrade water quality. There would be no impact.

g. **No Impact.** The proposed project is outside the 500-year floodplain and does not involve the construction of housing; therefore, there is no potential for impacts associated with placing housing within a flood hazard zone. There would be no impact.

h. **No Impact.** The entire proposed project site is outside the 500-year floodplain. Therefore, the proposed project would not place a structure within a 100-year flood hazard area. There would be no impact.

i. **No Impact.** The proposed project would not expose people to flooding hazards. The proposed project area is not within a dam or levee flood inundation zone. There would be no impact.

j. **No Impact.** The proposed project is located on relatively flat land that is not near any hillsides, lakes, or oceans. Therefore, the project site does not have the capability to expose people to potential impacts involving seiche, tsunamis, or mudflows. There would be no impact.

X. Land Use and Planning	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Physically divide an established community?	☐	☐	☐	☒
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Discussion:

a. **No Impact.** The proposed project would not result in the development of an above-grade linear feature (such as a road or wall) that would divide any portion of an established community. The existing plant is already entirely fenced in, and the project would not change this baseline condition. Therefore, the proposed project would not physically divide an established community. There would be no impact.

b. **No Impact.** The proposed project is consistent with the current City of McFarland General Plan. The proposed upgrades are to occur on lands zoned Heavy Industrial (M-3), and the WWTP is an allowable use based on the current zoning designation; therefore, the proposed upgrades are consistent with the current City zoning ordinance. There would be no impact.

c. **No Impact.** The proposed project site is not within an applicable habitat conservation plan or natural community conservation plan area. There would be no impact.

XI. Mineral Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
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:

a. **No Impact.** Mineral resource recovery operations do not occur within the fence line of the existing WWTP and would not occur as a result of the project. Therefore, the project would not 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. There would be no impact.

b. **No Impact.** The City of McFarland General Plan does not identify a locally important mineral resource recovery site within the WWTP footprint. The plant is not located within a specific plan area. Therefore, the project would not 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. There would be no impact.

XII. Noise	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?	☐	☐	☐	☒
b. Expose persons to or generate excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e. Be located within an airport land use plan area, or, where such a plan has not been adopted, within two miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f. Be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion:

a. **No Impact.** The current sources of noise at the WWTP are predominantly the sounds of water being pumped from the headworks and then circulated through the remaining facilities. The water is pumped by electrical motors, which generate a very low level of noise. The proposed project would include additional pumps that would generate similar noise levels. A site visit qualitatively indicated that the current noise level at the existing facility while the plant is in full operation is approximately 55 A-weighted decibels (dBA), which is equivalent to the sound of a normal voice at 5 to 10 feet. The closest sensitive receptor is a rural residence about 0.25 mile north of the WWTP's northern perimeter on Elmo Highway. At a distance of 0.25 mile, noise levels generated at the plant (55 dBA) would be completely attenuated (softened) to undetectable levels. Therefore, the project would not expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies. There would be no impact.

b. **No Impact.** The only groundborne vibrations would be those associated with the excavation and installation of the upgrades through the use of heavy equipment. The grading of the site and moving/removal of earthwork would have very localized vibration impacts. The distance to the nearest residences (about 0.25 mile to the north) would allow for the dissipation of these vibrations.

Therefore, the project would not expose persons to or generate excessive groundborne vibration or groundborne noise levels. There would be no impact.

c. **No Impact.** The noise levels associated with the ongoing operation of the WWTP would not cause significant increases in the ambient noise levels. The new facilities would have the same kinds of noise sources as the existing facility, with the noise being primarily due to the sound of rushing/flowing water and the constant hum of electric motors. The remote location of the plant and its distance from the nearest residences would allow ample opportunity for the noise to attenuate over distance before arriving at the residences. Please also see response XII.a. Therefore, the project would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. There would be no impact.

d. **Less-than-Significant Impact.** During construction of the proposed expansion, there would be noise generated by heavy equipment for excavation purposes and installation of the upgrades (earthmovers, cement trucks, etc.). However, these noise impacts are expected to be short-term in nature and duration, and noises would be similar to those that are commonly heard in the existing environment surrounding both the residences and the WWTP (farm equipment, diesel motors, harvesters, etc.). The remote location of the plant and its distance from the nearest residences would allow ample opportunity for the noise to attenuate over distance before arriving at the residences. Therefore, the project would not result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Impacts would be less than significant.

e. **No Impact.** The proposed project is not located within 2 miles of a public airport or public use airport or within an airport land use plan area. Given the distance of the project from public or public use airports, the project would not expose people residing or working in the project area to excessive airport-related noise levels. Please also see response XII.a. There would be no impact.

f. **No Impact.** The proposed project is not within the vicinity of a private airstrip. There would be no impact.

XIII. Population and Housing	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☒	☐
b. Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c. Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion:

a. **Less-than-Significant Impact.** The project does not include the development of housing or businesses. The expansion at the plant would increase the treatment capacity of the plant from 1.55 mgd to 2.5 mgd in anticipation of future growth through 2036. According to the Kern Council of Governments, historic population growth from 1980 through 2010 in the McFarland area is about 3% (Appendix A). Based on this historic growth, the projected growth used for the planning of this expansion is 2.9%. Table 4 shows the historic and projected population of the McFarland area.

Table 4. Historic and Projected Population

Year	Population	Percent Growth
1980	5,157	3.12
1990	7,005	3.22
2000	9,618	2.82
2010	12,707	2.90
2020	16,912	2.90
2030	22,508	2.90
2036	26,720	2.90

Source: Appendix A.

The McFarland area's population is expected to increase from 12,707 to 26,720 in 2036, for a total increase of 14,013 or a rough doubling of McFarland's population size. The proposed expansion indirectly accommodates this anticipated growth through the expansion of infrastructure. The impacts of this growth have been accounted for in the City's General Plan EIR. Therefore, the project would not result in substantial population growth not already accounted for by the City that would lead to significant direct or indirect environmental effects. Impacts would be less than significant.

b. **No Impact.** The proposed project would not displace any existing housing. The proposed project components would be located on property that is currently occupied by the existing WWTP. There would be no impact.

c. **No Impact.** The proposed project would not displace people. The proposed project components would be located on property that is currently occupied by the existing WWTP. There would be no impact.

XIV. Public Services	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a 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 following public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☐	☒

Discussion:

a. The following discusses the project's potential impacts on public services:

Fire Protection

Less-than-Significant Impact. The proposed project would not have an effect on fire protection services. As with the existing WWTP, the proposed project would comply with all applicable fire regulations that are required for operation. A demand for increased fire protection is generally associated with population increases or impacts on existing fire stations. The City's General Plan EIR already accounts for anticipated population growth and related impacts associated with fire protection. Impacts would be less than significant.

Police Protection

Less-than-Significant Impact. The proposed project would not have an effect on police protection services. The existing police force can accommodate the necessary service to the existing WWTP. A demand for new police protection services is generally associated with population increases or impacts on existing police stations. The City's General Plan EIR already accounts for anticipated population growth and related impacts associated with police protection. Impacts would be less than significant.

Schools

Less-than-Significant Impact. The proposed project would not have an effect on schools or result in a need for new or altered schools. A demand for new schools is generally associated with population increases or impacts on existing schools. The City's General Plan EIR already accounts for

anticipated population growth and related impacts associated with schools. Furthermore, no existing schools would be affected by the proposed project. Impacts would be less than significant.

Parks

Less-than-Significant Impact. The proposed project would not have an effect on parks. The demand for parks is generally associated with an increase of housing and population in an area. The City's General Plan EIR already accounts for anticipated population growth and related impacts associated with parks. The project would not have any effect on existing parks. Impacts would be less than significant.

Other Public Facilities

No Impact. The project site is currently served by existing public utilities and infrastructure, including roadways. The project would not affect other public facilities. The WWTP is a public facility that would be upgraded as a result of the proposed project. The improvements would not result in the need for new or altered government services. There would be no impact.

XV. Recreation	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
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 that might have an adverse physical effect on the environment?	☐	☐	☒	☐

Discussion:

a. **Less-than-Significant Impact.** The demand for recreational facilities is generally associated with an increase of housing and population in an area. The City's General Plan EIR already accounts for anticipated population growth and related impacts associated with recreational facilities. The project would not have any effect on existing recreational facilities. Impacts would be less than significant.

b. **Less-than-Significant Impact.** Please refer to response XV.a. The proposed project would not include recreational facilities or result in the demand for new recreational facilities. Impacts would be less than significant.

XVI. Transportation and Traffic	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b. 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?	☐	☐	☒	☐
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d. Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e. Result in inadequate emergency access?	☐	☐	☐	☒
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Discussion:

a. **Less-than-Significant Impact.** Operation of the proposed project would not result in a substantial increase in traffic volumes on local and area roadways in the vicinity of the project site. The project would not increase the number of workers at the plant during operations and, therefore, would not require additional trips to facilitate workers coming to and going from the plant. Given the current aeration and proposed Biolac process (both secondary treatment) at the WWTP, the plant would not utilize chemical treatments that would require additional truck trips to haul necessary disinfectants to the plant as a result of the upgrades. Also, given the new Biolac process, which uses RAS/WAS technology, the plant would produce more sludge than the baseline condition using the existing aeration process. Table 5 provides an estimate of the number of current truck trips required to haul away sludge versus the number resulting from the project.

Table 5. Operational Sludge Hauling Truck Trips

Condition	Million Gallons Treated/Year	Pounds of Sludge/Million Gallons Treated[3]	Pounds of Sludge/Year	Tons of Sludge/Year	Truck Trips/Year[4]
Existing	565.8[1]	360	203,688	101.8	20.2
Proposed	828.6[2]	1,500	1,242,900	621.4	124.2

[1] 1.55 million gallons/day * 365 days. Based on current capacity at the plant.
[2] 2.27 million gallons/day * 365 days. Based on average annual flow at design year 2036.
[3] Estimated in *City of McFarland Wastewater Treatment Plant Master Plan* (Appendix A)
[4] Based on 10-ton dump truck and two trips per visit (to and from the plant).

Using the information from Table 5, it is anticipated that the project would result in about 124 truck trips/year, which is an increase of 104 truck trips/year over the baseline condition. This equates to an increase of a truck trip to and from the plant approximately once every 6 days.[8] This would be a negligible operational increase in traffic given the rural nature of the roads surrounding the WWTP and the very low number of traffic trips generated on these roads. Therefore, the project is not anticipated to appreciably affect traffic patterns or conflict with applicable plans, ordinances, or policies establishing measures of effectiveness for the performance of the circulation system during the operational period.

There would be a negligible temporary increase in traffic from construction-related activities. However, given the rural nature of the roads surrounding the WWTP and the very low number of traffic trips generated on these roads, the minimal temporary traffic increase during construction is not expected to appreciably affect traffic patterns or conflict with applicable plans, ordinances, or policies establishing measures of effectiveness for the performance of the circulation system. Impacts would be less than significant.

b. **Less-than-Significant Impact.** Please refer to response XVI.a. The proposed project would result in a negligible increase in traffic volumes on local and area roadways in the vicinity of the WWTP during operations. Therefore, the project would not 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. Impacts would be less than significant.

c. **No Impact.** The proposed project would not result in the construction of project components that have a larger profile than the existing structures. Therefore, the proposed project would not change the baseline condition of the WWTP in terms of building height that would result in a change in air traffic patterns for safety reasons. Consequently, the project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks. There would be no impact.

d. **No Impact.** The proposed upgrades do not include any improvements to nearby roads that would result in a hazardous design feature or in an incompatible use with the existing agricultural lands and residences in the project's vicinity. Therefore, the project would not substantially increase hazards because of a design feature or incompatible uses. There would be no impact.

[8] 365 days/124 truck trips per year * 2 truck trips per hauling = X days per hauling

e. **No Impact.** The proposed project would not hinder emergency access in the area because operations of all upgrades would not occur within public rights-of-way. No access closures would occur during construction or operation of the project. Therefore, the project would not result in inadequate emergency access. There would be no impact.

f. **No Impact.** There are no bike racks, bus turnouts, and such on or in the vicinity of the WWTP that could be affected by the project. Construction and operations of the proposed project would not utilize any transportation modes or impede current public transportation routes. Therefore, the project would not conflict with adopted policies, plans, or programs regarding public transit or bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. There would be no impact.

XVII. Utilities and Service Systems	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?	☐	☐	☐	☒
e. Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g. Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion:

a. **Less-than-Significant Impact.** The proposed project would continue to comply with the current WDR Order No. R5-2008-0072 established by the RWQCB. The current WDR sets limits on pollutants that are discharged from the plant to protect beneficial uses of surface and groundwater and to preserve water quality objectives outlined in the Basin Plan. The existing WWTP complies with the WDR established by the RWQCB. A primary purpose of the proposed project is to enable the WWTP to continue to achieve compliance with the current WDR while anticipating future WDR. Therefore, the project would not exceed wastewater treatment requirements. Impacts would be less than significant.

b. **Less-than-Significant Impact.** Based on the analysis presented in this Initial Study Checklist, the construction of the proposed upgrades would not cause significant and immitigable environmental effects. Impacts would be less than significant.

c. **No Impact.** The proposed project would not result in a need for new or substantial alterations to stormwater drainage systems. The proposed project would not appreciably increase the amount of impervious surface area at the project site; impervious surfaces can cause increased surface flows that overwhelm the local stormwater drainage system. The existing WWTP has adequate existing drainage for the proposed components within the existing fence line. No new or expanded stormwater drainage facilities would be needed as a result of the project. Therefore, the project would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. There would be no impact.

d. **No Impact.** The WWTP's potable water provider would have sufficient water supplies available to serve the project from existing entitlements and resources, and new or expanded entitlements would not be needed. The WWTP uses a nominal amount of potable water for employee drinking and washing purposes; the WWTP typically requires a maximum of one to two employees in order to run the WWTP. There would not be an increase in the number of workers at the plant as a result of the project. Therefore, the project would have sufficient water supplies available to serve the project from existing entitlements and resources. There would be no impact.

e. **No Impact.** The purpose of the proposed project is to upgrade the existing WWTP. The WWTP is not served by any other wastewater treatment facility. The WWTP has sufficient capacity to service its own wastewater treatment needs, and the project would not result in an increase in wastewater produced at the plant. There would be no impact.

f. **Less-than-Significant Impact.** Sludge would continue to be hauled to McCarthy Farms for composting and disposal. Therefore, the sludge generated from the WWTP would be reused as compost and does not contribute to the capacity of any landfill. As discussed in response XVI.a, the proposed project at design year 2036 would produce about 621 tons of sludge/year in comparison to the current condition of about 102 tons of sludge/year. Therefore, the project would result in an increase of 519 tons of sludge/year. McCarthy Farms has indicated that it has the capacity to accept the additional 519 tons of sludge/year. Solid waste that results from screening at the headworks is hauled off by the local refuse collector and placed into a landfill. The project would increase treatment capacity at the plant and, therefore, would result in an increase the amount of screened material beyond the baseline condition to be hauled to a landfill. However, the screened material accounts for very little of the total amount of solid waste to be hauled off in comparison to the sludge amount. It is anticipated that the existing landfills have sufficient capacity to handle the additional amount of screened material. Impacts would be less than significant.

g. **No Impact.** Biosolids disposal is regulated under U.S. Environmental Protection Agency Sewage Sludge Regulations (40 CFR 503). These regulations establish standards for pollutant limits; operational standards; management practices; and monitoring, record keeping, and reporting requirements. Because biosolids from the City are sent to an offsite facility, they are required to comply with 40 CFR 503. Additionally, the current hauler would also need to be, and is, permitted per RWQCB requirements. The WWTP is currently in compliance with 40 CFR 503 regulations and would continue to be within compliance after construction of the upgrades.

   In addition, there are WDR specifications for proper treatment and disposal of biosolids. The SWRCB adopted general WDRs for the land application of biosolids (WDR Order No. 2004-0012-DWQ [General Order]). The existing WWTP complies with this General Order related to land application of biosolids, as would the proposed project. There would be no impact.

XVIII. 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 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?	☐	☐	☒	☐
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.)	☐	☐	☐	☒
c. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

Discussion:

a. **Less-than-Significant Impact.** Analysis of the proposed project, proposed project site, and surrounding lands has determined that if project development occurs in the proposed project area, special-status species would not be adversely affected. Mitigation has been established in this Initial Study to protect historic or prehistoric resources within the WWTP's fence line and reduce impacts to a level of less than significant.

b. **No Impact.** The project would not have impacts that are cumulatively considerable. No significant impacts have been identified for the proposed project. Additionally, no less-than-significant impacts of the project would be cumulatively considerable. There would be no impact.

c. **No Impact.** The proposed project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly. No substantial adverse impacts have been identified for the proposed project. There would be no impact.

Chapter 3
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Appendix A

City of McFarland Wastewater Treatment Plant Master Plan

Wastew er Treatmen nt

Ma er Plan

Cannon

DRAFT

September 2013

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Appendices

Common Acronyms and Abbreviations

AACE	Association for Advancement of Cost Estimating International
AAD	Annual Average Demand (Recycled Water Annual Flow Volume in Acre-Feet per Year)
AADF	Average Annual Daily Flow
ADMM	Average Day Maximum Month Flow
BOD	Biochemical Oxygen Demand
CCI	Construction Cost Index
CCR	California Code of Regulations (see also Title 22)
CDPH	California Department of Public Health
CFM	Cubic Feet per Minute
CIP	Capital Improvement Program
City	City of McFarland
cuft or CF	cubic feet
CWA	Clean Water Act
DIP	Ductile Iron Pipe
DWR	(California) Department of Water Resources
EDU	Equivalent Dwelling Unit
EEM	Energy Efficient Measures
EIR	Environmental Impact Report
ENR	Engineering News Record
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMP	Facilities Master Plan
GMF	Granular Media Filtration
fps	Feet Per Second
gpcd	Gallons Per Capita Per Day
gpd	Gallons Per Day
gpm	Gallons Per Minute
HDPE	High-Density Polyethylene
HP or hp	Horsepower
hr	Hour
I&I	Inflow and Infiltration
In	Inches
KW or kw	Kilowatt
LF or lf	Linear Feet
MCL	Maximum Contaminant Level
MG	Million Gallons
mgd	Million Gallons Per Day
mg/L	Milligram Per Liter (aka "Part Per Million") (i.e., Concentration of a Constituent in Water)
ml/L	Milliliter Per Liter (i.e., Volume of Constituent in Water)
MPN	Most Probable Number
MSL	Mean Sea Level
NFPA	National Fire Protection Association
NIC	Not Included or Not In Contract
NPDES	National Pollution Discharge Elimination System (Regulatory Framework for Permitting Discharges to Surface Water)

NPSHA	Net Positive Suction Head Available
NPSHR	Net Positive Suction Head Required
NTU	Nephelometric Turbidity Unit (i.e., Measure of Light-Transmitting Property of Waters to Indicate the Quality With Respect to Colloidal and Residual Suspended Matter)
OPC	Opinion of Probable Cost
PDWF	Peak Dry Weather Flow
PHF	Peak Hour Flow (Recycled Water Delivery Rate in gpm)
ppm	Part Per Million (aka Milligram Per Liter)
PS	Pump station
PVC	Polyvinyl Chloride
RW	Recycled (or Reclaimed) Water
RWQCB	Regional Water Quality Control Board
SRF	State Revolving Fund (loan program)
sqft or SF	Square Feet
SWP	State Water Project
SWRCB	(California) State Water Resources Control Board
TDS	Total Dissolved Solids (aka Salinity)
TF	Tertiary Filter
Title 22	Title 22 of California Code of Regulations (Especially, Division 4. Environmental Health, Chapter 3. Water Recycling Criteria)
TSS	Total Suspended Solids
UWMP	Urban Water Management Plan
WDR	Waste Discharge Requirements (RWQCB Permits for Discharges to Land or Groundwater)
WWTP	Wastewater Treatment Plant

1. INTRODUCTION

1.1 Background

The City of McFarland (City) is located in the northern end of Kern County, approximately 26 miles north of Bakersfield, astride Highway 99. The City is located in the southern San Joaquin Valley, 10 miles from the western foothills of the Sierra Nevada Mountain Range to the east and approximately 40 miles from the coastal mountains to the west. A location map is shown on Figure 1.1.

The City owns and operates a wastewater treatment plant (WWTP) located approximately 2.5 miles west of the City on Melcher Avenue between Sherwood Road and Elmo Highway. The plant is located on 320 acres of City-owned land, which consists 240 acres of farmland and 80 acres for the WWTP and effluent disposal ponds. The City currently collects approximately 1.1 mgd of domestic and commercial wastewater, which flows via gravity to the WWTP. Figure 1.2 shows the service area for the WWTP. The plant is permitted at 1.55 mgd. The effluent irrigates 240 acres of feed and fodder crops on City-owned land adjacent to the WWTP.

The City of McFarland has experienced a steady growth over the past 30 years at approximately 3.0 percent per year. Although a minor drop in flow has occurred, this has been attributed to the recent economic downturn. This growth trend is anticipated to continue into the future as the City provides affordable housing to its residents.

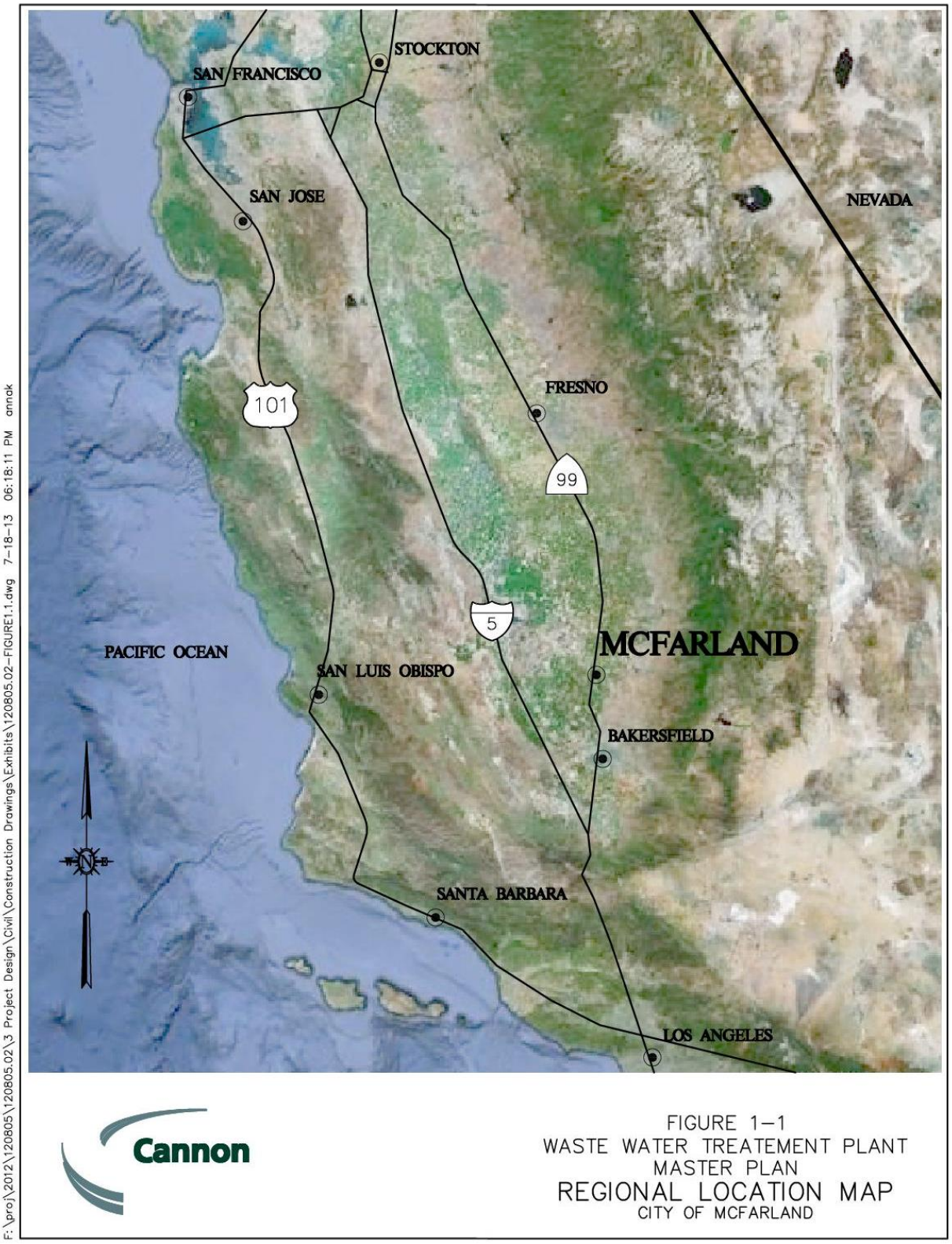
In early 2012, the City conducted a study to improve energy efficiency at the plant. The study identified a few alternatives for saving energy on the order of $1.0 to $1.5 million. In order to capture further consideration and growth, the City commissioned this Master Plan study to further review energy savings while providing further expansion to the plant.

1.2 Purpose and Scope of Study

The purpose of this study is to develop a facilities plan for the Cityôs WWTP based on projected flows and loadings through the year 2036. In addition, the study process will result in the identification of energy efficiency measures. A recommended implementation schedule has been developed for the project.

The primary goal of the study is to develop a plan, which will meet the current and anticipated discharge requirements of the California Regional Water Quality Control Board (CRWQCB) ï Central Valley Region, while planning for growth.

Figure 1-1. Regional Location Map



1.3 Previous Studies and Reports

The following studies and reports have been reviewed as incorporated into the preparation of this study.

Table 1-1. Previous Studies and Reports

Name	Date
Operations and Maintenance Manual for WWTP	1995
Wastewater Treatment Plant Effluent Reclamation ï Title 22 Engineering Report	1999
Wastewater Treatment Plant Report of Waste Discharge	2000
WW Collections Trunk Sewer Project-Contract Documents	2000
WWTP Expansion ï Contract Documents	2000
Wastewater Master Plan	2006
WWTP Operations and Maintenance Manual	2009
Sewer System Management Plan	2011
Groundwater Conditions in the Vicinity of McFarland WWTF	2012

1.4 General

1.4.1 Climate

McFarlandôs climate can is characterized by relatively cold winters and hot, dry summers. Winter months are cold with occasional inversion temperatures resulting in a ñTuleò fog in late winter. Winter temperatures occasionally drop below 32 degrees Fahrenheit, with the frost period extending from late November to February. Summers are hot, dry, and nearly cloudless. Summer temperatures range from daytime highs exceeding 100 degrees Fahrenheit to nighttime lows in the range of 50 to 60 degrees Fahrenheit.

Precipitation in the area averages about 5 to 7 inches each year. Most of the rain falls between November and April.

The prevailing wind is from the northwest. The wind generally increases in the evenings as a result of thermal effects.

The average growing season typically extends from March to late November.

1.4.2 Topography

The topography of the area is characteristic of the nearly flat gradient of the south San Joaquin Valley. The natural slope of the incorporated portion of the City is approximately 0.2% (1 foot per 500 feet). Elevations in the City range from about 365 feet in the south to 345 feet in the north. Ground elevations to the west lie approximately 349 above mean sea level. The WWTP ground elevations lie about 330 feet above mean sea level.

No natural creeks, streams, ponds, or lakes are located in or adjacent to the City. According to the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA), the WWTP is predominantly located in areas determined to be outside the 0.2% (500-year flood) hazard zone. The administration buildings area, maintenance shop, and Pond 3 have been built up above the natural terrain.

Zones A, X, and AH lie within Central and Eastern McFarland. These zones have an annual chance of 100-year rainfall even. Zone A does not have defined base flood elevations, Zone AH has potential flood depths of 1 to 3 feet, and Zone X has the potential for depths below 1 foot. The western third of the City is designated Zone X, which lies outside the 500-year flood areas.

1.4.3 Geology

The 320 acres of City-owned property consisting of the WWTP and the irrigated farm fields feature three soil types: the Kimberlina sand loam, Wasco Sandy Loam, and McFarland Loam. The soil classifications vary from sand to loam and textures from coarse to moderately coarse. Drainage is good to high. The soils are permeable, deep, even, fertile, and suitable for a wide variety of crops.

The California Building Code places the WWTP in seismic Zone 4 for the design of facilities. The mild topography and low elevation tend to negate the threats of landslides and liquefaction.

1.4.4 Groundwater

A groundwater report entitled ñGroundwater Conditions in the Vicinity of the City of McFarland WWTPò was completed in May 2012 by Ken Schmidt. The report reviewed quarterly groundwater monitoring reports generated in the period between 2001 and 2010.

In 2003, the groundwater depth varied from 87 to 97 feet below grade, and in 2010 the water depth varied from 96 to 111 feet below grade. Groundwater gradient maps prepared by Ken Schmidt and Associates suggest the occurrence of a mounding effect occurring at the plant site. Versions of these groundwater gradient maps, prepared by Ken Schmidt and Associates, appear in Appendix A.

The 2012 study also tabulated groundwater quality. The groundwater quality summary results for 2001, 2002, and 2011, provided by the City, are included in Appendix B.

The groundwater in the vicinity of the WWTP has electro conductivity ranging from 786 to 1,490 micro-mhos per centimeter (µmhos/cm). For the periods reviewed, total dissolved solids ranged from 560 to 1,100 milligrams per liter (mg/L); nitrates ranged from non-detect to as high as 162 mg/L.

The general conclusion of the groundwater report holds that local irrigation practices, including soil amendment applications, have influenced the quality of the shallow groundwater in the area. These practices have contributed nitrate concentrations exceeding the MCL of 45 mg/L over a large area near and west of McFarland. Furthermore, in some respects, percolation from the holding pond may be improving the shallow groundwater.

1.4.5 Water Supply

The City water system consists of a series of three active wells that draw from deep aquifers. In addition, a new well was drilled and activated in 2012.

The City had more than 2,455 service connections at the end of 2011. The total 2011 water production for the City was 672.26 million gallons (MG). Based on a population of 12,707 in 2010, the per-capita consumption is approximately 144 gallons per day per person (gpcpd).

The 2011 Consumer Confidence Report (Annual Water Quality Report) for the City of McFarland drinking water quality indicates total dissolved solids (TDS) ranging from XXX-YYY mg/L. The EC is estimated to be XXXX mg/L. The City had previously operated well head treatment for nitrates in two groundwater wells. However, these wells have been inactive since 200X, and one has been abandoned. The water quality reports are shown in Appendix C.

2. EXISTING AND PROJECTED SERVICE AREA

2.1 Service Area

The City of McFarland (City) is located in Kern County astride State Highway 99, approximately 20 miles north of Bakersfield. The City is located in the southern San Joaquin Valley, 10 miles from the western foothills of the Sierra Nevada Mountain Range to the east and approximately 40 miles from the coastal mountains to the west. Terrain within the City sphere of influence is nearly flat and consists primarily of agricultural land with developed residential/commercial parcels within the City limits.

Surrounded by dairies and agriculture land, the Cityôs WWTP is located approximately 3 miles west of the center of the City along Perkins Avenue. The location of the WWTP and its associated service area are shown on Figure 2.1.

2.2 Historical and Projected Populations

Cannon has obtained Kern Council of Governments (COG) historic population data and population projections for the City. The information from Kern COG was provided by Mr. Peter Smith (e-mail dated February 5, 2013). The U.S. Bureau of the Census is the source for the historic population data provided by Kern COG. Cannon has calculated the historic growth rates for the 1980s, 1990s, and 2000s at 3.12%, 3.22%, and 2.82%, respectively. The aggregate 30-year historic population from 1980 to 2010 was 3.0%. The population data provided by Mr. Smith and 30-year Historic Population Summary Table prepared by Cannon appears in Appendix D

Population data and growth projection estimates are essential to determining the present per-capita wastewater flows and to estimate future wastewater flow projections. Determining the projected population requires the application of an average growth rate. Based on historic growth, the projected growth rate utilized for the facilityôs planning is 2.90%. Historical and projected populations using the 2.90 percent projection rate for the City are outlined in Table 2.1. Based on the 2.90% growth rate over the next 20 years, the design population for the year 2036 will be 26,720 residents.

Figure 2-1. Service Area Map

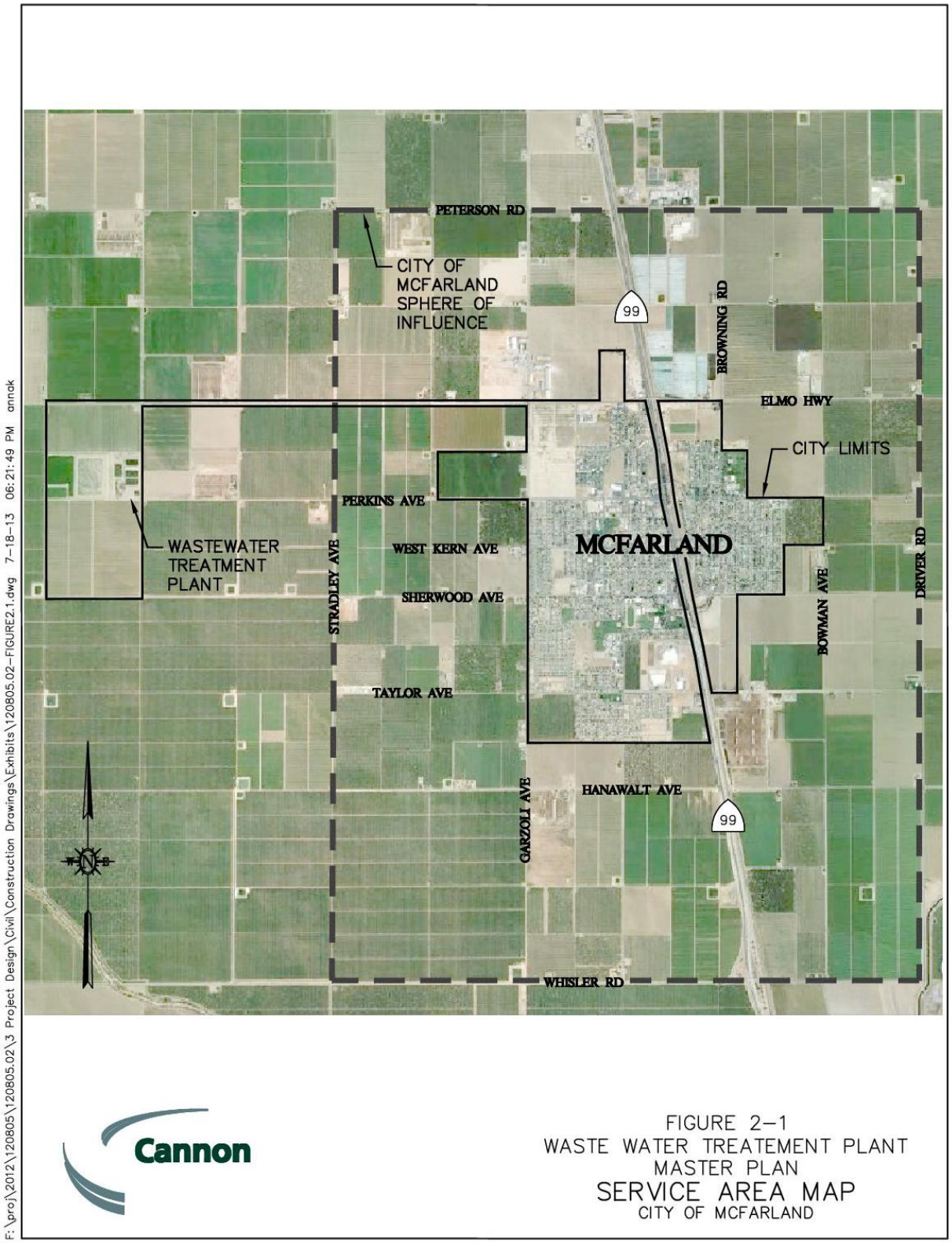


Table 2-1. Historical and Projected Population

Year	Population [1]	Percent Growth
1980	5,151	3.12
1985	6,007	3.12
1990	7,005	3.22
1995	8,208	3.22
2000	9,618	2.82
2005	11,055	2.82
2010	12,707	2.90
2015	14,659	2.90
2020	16,912	2.90
2025	19,510	2.90
2030	22,508	2.90
2035	25,967	2.90
2036	26,720	2.90

(1) Populations are projected at 2.90% for years 2010 and beyond.

3. HISTORICAL AND PROJECTED FLOWS AND LOADINGS

3.1 Historical Influent Flows

3.1.1 Annual Average Daily Flows

The relationship between past population and average annual daily flows (AADF) is used to determine the wastewater flows per capita in gallons per capita per day (gpcd). The historical gpcd is then used to estimate the projected gpcd for the planning period. The flows used to determine the gpcd include all flows into the wastewater treatment plant (WWTP). Historical AADF for the past six years are outlined in Table 3.1 below and shown graphically in Figure 3-1.

Table 3-1. Historical AAD Flows

Year	Population	Flow (mgd)	Per Capita Flow (gpcd)
2007	11,688	1.03	88
2008	12,018	1.08	89
2009	12,358	1.09	88
2010	12,707	1.05	83
2011	13,075	1.02	78
2012	13,454	0.99	74
6 Year Average			**83**

The calculated average value for the per-capita wastewater flow for the past six years is 83 gpcd. This figure is typical for a Valley city that is fully metered. Therefore, for the purpose of this study, a conservative per capita flow rate of 85 gpcd will be used for projecting future AAD flows. The seven-year monthly data for flows and loads are presented in Appendix E.

3.1.2 Average Day Maximum Month Flow

The design of WWTPs is generally based on the average-day maximum month flows (ADMMF). This approach is designed to provide the WWTP with the capacity to treat the wastewater from the maximum-month conditions as well as the average month. To project the ADMM flows, the ratio of the historical ADMMF to the AADF of the previous six years was determined. As shown in Table 3-2, the average ADMMF-to-AADF ratio for the most recent six-year period is 1.04. Therefore, a 1.10-ADMMF-to-AADF flow factor will be used to determine the ADMMF for the future planning period. This is also typical for Valley cities.

Figure 3-1. Historical Monthly Average Flows

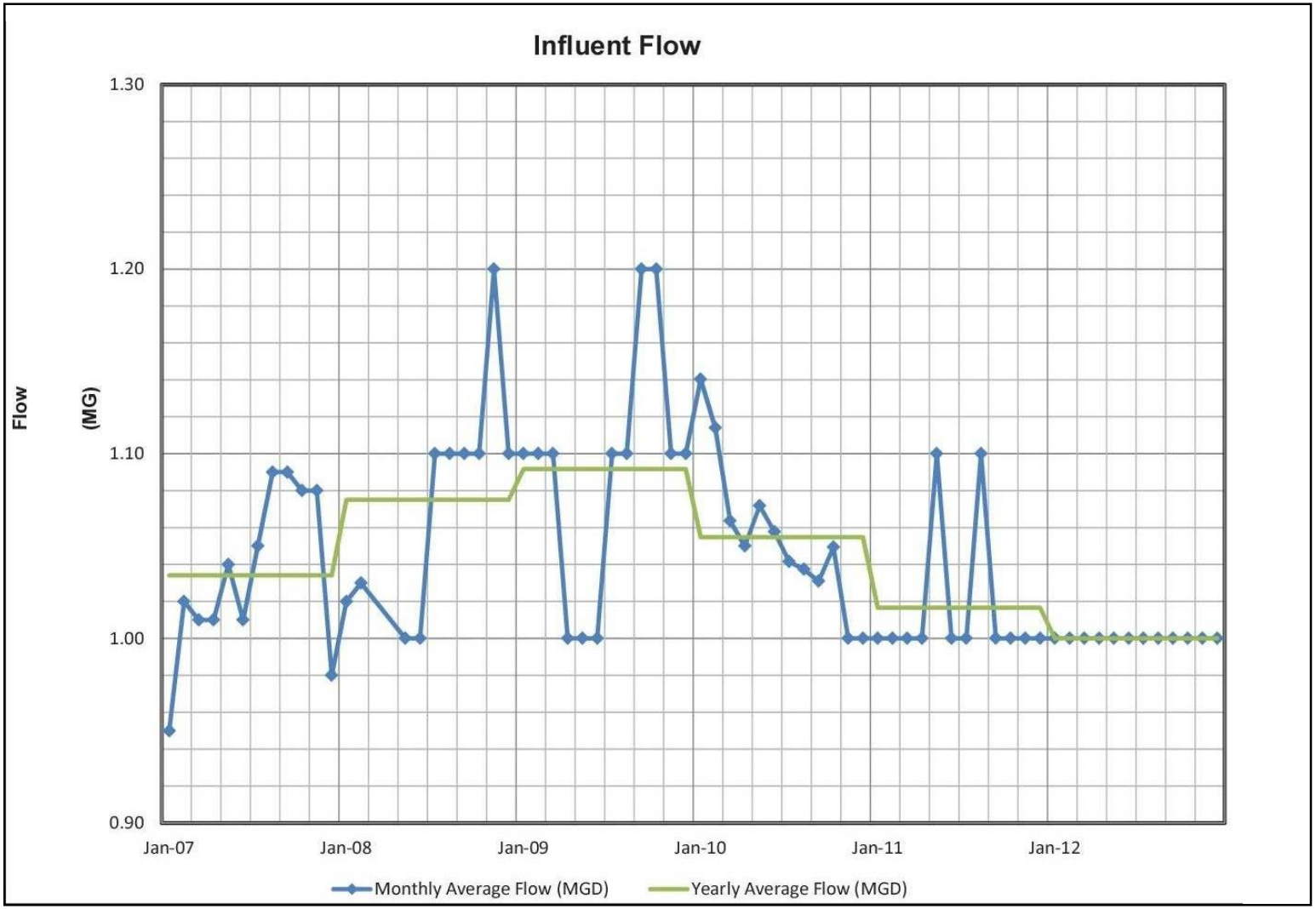


Table 3-2. Historical AADF and ADMMF

Year	AADF (mgd)	ADMMF (mgd)	ADMMF:AADF Factor
2007	1.03	1.09	1.05
2008	1.08	1.13	1.05
2009	1.09	1.17	1.07
2010	1.05	1.11	1.05
2011	1.02	1.03	1.02
2012	1.00	1.00	1.01
6 Year Average			**1.04**

3.1.3 Peak Hourly Flow

The peak hourly (PH) flow is required in order to ensure that the pipelines, meters, and other critical hydraulic appurtenances are sized adequately and to minimize any potential for flooding or overflow during high flow events. Usually, wastewater flows increase in wet weather because of infiltration and inflow. To determine this peaking factor, the peak instantaneous influent flows recorded are typically compared with the average daily flows. However, the City recently installed new flow-monitoring equipment because the previous flow monitoring measuring ñwheelòwas not providing reliable data. In the absence of a detailed flow analysis, the design peak hour factor from the typical Central San Joaquin Cities of 2.0 was suggested to the plant staff. Plant staff concurred that a 2.0 peak-hour factor was sufficient based on the experienced instantaneous flows. The peak-hour wet weather flow will be set at 2.0 times the average annual daily flow for the purpose of this report. Further peak-hour flow investigation utilizing the monitoring equipment will be required as this project moves toward detailed design. The flow projection factors and their corresponding flows, to be used for this analysis, are presented in Table 3-3 below.

Table 3-3. Flow Projection Factors

Flow Condition	Flow Projection Factor
Average Wastewater Flow per Person per Day (gpcd)	85
Average Annual Daily Flow (AAD)	1.0
Maximum Month Average Day Flow (MMAD)	1.10
Peak Hourly Factor (times AAD)	2.0

3.2 Projected Influent Flows

Applying the above flow projection factors to the estimated future population at a 2.90% growth rate results in the projected yearly flows shown in Table 3-4 below. This reveals that, based on a current permitted plant capacity of 1.55 mgd, the current McFarland WWTP will reach the hydraulic capacity sometime after 2020.

Table 3-4. Projected Influent Flows

Year	Population[(1)]	AADF (mgd)	ADMMF (mgd)	PH Flow (mgd)
2012[(2)]	13,454	1.0		--
2013	13,844	1.18	1.29	2.35
2014	14,246	1.21	1.33	2.42
2015	14,659	1.25	1.37	2.49
2016	15,084	1.28	1.41	2.56
2020	16,912	1.44	1.58	2.87
2025	19,510	1.66	1.82	3.32
2030	22,508	1.91	2.10	3.83
2035	25,967	2.21	2.43	4.41
2036	26,720	2.27	2.50	4.54

Notes:
(1) Assumes a 2.90% yearly growth rate for years 2012 and beyond.
(2) Historical values

3.3 Historical Influent Loadings

3.3.1 General

Generally, wastewater strength is defined by its five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and nitrogen content. The BOD_5 is described as the amount of oxygen required over a five-day period at 20 degrees Celsius by bacteria while stabilizing the decomposable organic matter under aerobic conditions. TSS is a measurement of the material suspended in the influent. Nitrogen has many different forms, such as ammonia (NH3), organic nitrogen (N), nitrate (NO3), and others. Typically, the nitrogen in untreated domestic wastewater comprises ammonia plus organic nitrogen and is defined as Total Kjeldahl nitrogen (TKN).

3.3.2 Influent BOD_5

Historical influent BOD_5 loadings for the past six years are shown in Table 3-5 below and graphically on Figure 3-2 on the next page. The six-year historical BOD_5 concentration for this time period was 214 milligrams per liter (mg/L) for the annual average loads, and 268 mg/L for maximum monthly average loads.

Table 3-5. Historical Influent BOD_5 Loading

	Annual Average		Maximum Month		AMMD:AAD
Year	mg/L	ppd	mg/L	ppd	Factor
2007	248	2,127	340	2,873	1.35
2008	209	1,395	219	1,870	1.34
2009	215	1,966	284	2,679	1.36
2010	238	2,091	306	2,648	1.27
2011	200	1,706	243	2,099	1.23
2012	174	1,452	218	1,818	1.25
6 year avg.	**214**		**268**		**1.30**

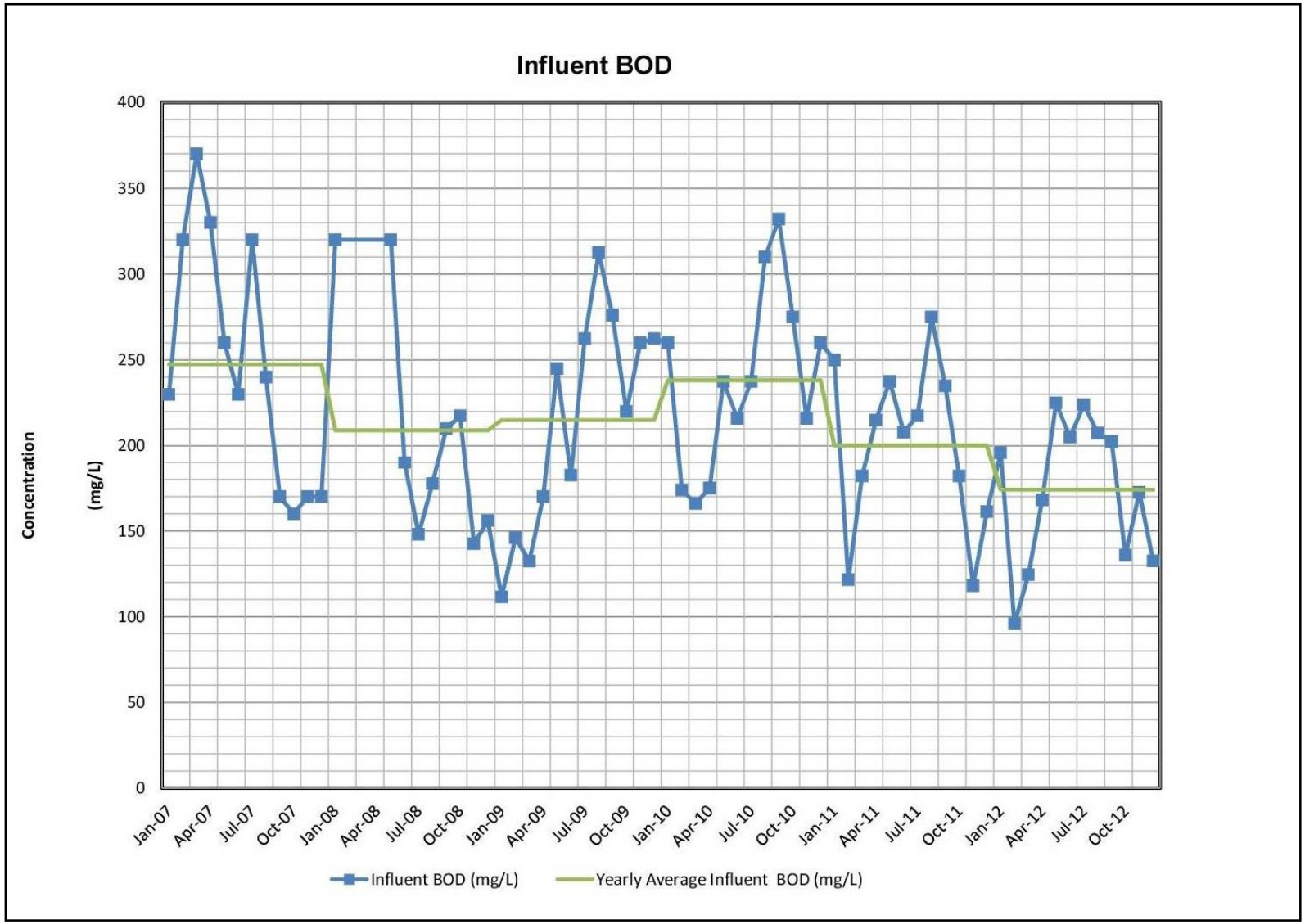
The current design criteria for the plant were obtained from the May 2005 Wastewater Treatment Plan Expansion CDBG Project - #16.98.1. The design criteria are as follows:

Table 3-6. Existing Design Criteria

Parameter	ADMM
Flow	1.55
BOD_5 - mg/L	375
BOD_5 - Loading, ppd	4,847

Neither the Total Suspended Solids nor the Total Kjeldahl Nitrogen was stated in the design drawings. The plant has since undergone major equipment modifications.

Figure 3-2. Historic Monthly Average BOD_5 Concentration



Based on a review of the plant data and historic design criteria above, an ADMM BOD_5 concentration of 275 mg/L and an AA BOD_5 concentration of 220 mg/L will be used. These numbers are slightly less than previous design numbers, but considered reasonable. They are also consistent with values used at similar communities in the Central San Joaquin Valley.

3.3.3 Influent TSS

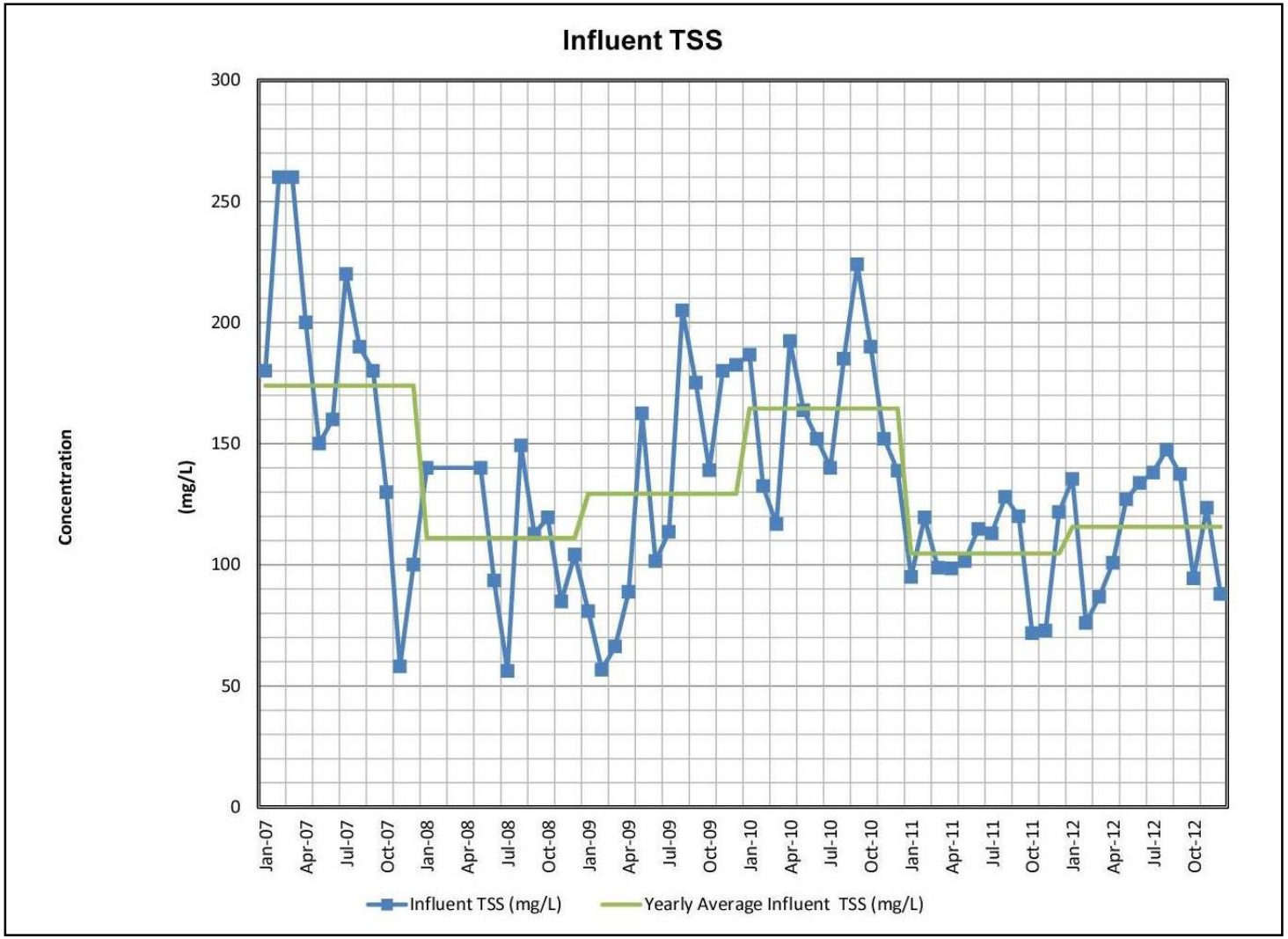
Historical influent TSS loadings for the past six years are shown in Table 3-7 below and graphically shown on Figure 3-3. The annual average TSS concentration is determined to be 133 mg/L, and the maximum monthly average for TSS is 167 mg/L. The current design criteria for the WWTP are shown on Table 3-6 above.

Table 3-7. Historical Influent TSS Loadings

	Annual Average		Maximum Month		ADMM:AAD
Year	**mg/L**	**ppd**	**mg/L**	**ppd**	**Factor**
2007	174	1,497	240	2,029	1.36
2008	111	747	127	1,167	1.56
2009	129	1,184	173	1,675	1.42
2010	164	1,447	200	1,730	1.20
2011	105	889	120	1,039	1.17
2012	116	965	141	1,176	1.22
6 year avg.	**133**		**167**		**1.32**

Based on the data analysis and the historic design criteria, TSS design figures were selected. The ADMM TSS used for design will be 175 mg/L, and AADF will be 135 mg/L.

Figure 3-3 Historical Monthly Average Influent TSS Concentrations



3.4 Historical Plant Performance

The records for the effluent quality from the WWTP for the past six years have also been reviewed and tabulated. Generally, the WWTP has produced a good effluent quality. However, periodic violations have occurred with 40 mg/L limit and the 80 percent removal requirements for both the effluent BOD_5 and effluent TSS.

3.4.1 Effluent BOD_5

The effluent BOD_5 shown in both concentration (mg/L) and loading (ppd) are shown in Table 3-8 below. Based on this data from the past six years, the plant effluent has averaged 38 mg/L. The corresponding BOD_5 removal rates, determined from comparing the annual average influent and effluent concentration values, have also been shown with a six-year average BOD_5 removal rate of 81.1 percent.

Table 3-8. Historical Effluent BOD_5

	Annual Average		
Year	mg/L	ppd	Percent Removal
2007	39	335	82.8
2008	44	325	79.4
2009	35	323	82.0
2010	45	398	80.1
2011	30	253	83.8
2012	35	288	78.8
6 year avg.	**38**		**81.1**

3.4.2 Effluent TSS

The effluent TSS shown in both concentration (mg/L) and loading (ppd) are shown in Table 3-9 below. Based on this data from the past six years, the plant effluent TSS has averaged 38 mg/L. The corresponding TSS removal based on a comparison of the annual average influent and effluent TSS concentration values are shown with a corresponding six-year average TSS removal rate of 69.4 percent. The minimum removal requirement under the permit is 80 percent. Therefore, the existing plant has experienced repeated difficulty meeting 80% removal with the TSS.

Table 3-9. Historical Effluent TSS

	Annual Average		
Year	mg/L	ppd	Percent Removal
2007	41	351	69.7
2008	41	304	62.9
2009	44	402	61.7
2010	53	463	67.5
2011	22	189	78.4
2012	26	218	76.1
6 year avg.	**38**		**69.4**

3.5 Projected Influent Loadings

Generally, the design loading for a WWTP facility is determined by the ADMM flows and ADMM loadings previously identified. These projected values will be used to determine the organic loading for the planning period.

3.5.1 BOD_5

The projected BOD_5 loadings are determined using the previously identified ADMMF BOD_5 concentration of 270 mg/L. With a flow of 2.5 mgd, the design criteria for ADMMF BOD_5 loading for the year 2036 is approximately 5,630 ppd.

3.5.2 TSS

The projected TSS loadings are determined using the previously identified ADMMF TSS concentration of 170 mg/L. With a flow of 2.5 mgd, the ADMMF TSS concentration for the year 2036 is projected as 3,544 ppd.

3.5.3 Nitrogen

The City has not historically collected nitrogen samples from the WWTP influent. However, based on typical domestic wastewater, an influent TKN design value of 35 mg/L will be assumed for ADMM. This results in a 2,036-TKN influent loading of 730 ppd for the ADMMF of 2.5 mgd. It is recommended that the City conduct analysis of the influent TKN in the coming months in order to confirm the 35 mg/L influent assumptions.

3.5.4 Summary of Projected Influent Flows and Loadings

The following table outlines the recommended year 2036 influent design flows, which are used in the alternative evaluations included as part of this Master Plan. It is recommended that these planning period design flows and loadings will be confirmed and further refined during the design period. The City is performing a sampling protocol for the Z4-composite analysis. Final design values may require adjustment based on the findings.

Table 3-10. Design Influent Flows and Loadings

Parameter	AADF	ADMM
Flow	2.3	2.5
BOD_5 - mg/L	220	275
BOD_5 - ppd	4,220	5,734
TSS - mg/L	140	170
TSS - ppd	2,685	3,544
TKN - mg/L	25	35
TKN - ppd	480	730

3.6 Historical and Projected Biosolids Production

The existing Aerated Lagoons do not generate sludge on a daily or monthly basis. As the sludge is aerated and treated, some of the sludge settles to the bottom and then further degrades. Pond 3 is the settling pond for the process and theoretically should have the most accumulated sludge. The sludge is periodically removed through dredging of the bottom sludge. Bottom sludge from Pond 3 was pumped into an on-site pond and then allowed to solar dry during the summer months. Once the sludge dried, a sludge hauler removed 396.2 tons in 2011. Previously, the City had hired a private contractor to dredge, dewater, and haul sludge from ponds 1A and from Pond 2. This dredging took place in 2005. However, there is no recorded documentation of the amount of sludge removed.

Based on the sludge removed in 2011 and the fact that some sludge had been removed in 2005, the estimated sludge produced and removed from the plant is estimated at approximately 360 pounds per million gallons treated.

With the anticipation that the City will transition to an activated sludge process in the future, the projected sludge production will range from 1,000 pounds per million gallons treated to 1,500 pounds per million gallons treated. This will represent a significant change to the sludge production at the WWTP. The increased production will result from the nature of the activated sludge process, wherein ñbugsòare grown in the activated sludge system to consume and stabilize the wastewater solids. These ñbugsòare removed from the process periodically, in the form of wet sludge, in order to maintain the proper population of bugs for an active treatment system. The ñbugsòand degraded waste are ultimately dewatered and hauled away.

The projected biosolids production for a few projected years is presented below. These projected values will be utilized for sizing dewatering facilities.

Table 3-11. Future Biosolids Production

Year	AADF (mgd)	Flow (MG/yr)	Biosolids @1,000/MG (tons/yr)	Biosolids @1,500/MG (tons/yr)
2016	1.28	467.2	233.6	350.4
2026	1.71	624.1	312.1	468.1
2036	2.27	828.5	414.3	621.4

Notes:
1. Biosolids production is estimated on annual average flow at 1,000 lbs./MG and 1,500 lbs./MG.

4. EXISTING AND FUTURE REGULATORY REQUIREMENTS

4.1 Introduction and Summary

The purpose of this chapter is to summarize the current and future regulations that are applicable to the City of McFarlandôs (City) Wastewater Treatment Plant (WWTP). The primary objectives of the regulations are to provide protection of the surrounding land uses, protection of the groundwater, and protection of public safety.

The City received its current WWTP Waste Discharge Requirements (WDR) in April 2008. Therefore, the City has been operating under the new generation (post ~2001) of WDRs issued by the California Regional Water Quality Control Board (RWQCB). Because the City has operated under a 2008 permit, the Cityôs current WDR requirements and probable future requirements will be extremely similar. The City intends to continue the process of using recycled undisinfected secondary effluent for irrigating feed and fodder crops. In 2006, the City installed a 500kw standby generator that is currently permitted by the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD).

A brief summary of the regulations and requirements that apply to the City appears in this chapter:

- Title 22 recycled water regulations that state the allowable uses for the Cityôs undisinfected secondary recycled water and the requirement to submit a Title 22 report for effluent irrigation.
- Regulatory Agencies and Regulations Applicable to the McFarland WWTP.
- State, Federal, and County biosolids regulations that govern disposal of Class A and Class B biosolids.
- Air regulations that limit the concentrations of certain air contaminants from being discharged by the WWTP.

4.2 Background

The primary laws regulating water quality are the Clean Water Act (CWA) and the California Water Code. The Environmental Protection Agency (EPA) or a delegated State agency regulates pollutants that can be discharged to the surface waters of the United States. This is completed through the issuance of National Pollutant Discharge Elimination System (NPDES) permits. The California Water Code and the Porter-Cologne Act require the State to adopt water quality policies, plans, and objectives for the protection of the Stateôs waters. The State Water Resources Control Board (SWRCB) and the nine RWQCBs meet this requirement by establishing water quality criteria in regional Basin Plans, the Inland Surface Waters, Enclosed Bays and Estuaries Plan, the Thermal Plan, and the Ocean Plan.

4.2.1 Agencies Responsible for McFarlandsô Regulations

The RWQCB Central Valley Regionï Fresno Office is responsible for developing and issuing WDRs for the City. It is also responsible for requiring the City to develop and implement a pretreatment program for industrial discharges to the WWTP, according to the EPA National Pretreatment Program regulations. The City is responsible for obtaining all air quality permits from the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD), which limits air emissions on various types of equipment within the WWTP.

4.3 Waste Discharge Requirements (WDRs)

The McFarland WWTP currently operates under WDR Order No. R5-2008-0072 issued by the RWQCB in April 2008. The City discharges to feed and fodder crops and is therefore not required to obtain a NPDES permit. A copy of the WDR is provided in Appendix F.

As part of the Wastewater Master Plan, the City and Cannon met with the RWQCB in order to gain an understanding of probable future permit requirements. The following sections include the requirements in the City's current permit and the probable requirements in the City's future WDR.

4.3.1 Existing Effluent Discharge Requirements

4.3.1.1 Current WDR Requirements

The City's current WDR includes effluent discharge requirements. The requirements are provided in Table 4-1.

Table 4-1. Current WDR No. R5-2008-0072 Effluent Discharge Requirements

Constituent	Units	Monthly Average	Daily Maximum
Monthly Avg. Flow	mgd	1.55	--
BOD_5	mg/L	40	80
Total Suspended Solids	mg/L	40	80
Electrical Conductivity	µmhos/cm	Source + 500 or 1,000	--

In addition to the requirements in the table, the WDR lists the stipulation provided below:

- The arithmetic mean of BOD_5 and of total suspended solids samples collected over a monthly period shall not exceed 20 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.
- All conveyance, treatment, storage, and disposal units shall be designed, constructed, operated, and maintained to prevent inundation of washout due to floods with 100-year return frequency.
- Public contact with effluent shall be precluded through such means as fences, signs, or acceptable alternatives.
- Objectionable odors originating at the WWTP shall not be perceivable beyond the limits of the WWTP.
- 100-year rainfall shall be considered for all conveyance, treatment, storage, and disposal units.
- Ponds shall be managed to prevent breeding of mosquitos.
- No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of groundwater limitations.

4.3.2 Future Discharge Limits

4.3.2.1 Future WDR Requirements

The WWTPôs probable future effluent discharge requirements for discharge to the pond will include the current WDR requirements and may include the limits summarized in Table 4-2.

Table 4-2. Future Effluent Discharge Limits for Discharge to Feed and Fodder

Constituents	Units	Monthly Average	Daily Maximum
Biological Oxygen Demand (BOD_5)	mg/L	40	80
Total Suspended Solids (TSS)	mg/L	40	80
Electrical Conductivity	µmhos/cm	Source + 500 or max 1,000	
Settleable Solids	ml/L	0.2	0.5

Additional requirements that may be included in the future permit are listed below.
Formal Title 22 report will likely be required per a February 2013 visit with the RWQCB.

4.3.3 Groundwater Limitations – Current and Future

The current and future groundwater requirements are anticipated to be extremely similar because the current permit was issued in 2008. The future permit will likely include some requirements from the current WDR with the following language:

Release of waste constituents from any treatment or storage component associated with the WWTP shall not cause or contribute to groundwater. Containing concentrations of constituents identified below, or natural background quality, whichever is greater.

- Nitrate as nitrogen of 10 mg/L.
- Electrical Conductivity of 900 umhos/cm.
- Total Coliform Organism of 2.2 MPN/100 mL.
- For constituents identified in Title 22, the MCLs quantified therein.

An additional provision further requires that the storage ponds shall maintain a dissolved oxygen content of 1.0 mg/L for three consecutive sampling periods.

4.4 Recycled-Water Regulations

The major State agencies with regulatory authority include the CDPH, the SWRCB, and the RWQCB. In addition to State regulatory agencies, County and local authorities may also be involved. No federal regulations currently pertain to water recycling.

The CDPH is the primary State agency responsible for public health, whereas the SWRCB and RWQCB are the primary State agencies charged with protection, coordination, and control of water quality. In order to use areas for recycling wastewater, the City is required to submit a Title 22 Recycled Water Engineering Report and the two application forms ï a Report of Waste

Discharge (RWD) and a Water Reclamation Requirements (WRR) ï to the CDPH. Once CDPH approves the report and applications, the RWQCB must approve the report and then issue the final permit for the recycling project.

The existing water recycling regulations, which dictate wastewater treatment processes and effluent quality criteria, are contained in the California Code of Regulations, Title 22, compilation of water recycling regulations can be found at http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/RWregulations-01-2009.pdf. The most recent revision to these regulations came into effect in 2009.

4.4.1 2009 Recycled Water Regulations - Recycled Water Quality

The CDPH regulations define four types of recycled water determined by the treatment process and total coliform, bacteria, and turbidity levels. Although the CDPH has not assigned type designations to the grades of recycled water defined by the current regulations, designations are provided here for clarity. The four treatment types of recycled water that are currently allowed are summarized in Table 4-5 and contained in Appendix G.

Table 4-3. Recycled Water Treatment Regulations

Recycled Water Type	Treatment Process	Approved Uses	Median Coliforms (MPN/100 ml)
Disinfected Tertiary	Filtered(1) and Disinfected(2)	Spray Irrigation of Food Crops Landscape Irrigation(3) Nonrestricted Recreational Impoundment	2.2(4)
Disinfected Secondary - 2.2	Oxidized and Disinfected(2)	Surface Irrigation of Food Crops Restricted Recreational Impoundment	2.2(3)
Disinfected Secondary - 2.3	Oxidized and Disinfected(2)	Pasture for Milking Animals Landscape Irrigation(6) Landscape Impoundment	23(3)
Undisinfected Secondary	Oxidized	Fodder, Fiber and Seed Crops Surface Irrigation of Orchards and Vineyards(5)	

Notes:

1. *"Filtered" refers to an oxidized wastewater that satisfied (a) or (b) below:*
   - *a. Has been coagulated and passed through natural undisturbed soils or filter media with a specified maximum flux rate depending on the type filtration system and does not exceed:*
     - *i. an average of 2 NTU within a 24-hour period,*
     - *ii. 5 NTU more than 5 percent of the time within a 24-hour period, and*
     - *iii. 10 NTU at any time.*
   - *b. Has been passed through a microfiltration, ultrafiltration, nanofiltration, or reverse osmosis membrane so that the turbidity does not exceed:*
     - *i. 0.2 NTU more than 5 percent of the time within a 24-hour period, and*
     - *ii. 0.5 NTU at any time.*
2. *Disinfected by either:*
   - *a. A chlorine process with a continuous concentration contact time (CT) 450 mg-mins/l with*

a modal contact time ≥ 90 minutes (based on peak dry weather design flow).

b. A process combined with filtration that inactivates and/or removes 99.999% of F-specific bacteriophage MS-2, or polio virus.

3. Includes unrestricted access golf courses, parks, playgrounds, school yards, and other landscaped areas with similar areas.

4. For the past 7 days that analyses have been completed.

*5. **No longer allowed**. The DPHS has required that undisinfected secondary standards are not suitable, and that recycled water must meet disinfected secondary-2.2 requirements (see Appendix H).*

6. *Includes restricted access golf courses, cemeteries, freeway landscapes, and landscapes with similar public access.*

Article 3 of the Water Recycling Criteria details the acceptable uses of recycled water. Some of the uses specifically addressed include irrigation, impoundment, and cooling. The only exception noted for using recycled water is that the regulations shall not apply to on-site use at a water recycling plant or wastewater treatment plant, provided public access is restricted to the area where reuse occurs.

In the case of the WWTP effluent, the facility meets the undisinfected secondary criteria based upon Title 22 regulations. Allowable uses for McFarlandôs effluent are listed in Table 4-5 and the section below. The City intends to use the undisinfected secondary effluent on feed and fodder crops in the near term and long term. Therefore, further discussion on recycle water uses will be limited.

4.4.1.1 Other Uses

The recycled-water regulations have many other uses, depending on the level of filtration and disinfection provided. Recycled-water uses such as parks and playgrounds, golf courses, vegetables, industrial uses, cooling, and toilet flushing are covered in the Title 22 regulations.

4.5 Bliosolids Regulations for Land Application

Most recently, plant staff removed sludge in 2012 and 2005 from the aeration bottom sludge and solar dried it before hauling it away via land applier. A hauler typically hauls it to a central compost facility for blending and producing compost. The compost is land applied on agricultural land. The aerated lagoon process has generated very little sludge over the years. It is anticipated that the City will convert to an activated sludge process whereas more sludge will be produced on a daily, monthly, and annual basis. The City will generate Class B biosolids in the near term and long term. The City will continue paying to haul the sludge away for the foreseeable future. However, the City may also explore spreading biosolids on City-owned agricultural land.

This section provides a summary of the biosolids regulations with which the WWTP must comply for off-site reuse of biosolids now and into the future. Tables listing the various land application criteria are provided in Appendix H.

4.5.1 Overview

The major regulations that govern the application of biosolids at the reclamation area are the Cityôs WDR, the U.S. EPA Sewage Sludge Regulations (40 CFR 503), the SWRCB Water

Quality Order No. 2004-0012 - DWQ (General Order), and any county Biosolids Ordinance from the County where the biosolids are land applied.

Since McFarland sends its biosolids to an off-site facility, the City must comply with the 40 CFR 503 Regulations (as they pertain to biosolids generators), the WDR specifications for proper treatment and disposal, and the Kern County regulations. Any off-site facility that would take the biosolids must be permitted by the RWQCB. However, if the City receives a General Order Permit to apply biosolids to its own property, this will occur within the City limits and the City will not have to comply with County requirements in this case.

4.5.2 Federal Regulations (40 CFR 503)

The Federal Regulations, 40 CFR 503, became effective in 1994. The regulation is self-implementing and imposes requirements on the facilities that produce the biosolids and on the land appliers. The regulation establishes standards for pollutant limits, operational standards, management practices, and requirements for monitoring, record keeping, and reporting. To qualify for land application, the biosolids must meet the maximum pollutant limitations for 10 metals and satisfy requirements for pathogen reduction and vector attraction reduction. This section provides a brief summary of the Federal Standards the biosolids must meet in order to comply with the 40 CFR 503 Regulations.

4.5.2.1 Metals Limitations

The 40 CFR 503 Regulations contain pollutant ceiling concentrations for metals that are the maximum allowable concentrations for land-applied biosolids (40 CFR 503.13 Table 1). In addition, there is a set of lower pollutant limits for biosolids to be defined as ñexceptional qualityò (EQ) biosolids (see 40 CFR 503.13 Table 3). Biosolids with pollutants above the 40 CFR 503 Table 1 ceiling limits cannot be applied to land. Biosolids with pollutants below the 40 CFR 503 Table 1 ceiling limits, but above the Table 3 limits, can be applied to land but are subject to annual and cumulative pollutant loading limits. Biosolids below the 40 CFR 503.13 Table 3 limits can be applied to land without regard to the annual or cumulative loading limits.

The Table 1 and Table 3 metals limits are listed in Appendix H.

4.5.2.2 Pathogen Reduction

In addition to pollutant concentrations, biosolids must not pose a public health risk. Performance-based pathogen reduction standards, contained in 40 CFR 503.32, classify biosolids as either Class A or Class B. The goal of Class A designation is to reduce pathogens to below detectable limits. The goal of Class B designation is to meet adequate pathogen reduction requirements and to rely on environmental factors at the reuse site to further reduce pathogens. Therefore, sites that use Class B biosolids must follow additional site restrictions concerning public access, animal grazing, and crop harvesting.

The Class A and Class B alternatives are provided in Appendix H.

4.5.2.3 Vector Attraction Reduction

Vector attraction is any characteristic that attracts disease vectors, such as insects or animals that may transport or transmit infectious agents. The 40 CFR 503 regulations specify 10

alternatives for meeting the vector attraction reduction requirements. One alternative must be met in order for biosolids to be land applied. The alternatives are provided in Appendix H.

4.5.2.4 Exceptional Quality Biosolids

Exceptional Quality (EQ) biosolids may be used and distributed in bulk or bag form and are not subject to general requirements or management practices other than monitoring, record keeping, and reporting to substantiate that the quality criteria have been met. EQ biosolids are exempt from cumulative loading rate restrictions on the soils. In order to be classified as EQ biosolids, the biosolids must meet the lower EQ pollutant limits, be classified as Class A, and meet one of the vector attraction reduction requirements.

4.5.3 General Order

In 2004, the SWRCB adopted general WDRs for the discharge of biosolids as a soil amendment. The WDRs are contained in Water Quality Order No. 2004 ï 0012 - DWQ (General Order). The General Order is intended to streamline the regulatory process for land application sites statewide. Key provisions that go beyond the requirements of 40 CFR 503 are the following:

- It is applicable for all land applied Class A and Class B biosolids, and essentially all EQ biosolids that contain more than 50 percent biosolids (i.e., compost blended with green waste, where the biosolids exceed 50 percent of the blend).
- The discharger and the applier must file a Notice of Intent (NOI), which is a form and associated data, and submit a filing fee. A separate NOI and filing fee must be submitted for each landowner involved in a reuse project. After approval of the NOI, the RWQCB will issue a Site ID Number. Once the City receives the number, the City submits the Application information. If all requirements are met, the RWQCB will issue a Notice of Applicability (NOA). For comparison, the self-implementing 40 CCFR 503 Regulations do not require application forms or pre-approvals.
- The 40 CFR 503 pollutant ceiling concentrations must be met. In addition, the General Order contains a molybdenum limit of 75 milligrams per kilogram (mg/kg) and a cumulative loading limit of 16 pounds per acre (lbs/acre). Cumulative loading limits are required for all sites ï even those that receive EQ biosolids. Background soils concentrations must be measured and used to calculate cumulative loading limits on the soils. This reduces the overall effective cumulative loading limit for any given site. The metal limits are listed in Appendix H.
- In addition to metals and nutrients, biosolids must be monitored annually for pesticides and PCBs (EPA Method 8080) and semi-volatile organics (EPA Method 8270).
- Biosolids must be incorporated into the soil within 24 hours in arid areas.
- To protect from dust and blown particulates, biosolids with a moisture content of less than 50 percent cannot be land applied. Depending on the biosolidsô density, this may correspond to a maximum dryness of 50 to 60 percent solids.
- Class B biosolids within a half mile of sites with a high potential of public exposure (schools, parks, hospitals, etc.) shall be injected.
- Annual plant tissue testing for molybdenum, copper, and selenium is required.
- Previously undisturbed lands or sites that lie fallow for a period of more than one year (excluding land that has been disked or tilled) must undergo a biological site assessment to identify special-status species.
- Individual owners of the property where the land application occurs are ultimately responsible for ensuring compliance with the General Order.

-

4.5.4 Future Trends for Biosolids Land Application

Several counties have banned, or practically banned, all biosolids applications. These include Shasta, Lassen, Glenn, Yuba, Lake Sutter, Contra Costa, San Joaquin, Stanislaus, Madera, Santa Cruz, Monterey, San Benito, Tulare, San Bernardino, and Imperial. Other counties ï such as Fresno, Kings, Kern, and Riverside ï have passed ordinances banning land application of Class B biosolids on unincorporated County land.

In 2006, Kern County's Ban on Sewage Sludge Land Application was passed via popular referendum. It banned the application of treated human and industrial sewage sludge as fertilizer on unincorporated farmland in Kern County. The ban never actually took effect due to legal challenges. Kern County continues the battle to ban the spreading of sludge in unincorporated areas.

The City of McFarland has no economic incentive for producing Class A sludge, as the practice is extremely cost prohibitive for small facilities. The City currently produces Class B sludge and will continue producing Class B sludge into the foreseeable future.

4.6 Air Regulations

The SJVUAPCD issues the emissions permit for the WWTP based on both the Federal Clean Air Act (FCAA), which has created a comprehensive national framework designed to protect ambient air quality by limiting air emission from both stationary and mobile sources, and Californiaôs comprehensive state air quality control program.

The City of McFarland has installed a 500-Kw standby generator for the WWTP that is sized to operate the entire plant during power outages. The generator is permitted through the SJVUAPCD.

4.6.1 San Joaquin Valley Unified Air Pollution Control District Regulations

4.6.1.1 Overview

The SJVUAPCD has the primary responsibility for control of air pollution from sources other than motor vehicles and consumer products in the SJVAB: Fresno, Kings, Tulare, Madera, Stanislaus, San Joaquin, and Merced Counties, as well as the Valley portion of Kern County.

The SJVAPCD is responsible for preparing attainment plans for each nonattainment criteria pollutant (ozone and PM) for which it does not meet the standard. The APCD and California Air Resources Board (CARB) must adopt separate SIPs for each of the criteria pollutants and submit them to the EPA. Currently, the San Joaquin Air Basin (SJAB) is classified as an extreme ozone nonattainment area and a serious PM10 nonattainment area for the health-based air quality standards established by the federal Clean Air Act. The SJVAB is also classified as severe nonattainment for the California ozone standard and nonattainment for the California PM10 standard.

4.6.1.2 Background

The SJVUAPCD activities include rule development and enforcement, air quality monitoring and planning, a permit system for stationary and mobile air pollution sources, protection of the public

from the adverse effects of toxic air contaminants, and responses to public requests for information regarding air quality issues.

The SJVUAPCD administers rules and regulations that apply to stationary and mobile sources that emit air contaminants in the SJVAB. SJVUAPCD regulations are separated into nine categories, summarized in Table 4-6.

Table 4-4. San Joaquin Valley Unified Air Pollution Control District Regulations

Regulation	Description
I	General Provisions
II	Permits
III	Fees
IV	Prohibitions
V	Procedures Before the Hearing Board
VI	Air Pollution Emergency Contingency Plan
VII	Toxic Air Pollutants
VIII	Fugitive PM_{10} Emissions
IX	Mobile and Indirect Sources

For this report, the regulations that specify prohibitions and/or compliance limits that are applicable to wastewater treatment facilities are separated into two categories that impact major and minor treatment plant operations.

Prohibitory Rules applicable to major treatment plant operations are listed in Table 4-7. The rules include emission limits for conventional pollutants (NOx, SOx, CO, VOCs), non-conventional pollutants (i.e., metals), visible emissions, odors (nuisance), fugitive dust emissions, and particulates.

Prohibitory Rules applicable to minor treatment plant operations are listed in Table 4-8. These regulations apply to practices that include storing and dispensing gasoline, painting equipment, and utilizing volatile solvents. Though important for compliance, these ñminoròactivities are not in the scope of this document.

At the McFarland WWTP, sources of conventional air contaminants are predominantly derived from the fugitive emissions from wastewater processes.

4.6.2 SJVUAPCD Permitting Process

Rule 2010 specifies a ñtwo-tieredò permitting process for the SJVUAPCD. The permitting process governs the construction, replacement, operation, or alteration of any source operation that emits or may emit contaminants. The two-tiered process includes an ñAuthority to Constructò (ATC) followed by a ñPermit to Operateò (PTO). = ATC and PTO permits are generally required for the construction, modification, replacement, or operation of combustion sources (e.g., flares, incinerators, and engines). The SJVUAPCD has indicated that future permits may be required for non-combustion facilities or operations that emit or have the potential to emit air contaminants.

The City does not anticipate a change to the existing generator permit. The generator is sufficiently sized to meet the loads for each of the plant alternatives presented in Chapter 6.

Table 4-5. SJVUAPCD Prohibitory Rules Governing Major Treatment Plant Operations

Rule No.	Title	Requirements	Facilities and Operations Affected
4101	Visible Emissions (Ringelmann Scale)	• Opacity less than Ringelmann Standards	Combustion Equipment
4102	Nuisance	• No Emissions Causing Nuisance and Annoyance	Odor Generating Facilities
4201	Particulate Matter Concentration	• <0.1 grain/cf	Engine vents and scrubber stacks
4701/ 4702	Internal Combustion Engines	• NO_x, CO, VOC Emission Limits • Emission Control Plan • Compliance Testing	Internal Combustion Engines >50 hp, Special Categories for Water/Wastewater Treatment Facilities, limited exemption for standby engines
4801	Sulfur Compounds	• Sulfur <0.2 Percent, (as SO_2)	Combustion of Diesel Engines
8011	Fugitive PM10 Prohibitions	• Management Plan (if vehicle traffic exceeds 75 vehicle trips per day)	Unpaved Roads and Unpaved Vehicle/Equipment Traffic Areas
8021	Construction, Demolition, Excavation, and Other Earthmoving Activities	• Dust Control Measures	Construction Related Activities
8031	Bulk Materials	• Control Requirements to limit dust during handling, storage, and transport (on- and off-site)	Dried Sludge Handling Operations

Table 4-6. SJVUAPCD Prohibitory Rules Governing Minor Treatment Plant Operations

Rule No.	Title	Requirements	Facilities and Operations Affected
4601	Architectural Coatings	• VOC Content Limits • Labeling Requirements	All Painting of Structures, Pavements, Curbs or Trailers
4603	Coating of Metal Parts and Products	• VOC Content Limits • VOC Emissions • Equipment	Coating or Painting of any Metal Part or Equipment
4621	Gasoline Transfer to Storage	• Vapor Recovery Systems	Gasoline Storage
4622	Gasoline Transfer to Vehicle Fuel Tanks	• Vapor Recovery Systems	Gasoline Pumps
4662	Organic Solvent Degreasing Operations	• Various Requirements by Category	Maintenance Degreasers

5. EXISTING WASTEWATER TREATMENT PLANT FACILITIES

5.1 Description of Wastewater Treatment Facilities

The town site of McFarland was established in 1908 and the City incorporated in 1957. Lagoons 1, 2, and 3 were constructed and equipped with diffused air piping in 1977. A manual bar screen headworks, blower building (now maintenance shop), and control building were also constructed in 1977. The aerated lagoon system replaced an older trickling filter plant. The aerated lagoons were designed to operate in series as a tapered aerated lagoon system. In 1986, the plant was modified with the surface aerators in Lagoon 1. Lagoons 2 and 3 continued to operate with the blowers and diffused air system. In 1989, an electrically operated mechanical bar screen was added to the headworks and the blowers were replaced. Lagoons 1, 2, and 3 were converted to surface aeration in various configurations. Pond 1A was added in May 2000 to operate in parallel with Pond 1, with self-aspirating aerators. Pond 1A and Pond 1 had identical aeration with tapering aeration in Pond 2 and 3. Under the 2000 expansion, the treatment process resulted in a rated capacity of 1.55 mgd. A second parallel headworks structure was installed in 2003. In 2006, an emergency backup generator was installed with sufficient capacity to operate the entire plant. In 2008, the aerators were replaced with a series of blowers and fine bubble diffusers. Additionally, an 18-acre reservoir with a storage capacity of approximately 260 acre-feet was constructed in 2010.

5.1.1 Description of Individual Process Units

The basic configuration of the City of McFarlandôs existing aerated lagoon WWTP was completed in 2001 along with an effluent storage Reservoir No. 3 addition in 2006. The 2001 plant modifications included a series of self-aspirating aerators to impart air into the wastewater basins. The basic design configuration was developed by Boyle Engineering. In 2007, under the contract operation group of Serven Trent, the aeration system was replaced with a series of blowers installed along the banks of Ponds 1, 1A, 2, and 3. Each blower includes a floating header with a series of down-comer tubes that push air out of a ñsoaker hoseò (fine bubble diffuser) and is held just above the bottom of the ponds on a metal rack structure. The blowers in Pond 3 were removed in 2010. See Figure 5-1 for a general layout of the existing WWTP.

Treated effluent is transferred into one of three reservoirs, and the final effluent is then used to irrigate crops on City-owned farmland.

The plant is generally in good condition and is well maintained. No serious signs of corrosion of the concrete structures exist. All equipment is in fair to good operational order.

5.1.1.1 Collection System

Two main trunk lines lead into the WWTP. The truck lines consist of the following:

- The older 18-inch Perkins Avenue line extending from the WWTP along Perkins Avenue across Highway 99.
- The newer 24-inch Perkins Avenue and Garzoli Avenue trunk line from the WWTP along Perkins Avenue to Garzoli Avenue.

The 18-inch Perkins Avenue line, installed during the 1950s, serves the bulk of the City. The 24-inch Garzoli Avenue line, installed in 2001, enters Headworks No. 2 with a 24-inch main.

The Perkins/Garzoli line was installed to serve the southeast part of town and to carry peak flows off the 18-inch Perkins Avenue line at the intersection of Garzoli and Perkins avenues.

A map of the Collections system is shown on Figure 5-2. Overall, the collection system consists of 6- to 24-inch gravity sewer lines and two small lift stations. The majority of the system consists of 8-inch gravity sewer mains. The collection system has not had any sewer overflows since the early 2000s.

Figure 5-1. Existing Facilities

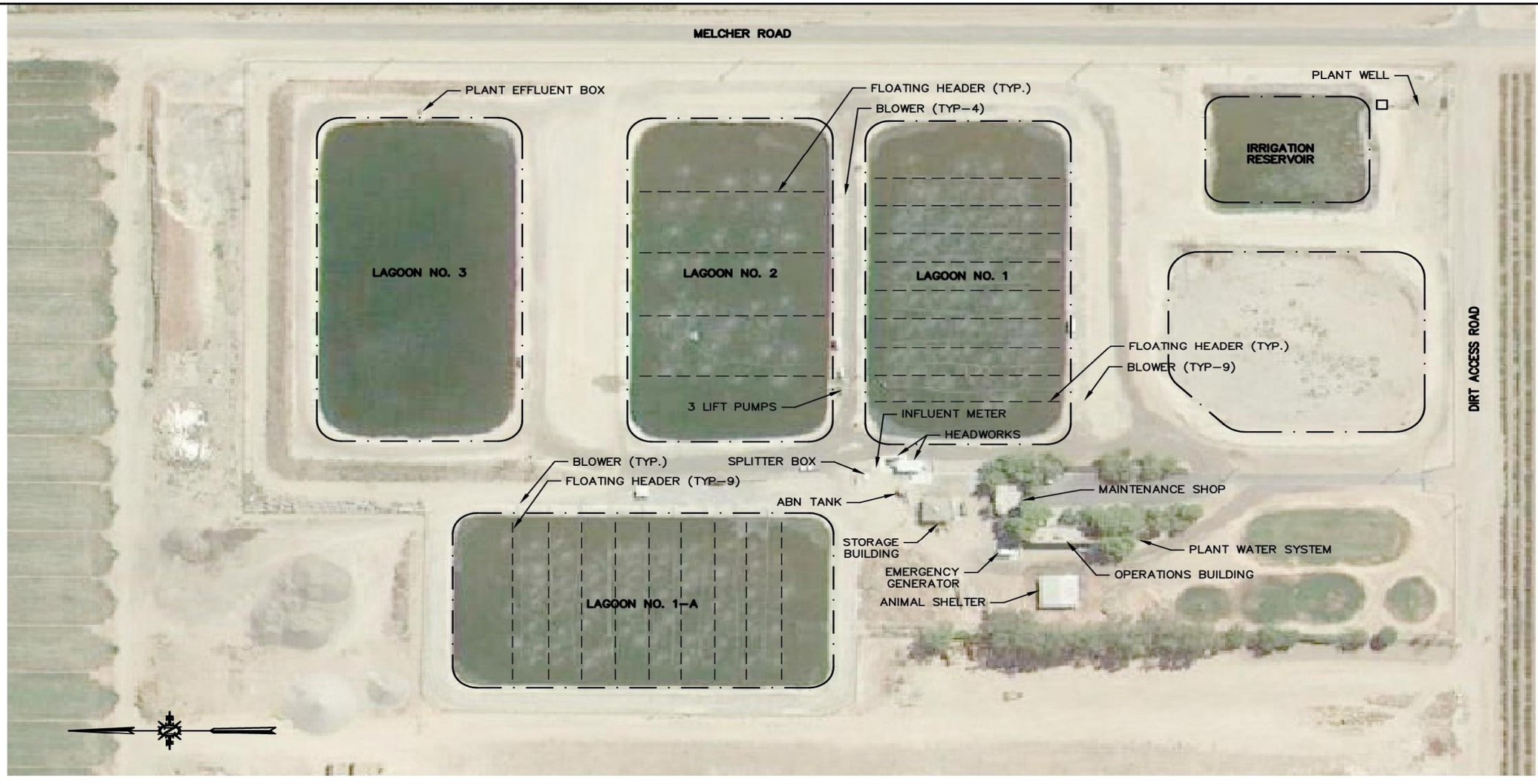


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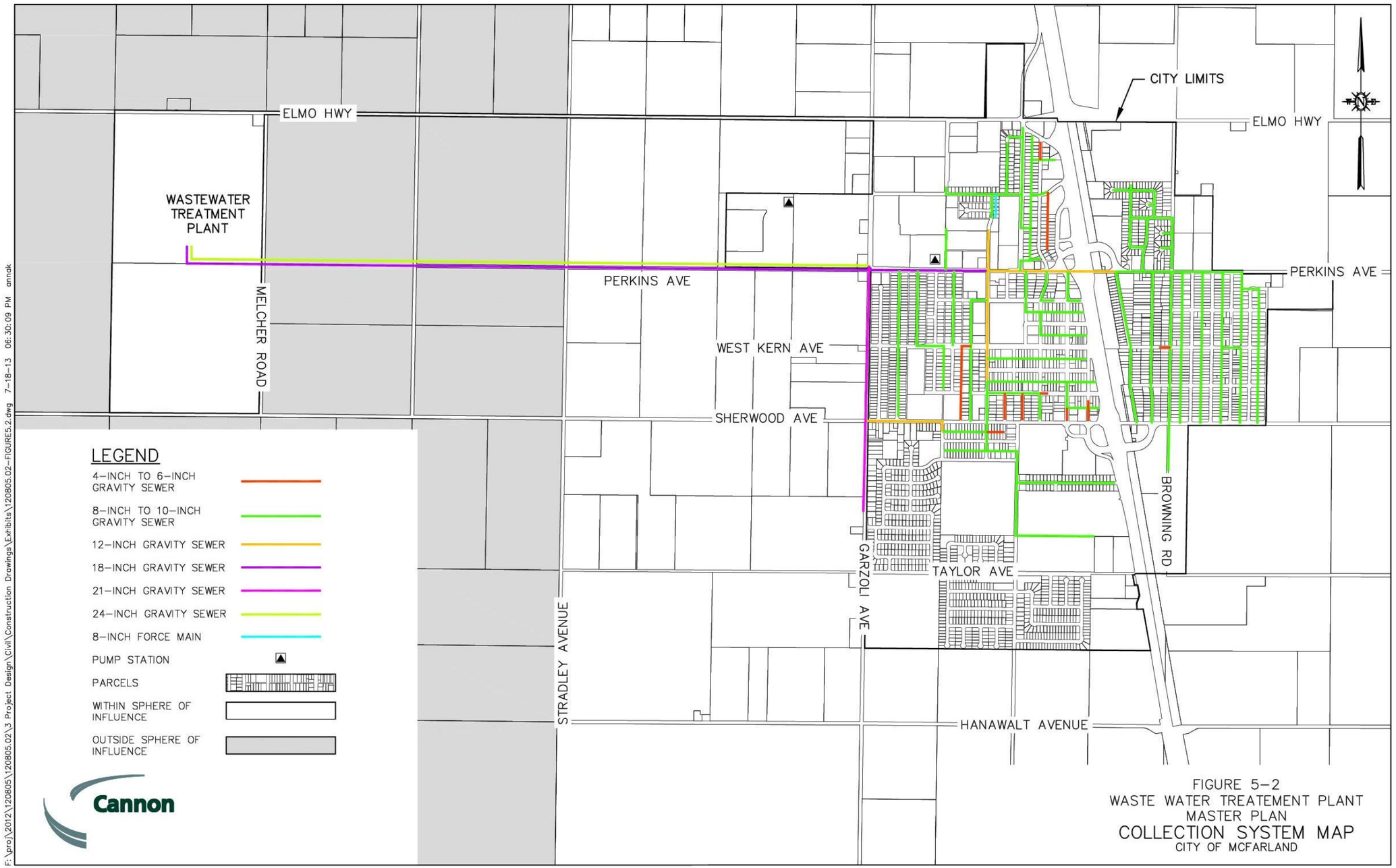
FIGURE 5-1
WASTE WATER TREATEMENT PLANT
MASTER PLAN
EXISTING FACILITIES
CITY OF MCFARLAND

F:\proj\2012\120805\120805.02\3 Project Design\Civil\Construction Drawings\Exhibits\120805.02-FIGURE5.1.dwg 7-18-13 06:24:46 PM amrok

Figure 5-2. Collection System Map



5.1.1.2 Headworks

The WWTP operates with two headworks structures that are nearly identical. The older headworks (No. 1) was constructed as part of the original 1977 WWTP, and the newer Headworks (No. 2) was built with the installation 2001 Perkins/Garzoli Sewer Trunk Lines.

Wastewater flows directly from the original Perkins Avenue 18-inch vitrified clay pipe (VCP) sewer into the Headworks No.1 structure, which contains a channel for a manual bar screen and a channel for the mechanical bar screen. Similarly, Headworks No. 2 consists of a concrete structure with two channels. The primary channel is equipped with a mechanical bar screen. A second channel containing a manual bar screen serves as a bypass. Headworks No. 2 is preceded by a 24-inch PVC gravity sewer line. Each headworks is equipped with a traveling fine screen manufactured by Parkson Aqua Guard and a Parkson Washer Compactor. The bar screen is operated on a timer for removing inert material from the waste stream. The removed material is dropped into the washer compactor, which further compresses the material into cylindrical pieces that are dumped into a trash bin. The compressed material is hauled to a sanitary landfill.

The headworks structures are shown in Figure 5-3 and Figure 5-4 below.

Figure 5-3. Headworks No. 1

Figure 5-4. Headworks No. 2

5.1.1.3 Influent Meter

An influent meter structure is located within the 14 inch piping just downstream of the headworks structures. This in-line pipe meter is equipped with a totalizer and flow recorder. The City recently changed out from circular flow recorder. Flow is recorded in the electrical room adjacent to the office. The recorder indicates instantaneous flows in units of 1,000 gallons per day, and the totalizer reads in units of 1,000 gallons.

5.1.1.4 Aerated Lagoon 1 and 1A

Flow from the headworks and meter box gravity flow into a splitter box. The flow is then split equally between Aerated Lagoon 1 and 1A. The two lagoons are typically operated in parallel but can be operated in series. These lagoons provide the primary aeration of the incoming flows. Most of the organic material undergoes aerobic treatment, and some incidental anaerobic digestion occurs at the lagoon bottoms in the unmixed dead zones.

Lagoon 1 and 1A are nearly identical. Each lagoon is 4.1 MG with 4.5 feet of freeboard. The lagoons have varying detention time depending on influent flows. Based on 50/50 split of the permitted capacity of 1.55 mgd, each lagoon has a design detention time of 5.3 days. The ponds are approximately 16 feet deep and are typically operated with 4.5 feet of freeboard (11.5 foot water depth). Each lagoon is equipped with nine 8.5-hp regenerative blowers, which operate continuously. Each blower forces air into a floating header pipe on the pond surface, and each header has a series of down-comer tubes that are connected to a "soaker hose" assembly near the bottom of the pond. These soaker hoses function as "fine bubble" diffusers while being anchored to a stainless-steel frame that sits on the pond bottoms. The down-comer tubes periodically disconnect at the pipe header or at the soaker hose. Reconnecting the tubes is a cumbersome process that creates problems while not connected. The dissolved oxygen (DO) is manually measured daily by plant operators. Staff targets a DO of 3.0 mg/L in each

basin. A DO below 3.0 mg/L usually indicates that too many down-comer tubes are disconnected or that the blower intakes are clogging. Lagoon 1 is shown in Figure 5-5 below.

Figure 5-5. Lagoon 1

5.1.1.5 Aerated Lagoon 2

From Lagoon 1, the primary treated wastewater flows via gravity through a flow control structure and buried piping into Lagoon 2. This lagoon continues the aeration and mixing treatment process at a lesser degree. Lagoon 2 is similar in size to Lagoon 1 and 1A. At the permitted capacity of 1.55 mgd, the detention time through the pond is 2.6 days. Lagoon 1 is equipped with similar regenerative type blowers. However, it only has four 8.5-hp blowers that operate continuously. Each header has a series of down-comer tubes and soaker hose assemblies. DO is measured daily with a portable DO meter with a target DO of 3.0 mg/L in mind.

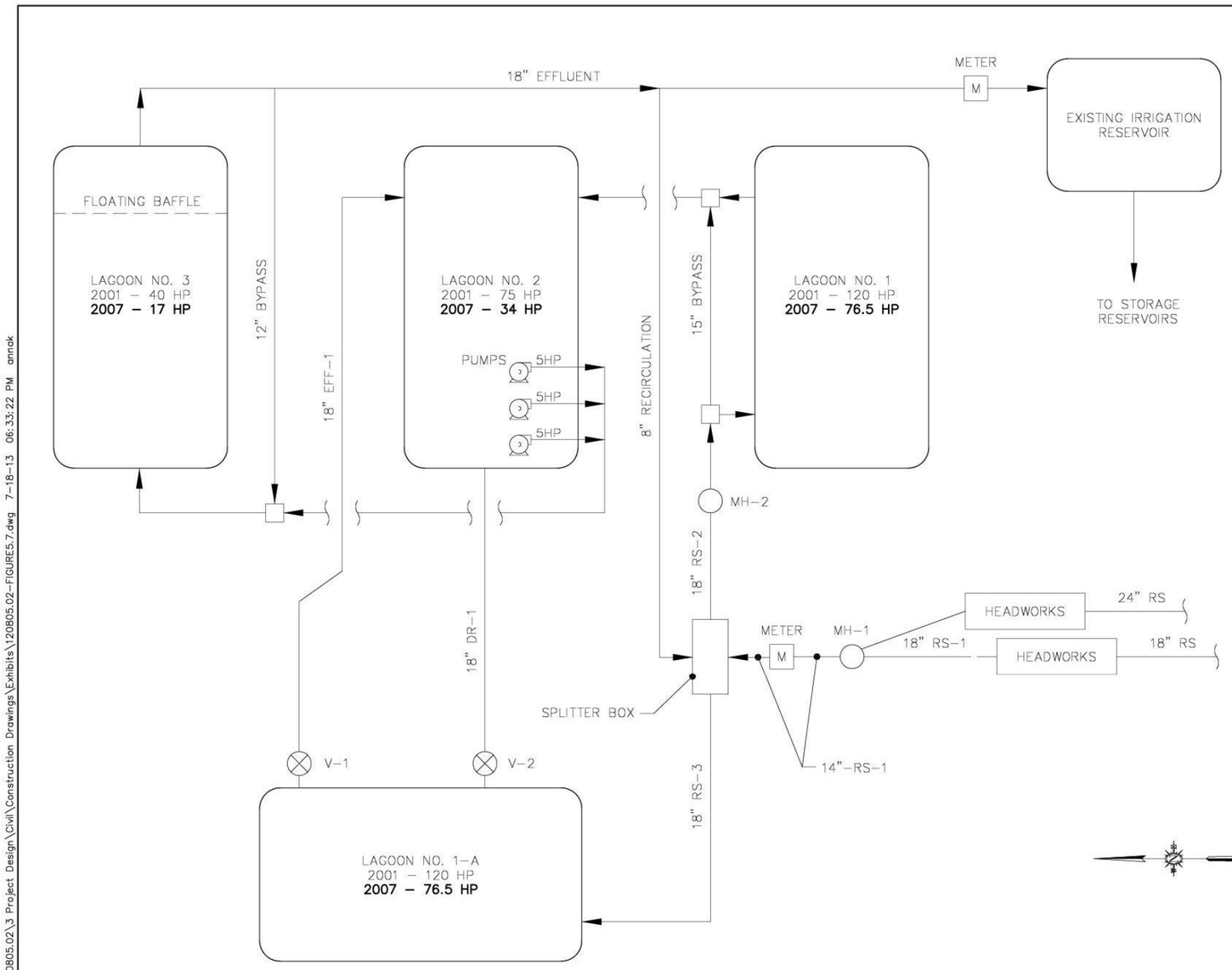
Figure 5-6. Lagoon 2

The treated wastewater from Lagoon 2 is pumped with one of three 5-hp low lift vertical turbine pumps. Due to the amount of inert material reaching pond 2, and the design of the pump station, these pumps experience clogging and are a constant source of high maintenance. The pumping station is equipped with a level-sensing device that maintains the depths in Lagoons 1 and No. 2 at about 12 feet.

5.1.1.6 Lagoon 3

Lagoon 3 is approximately 12 feet higher than Lagoons 1, 1A, and 2. Lagoon 3 acts as a settling pond for all the treated wastewater. It has a water depth of approximately 13 feet, which is maintained with a flow-control effluent structure. Lagoon 3 has a detention time of approximately 2.4 days. During the 2007 plant modifications, Pond 3 was equipped with two 8.5-hp regenerative type blowers, as well as air headers with soaker hose assemblies similar to those in Lagoon 1 and 2. However, these blowers were removed in 2010 in order to improve the settling of solids. The final effluent sampling occurs in the flow-control effluent structure for permit compliance. Flow can then gravity flow into the older on-site irrigation reservoir or into the effluent storage ponds. The overall plant process flow diagram is shown in Figure 5-7. The overall detention time through the plant is approximately 11.3 days

Figure 5-7. Process Flow Diagram



INFLUENT CHARACTERISTICS	2001 DESIGN	2007 MODIFICATIONS
AVERAGE DAILY FLOW	1.55 MGD	
5-DAY BIOCHEMICAL OXYGEN DEMAND	375 mg/L	
HEADWORKS		
MECHANICAL BAR SCREEN	–	
WASHER AND COMPACTOR	–	
METERING (CAPACITY)	4.0 MGD	
AERATED LAGOONS		
NO. 1		
VOLUME	4.1 MG	
MODE	COMPLETE MIX	
AERATION:		
TYPE	FLOATING ASPIRATING	BLOWERS
NUMBER	6	9
HP (EACH)	20	8.5
TOTAL HP	120	76.5
NO. 1A		
VOLUME	4.1 MG	
MODE	COMPLETE MIX	
AERATION:		
TYPE	FLOATING ASPIRATING	BLOWERS
NUMBER	6	9
HP (EACH)	20	8.5
TOTAL HP	120	76.5
NO. 2		
VOLUME	3.9 MG	
MODE	PARTIAL MIX	
AERATION:		
TYPE	FLOATING ASPIRATING	BLOWERS
NUMBER	5	4
HP (EACH)	15	8.5
TOTAL HP	75	34
NO. 3		
VOLUME	3.7 MG	
MODE	PARTIAL MIX	
AERATION:		
TYPE	FLOATING ASPIRATING	BLOWERS
NUMBER	4	2
HP (EACH)	10	8.5
TOTAL HP	40	17
EFFLUENT CRITERIA		
5-DAY BIOCHEMICAL OXYGEN DEMAND	40 mg/L	
SETTLEABLE SOLIDS	.2 ml/L	

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PROCESS FLOW DIAGRAM

FIGURE 5-7
WASTE WATER TREATEMENT PLANT
MASTER PLAN
PROCESS FLOW DIAGRAM
CITY OF MCFARLAND

5.1.1.7 Effluent Storage Ponds 1, 2 and 3

Treated effluent is typically stored in storage ponds 1, 2 and 3. Ponds 1 and 2 were installed sometime after the 1977 WWTP construction, and Pond 3 was installed in 2008. The combined storage of these ponds is approximately 457 acre-feet. The individual pond dimensions and volumes are shown below.

Pond	Top Area	Bottom Area	Volume - AF
1	3.4	2.5	35.6
2	17.7	14.4	192.7
3	21.1	17	228.3

Under normal operations, effluent is stored in Pond 2 at the highest water level possible to allow gravity irrigation of the north 80 acres of farmland. Pond 1 was historically used to manage the pumping of final effluent into a drip irrigation system on the south 160 acres. Water is only diverted to Pond 3 when Pond 2 is full and when the farm water demand is less than effluent water produced. As a result, Pond 3 is typically used during the winter months. The Effluent Storage Ponds and City-owned farm fields are shown in Figure 5- 8. The effluent storage ponds include a pond pump station for diverting water between ponds 1 and 2 as well as a filter pump station for delivering water (through a filter) to the former 160 acres of vineyards. This pump station has been removed and will be replaced with a feed and fodder pump station for approximately 60 acres of land.

5.1.1.8 Plant Water

The plant water system consists of an on-site well located in the southeast corner of the WWTP property. Well water is pumped into a 20,000-gallon tank adjacent to the Operation/Laboratory building. As it is pumped into a small pressure tank, the water is boosted to approximately 50 psi in order to provide pressure in the distribution system throughout the plant. Once the pressure drops to 20 psi, the pump turns on until the water reaches the system pressure. The tank and booster pump were recently replaced. However, the need may exist to replace distribution piping throughout the plant.

5.1.1.9 Flush Water

As part of Pond 1A, an additional 10-hp pump was installed at the influent splitter box. The pump suction is tied to the final effluent pipeline. The final effluent is pumped to the headworks sprayer bars.

Figure 5-8. Effluent Storage Ponds

5.1.1.10 Irrigated Farmland

The farmland consists of approximately 240 acres divided up into parcels A, B, and C. Parcel B is used to grow feed and fodder crops, and Parcels A and B were historically vineyards irrigated with final effluent. The 160 acres of vineyards are currently being converted to feed and fodder crops. This conversion should be completed by fall 2013.

5.1.1.11 Generator

An existing 500-Kw diesel-driven generator supplies the entire plant. The generator was installed with an automatic transfer switch for powering up the plant in the event of a loss of utility power. Figure 5-9 below shows the generator adjacent to the operations building.

Figure 5-9. Generator

The wastewater in the collection system arrives at the WWTP via gravity. During a power outage, the wastewater will continue to flow through headworks 1 and 2 into lagoons 1, 1A, and 2. The lagoons typically operate with 4.5 feet of freeboard, which allows enough time for the emergency generator to start up. The generator was installed in 2006 and is of sufficient size to operate any of the proposed plant alternatives. A loading shedding system should be considered for the upcoming plant improvements.

5.1.1.12 Electrical

A single 600-amperage, 480-volt service switchboard serves the WWTP. The switchboard contains a distribution section that distributes 480-volt, 3-phase throughout the entire treatment plant facility. The switchboard is housed in the electrical room in the operations building. This room contains the switchboard, the subpanels, and a step-down transformer. One subpanel services Lagoon 1A and the dog kennel. Power is distributed around the site through circuit breakers in the switchboard. Each pond site has a separate switch rack with main disconnects and starters for each pump and/or blowers. Figure 5-10 indicates a typical field switch rack at

one of the lagoons. Overall, the Electrical MCC and subpanels have performed well for the site. However, the switchboard is out of date and should be replaced with an upgraded plant.

Figure 5-10. Electrical – Typical Lagoon Switch rack

5.1.1.13 Operations and Laboratory Building

The Operations and Control Building is a 700-square-foot building consisting of electrical room, a laboratory and operations office, and a single restroom. This building is part of the original 1977 plant additions and has not been upgraded or remodeled. The laboratory often serves as a break room and/or meeting room due to lack of space.

The City may consider remodeling the existing laboratory and possibly adding a separate restroom and office for the plant manager.

5.1.1.14 Maintenance Shed

The maintenance shop consists of a 24-by-16-foot building (384 square feet). The maintenance shop was the original blower building for the 1977 plant additions. Once the plant converted to surface aerators, the room was remodeled to serve as a maintenance shop. The shop is sufficiently sized for typical maintenance operations. The City may consider adding the appropriate HVAC.

6. ALTERNATIVE ANALYSIS

6.1 Description of Treatment Alternatives

The treatment alternatives considered for the City of McFarland (City) Wastewater Treatment Plant (WWTP) expansion are based upon compliance with existing and future regulations. Because the existing aerated lagoon cannot denitrify the wastewater, each alternative presented is essentially a completely new plant. Each alternative is for a 2.5-mgd maximum month average flow.

The existing headworks is limited in capacity and will not handle the peak flows projected for the 20-year planning period. A new single headworks will be needed with a combined influent sewer. The new headworks will to be located to the west of the existing headworks. The headworks will include a mechanical bar screen sized for peak hour flows with a bypass channel and a manual bar screen, submersible lift pumps, and an in-line flow meter on the discharge line. Screenings would be compressed to remove water and then dumped into plastic bags for ease of removal. For planning of headworks facilities, a larger planning horizon is generally considered for the structural concrete because these structures cannot be built in a modular fashion. Therefore, a headworks with an ultimate peak-hour flow capacity of approximately 6.75 mgd will be incorporated.

All alternatives assume the continued use of the storage/percolation ponds with irrigating treated effluent on feed and fodder crops. Considering continued evaporation/percolation of effluent, approximately 300 acres of feed and fodder farming will need to be available for disposal of the annual average flow of 2.3 mgd.

6.1.1 Alternative No. 1 – Extended Aeration Activated Sludge

Alternative No. 1: Biolac Wave-Ox will convert the existing process from aerated lagoons to a biological suspended growth process utilizing Pond 3 as the treatment process. The Biolac process is an extended aeration-activated sludge process that utilizes centralized blowers, air piping header, and several floating headers. Fine bubble diffusers are attached to the floating headers and submerged near the bottom of the basin. Floating headers are turned on and off to produce multiple ñcellsòof aerobic and anoxic zones, which will allow for simultaneous nitrification and denitrification of the wastewater. The basin is generally lined with HDPE or concrete.

The new facilities would consist of new headworks with lift pumps, conversion of Pond 2 into a Biolac basin, two new secondary clarifiers, new return activated sludge (RAS) and waste activated sludge pump station, and a single scum pump station. New solids handling facilities would include lined solar drying beds within Pond 1A and Pond 3. A site plan of the Biolac alternative is shown in Figure 6.1. As shown, Pond 3 will be utilized for the Biolac Wave-Ox process for providing the nitrification and de-nitrification process. This process is being successfully operated in other similarly sized communities. The new secondary clarifiers would be located in the area just north of Pond 3. Therefore, new lined solar drying beds are provided as redundancy to the mechanical screw press dewatering.

6.1.2 Alternative No. 2 – Oxidation Ditch

The site plan for the Oxidation Ditch Alternative is shown in Figure 6.2. As with Alternative 1, Pond 3 will be utilized for a new oxidation ditch with an anoxic zone for nitrification and de-nitrification. The Oxidation Ditch is a robust process and is being operated successfully in other central San Joaquin communities. The oxidation ditch is an extended aeration activated sludge

system that consists of a ring- or oval-shaped channel equipped with mechanical surface aeration devices to provide biological treatment.

The new headworks, two new secondary clarifiers, RAS/WAS Pump Station, and sludge dewatering are identical to those listed in Alternative 1 above. The footprint for a new oxidation ditch for 2.5-mgd flow fits nicely within the Pond 1 footprint. Figure 6.2 shows the layout of this alternative at the WWTP.

6.1.3 Alternative No. 3- IFAS

The Integrated Fixed Film Activated Sludge (IFAS) is a technology capable of providing a de-nitrified effluent. Although IFAS is utilized at smaller flows, three parallel treatment trains are recommended for the design maximum month flow of 2.5 mgd. The IFAS utilized a series of tubes mounted in a ñFerris wheelò configuration that are primarily submerged in wastewater. With every rotation, the tubes capture atmospheric air, draw it down into mixed liquor in a steel or concrete basin, and slowly release it as course bubble aeration. During the rotation, additional cascade aeration elevates the dissolved oxygen in the upper layer of the basin. The combination of the slow rotation of the ñFerris wheelò aerator, intense air release, and the addition of a peripheral mixing paddle ensure a thoroughly mixed system.

In addition, IFAS includes a large surface area for fixed film growth. The interior and exterior of the special polypropylene discs provide the environment for attached growth organisms. These organisms will react quickly to an increased food source, or shock load, to eliminate discharge violations during peak or diurnal fluctuations.

The amount of aeration can be controlled using a variable speed drive connected to the rotor, causing it to rotate faster or more slowly based on the actual oxygen demand.

The IFAS requires vertical wall concrete construction and can fit within the half same footprint of the existing Pond 2. Three basins of the same size would be required for the projected 20-year wastewater flows for the City. The other required new facilities (headworks, clarification, RAS/WAS & dewatering) would be the same as in Alternative 1 above.

Figure 6-1. Biolac – Alternative 1

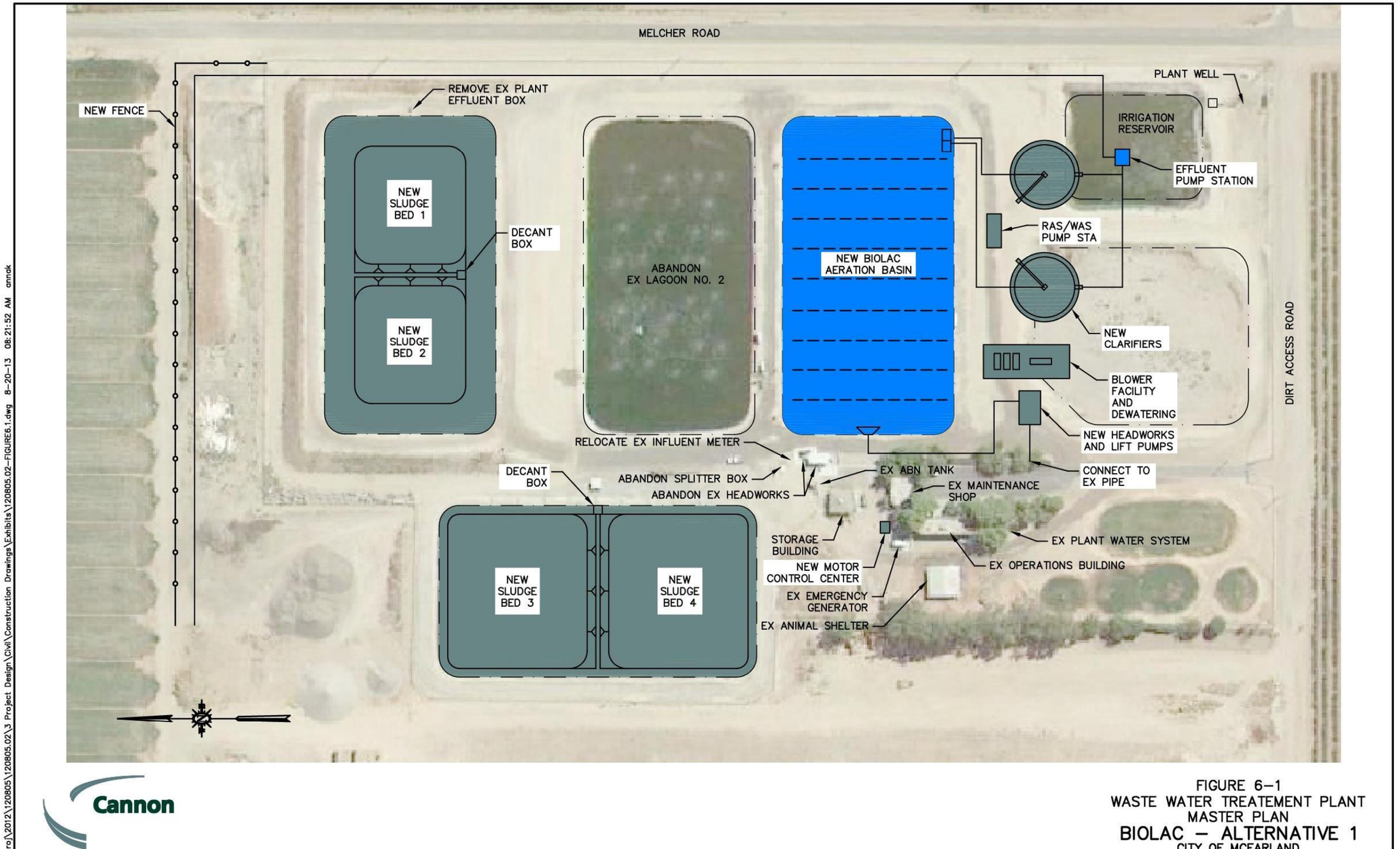

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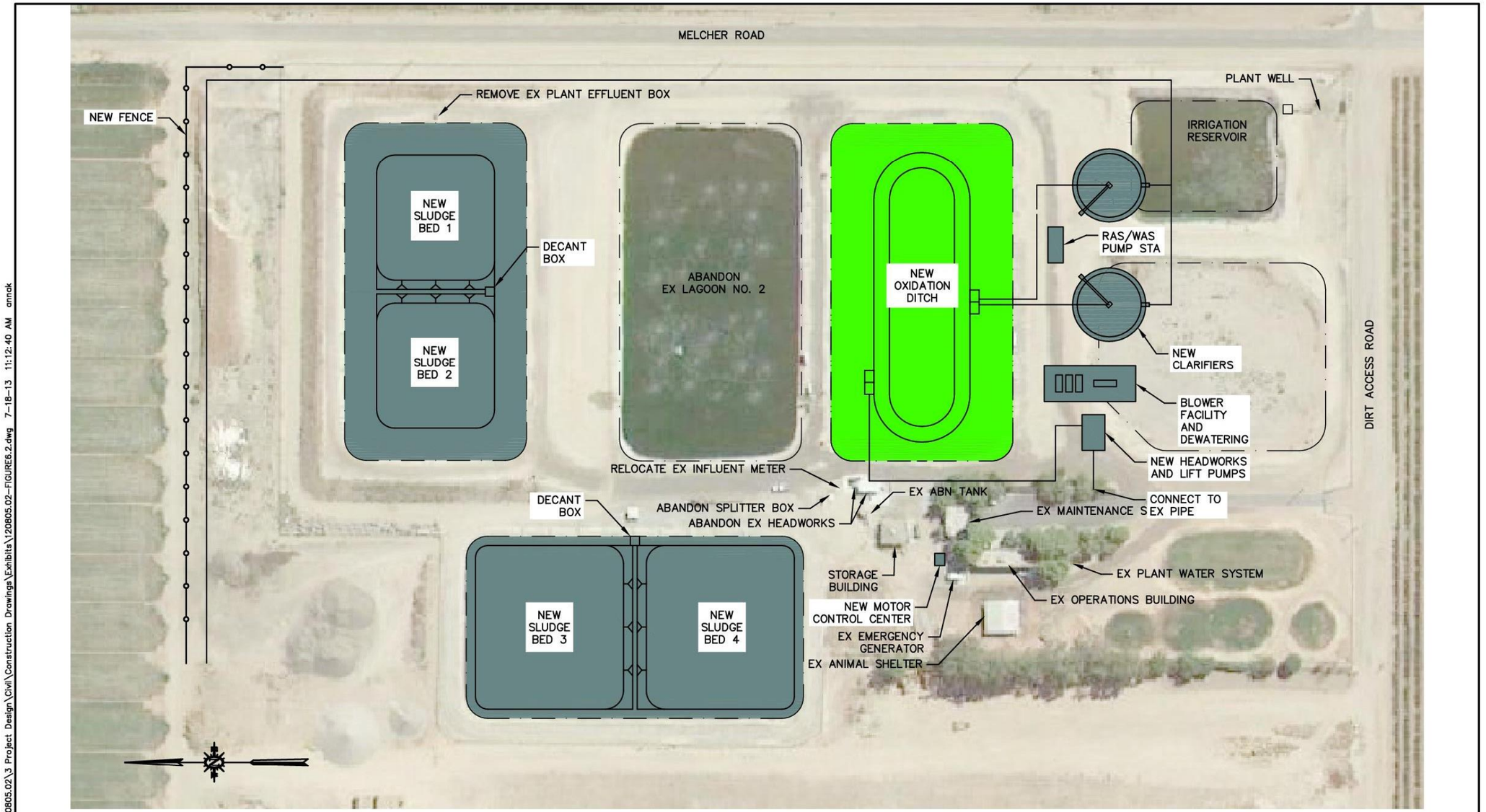
FIGURE 6-1
WASTE WATER TREATEMENT PLANT
MASTER PLAN
BIOLAC – ALTERNATIVE 1
CITY OF MCFARLAND

Figure 6-2. Oxidation Ditch – Alternative 2



F:\pro\2012\120805\120805.02\3 Project Design\Civil\Construction Drawings\Exhibits\120805.02-FIGURE6.2.dwg 7-18-13 11:12:40 AM amak

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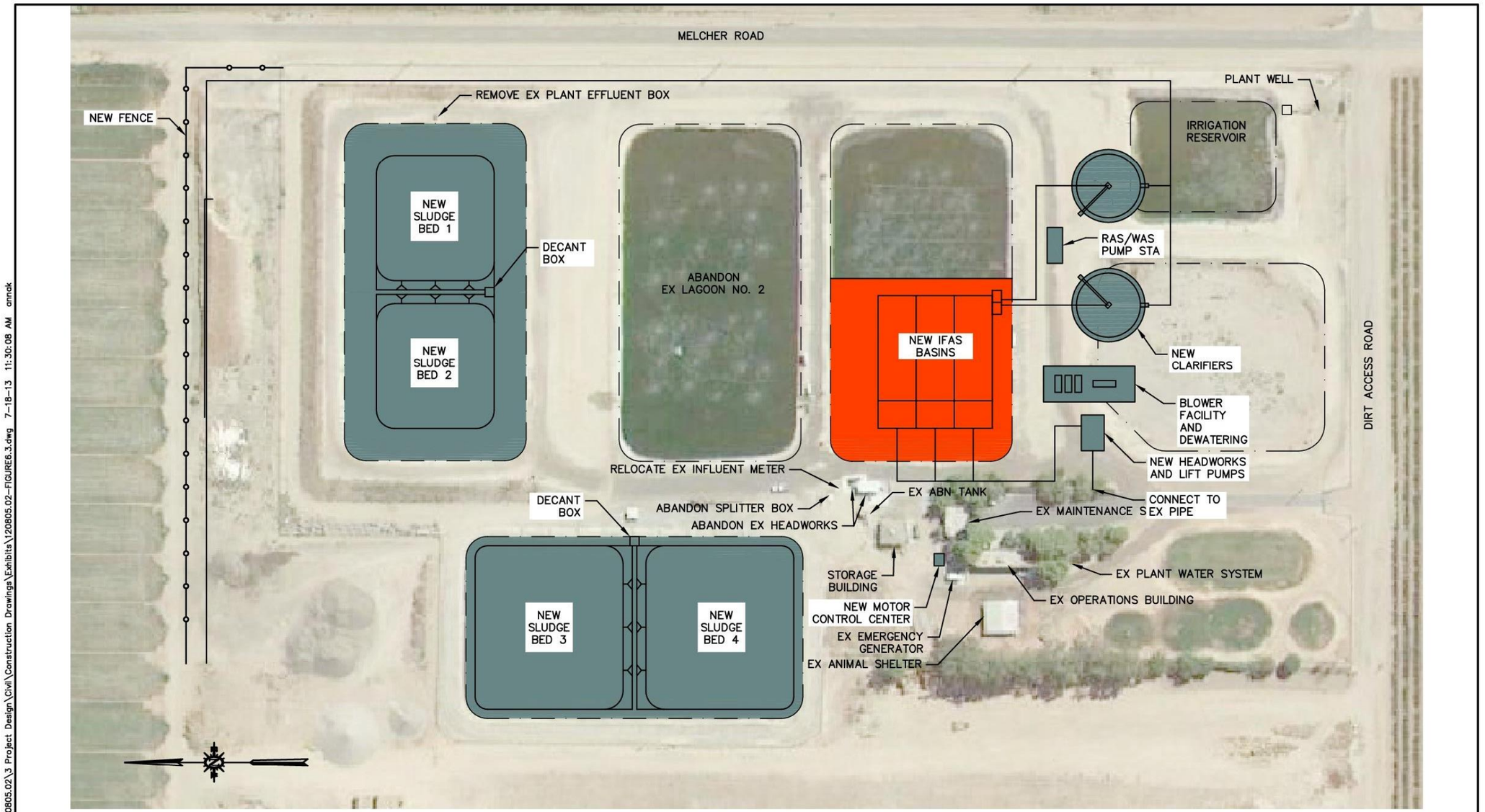
FIGURE 6-2
WASTE WATER TREATEMENT PLANT
MASTER PLAN
OXIDATION DITCH – ALTERNATIVE 2
CITY OF MCFARLAND

Figure 6-3. IFAS – Alternative



F:\pro\2012\120805\120805.02\3 Project Design\Civil\Construction Drawings\Exhibits\120805.02-FIGURE6.3.dwg 7-18-13 11:30:08 AM amndk

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FIGURE 6-3
WASTE WATER TREATEMENT PLANT
MASTER PLAN
IFAS – ALTERNATIVE 3
CITY OF MCFARLAND

6.2 Estimated Costs of Treatment Alternatives

The costs for the treatment alternatives are based upon recent projects with similar components. These costs were adjusted to 2013 dollars. An overall contingency of 10% was added to cover the many items that cannot be identified at this level of development for the alternatives. The detailed costs for each alternative are located in Appendix I.

Costs have been flat in the past several years due to the economic downturn and overall shortage of projects versus the number of available contractors. It is assumed that inflation on projects of this nature will remain low in the next several years. An annual inflation rate of 2 to 3% should be used if costs are escalated forward. The contingency may cover some of these costs. However, project costs for preparing budgets will require a more detailed cost estimate. The costs shown herein are for comparison of alternatives. Chapter 7 presents the overall project costs based on the preferred alternative.

6.2.1 Alternative No. 1 – Biolac

The detailed estimated cost for the Biolac alternative appears in Appendix I. The sizing criteria for each component are also shown. The total alternative construction cost is $8.22 million. The major components of this cost are the new headworks, the new Biolac Wave-Ox aeration basin, two secondary clarifiers, the RAS/WAS pump station, the new screw press, and sludge drying beds. The remaining components are common to the other alternatives.

The cost for yard piping is estimated as a percentage of the various components. Because this alternative involves several components, a percentage of 15% is used ï a typical rate for projects of this complexity. Site work is estimated to be 5% of the component costs. Electrical site work is estimated to be 10%. The electrical work is estimated to be only 10% because the various component costs include the electrical and instrumentation work for that component.

6.2.2 Alternative No. 2 – Oxidation Ditch

The major components of this alternative are the new headworks, the oxidation ditch, the two secondary clarifiers, the RAS/WAS pump station, the screw press, and the lined solar sludge drying beds. As would be expected, the cost of the oxidation ditch is greater than the cost of the Biolac aeration basin. However, the cost difference is lower than may be expected. The Biolac aeration basin has less concrete, but the aeration basin has a much greater amount of piping and controls. For the Biolac alternative, this basin must be sized for the entire 2.5-mgd maximum month average daily flow. For the oxidation ditch alternative, the basin is sized for the flow that will go to the existing aeration basins. The oxidation ditch alternative requires two secondary clarifiers. Also the oxidation ditch and Biolac allow the WAS to go directly to the centrifuge dewatering.

The same percentages for Alternative No. 1 are added to cover the costs for yard piping, site work, electrical site work, and contingencies. The breakdown of the various costs for this alternative is shown in Appendix I. The total construction cost for this alternative is $9.63 million.

6.2.3 Alternative No. 3 – IFAS

The major components of this alternative are the new headworks, the concrete IFAS anoxic and aeration basin and IFAS equipment, new clarifiers, the RAS/WAS Pump station, new screw press, and line solar sludge drying beds. Their cost is very comparable to the components of Alternatives 1 and 2. The overall IFAS footprint is smaller than that of Alternative 1 or 2. However, since the IFAS has to be constructed with deep vertical wall concrete, the cost would be greater than those of both Alternatives 1 and 2. The IFAS incorporates submerged mixed liquor pumps for returning up to 4 times the flow to the front of the basins.

The yard piping is 15% for this alternative. The factors for site work, electrical site work, and contingencies remain the same as for the previous two alternatives. The estimated construction cost for this alternative is $10.15 million. A summary of the components of this alternative costs appears in Appendix I.

6.3 Evaluation of Treatment Alternatives

Table 6.7 shows the estimated capital cost for each of the three alternatives. The lowest-cost alternative is the Biolac Alternative. The cost for this alternative is approximately $7.91 million. The next lowest cost alternative is the Oxidation Ditch at $9.63 million and finally the IFAS alternative at $10.15 million.

Table 6.1 Alternative Capital Costs
Wastewater Treatment Plant Master Plan
City of McFarland

No.	Alternative	Capital Cost (million)	Percentage of Lowest Cost
1	Biolac	$8.22	100.0%
2	Oxidation Ditch	$9.63	117.4%
3	IFAS	$10.15	123.5%

The three alternatives are considered advance secondary treatment processes and are all capable of producing a high-quality effluent. Adding filtration and disinfection would be an easy transition if the City wanted to produce Title 22 reclaimed water.

A detailed evaluation for the annual operation and maintenance costs was performed on the three alternatives. The detailed evaluation is located in Appendix J. Based on the WWTP 2011 and 2012 utility bills, a 12-cent-per-kilowatt-hour rate was used for power costs.

The lowest annual power costs are realized in Alternative No. 1 (Biolac), and the lowest present worth analysis was also realized by the Biolac alternative.

Non-economic factors are also considered in differentiating the alternatives. The floating header and diffused air in the aerated lagoon are similar to the Biolac floating header and ñtrapezeò aerators. The Biolac will utilize the Pond 3 basin, which is also familiar to the plant staff. The clarification, RAS/WAS pumping, and the screw press will be new. However, these components are new for each alternative.

The oxidation ditch is somewhat new to the plant staff but is a suspended growth system similar to the activated sludge process. The Biolac and Oxidation Ditch each require a long hydraulic detention time and sludge age, make them easy to operate and allow for an extremely stable process. Several Biolac and oxidation ditch facilities are currently in operation in the Central San Joaquin Valley. These facilities have successful track records and are familiar to the regulatory agencies. Staff will need to learn laboratory analyses and process controls for each alternative as part of complying with NdN process. This should not cause difficulty for the staff. A Grade 3 operator certificate will be required.

The IFAS process is a recent variation to the suspended growth-activated sludge with incorporation of fixed film biological growth. The process has more motors and moving parts as well as more automation of its controls. This may require more of the maintenance work to be contracted to outside firms than required by the two previous alternatives. This process would

be new to the plant staff and the region. The IFAS process is typically associated with smaller plants such as resorts and isolated residential or commercial developments and is uncommon at larger municipal installations. However, the system offers the advantage that it may be installed in modules as needed.

The Biolac and Oxidation Ditch have a record of regional success. The Biolac has more overall parts to maintain than the oxidation ditch. However, the individual pieces are less expensive than the oxidation ditch components.

Table 6.8 shows summary of the evaluation of the non-economic factors used to evaluate the alternatives for the McFarland WWTP. The factors are ranked from 1 to 4, with the lowest number being the most desirable and the highest number being the least desirable. As shown in Figure 6.8, the total scores ranged from a low of 15 for the Oxidation Ditch alternative to 30 for the IFAS alternative.

Table 6.2 Comparison of Treatment Alternatives
Wastewater Treatment Plant Master Plan
City of McFarland

Factors	Alternative 1 Biolac	Alternative 2 Ox. Ditch	Alternative 3 IFAS
Effluent Quality	**2**	**2**	**2**
Process Flexibility	1	1	2
Handle Varying Flows	1	1	2
Ease of Operation	2	1	2
Ease of Maintenance	2	1	3
Simplicity of Controls	2	1	3
Similarity of Existing Process	1	2	3
Learning Curve Required	1	2	3
Local Experience	1	1	4
Regulatory Familiarity	1	1	3
Utilization of Existing Infrastructure	1	2	2
Total Score	**15**	**15**	**29**

Based upon the evaluation of the capital cost and the non-economic factors, the recommended alternative is to expand and upgrade the McFarland WWTP using the Biolac-activated sludge process in Alternative No. 1. The non-economic factors favor the oxidation ditch and Biolac are equivalent in comparison.

6.4 Effluent Disposal/Reuse

McFarlandsõ current WWTP relies on effluent disposal by means of percolation; evaporation when the effluent is stored in Ponds 1, 2 or 3; and irrigation of feed and fodder crops on City-owned land. With the proposed plant modifications, the plant will denitrify the effluent and

continue to store the effluent (with evaporation/percolation) prior to irrigating the adjacent farm fields.

The adjacent 80 acres to the north and 160 acres to the south will provide the bulk of effluent disposal capacity. Although the City will need a total of approximately 300 acres for disposal of the design annual average flow of 2.3 mgd, a detailed effluent disposal analysis needs to be performed. The City can continue leasing the farmland to contract farmers, which provides a revenue source to the City.

The cost of obtaining additional land is not incorporated into the overall project cost as the additional effluent disposal and farmland is not immediately needed.

6.5 Biosolids

The City WWTP currently produces Class B biosolids from its aerated lagoon process via solar drying of dredged wet sludge. The wet biosolids are solar dried and then transported to McCarthy Farms for composting at a cost of $32 per ton. Converting to a biological activated sludge process will produce more consistent sludge that will require handling and processing on an annual basis. Chapter 3 presents the approximate near- and long-term biosolids production for a new plant. The alternatives analysis has included a dewatering screw press and lined solar drying beds for handling sludge. The City intends to continue having a licenses hauler dispose of dried sludge for the foreseeable future.

6.5.1 Class A Biosolids Treatment Options

With very little interest in the production of a Class A sludge in the Central San Joaquin Valley and with the availability of the licensed compost haulers in Kern County, Class A sludge-generated alternatives were not explored.

Should the City have a need to produce a Class A sludge, a screw press manufacturer can provide a system that allows for the sludge to be lime and heat treated to achieve a Class A sludge. The Class A sludge option is not included in the cost estimates for biosolids handling.

6.5.2 Class B On-site Biosolids Treatment Options

The plant currently produces Class B biosolids by solar drying dredged sludge. However, the dewatered biosolids at 20 to 25% solids are not in a form that most users want to handle. Solar drying produces an extremely dry product that is more readily acceptable to users.

Each alternative includes a screw press and solar drying beds for continued production of Class B sludge.

6.5.3 Recommendations

Because the City owns its own farmland, it may explore land application of biosolids on the farm fields. After one or two years of actual sludge production, the City may want to explore the cost benefit analysis land applying the biosolids on City-owned farmland. Two large sludge composters in Kern County give the City options for inexpensive disposal.

At this time, it is recommended that the City continue to contract a licensed biosolids hauler.

6.6 Support Facilities

6.6.1 Office Building and Control Center

Constructed in 1977, the existing Operation and Laboratory Building remains in the same general condition. The 696-square-foot building houses a single restroom, a combined office-laboratory room, and an electrical motor control room. No modifications to this building are necessary.

6.6.2 Maintenance Building

The existing maintenance building is located adjacent to the Office Building and Control Center. The approximately 384-square-foot maintenance building appears to be adequately sized to accommodate existing and future maintenance efforts. Plant staff has indicated that additional outlets at 220 volts are needed.

6.6.3 Standby Generator

The existing standby generator has a rating of 500 kW. The generator was installed in 2006 and remains in good operating condition. Based on the equipment sizing for each alternative, the existing generator is adequately sized for keeping most of the equipment operational during a power outage.

The generator is equipped with an automatic transfer switch to allow for the generator to start automatically in the event of a power outage.

6.6.4 Plant Electrical System

In general, the plant electrical system has been well maintained. However, the majority of the main electrical components are more than 35 years old. Due to the age of the electrical equipment, finding replacement parts will become difficult. It is recommended that a detailed review of the entire electrical system take place during the design of the plant expansion. Those portions deemed outdated should be replaced as part of the plant expansion.

The existing plant is being serviced by PG&E, and the motor control center is equipped with a 600-amperage, 277/480 volt, three-phase service. Based on the estimated connected load for each alternative, an 800-amperage service will be needed for the plant expansion.

As part of this planning phase, a new Motor Control Center is incorporated into each alternative. The cost for a new MCC is approximately $60,000 plus the cost of the electrical cabinets and conduit terminations. During the design phase, we recommend that further detailed evaluations take place in order to determine whether the existing MCC room can be reused.

6.6.5 Plant SCADA System

The existing plant has never had a SCADA system, and all the equipment is monitored manually. With the plant expansion, a new plant SCADA is recommended for all the new wastewater processes. In addition, consideration should be given to incorporate existing equipment that will remain in service. A 5% contingency is incorporated into the cost estimates for each alternative, amounting to approximately $300,000.

7. Recommended Project

7.1 Description of Recommended Project

Based upon the evaluation of the economic and non-economic factors, the recommended alternative for upgrading and expanding the City of McFarland (City) Wastewater Treatment Plant (WWTP) is the Biolac Wave-Ox Alternative. Included in the project would be upgrades and/or expansion to existing support facilities.

7.1.1 Recommended Project

The project would include a new headworks to replace the existing dual headworks. The headworks will be sized for a peak hour flow of approximately 9.2 million gallons per day (mgd) to accommodate the growth for the next 40 years. It would include two influent channels with one new mechanical bar screen and a fixed manual bar screen. The second channel could be equipped with a second screen sometime in the future. The screenings would be dewatered and compressed in a compactor then dumped into a commercial trash bin.

A new submersible wet well pump station will be constructed with an above ground discharge header. A magnetic flow meter will be installed in the discharge header for measuring influent flow measurement. VFD driven pumps will ensure accurate flow measurements.

The Lagoon 1 basin is configured such that it would only need minimal work to be converted to a Biolac Wave-Ox basin. It is sized appropriately for adequate detention time for achieving adequate solids retention. The Wave-Ox will aeration system has the capability to develop integral anoxic zones for simultaneous nitrification and de-nitrification. Two new secondary clarifiers and a return activated sludge (RAS) and waste activated sludge (WAS) pump station will support the Biolac system.

The wastewater solids from the Biolac basin would be pumped directly to the screw press or to lined solar drying beds. This allows for complete redundancy for the dewatering operation. The dewatered & dried sludge would continue to be transported to McCarthy Farms for composting and disposal.

Recommended support facilities to be included in the project are new Motor Control Center. The existing 600 amperage connection will need to be upgraded to an 800 amperage connection. The existing motor control center room appears too small to convert. However, the sizing and future MCC requirements will be further examined during design.

A preliminary site plan for the recommended project is shown in Figure 7.1.

7.2 Construction Costs

In addition to the facility components and costs for each alternative, there are additional common facility components required of each alternative. The components and the associated construction costs are shown on Table 7.1. The total construction costs for the recommended project becomes $ 8.22 million.

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7.3 Project Costs

In addition to the construction costs, the project includes planning, environmental, engineering design and construction monitoring, legal and administrative costs. The total estimated project costs are $10 million and are outlined on Table 7.2

Figure 7-1. Biolac Alternative

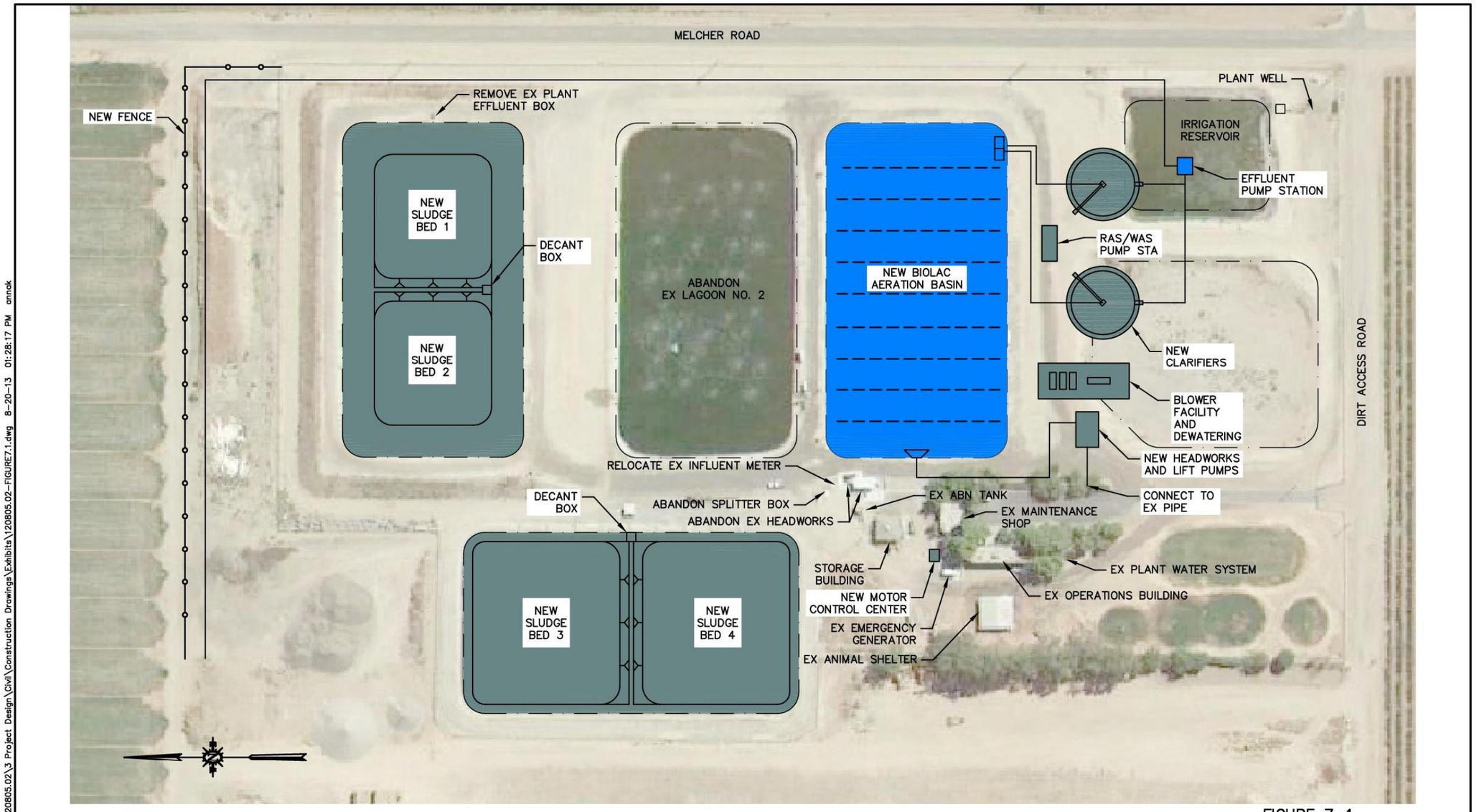

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FIGURE 7-1
WASTE WATER TREATEMENT PLANT
MASTER PLAN
RECOMMENDED PROJECT
BIOLAC ALTERNATIVE
CITY OF MCFARLAND

Table 7.1 Total Project Costs
Wastewater Treatment Plant Master Plan
City of McFarland

Component		Cost[(1)]
Project Construction Cost	**$**	**8,217,000**
Planning, Environmental, Engineering, Legal & Administration		
Planning (Project Report, Environmental, Revenue Program, Disposal Evaluation)		$122,000
Design Engineering - WWTP		$821,700
Construction Engineering - WWTP		$821,700
Administration & Legal		$40,000
Total Project Cost	**$**	**10,022,400**

7.4 Phased Project Approach and Costs

As an alternative to building the entire project at once, a phased project approach was developed. The City of McFarland may elect to stagger the overall project into smaller construction projects. The recommended project was review with a phase project construction approach. Items such as yard piping, paving and grading, electrical & controls were proportionately distributed to the major components and then developed into smaller projects as follows:

Table 7.2 Phased Project Costs: Wastewater Treatment Plant Master Plan
City of McFarland

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total Estimated Costs
Base Construction Costs			$1,238,000	$2,279,000	$2,731,000	$ 964,000	$2,725,000	$ 9,937,000
Mobilization			$ 50,000	$ 50,000	$ 50,000	$ 40,000	$ 50,000	$ 240,000
Startup & Debug			$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 100,000
Demobilize			$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 175,000
Subtotal			**$1,343,000**	**$2,384,000**	**$2,836,000**	**$1,059,000**	**$2,830,000**	**$ 10,452,000**
Planning - Project Report)	$ 83,000							$ 83,000
Planning - Environmental		$ 37,000						$ 37,000
Design Engineering - WWTP (10% design + $ 25K bidding/proj.)		$ 250,000	$ 227,900	$ 273,100	$ 96,400	$ 272,500		$ 1,119,900
Construction Engineering - WWTP			$ 170,000	$ 170,000	$ 170,000	$ 170,000	$ 170,000	$ 850,000
Administration & Legal		$ 5,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 80,000
Total Project Costs		**$ 912,000**	**$1,553,000**	**$2,594,000**	**$3,046,000**	**$1,269,000**	**$3,040,000**	**$ 12,621,900**

Notes: 1) Construction costs are escalated at 3% per year
2) Standard estimated based on historic bidding information and this assumes a different contractor is secured for each project

Year 1 Planning
Year 2 Environmental Planning & Design
Year 3 Headworks & New MCC
Year 4 Aeration Basin, Blowers & Canopy
Year 5 Secondary Clarifiers & RAS/WAS PS
Year 6 Screw Press & Effluent PS
Year 7 Sludge Beds

APPENDIX A: GROUNDWATER GRADIENT MAPS

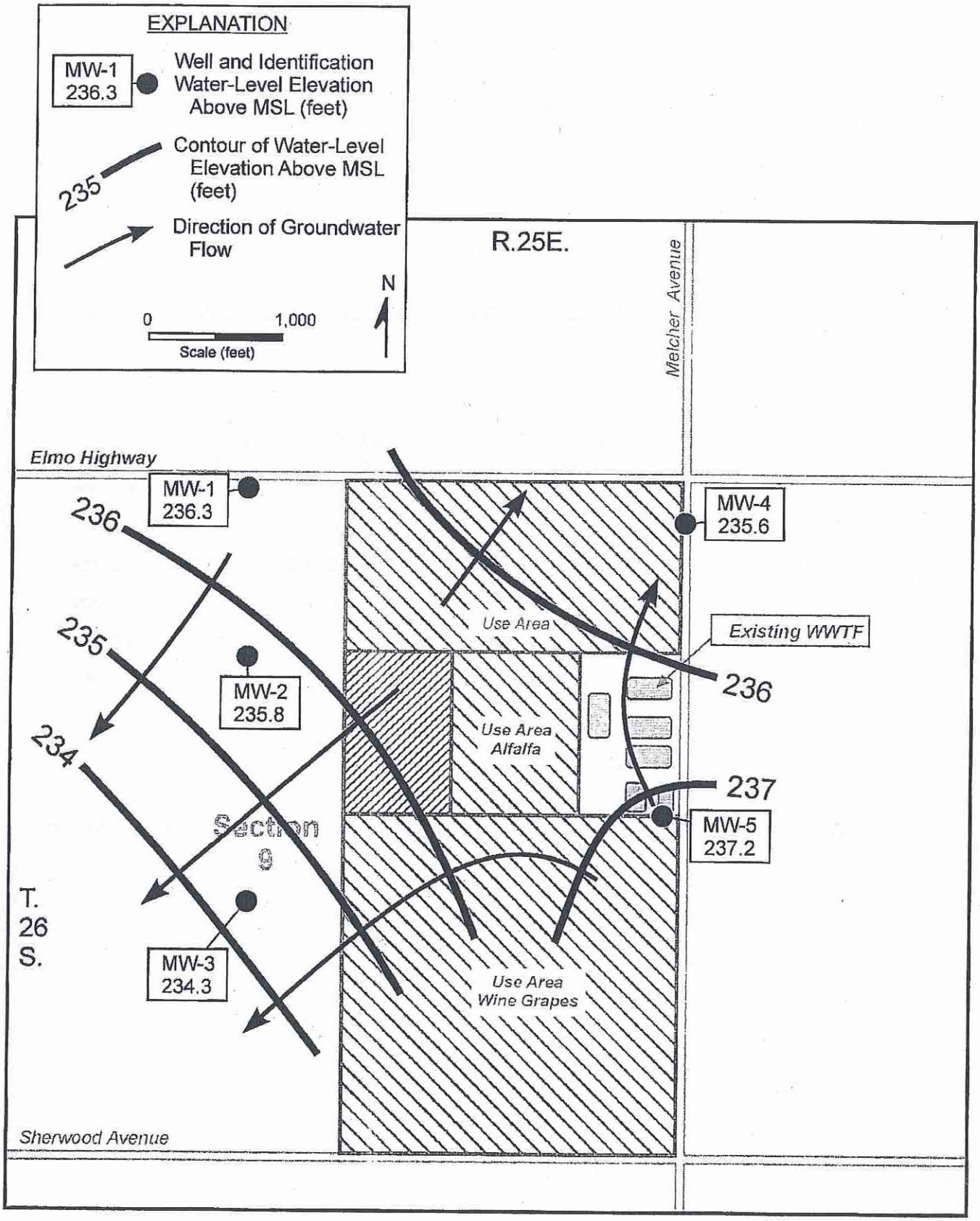


FIGURE 2 - WATER-LEVEL ELEVATIONS AND DIRECTION OF GROUNDWATER FLOW (MARCH 5, 2003)

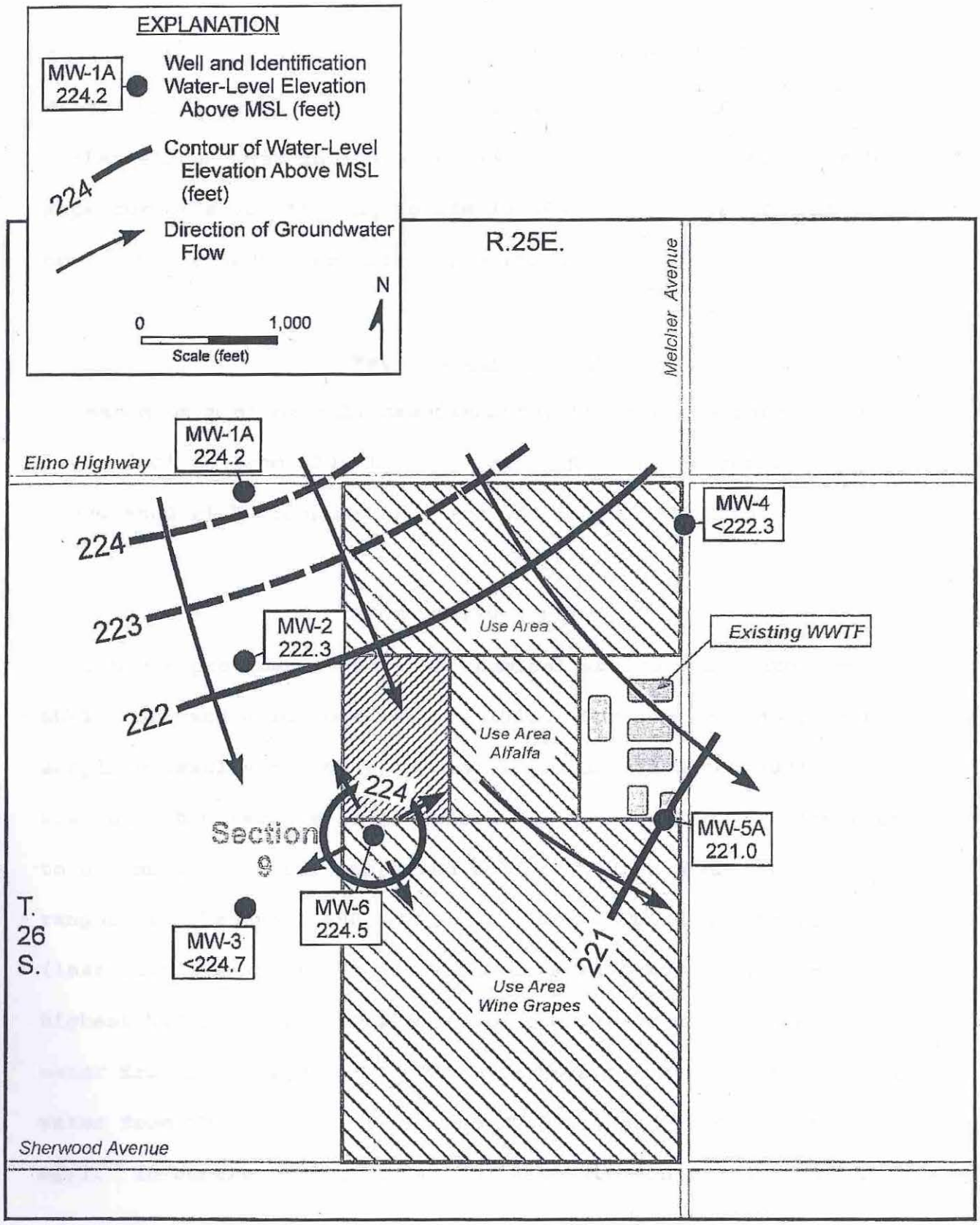


FIGURE 3 - WATER-LEVEL ELEVATIONS AND DIRECTION OF GROUNDWATER FLOW (SEPTEMBER 15, 2010)

APPENDIX B: GROUNDWATER MONITORING WELL LABORATORY RESULTS

TABLE 4-RESULTS OF CHEMICAL ANALYSES OF WATER FROM MONITOR WELLS

Constituent (mg/l)	MW-1A	MW-2	MW-3
Calcium	190	77	96
Magnesium	18	10	23
Sodium	100	94	72
Potassium	1	3	
Carbonate	<5	<1	<1
Bicarbonate	170	140	156
Sulfate	390	131	143
Chloride	100	48	55
Nitrate	136	97	72
Fluoride	<0.1	<0.1	0.1
pH	7.7	8.0	8.2
Electrical Conductivity (micromhos/cm @ 25°C)	1,490	786	820
Total Dissolved Solids (@ 180°C)	1,100	568	580
Date	10/11/11	9/6/01	9/11/02

Continued:

APPENDIX C: CONSUMER CONFIDENCE REPORTS

2012 Consumer Confidence Report

Water System Name: **City of McFarland** Report Date: 05/21/2013

We test the drinking water quality for many constituents as required by state and federal regulations. This report shows the results of our monitoring for the period of January 1 - December 31, 2012 and may include earlier monitoring data.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo ó hable con alguien que lo entienda bien.

Type of water source(s) in use: Deep Wells

Name & location of source(s): Garzoli Well, Well 2, Well 4, Well 6, & Taylor Well

Well 2 and Well 4 were abandoned in 2012 by pulling out the well pump completely and Taylor Well was not online

Drinking Water Source Assessment information: Total production for 2012 from the ground wells was 595.43 million Gallons with the storage tank. The majority, 595.43 million gallons, were pumped from deep water bearing layers of exceptional quality.

Time and place of regularly scheduled board meetings for public participation: The second and last Thursday of each month at 6:00 pm.
McFarland Community Center
103 W. Sherwood Avenue
McFarland, CA 93250

For more information, contact: Mario Gonzales, Public Works Director Phone: (661) 792-3091

TERMS USED IN THIS REPORT

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (USEPA).

Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Primary Drinking Water Standards (PDWS): MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Secondary Drinking Water Standards (SDWS): MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the MCL levels.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Regulatory Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

Variances and Exemptions: Department permission to exceed an MCL or not comply with a treatment technique under certain conditions.

ND: not detectable at testing limit

ppm: parts per million or milligrams per liter (mg/L)

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

ppb: parts per billion or micrograms per liter (µg/L)

ppt: parts per trillion or nanograms per liter (ng/L)

ppq: parts per quadrillion or picogram per liter (pg/L)

pCi/L: picocuries per liter (a measure of radiation)

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- *Microbial contaminants*, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants*, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- *Pesticides and herbicides*, that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- *Radioactive contaminants*, that can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the USEPA and the California Department of Public Health (Department) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

Tables 1, 2, 3, 4, 5, 7, and 8 list all of the drinking water contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The Department allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, are more than one year old.

TABLE 1 – SAMPLING RESULTS SHOWING THE DETECTION OF COLIFORM BACTERIA

Microbiological Contaminants (complete if bacteria detected)	**Highest No. of Detections**	**No. of months in violation**	**MCL**	**MCLG**	**Typical Source of Bacteria**
Total Coliform Bacteria	6	*1	More than 1 sample in a month with a detection	(0)	Naturally present in the environment
Fecal Coliform or *E. coli*	0	0	A routine sample and a repeat sample are total coliform positive and one of these is also fecal coliform or *E. coli*	(0)	Human and animal fecal waste

TABLE 2 – SAMPLING RESULTS SHOWING THE DETECTION OF LEAD AND COPPER

Lead and Copper (complete if lead or copper detected in the last sample set)	**No. of samples collected**	**90th percentile level detected**	**No. sites exceeding AL**	**AL**	**PHG**	**Typical Source of Contaminant**
Lead (ppb)	30	1.9	0	15	0.2	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits

Copper (ppm)	30	.019	0	1.3	0.3	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

TABLE 3 – SAMPLING RESULTS FOR SODIUM AND HARDNESS

Chemical or Constituent (and reporting units)	**Sample Date**	**Level Detected**	**Range of Detections**	**MCL**	**PHG (MCLG)**	**Typical Source of Contaminant**
Sodium (ppm)						Salt present in the water and is generally naturally occurring
Garzoli Well	2010	44.	44.	None	None	
Well 6	2010	78.	78.	None	None	
Taylor Well	2009	67.	33.–34.	None	None	
Hardness (ppm)						Sum of polyvalent cations present in the water, generally magnesium and calcium, and are usually naturally occurring
Garzoli Well	2010	7.49	7.49	None	None	
Well 6	2010	12.5	12.5	None	None	
Taylor Well	2009	4.99	4.99	None	None	

***Any violation of an MCL or AL is asterisked. Additional information regarding the violation is provided later in this report.*

TABLE 4 – DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	**Sample Date**	**Level Detected**	**Range of Detections**	**MCL [MRDL]**	**PHG (MCLG) [MRDLG]**	**Typical Source of Contaminant**
Radium (pCi/L)						Presence of radioactive substances on surface or within solids , liquids or gases; erosion of natural deposits
Garzoli Well	2012	0.00	1	5	(0)	
Well 6	2012	0.00	1	5	(0)	
Taylor Well	2012	0.052	1	5	(0)	
Aluminum (ppm)						Residue from some surface water treatment process; erosion of natural deposits
Garzoli Well	2010	40	40	1	0.6	
Well 6	2010	30	30	1	0.6	
**Arsenic (ppb) (1)						Runoff from orchards; glass and electronics production wastes; erosion of natural deposits
Garzoli Well	2012	13	12-13	10	0.004	
Well 6	2012	8	7-8	10	0.004	
Taylor Well	2012	10	10	10	0.004	
372 Mt. Arbor	2012	10	10	10	0.004	
Barium (ppb)						Discharge of oil drilling wastes and from metal refineries; erosion of natural deposits
Garzoli Well	2010	0.30	0.30	1	2	
Well 6	2010	1.0	1.0	1	2	
Chromium (ppb)						Discharge from steel and pulp mills and chrome plating; erosion of natural deposits
Garzoli Well	2010	8	8	50	(100)	
Well 6	2010	2	2	50	(100)	
**TTHMs (ppb) (2) (Total trihalomethanes)	2012	0.9	0.5	80	N/A	By-product of drinking water disinfection
**HAA5s (ppb) (2)	2012	0	2	60	N/A	By-product of drinking water disinfection
Chlorine (ppm)	2012	0.8	0.0-1.53	4.0	4	Drinking water disinfectant added for treatment
Nitrate (ppm)						Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Garzoli Well	2012	6.0	6.0	45	45	
Well 6	2012	2.3	2.3	45	45	
Taylor Well	2012	4.7	4.7	45	45	

Mercury (ppb) Garzoli Well Well 6	 2010 2010	 ND ND	 <0.02 0.02	 2 2	 1.2 1.2	Discharge from refineries and factories, runoff from landfills and cropland; erosion of natural deposits
Dibromochloropropane (ppt) (DBCP) Garzoli Well Well 6	 2009 2010	 ND ND	 ND ND	 200 200	 1.7 1.7	Banned nemtocide that still may be present in soils due to runoff/leaching from former use on soybean, cotton, vineyards, tomatoes, and tree fruit

TABLE 5 – DETECTION OF CONTAMINANTS WITH A SECONDARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	**Sample Date**	**Level Detected**	**Range of Detections**	**MCL**	**PHG (MCLG)**	**Typical Source of Contaminant**
Color (units) Garzoli Well Well 6 Taylor Well	 2010 2010 2009	 <5.0 ND 2.5	 <5.0 5. <5-5.	 15 15 15	 N/A N/A N/A	Naturally-occurring organic materials
Turbidity (units) Garzoli Well Well 6 Taylor Well	 2010 2010 2009	 .20 .40 .30	 .30 .40 .20-.40	 5 5 5	 N/A N/A N/A	Soil Runoff

TABLE 6 – DETECTION OF UNREGULATED CONTAMINANTS

Chemical or Constituent (and reporting units)	**Sample Date**	**Level Detected**	**Range of Detections**	**Notification Level**	**Health Effects Language**
Vanadium (ppb) Garzoli Well Well 6	 2010 2010	 44. 11	 44. 11	 N/A N/A	Babies of some pregnant women who drink water containing vanadium in excess of the notification level may have an increased risk of development effects, based on studies in laboratory animals

***Any violation of an MCL, MRDL, or TT is asterisked. Additional information regarding the violation is provided later in this report.*

Additional General Information on Drinking Water

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Lead-Specific Language for Community Water Systems: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. [INSERT NAME OF UTILITY] is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Summary Information for Violation of a MCL, MRDL, AL, TT, or Monitoring and Reporting Requirement

VIOLATION OF A MCL, MRDL, AL, TT, OR MONITORING AND REPORTING REQUIREMENT				
Violation	**Explanation**	**Duration**	**Actions Taken to Correct the Violation**	**Health Effects Language**
December 2012	Six (6) out of thirty (30) samples taken showed the presence of total coliform due to the chlorinator going down	Twenty four (24) Hours	The chlorinator was replaced within twenty four (24) hours and subsequent (follow-up) sampling did not show the presence of coliform bacteria in any of the samples	Total coliform bacteria are generally not harmful themselves. People with severely compromised immune systems, infants, and some elderly may be at increased risk. These people should seek advice about drinking water from their health care providers.
2009 and 2011	City exceeded the arsenic MCL and failed to comply with Section 64431 (a), Title 22, California Code of Regulations (CCR), which establishes the MCL for arsenic	2009 and 2011	The City is required to conduct quarterly public notification beginning with the second quarter of 2012 and should be repeated every three (3) months as long as the violation exists.	This was not an emergency, however if you have specific health concerns, consult your doctor. Some people who drink water containing arsenic in excess of the MCL over many years may experience skin damage or circulatory system problems, and may have an increased risk of getting cancer.
2nd and 4th Qtr. of 2012	City did not monitor or test for total trihalomethanes (TTHMs) and haloacetic acids (HAA5) in the distribution system and therefore cannot be sure of the quality of the drinking water during that time	2nd and 4th Qtr. of 2012	City must collect paired TTHM and HAA5 samples every quarter in 2013 at a location reflecting maximum residence time and in accordance with your DBP monitoring plan	

For Water Systems Providing Ground Water as a Source of Drinking Water

TABLE 7 – SAMPLING RESULTS SHOWING FECAL INDICATOR-POSITIVE GROUND WATER SOURCE SAMPLES

Microbiological Contaminants (complete if fecal-indicator detected)	**Total No. of Detections**	**Sample Dates**	**MCL [MRDL]**	**PHG (MCLG) [MRDLG]**	**Typical Source of Contaminant**
E. coli	0	N/A	0	(0)	Human and animal fecal waste
Enterococci	0	N/A	TT	N/A	Human and animal fecal waste
Coliphage	0	N/A	TT	N/A	Human and animal fecal waste

APPENDIX D: HISTORIC POPULATION

DP03

SELECTED ECONOMIC CHARACTERISTICS

2007-2011 American Community Survey 5-Year Estimates

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Data and Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

Subject	McFarland city, California			
	Estimate	Margin of Error	Percent	Percent Margin of Error
EMPLOYMENT STATUS				
Population 16 years and over	8,704	+/-308	8,704	(X)
In labor force	4,957	+/-402	57.0%	+/-5.1
Civilian labor force	4,957	+/-402	57.0%	+/-5.1
Employed	4,049	+/-365	46.5%	+/-4.7
Unemployed	908	+/-298	10.4%	+/-3.4
Armed Forces	0	+/-95	0.0%	+/-0.4
Not in labor force	3,747	+/-513	43.0%	+/-5.1
Civilian labor force	4,957	+/-402	4,957	(X)
Percent Unemployed	(X)	(X)	18.3%	+/-5.4
Females 16 years and over	3,612	+/-318	3,612	(X)
In labor force	1,725	+/-287	47.8%	+/-6.1
Civilian labor force	1,725	+/-287	47.8%	+/-6.1
Employed	1,307	+/-229	36.2%	+/-5.0
Own children under 6 years	1,722	+/-267	1,722	(X)
All parents in family in labor force	864	+/-260	50.2%	+/-12.6
Own children 6 to 17 years	2,417	+/-322	2,417	(X)
All parents in family in labor force	1,475	+/-372	61.0%	+/-11.8
COMMUTING TO WORK				
Workers 16 years and over	3,917	+/-371	3,917	(X)
Car, truck, or van -- drove alone	2,079	+/-299	53.1%	+/-6.8
Car, truck, or van -- carpooled	1,564	+/-351	39.9%	+/-7.4
Public transportation (excluding taxicab)	35	+/-42	0.9%	+/-1.1
Walked	148	+/-95	3.8%	+/-2.4
Other means	68	+/-69	1.7%	+/-1.8
Worked at home	23	+/-27	0.6%	+/-0.7
Mean travel time to work (minutes)	26.4	+/-3.6	(X)	(X)
OCCUPATION				
Civilian employed population 16 years and over	4,049	+/-365	4,049	(X)

Subject	McFarland city, California			
	Estimate	Margin of Error	Percent	Percent Margin of Error
Management, business, science, and arts occupations	403	+/-172	10.0%	+/-4.2
Service occupations	420	+/-144	10.4%	+/-3.5
Sales and office occupations	536	+/-164	13.2%	+/-3.9
Natural resources, construction, and maintenance occupations	2,193	+/-355	54.2%	+/-6.5
Production, transportation, and material moving occupations	497	+/-176	12.3%	+/-4.3
INDUSTRY				
Civilian employed population 16 years and over	4,049	+/-365	4,049	(X)
Agriculture, forestry, fishing and hunting, and mining	2,160	+/-396	53.3%	+/-8.0
Construction	146	+/-96	3.6%	+/-2.3
Manufacturing	104	+/-78	2.6%	+/-2.0
Wholesale trade	73	+/-59	1.8%	+/-1.5
Retail trade	345	+/-138	8.5%	+/-3.3
Transportation and warehousing, and utilities	282	+/-129	7.0%	+/-3.1
Information	16	+/-26	0.4%	+/-0.6
Finance and insurance, and real estate and rental and leasing	0	+/-95	0.0%	+/-0.9
Professional, scientific, and management, and administrative and waste management services	187	+/-102	4.6%	+/-2.5
Educational services, and health care and social assistance	458	+/-169	11.3%	+/-4.2
Arts, entertainment, and recreation, and accommodation and food services	120	+/-68	3.0%	+/-1.7
Other services, except public administration	98	+/-78	2.4%	+/-1.9
Public administration	60	+/-54	1.5%	+/-1.3
CLASS OF WORKER				
Civilian employed population 16 years and over	4,049	+/-365	4,049	(X)
Private wage and salary workers	3,534	+/-352	87.3%	+/-3.7
Government workers	378	+/-157	9.3%	+/-3.8
Self-employed in own not incorporated business workers	127	+/-73	3.1%	+/-1.8
Unpaid family workers	10	+/-16	0.2%	+/-0.4
INCOME AND BENEFITS (IN 2011 INFLATION-ADJUSTED DOLLARS)				
Total households	2,699	+/-222	2,699	(X)
Less than $10,000	222	+/-120	8.2%	+/-4.5
$10,000 to $14,999	276	+/-118	10.2%	+/-4.0
$15,000 to $24,999	450	+/-142	16.7%	+/-4.8
$25,000 to $34,999	372	+/-141	13.8%	+/-5.0
$35,000 to $49,999	541	+/-144	20.0%	+/-5.5
$50,000 to $74,999	628	+/-170	23.3%	+/-6.2
$75,000 to $99,999	68	+/-46	2.5%	+/-1.6
$100,000 to $149,999	135	+/-73	5.0%	+/-2.6
$150,000 to $199,999	7	+/-12	0.3%	+/-0.4
$200,000 or more	0	+/-95	0.0%	+/-1.4
Median household income (dollars)	35,615	+/-4,826	(X)	(X)
Mean household income (dollars)	40,273	+/-3,664	(X)	(X)
With earnings	2,416	+/-175	89.5%	+/-4.5
Mean earnings (dollars)	39,192	+/-3,822	(X)	(X)
With Social Security	560	+/-129	20.7%	+/-4.1
Mean Social Security income (dollars)	9,777	+/-1,503	(X)	(X)
With retirement income	117	+/-65	4.3%	+/-2.4
Mean retirement income (dollars)	13,068	+/-7,819	(X)	(X)
With Supplemental Security Income	189	+/-89	7.0%	+/-3.1
Mean Supplemental Security Income (dollars)	8,952	+/-2,722	(X)	(X)
With cash public assistance income	142	+/-90	5.3%	+/-3.3

Subject	McFarland city, California			
	Estimate	Margin of Error	Percent	Percent Margin of Error
Mean cash public assistance income (dollars)	4,032	+/-1,658	(X)	(X)
With Food Stamp/SNAP benefits in the past 12 months	570	+/-167	21.1%	+/-6.1
Families	2,441	+/-201	2,441	(X)
Less than $10,000	127	+/-99	5.2%	+/-4.2
$10,000 to $14,999	248	+/-118	10.2%	+/-4.6
$15,000 to $24,999	462	+/-153	18.9%	+/-5.6
$25,000 to $34,999	351	+/-148	14.4%	+/-5.7
$35,000 to $49,999	438	+/-127	17.9%	+/-5.5
$50,000 to $74,999	620	+/-174	25.4%	+/-6.9
$75,000 to $99,999	60	+/-41	2.5%	+/-1.7
$100,000 to $149,999	128	+/-74	5.2%	+/-2.9
$150,000 to $199,999	7	+/-12	0.3%	+/-0.5
$200,000 or more	0	+/-95	0.0%	+/-1.5
Median family income (dollars)	35,821	+/-5,540	(X)	(X)
Mean family income (dollars)	41,444	+/-3,886	(X)	(X)
Per capita income (dollars)	9,285	+/-1,058	(X)	(X)
Nonfamily households	258	+/-107	258	(X)
Median nonfamily income (dollars)	11,164	+/-1,802	(X)	(X)
Mean nonfamily income (dollars)	16,803	+/-5,346	(X)	(X)
Median earnings for workers (dollars)	13,815	+/-2,105	(X)	(X)
Median earnings for male full-time, year-round workers (dollars)	30,818	+/-3,504	(X)	(X)
Median earnings for female full-time, year-round workers (dollars)	25,750	+/-10,049	(X)	(X)
HEALTH INSURANCE COVERAGE				
Civilian noninstitutionalized population	(X)	(X)	(X)	(X)
With health insurance coverage	(X)	(X)	(X)	(X)
With private health insurance	(X)	(X)	(X)	(X)
With public coverage	(X)	(X)	(X)	(X)
No health insurance coverage	(X)	(X)	(X)	(X)
Civilian noninstitutionalized population under 18 years	(X)	(X)	(X)	(X)
No health insurance coverage	(X)	(X)	(X)	(X)
Civilian noninstitutionalized population 18 to 64 years	(X)	(X)	(X)	(X)
In labor force:	(X)	(X)	(X)	(X)
Employed:	(X)	(X)	(X)	(X)
With health insurance coverage	(X)	(X)	(X)	(X)
With private health insurance	(X)	(X)	(X)	(X)
With public coverage	(X)	(X)	(X)	(X)
No health insurance coverage	(X)	(X)	(X)	(X)
Unemployed:	(X)	(X)	(X)	(X)
With health insurance coverage	(X)	(X)	(X)	(X)
With private health insurance	(X)	(X)	(X)	(X)
With public coverage	(X)	(X)	(X)	(X)
No health insurance coverage	(X)	(X)	(X)	(X)
Not in labor force:	(X)	(X)	(X)	(X)
With health insurance coverage	(X)	(X)	(X)	(X)
With private health insurance	(X)	(X)	(X)	(X)
With public coverage	(X)	(X)	(X)	(X)
No health insurance coverage	(X)	(X)	(X)	(X)

Subject	McFarland city, California			
	Estimate	Margin of Error	Percent	Percent Margin of Error
PERCENTAGE OF FAMILIES AND PEOPLE WHOSE INCOME IN THE PAST 12 MONTHS IS BELOW THE POVERTY LEVEL				
All families	(X)	(X)	29.0%	+/-6.6
With related children under 18 years	(X)	(X)	36.0%	+/-7.8
With related children under 5 years only	(X)	(X)	28.8%	+/-19.1
Married couple families	(X)	(X)	23.5%	+/-6.8
With related children under 18 years	(X)	(X)	31.5%	+/-9.1
With related children under 5 years only	(X)	(X)	27.1%	+/-23.2
Families with female householder, no husband present	(X)	(X)	56.8%	+/-20.0
With related children under 18 years	(X)	(X)	58.5%	+/-20.6
With related children under 5 years only	(X)	(X)	100.0%	+/-100.0
All people	(X)	(X)	33.8%	+/-7.1
Under 18 years	(X)	(X)	38.7%	+/-8.7
Related children under 18 years	(X)	(X)	38.1%	+/-8.7
Related children under 5 years	(X)	(X)	39.0%	+/-12.3
Related children 5 to 17 years	(X)	(X)	37.6%	+/-9.6
18 years and over	(X)	(X)	31.0%	+/-6.7
18 to 64 years	(X)	(X)	31.2%	+/-7.0
65 years and over	(X)	(X)	27.8%	+/-13.7
People in families	(X)	(X)	32.0%	+/-7.3
Unrelated individuals 15 years and over	(X)	(X)	64.8%	+/-14.5

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

There were changes in the edit between 2009 and 2010 regarding Supplemental Security Income (SSI) and Social Security. The changes in the edit loosened restrictions on disability requirements for receipt of SSI resulting in an increase in the total number of SSI recipients in the American Community Survey. The changes also loosened restrictions on possible reported monthly amounts in Social Security income resulting in higher Social Security aggregate amounts. These results more closely match administrative counts compiled by the Social Security Administration.

Workers include members of the Armed Forces and civilians who were at work last week.

Industry codes are 4-digit codes and are based on the North American Industry Classification System 2007. The Industry categories adhere to the guidelines issued in Clarification Memorandum No. 2, "NAICS Alternate Aggregation Structure for Use By U.S. Statistical Agencies," issued by the Office of Management and Budget.

Census occupation codes are 4-digit codes and are based on the Standard Occupational Classification (SOC). The Census occupation codes for 2010 and later years are based on the 2010 revision of the SOC. To allow for the creation of 2007-2011 and 2009-2011 tables, occupation data in the multiyear files (2007-2011 and 2009-2011) were recoded to 2011 Census occupation codes. We recommend using caution when comparing data coded using 2011 Census occupation codes with data coded using Census occupation codes prior to 2010. For more information on the Census occupation code changes, please visit our website at http://www.census.gov/hhes/www/ioindex/.

While the 2007-2011 American Community Survey (ACS) data generally reflect the December 2009 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.

Estimates of urban and rural population, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2000 data. Boundaries for urban areas have not been updated since Census 2000. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Source: U.S. Census Bureau, 2007-2011 American Community Survey

Explanation of Symbols:

1. An '**' entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
2. An '-' entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.
3. An '-' following a median estimate means the median falls in the lowest interval of an open-ended distribution.
4. An '+' following a median estimate means the median falls in the upper interval of an open-ended distribution.
5. An '***' entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
6. An '*****' entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.
7. An 'N' entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.
8. An '(X)' means that the estimate is not applicable or not available.

Table 3-1 Kern County Population and Housing

Year	Census 1980	Census 1990	Census 2000	Census 2010	Forecast 2020	Forecast 2030	Forecast 2035
Kern County							
Population	403,089	543,477	661,653	839,600	1,010,800	1,208,200	1,321,000
Households	139,881	181,480	208,655	254,610	319,200	381,600	417,200
Metro Bakersfield							
Population	228,000	329,100	409,800	533,461	640,536	764,941	848,487
Households	89,500	120,000	134,100	172,970	203,753	244,722	269,840
Arvin							
Population	6,863	9,286	12,956	19,304	23,300	28,100	31,200
Households	1,946	2,385	3,010	4,228	5,200	6,400	7,200
Bakersfield							
Population	105,611	174,820	247,057	347,483	427,400	525,700	589,800
Households	39,602	62,516	83,441	111,132	139,100	174,100	197,200
California City							
Population	2,743	5,955	8,385	14,120	17,000	20,400	22,600
Households	990	2,119	3,067	4,102	5,100	6,300	7,200
Delano							
Population	16,491	22,762	38,824	53,041	59,400	66,400	70,700
Households	4,912	6,236	8,409	10,260	11,400	12,700	13,500
Maricopa							
Population	946	1,193	1,111	1,154	1,250	1,350	1,410
Households	338	416	404	414	450	500	530
McFarland							
Population	5,151	7,005	9,618	12,707	14,200	15,900	16,900
Households	1,399	1,685	1,990	2,599	3,200	3,900	4,300
Ridgecrest							
Population	15,929	28,295	24,927	27,616	30,500	33,600	35,500
Households	5,762	10,349	9,826	10,781	12,000	13,400	14,200
Shafter							
Population	7,010	8,409	12,731	16,988	23,700	33,100	39,900
Households	2,284	2,558	3,292	4,230	6,100	8,700	10,600
Taft							
Population	5,316	5,902	6,400	9,327	11,500	14,300	16,000
Households	2,096	2,209	2,233	2,254	3,000	4,000	4,700
Tehachapi							
Population	4,126	5,791	10,957	14,414	17,900	22,200	25,000
Households	1,534	2,335	2,533	3,121	4,000	5,200	5,900
Wasco							
Population	9,613	12,412	21,263	25,545	31,200	38,100	42,600
Households	3,001	3,471	3,971	5,131	6,500	8,200	9,300
Unincorporated							
Population	223,290	261,647	264,111	297,901	353,450	409,050	429,390
Households	75,947	85,201	86,474	96,358	123,150	138,200	142,570

Sources:

1980-2000 (April) data from U.S. Bureau of the Census

2020-35 (July) Kern COG growth forecast by Regional Statistical Areas (RSA), adopted October 2009

Note: City trends subject to periodic annexation and de-annexation activity, population includes prisons

APPENDIX E: MONTHLY DATA FOR FLOWS AND LOADS

City of McFarland
Waste Water Treatment Plant Flows and Loads
Project No: 120805

Data:

		Plant Influent		Plant Effluent			
Month	***Flow, Q (mgd)***	***BOD Concentration (mg/L)***	***TSS Concentration (mg/L)***	***Effluent BOD (mg/L)***	***BOD Removal Rate***	***Effluent TSS (mg/L)***	***TSS Removal Rate***
Jan-07	0.95	230.00	180.00	53.80	77%	28.20	84%
Feb-07	1.02	320.00	260.00	69.80	78%	59.50	77%
Mar-07	1.01	370.00	260.00	36.30	90%	38.80	85%
Apr-07	1.01	330.00	200.00	35.30	89%	51.30	74%
May-07	1.04	260.00	150.00	21.80	92%	37.40	75%
Jun-07	1.01	230.00	160.00	20.30	91%	26.00	84%
Jul-07	1.05	320.00	220.00	30.60	90%	23.20	89%
Aug-07	1.09	240.00	190.00	40.00	83%	27.00	86%
Sep-07	1.09	170.00	180.00	23.50	86%	30.50	83%
Oct-07	1.08	160.00	130.00	32.40	80%	36.80	72%
Nov-07	1.08	170.00	58.00	40.00	76%	58.80	-1%
Dec-07	0.98	170.00	100.00	66.50	61%	72.50	28%
Jan-08	1.02	320.00	140.00	83.60	74%	73.00	48%
Feb-08	1.03			57.40		51.00	
Mar-08							
Apr-08							
May-08	1.00	320.00	140.00	36.00	89%	32.80	77%
Jun-08	1.00	190.00	93.50	31.30	84%	32.00	66%
Jul-08	1.10	148.00	56.20	24.00	84%	26.00	54%
Aug-08	1.10	177.50	149.30	46.50	74%	36.00	76%
Sep-08	1.10	210.00	112.80	55.20	74%	29.20	74%
Oct-08	1.10	217.50	119.50	31.30	86%	33.00	72%
Nov-08	1.20	142.50	84.80	28.80	80%	38.50	55%
Dec-08	1.10	156.00	104.20	44.40	72%	57.20	45%
Jan-09	1.10	111.50	80.80	40.50	64%	53.80	33%
Feb-09	1.10	146.00	56.70	44.00	70%	34.60	39%
Mar-09	1.10	132.30	66.30	20.00	85%	25.30	62%
Apr-09	1.00	170.00	88.80	28.60	83%	38.60	57%
May-09	1.00	245.00	162.50	33.50	86%	51.00	69%
Jun-09	1.00	182.50	101.50	32.50	82%	41.30	59%
Jul-09	1.10	262.50	113.60	28.00	89%	27.00	76%
Aug-09	1.10	312.50	205.00	37.60	88%	30.30	85%
Sep-09	1.20	276.00	175.20	21.60	92%	30.40	83%
Oct-09	1.20	220.00	139.00	37.00	83%	86.70	38%
Nov-09	1.10	260.00	180.00	32.50	88%	36.80	80%
Dec-09	1.10	262.50	182.50	70.00	73%	71.80	61%
Jan-10	1.14	260.00	186.70	79.30	70%	30.70	84%

Feb-10	1.11	173.80	132.50	60.30	65%	35.30	73%
Mar-10	1.06	166.00	116.80	48.80	71%	38.40	67%
Apr-10	1.05	175.00	192.30	50.50	71%	40.50	79%
May-10	1.07	237.50	163.80	37.30	84%	33.80	79%
Jun-10	1.06	216.00	152.00	33.40	85%	66.00	57%
Jul-10	1.04	237.50	140.00	59.30	75%	128.80	8%
Aug-10	1.04	310.00	185.00	45.00	85%	83.50	55%
Sep-10	1.03	332.00	224.00	48.60	85%	108.40	52%
Oct-10	1.05	275.00	190.00	21.30	92%	27.00	86%
Nov-10	1.00	216.00	152.00	19.20	91%	19.80	87%
Dec-10	1.00	260.00	138.80	35.00	87%	21.80	84%
Jan-11	1.00	250.00	95.00	26.80	89%	14.50	85%
Feb-11	1.00	121.50	119.50	41.30	66%	18.80	84%
Mar-11	1.00	182.00	98.80	41.00	77%	18.20	82%
Apr-11	1.00	215.00	98.50	38.00	82%	23.50	76%
May-11	1.10	237.50	101.50	35.30	85%	30.30	70%
Jun-11	1.00	208.00	114.80	32.20	85%	33.40	71%
Jul-11	1.00	217.50	113.00	27.30	87%	25.50	77%
Aug-11	1.10	275.00	128.00	24.20	91%	20.40	84%
Sep-11	1.00	235.00	120.00	14.00	94%	21.50	82%
Oct-11	1.00	182.00	71.80	17.40	90%	17.60	75%
Nov-11	1.00	118.00	72.80	23.50	80%	18.00	75%
Dec-11	1.00	161.30	121.80	36.80	77%	25.30	79%
Jan-12	1.00	196.00	135.40	57.00	71%	28.30	79%
Feb-12	1.00	95.80	76.00	40.00	58%	32.80	57%
Mar-12	1.00	124.50	86.80	38.80	69%	32.50	63%
Apr-12	1.00	168.00	100.80	43.20	74%	30.80	69%
May-12	1.00	225.00	127.00	36.00	84%	20.50	84%
Jun-12	1.00	205.00	133.80	30.30	85%	29.50	78%
Jul-12	1.00	224.00	138.00	30.50	86%	32.50	76%
Aug-12	1.00	207.50	147.50	37.00	82%	26.00	82%
Sep-12	1.00	202.50	137.50	32.30	84%	18.80	86%
Oct-12	1.00	135.80	94.40	26.60	80%	15.60	83%
Nov-12	1.00	172.50	123.50	19.80	89%	19.80	84%
Dec-12	1.00	132.50	88.00	22.80	83%	26.10	70%
Jan-13	1.00	156.00	115.60	34.20	78%	27.00	77%
Feb-13	1.00	177.50	129.50	40.80	77%	36.50	72%
Mar-13	1.00	372.50	277.50	42.30	89%	57.00	79%
Average		189.71	120.89	32.13		26.76	

APPENDIX F: WASTE DISCHARGE REQUIREMENTS (WDR)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2008-0072

WASTE DISCHARGE REQUIREMENTS
FOR
CITY OF MCFARLAND
WASTEWATER TREATMENT FACILITY
KERN COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Water Board) finds that:

1. The City of McFarland (hereafter Discharger) submitted a *Report of Waste Discharge* (RWD) in June 2004, in support of a discharge to land of wastewater from its existing Wastewater Treatment Facility (hereafter WWTF). Additional information was included in a 17 May 2005 *Final Geotechnical Investigation* report prepared by BSK regarding effluent storage reservoir expansion at the McFarland WWTF. The purpose of the reports was to document the plans proposed by the Discharger to increase the storage capacity at the WWTF to match the designed treatment capacity.

2. The WWTF is approximately two miles west of the City of McFarland at the northwest corner of the intersection of Melcher Road and Perkins Avenue in the northeast quarter of Section 9, Township 26 South, Range 22 East, MDB&M, as shown on Attachment A, which is attached hereto and made part of this Order by reference.

3. The existing WWTF began operations in early 1979 and was regulated by Waste Discharge Requirements (WDR) Order No. 78-174, which permitted a flow of 0.5 million gallons per day (mgd). WDR Order No. 89-154 was issued in late 1989 and allowed an increase in flow to 0.8 mgd. The Discharger submitted a RWD in March 2000 requesting an increase in flow to an average of 1.1 mgd.

4. Order No. 89-154 prescribed effluent limitations on a monthly average basis for 5-day biochemical oxygen demand (BOD), dissolved oxygen (DO), total settleable solids (TSS), and requires quarterly sampling of effluent for nitrogen forms. The Discharger has had difficulty in complying with the effluent BOD limit. However, recent plant maintenance activities appear to have reduced BOD concentrations. Nitrate concentrations, while not having a listed effluent limit, continue to be elevated in the effluent and the underlying groundwater.

5. The Discharger's self-monitoring reports (SMRs) indicate that it routinely violated the monthly average (40 milligrams per liter [mg/L]) five-day biochemical oxygen demand (BOD) and total suspended solids (TSS) limit of in 2005 and 2006. BOD exceeded the limit in 19 of 24 months between January 2005 and December 2006 including all 12 months in 2005. TSS concentrations were similar exceeding the limits in 16 of the 24 months in 2005 and 2006. However, recent improvements to the WWTF have improved BOD and TSS concentrations. In 2007, BOD was below the limit in nine of the 12 monitoring events, while TSS was below in eight of the 12 monitoring events.

6. Nitrate as nitrogen concentrations in groundwater are typically above the primary maximum contaminant level (MCL) of 10 mg/L in groundwater samples collected from the WWTF's monitoring wells. However, the McFarland area has historically had high nitrate/nitrogen concentrations in groundwater and background nitrate/nitrogen concentrations in the WWTF's upgradient monitoring wells are higher than the concentrations reported in the downgradient wells.

7. In 1988, the Discharger conducted a Brine/Nitrate Study in efforts to reduce the amount of salts and nitrates in the two domestic wells used to supply water to the City of McFarland. The City of McFarland installed an ion exchange system to remove nitrate/nitrogen from its two deep water supply wells. The regenerant from the ion exchange process is discharged to the sewer system and likely contributes to the elevated concentrations observed in the effluent from the WWTF.

8. The Discharger violated Discharge Specification No. B.12 of Order No. 89-154 for continuing to irrigate crops other than fodder, fiber, or seed crops. When the WDRs were adopted in 1989, Title 22 also allowed the discharge of non-disinfected secondary treated wastewater to food crops where recycled water does not come into contact with the edible portion of the food crop and where the food crop undergoes commercial pathogen-destroying processing before being consumed by humans. In January 2003, the California Department of Health Services (now the Department of Public Health [DPH]) issued a memorandum stating that contact with recycled water is likely to occur in vineyards and that there may be a potential for pathogens to gain access to the interior of fruits. The DPH now recommends that all vineyards be irrigated with water that meets the requirements of disinfected secondary-2.2 recycled water as defined in Title 22. Regional Water Board staff notified the Discharger of this information in a 9 August 2004 letter.

9. Order No. 89-154 is no longer adequate because it does not reflect the current conditions of the WWTF and the Expansion Project, does not reflect current discharge flow rates, and is not consistent with the current disposal guidelines. The continued discharge of undisinfected wastewater to the vineyard without an updated Use Area Management Plan warrant the adoption of revised Waste Discharge Requirements and a Cease and Desist Order to bring the WWTF into compliance with applicable regulations and guidelines.

10. The RWD and Final Geotechnical Investigation present information on site conditions, the existing wastewater treatment process and quality, planned plant upgrades, and the conceptual design of the Expansion Project. Attachment B, which is attached hereto and made a part of this Order by reference, depicts a plan view of the existing WWTF and Expansion Project (new pond area), as depicted in the RWD and the Final geotechnical Investigation. However, the design presented in the RWD and Final Geotechnical Investigation has been changed. A new technical report describing the construction of the new pond and a new RWD documenting the expanded WWTF and the corresponding Use Area for the recycling of treated wastewater is required as stated in Provision H.13.

Existing Wastewater Treatment Facility

11. The existing WWTF consists of a headworks with two mechanical bar screens and an influent meter. The wastewater is then routed to four aerated lagoons (Nos. 1, 1A, 2 and 3) equipped with small bubble diffused-air aeration devices. Wastewater is pumped to the Use Area that consists of two unlined storage ponds that comprised about 30 acres or about 236 acre-feet of storage (new pond under construction). Additionally, recycled water is used for irrigation on approximately 270 acres of adjacent farmland. Two small effluent storage ponds are located at the southwest corner of the WWTF and are used to deliver effluent to the adjacent farm fields.

12. Wastewater is collected from the central and northern portions of the City and transported to the WWTF in an 18-inch trunk line that trends east to west along Perkins Avenue. A new 24-inch line was constructed in 2001 to serve the southern portion of the City. The 24-inch line trends east along Taylor Avenue, then north along Garzoli Avenue to Perkins, then is set parallel to the old 18 inch line west to the WWTF.

13. Influent enters at the headworks, which house two screen/compactors (one connected to the 18-inch line, the other to the 24-inch line), an open channel flow meter, and a splitter box. Solids from the screen/compactor are dewatered and deposited in a trash-bin.

14. From the headworks, influent is discharged by gravity to Aeration Lagoon Nos. 1 or 1A (or both) and then flows by gravity into Aeration Lagoon No. 2 for further aeration and solids settling. The partially treated wastewater is then pumped to Aeration Lagoon No. 3 before being sent to the disposal ponds or to the adjacent farm fields for water recycling. Lagoon Nos. 1, 2, and 3 have dimensions of 380 feet by 200 feet, while lagoon No. 1A is slightly larger at 376 feet by 206 feet.

15. Effluent from the Aeration Lagoons is discharged to the eastern Disposal Ponds, which comprise approximately 30 acres and have a capacity of approximately 236 acre feet.

16. Self-monitoring reports indicate that winter flows are not higher than summer flows, demonstrating insignificant inflow and infiltration to the collection system during winter months.

17. Self-monitoring data from January 2007 to December 2007 characterize the discharge as follows:

Constituent/Parameter	Units[1]	Influent	Effluent	% Removal[2]
Monthly Average Discharge Flow	mgd	1.01	NS[2]	--
Conventional Pollutants				
BOD[3]	mg/L	298	39	87
TSS[4]	mg/L	168	41	76
Salts				
Chloride	mg/L	NS[5]	58	--

Constituent/Parameter	Units[1]	Influent	Effluent	% Removal[2]
Salts (continued)				
Sodium	mg/L	NS	98	--
EC[6]	µmhos/cm	NS	599	--
TDS[7]	mg/L	NS	380	--
Nitrogen				
Nitrate as Nitrogen	mg/L	NS	21.9[8]	--
Total Nitrogen[9]	mg/L	NS	27	--
Metals				
Aluminum	µg/L	NS	340	--
Iron	µg/L	NS	190	--
Manganese	µg/L	NS	<20	--

1 Million gallons per day (mgd); milligrams per liter (mg/L); micromhos per centimeter (µmhos/cm); micrograms per liter (µg/L).
2 Percent removal (% removal), -- = No data available
3 5-day biochemical oxygen demand (BOD)
4 Total suspended solids (TSS)
5 Not sampled (NS)
6 Electrical conductivity at 25ºC (EC)
7 Total dissolved solids (TDS)
8 Data reported as Nitrate. Converted to nitrate as nitrogen by dividing by a factor of 4.5.
9 Calculated by adding nitrate as nitrogen and total Kjeldahl nitrogen (TKN)

18. The EC of the WWTF influent ranges from about 300 to 420 µmhos/cm over source water.

19. The WWTF does not have a sludge management plan. Sludge was removed from the aerated lagoons in 2005 and 2006 as it was suspected the buildup of sludge was contributing to the routine exceedance of the BOD effluent limit. Effluent BOD concentrations improved considerably following the removal of the sludge and other maintenance activities. Updating the existing Operations and Management Plan is needed to provide a schedule for sludge removal and disposal as required by Provision H.14.

Expansion Project

20. The design of the Expansion Project is not complete; however, conceptually the expansion project consists of expanding the capacity of the disposal ponds by adding another 30-acre disposal pond east of the existing disposal pond, and adding acreage to the existing recycled water Use Area.

21. The initial design to expand the disposal pond was presented in the 17 May 2005 *Final Geotechnical Investigation* prepared by BSK. The report proposed expanding the existing pond by removing the eastern wall of the pond and replacing it further to the east. The additional storage was to be about 20 acres or about 125 acre-feet. Regional Water Board staff concurred with report findings in a 22 May 2006 letter to the Discharger.

22. A 23 June 2006 *McFarland Storage Pond Expansion – Progress Update* prepared by Boyle indicates 100-acres of alfalfa in combination with the disposal ponds would be required for recycling or disposing of 1.55 mgd of treated wastewater. The Use Area was to consist of a 15-acre field in the central portion of the WWTF property, a 75-acre field north of the WWTF, and 80-acres of the 160-acre vineyard would be converted to alfalfa.

23. The Discharger changed the design of the proposed pond construction and Use Area and has constructed a separate 30-acre disposal pond east of the existing ponds. The operator indicated the new plan would remove the remaining 15 acres of alfalfa from the central portion of the property. This would leave the 75-acre parcel north of the WWTF, and the 160-acre vineyard south of the WWTF for recycling of treated wastewater. The 80-acres of grapes has yet to be converted to alfalfa, and the Plant Operator indicated the discharger is addressing purchasing/leasing additional land instead of converting the vineyard to alfalfa. The revised design of the ponds appears to be more than adequate to service the needs of the WWTF, but the Discharger will need to provide a technical report (RWD) as required in Provision H.13, that will include revised water and nutrient balances to illustrate that the Discharger has adequate pond volume and land for recycling.

24. Based on adding another 30-acre disposal pond, the storage capacity will increase from about 236 acre feet to about 470 acre feet. A water balance provided by the Discharger in June 2006 indicated a minimum of 100 acres of alfalfa were required for wastewater recycling in addition to the then-planned 361 acre-feet of disposal pond storage.

25. It is anticipated that effluent mineral and metals quality characterized in Finding 17 for the existing WWTF will be similar to the effluent quality resulting from the Expansion Project.

Sanitary Sewer Overflows

26. A “sanitary sewer overflow” is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the treatment facility. Temporary storage and conveyance facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage/conveyance facilities.

27. On 2 May 2006, the State Water Board adopted Statewide General Waste Discharge Requirements For Sanitary Sewer Systems General Order No. 2006-003-DWQ (General Order). The General Order requires all public agencies that own or operate sanitary sewer systems greater than one mile in length to comply with the order. The Discharger’s collection system is greater than one mile in length; therefore the General Order is applicable. The application or Notice of Intent (NOI) for coverage under the general permit was submitted to the State Water Resources Control Board in October 2007.

Water Recycling

28. The Discharger recycles undisinfected treated wastewater to about 270-acres of adjacent farmland owned by the Discharger. The acreage included a 75 acre parcel north of the WWTF, a 35-acre parcel in the central portion of the WWTF property, and 160-acres of "wine grapes" south of the WWTF. Currently, the acreage available for recycling is about 235 acres.

29. Title 22 allows for the discharge of non-disinfected secondary treated wastewater to food crops where recycled water does not come into contact with the edible portion of the food crop and where the food crop undergoes commercial pathogen-destroying processing before being consumed by humans. However, the DPH issued an 8 January 2003 memo regarding *Orchard and Vineyard Irrigation Using Recycled Water.* The DPH now recommends that all vineyards be irrigated with water that meets the requirements of disinfected secondary-2.2 recycled water as defined in Title 22. To meet DHS guidelines for Orchard and Vineyard Irrigation Using Recycled Water, the wastewater discharged to the wine grapes must meet disinfected secondary-2.2 recycled water requirements as defined in Title 22, Section 60301.220.

Site-Specific Conditions

30. The WWTF is in an arid climate characterized by hot dry summers and mild winters. The rainy season generally extends from November through March. Occasional rains occur during the spring and fall months, but summer months are dry. Average annual precipitation and evaporation in the discharge area are about 11 inches and 63 inches, respectively, according to information published by the California Department of Water Resources (DWR).

31. Areal soils in the vicinity of the WWTF and the Use Areas are predominantly the Kimberlina fine sandy loam with lesser amounts of Wasco sandy loam and the McFarland loam, according to the USDA Natural Resources Conservation Service. These soils are well drained and were developed from predominantly granitic parent rock.

32. The WWTF is not within a 100-year floodplain according to Federal Emergency Management Agency maps. The northern end of the flood plain for Poso Creek is depicted on FEMA Flood map No. 060075-0245B as being about a half mile southwest of the WWTF property.

33. The Discharger is not required to obtain coverage under a National Pollutant Discharge Elimination System general industrial storm water permit for the WWTF because all storm water runoff is retained onsite and does not discharge to a water of the United States.

34. Land use in the WWTF vicinity is primarily agricultural with the City of Mc Farland approximately two miles to the east. A dairy is about a half mile east of the WWTF. The primary crops grown within five miles of the WWTF include grapes, almonds, alfalfa, cotton,

corn (forage), apricots, peaches, and dry beans according to DWR Kern County land use data published in 1998. Irrigation water is supplied primarily by surface water.

Groundwater Considerations

35. Regional groundwater is approximately 140 feet below ground surface and flows west southwesterly, according to information in *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer*, published by DWR in Spring 2004.

36. Depth to first encountered groundwater in the Discharger's monitoring wells ranged from about 90 to 100 feet below the ground surface in March 2007. The WWTF appears to be just east of the eastern edge of the "Corcoran Clay" or "E-clay layer." Drillers logs indicate a clay layer at about 200 feet bgs in some borings, but none in others drawing question to the extent of the clay layer in this area.

37. The City of McFarland obtains its source water from four deep groundwater wells and treats the water with ion exchange to remove nitrates. The resulting source water is of good quality, with the exception of arsenic, as indicated by the City's 2006 Consumer Confidence Report. Excerpts of this Annual Report are presented in the following table.

Constituent/Parameter	Units[1]	Range	Average
Sodium	mg/L	41 – 79	75
Sulfate	mg/L	4.0 – 11	98
EC[2]	µmhos/cm	203 – 892	550
Nitrate	mg/L	0.9 – 6.5	4.03
TDS[3]	mg/L	140 – 556	385
Arsenic	ug/L	2 – 16	11

1. mg/L = milligrams per liter, µmhos/cm = micromhos per centimeter, ug/L = micrograms per liter.
2. EC = Electrical conductivity
3. TDS = Total dissolved solids.

38. The Discharger has a six-well groundwater-monitoring network as shown in Attachment B. The original network was constructed in 2001 and consisted of five wells: two in the interpreted upgradient direction (MW-4 and MW-5) and three in the interpreted downgradient to crossgradient direction (MW-1 through MW-3 and MW-6). Wells MW-1 and MW-5, went dry in 2004 and two replacement wells MW-1A and MW-5A, were installed in January 2007. An additional well, MW-6, was installed along the southern property boundary. The following table characterizes groundwater from the Discharger's monitoring wells (data from September 2001 through September 2007).

McFarland WWTF - Groundwater Monitoring Data

Constituent[1]	Units[2]	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6[3]
pH	mg/L	7.8	7.9	8.0	7.6	7.7	7.8
EC	µmhos/cm	1285	862	857	1336	1014	886
Nitrate as N	mg/L	36.5	13.6	15.6	37.4	20.0	0.5
Sulfate	mg/L	204	80	115	145	87	70
TDS	mg/L	938	571	585	956	724	555
Chloride	mg/L	79	100	92	111	78	75
Sodium	mg/L	129	83	78	144	98	137
Calcium	mg/L	142	92	92	128	119	68
Magnesium	mg/L	21.9	18.6	15.9	20.7	25.9	9.9
Potassium	mg/L	6.3	8.0	5.5	6.1	13.1	0.8
Iron	ug/L	31	36.3	17.1	9.6	30.6	<0.028[4]
Bicarbonate	mg/L	210	159	133	284	290	325

1 EC = Electrical conductivity.

2 µmhos/cm = micromhos per centimeter, mg/L = milligrams per liter, ug/L = micrograms per liter.

3 Data is from two/three 2007 sampling events

4 The less than symbol indicates the result was not detected at a concentration greater than the listed value.

39. The highest measurements/concentrations of EC, TDS, sulfate, and nitrate are currently observed in upgradient well MW-4. EC and TDS results in all samples collected since 2001 have exceeded the lower secondary maximum contaminant level (MCL) of 900 umhos/cm and 500 mg/l, for EC and TDS, respectively. The upgradient well (MW-4) does not appear to represent true background conditions and is likely influenced from an offsite source.

40. Formerly, the highest EC, TDS, sulfate, and nitrate as nitrogen results were observed in well MW-1 as illustrated in the averages listed in the previous table. All samples collected from this well since 2001 have exceeded the recommended MCLs for EC, TDS, and nitrate as nitrogen. However, EC measurements in well MW-1 have decreased considerably from 1,720 umhos/cm in 2001 to about 1,000 umhos/cm (just above the MCL) in 2007.

41. The lowest concentrations are typically observed in the downgradient wells MW-2 and MW-3. MW-6 has been sampled only three times so trends in concentration cannot be assessed, but concentrations are low and similar to those in wells MW-2 and MW-3.

Basin Plan, Beneficial Uses, and Water Quality Objectives

42. The Water Quality Control Plan for the Tulare Lake Basin, 2nd Edition, (hereafter Basin Plan) designates beneficial uses, establishes numerical and narrative water quality objectives, contains implementation plans and policies for protecting all waters of the basin, and incorporates by reference plans and policies of the State Water Board. Pursuant to

Section 13263(a) of the California Water Code (CWC), these waste discharge requirements implement the Basin Plan.

43. Water in the Tulare Lake Basin is in short supply, requiring importation of surface water from other parts of the State. The Basin Plan encourages recycling on irrigated crops wherever feasible and indicates that evaporation of recyclable wastewater is not an acceptable permanent disposal method where the opportunity existing to replace an existing uses or proposed use of fresh water with recycled water.

44. The WWTF is in Detailed Analysis Unit (DAU) No. 256 within the Kern County Basin hydrologic unit. The Basin Plan designates the beneficial uses of groundwater in this DAU as municipal and domestic supply, agricultural supply, and industrial process and service supply.

45. The Basin Plan includes a water quality objective for chemical constituents that, at a minimum, require waters designated as domestic or municipal supply to meet the MCLs specified in Title 22. The Basin Plan recognizes that the Regional Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

46. The Basin Plan establishes narrative water quality objectives for Chemical Constituents, Tastes and Odors, and Toxicity. The Toxicity objective, in summary, requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses.

47. The Basin Plan identifies the greatest long-term problem facing the entire Tulare Lake Basin as the increase in salinity in groundwater, which has accelerated due to the intensive use of soil and water resources by irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. Until then, the Basin Plan establishes several salt management requirements, including:

    a. The incremental increase in salts from use and treatment must be controlled to the extent possible or limited to a maximum of 1,000 µmhos/cm. The maximum EC shall not exceed the EC of the source water plus 500 µmhos/cm. When the source water is from more than one source, the EC shall be a weighted average of all sources.

    b. Discharges to areas that may recharge good quality groundwaters shall not exceed an EC of 1,000 µmhos/cm, a chloride content of 175 mg/L, or boron content of 1.0 mg/L.

    These effluent limits are considered reflective of best practicable treatment or control (BPTC).

48. The list of crops in Finding 34 is not intended as a definitive inventory of crops that are or could be grown in the area affected by the discharge, but is representative. Crops sensitive to salt and boron are currently being grown in the area. The effluent characterized in Finding 17 should protect the crops grown. Additional monitoring for salt-specific constituents, such as boron, is necessary, but will likely be less than the quality specified in Finding 47.

49. The Basin Plan requires municipal WWTFs that discharge to land to comply with treatment performance standards for BOD_5 and TSS. WWTFs that preclude public access and are greater than 1 mgd must provide removal of 80 percent or reduction to 40 mg/L, whichever is more restrictive, of both BOD_5 and TSS.

Antidegradation

50. State Water Resources Control Board Resolution No. 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that:
    a. The degradation is consistent with the maximum benefit to the people of the State;
    b. The degradation will not unreasonably affect present and anticipated future beneficial uses;
    c. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives; and
    d. The discharger employs BPTC to minimize degradation.

51. Constitutes of concern that have the potential to degrade groundwater include, in part, salts and nutrients.
    a. For salinity, the Basin Plan contains effluent limits (EC of the source water plus 500 µmhos/cm, or a maximum of 1,000 µmhos/cm) that considered Resolution 68-16 when adopted. The discharge meets these limits and therefore should not unreasonably degrade the beneficial uses of groundwater with respect to salinity.
    b. For nitrogen, practicable measures are: 1) treating the effluent such that it is below objectives for drinking water, or 2) storing the effluent in a manner that protects the underlying groundwater from percolation from ponds until it can be beneficially used on crops. Nitrogen concentrations in effluent are slightly elevated and exceed the MCL of 10 mg/L. However, nitrogen concentrations in groundwater typically exceed the concentrations in the effluent, and the upgradient (MW-4 and MW-5) and crossgradient (MW-1) wells have the highest concentrations, indicating the WWTF is not the primary source of the elevated nitrogen concentrations in groundwater.

Treatment and Control Practices

52. The Expansion Project described in Findings 20 through 26, once completed, will provide treatment and control of the discharge that incorporates:
    a. secondary treatment;
    b. recycling of wastewater at agronomic rates;

c. an operation and maintenance (O&M) manual; and

d. certified operators to ensure proper operation and maintenance.

53. This Order establishes groundwater limitations for the WWTF that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. This Order contains requirements for a groundwater assessment for assuring that the highest water quality consistent with the maximum benefit to the people of the State will be achieved.

Other Regulatory Considerations

54. The United States Environmental Protection Agency (EPA) has promulgated biosolids reuse regulations in Title 40, Code of Federal Regulations, Part 503, Standards for the Use or Disposal of Sewage Sludge, which establishes management criteria for protection of ground and surface waters, sets application rates for heavy metals, and establishes stabilization and disinfection criteria. The Discharger may have separate and/or additional compliance, reporting, and permitting responsibilities to EPA.

55. As the discharge consists of treated municipal sewage and incidental discharges from treatment and storage facilities associated with a municipal wastewater treatment plant, and as these discharges are regulated by waste discharge requirements consistent with applicable water quality objectives, the Facility and its discharge is exempt from containment pursuant to Title 27, Section 20090(a).

CEQA

56. The Discharger certified an initial study and mitigated negative declaration (MND) in August 2001 in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et, seq.) and the State CEQA guidelines (Title 14, Division 6, California Code of Regulations, as amended). The MND indicates that the discharge will comply with Regional Water Board regulations, which will mitigate any groundwater impacts.

57. This Order implements measures necessary to mitigate any adverse impacts to groundwater from the Expansion Project to less than significant levels, including:

a. Effluent Limitation B.1, which restricts flow to 1.1 mgd until the Discharger can treat and dispose of the proposed increase in discharge flow in accordance with the terms and conditions of this Order and the CWC.

b. Effluent Limitations B.2, which establish effluent limitations consistent with the Basin Plan's performance standards.

c. Discharge Specification C.7, which stipulates waste constituents cannot be released or discharged in a concentration or mass that causes violation of the Order's groundwater limitations.

General Findings

58. Pursuant to CWC Section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

59. The Regional Water Board will review this Order periodically and will revise requirements when necessary.

60. California Water Code Section 13267(b) states that: "In conducting an investigation specified in subdivision (a), the Regional Water Board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Water Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the Regional Water Board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."

61. The technical reports required by this Order and the attached Monitoring and Reporting Program No.R5-2008-0072 are necessary to assure compliance with these waste discharge requirements. The Discharger operates the Facility that discharges the waste subject to this Order.

62. The California Department of Water Resources set standards for the construction and destruction of groundwater wells, as described in California Well Standards Bulletin 74-90 (June 1991) and Water Well Standards: State of California Bulletin 94-81 (December 1981). These standards, and any more stringent standards adopted by the State or county pursuant to California Water Code Section 13801, apply to all monitoring wells.

Public Notice

63. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.

64. The Discharger and interested agencies and persons have been notified of the intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

65. All comments pertaining to the discharge were heard and considered in a public meeting.

IT IS HEREBY ORDERED that, Waste Discharge Requirements Order No. 89-154 is rescinded and that, pursuant to Sections 13263 and 13267 of the CWC, the City of McFarland and its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the CWC and regulations adopted thereunder, shall comply with the following:

A. Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.
2. Bypass or overflow of untreated wastes, except as allowed by Provision E.2 of Standard Provisions and Reporting Requirements, is prohibited.
3. Discharge of waste classified as 'hazardous', as defined in Section 2521(a) of Title 23, California Code of Regulations, Section 2510 et seq., is prohibited. Discharge of waste classified as 'designated,' as defined in California Water Code Section 13173, in a manner that causes violation of groundwater limitations, is prohibited.

B. Effluent Limitations

1. The monthly average discharge flow shall not exceed:
   a. 1.1 mgd until the Discharger meets the requirements of Provision H13.
   b. 1.55 mgd after the requirements Provision H13 has been satisfied and approved by the Executive Officer.

2. The effluent discharge to the Storage Ponds shall not exceed the following limitations:

Constituent	Units	Monthly Average	Daily Maximum
BOD_5[1]	mg/L	40	80
TSS[2]	mg/L	40	80

[1] Five-day biochemical oxygen demand
[2] Total suspended solids

3. The arithmetic mean of BOD_5 and TSS in effluent samples collected over a monthly period shall not exceed 20 percent of the arithmetic mean of the values for influent samples collected at the same times during the same period (80 percent removal).

4. The annual flow-weighted average EC of the discharge shall not exceed the flow-weighted average EC of the source water plus 500 µmhos/cm or a maximum of 1,000 µmhos/cm, whichever is less. The flow-weighted average of the source water shall be a moving average for the most recent 12 months.

C. Discharge Specifications

1. All conveyance, treatment, storage, and disposal units shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

2. Public contact with effluent shall be precluded through such means as fences, signs, or acceptable alternatives.
3. Objectionable odors shall not be perceivable beyond the limits of the WWTF property at an intensity that creates or threatens to create nuisance conditions.
4. Disposal ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the winter. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.
5. On or about **1 October** of each year, available disposal pond storage capacity shall at least equal the volume necessary to comply with Discharge Specification C.4.
6. Ponds shall be managed to prevent breeding of mosquitoes. In particular,
   a. An erosion control plan should assure that coves and irregularities are not created around the perimeter of the water surface.
   b. Weeds shall be minimized through control of water depth, harvesting, and herbicides.
   c. Dead algae, vegetation and other debris shall not accumulate on the water surface.
   d. Vegetation management operations in areas in which nesting birds have been observed shall be carried out either before or after, but **not during**, the April 1 to June 30 bird nesting season.
7. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of groundwater limitations.

D. Recycling Specifications

The following specifications apply to use areas under the ownership or control of the Discharger. Other use areas are covered by separate water recycling requirements.

1. Recycled water (i.e., effluent) shall remain within the Use Area. Recycled water provided off-site shall only be provided to users that hold Regional Water Board adopted water reclamation requirements, or users who have obtained a waiver of reclamation requirements from the Regional Water Board.
2. Use of recycled water shall be limited to flood irrigation of fodder, fiber, seed crops not eaten by humans or for grazing of non-milking cattle and shall comply with the provisions of Title 22.
3. The Discharger will maintain the following setback distances from areas irrigated with recycled water:

Setback Distance (feet)	To
25	Property Line
30	Public Roads
50	Drainage courses
100	Irrigation wells
150	Domestic wells

4. No physical connection shall exist between recycled water piping and any domestic water supply or domestic well, or between recycled water piping and any irrigation well that does not have an air gap or reduce pressure principle device.

5. The perimeter of the Reclamation Areas shall be graded to prevent ponding along public roads or other public areas and prevent runoff onto adjacent properties not owned or controlled by the Discharger.

6. Areas irrigated with recycled water shall be managed to prevent nuisance conditions or breeding of mosquitoes. More specifically:

   a. All applied irrigation water must infiltrate completely within a 48-hour period;

   b. Ditches not serving as wildlife habitat should be maintained free of emergent, marginal, and floating vegetation; and

   c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled water.

7. Areas irrigated with recycled water shall be posted with warning signs in accordance to Title 22, Section 60310 (g). Signs will be of a size no less than four inches high by eight inches wide, shall be placed at all areas of public access and around the perimeter of all areas used for effluent disposal or conveyance to alert the public of the use of recycled water. All signs shall display an international symbol similar to that shown in Attachment C, which is attached hereto and made a part of this Order by reference, and present the following wording:

“RECYCLED WATER – DO NOT DRINK”

“AGUA DE DESPERDICIO RECLAMADA – POR FAVOR NO TOME”

8. Reclamation of WWTF effluent shall be at reasonable agronomic rates considering the crop, soil, climate, and irrigation management plan. The annual nutrient loading of reclamation areas, including the nutritive value of organic and chemical fertilizers and of the recycled water, shall not exceed crop demand.

E. Sludge Specifications

Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the WWTF. Biosolids refers to sludge that has undergone sufficient treatment and testing to qualify for reuse pursuant to federal and state regulations as a soil amendment for agriculture, silviculture, horticulture, and land reclamation.

1. Sludge and solid waste shall be removed from screens, sumps, aeration basins, ponds, clarifiers, etc. as needed to ensure optimal plant operation.
2. Any handling and storage of residual sludge, solid waste, and biosolids on property of the WWTF shall be temporary (i.e., no longer than two years) and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations of this Order.
3. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27. Removal for further treatment, disposal, or reuse at sites (i.e., landfill, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a regional water quality control board will satisfy this specification.
4. Use of biosolids as a soil amendment shall comply with valid waste discharge requirements issued by a regional water quality control board or State Water Board or a local (e.g., county) program authorized by a regional water quality control board. In most cases, this means the General Biosolids Order (State Water Board Water Quality Order No. 2004-12-DWQ, “General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities”). For a biosolids use project to be authorized by the General Biosolids Order, the Discharger must file a complete Notice of Intent and receive a Notice of Applicability for each project.
5. Any proposed change in sludge use or disposal practice shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

F. Pretreatment Requirements

1. The Discharger shall implement the necessary legal authorities, programs, and controls to ensure that the following incompatible wastes are not introduced to the treatment system, where incompatible wastes are:
   a. Wastes that create a fire or explosion hazard in the treatment works;
   b. Wastes that will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0, unless the works is specially designed to accommodate such wastes;

c. Solid or viscous wastes in amounts that cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;

d. Any waste, including oxygen demanding pollutants (BOD5, etc.), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and loss of treatment efficiency;

e. Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40°C (104°F), unless the treatment works is designed to accommodate such heat;

f. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

g. Pollutants that result in the presence of toxic gases, vapors, or fumes within the treatment works in a quantity that may cause acute worker health and safety problems; and

h. Any trucked or hauled pollutants, except at points predesignated by the Discharger.

2. The Discharger shall implement the legal authorities, programs, and controls necessary to ensure that indirect discharges do not introduce pollutants into the sewerage system that, either alone or in conjunction with a discharge or discharges from other sources:

   a. Flow through the system to the receiving water in quantities or concentrations that cause a violation of this Order, or

   b. Inhibit or disrupt treatment processes, treatment system operations, or sludge processes, use, or disposal and either cause a violation of this Order or prevent sludge use or disposal in accordance with this Order.

G. Groundwater Limitations

1. Release of waste constituents from any treatment or storage component associated with the WWTF shall not cause or contribute to groundwater:

   a. Containing concentrations of constituents identified below, or natural background quality, whichever is greater.

      (i) Nitrate as nitrogen of 10 mg/L.

      (ii) Electrical Conductivity of 900 µmhos/cm.

      (iii) Total Coliform Organisms of 2.2 MPN/100 mL.

      (iv) For constituents identified in Title 22, the MCLs quantified therein.

   b. Containing taste or odor-producing constituents, toxic substances, or any other constituents, in concentrations that cause nuisance or adversely affect beneficial uses.

H. Provisions

1. The Discharger shall comply with the Standard Provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as Standard Provisions(s).
2. The Discharger shall comply with Monitoring and Reporting Program (MRP) No. R5-2008-0072, which is part of this Order, and any revisions thereto as adopted by the Regional Water Board or approved by the Executive Officer. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharger self-monitoring reports.
3. The Discharger shall keep at the WWTF a copy of this Order, including its MRP, Information Sheet, attachments, and Standard Provisions, for reference by operating personnel. Key operating personnel shall be familiar with its contents.
4. The Discharger shall not allow pollutant-free wastewater to be discharged into the Facility collection, treatment, and disposal systems in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means storm water (i.e., inflow), groundwater (i.e., infiltration), cooling waters, and condensates that are essentially free of pollutants.
5. The Discharger must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also include adequate laboratory controls and appropriate quality assurance procedures. This Provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger only when the operation is necessary to achieve compliance with the conditions of the Order.
6. All technical reports and work plans required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. To demonstrate compliance with sections 415 and 3065 of Title 16, CCR, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports and work plans must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
7. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Accordingly, the Discharger shall submit to the Regional Water Board on or before each report due date the specified document or, if an action is specified, a written report detailing evidence of compliance with the date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Water Board by letter when it returns to compliance with the time schedule. Violations may result in

enforcement action, including Regional Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

8. In the event of any change in control or ownership of land or waste treatment and storage facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the appropriate Regional Water Board office.

9. To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the address and telephone number of the persons responsible for contact with the Regional Water Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Regional Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.

10. As a means of discerning compliance with Discharge Specification C.3, the dissolved oxygen content in the upper zone (1 foot) of effluent in the effluent storage ponds shall not be less than 1.0 mg/L for three consecutive sampling events. Should the DO be below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Regional Water Board and propose a remedial approach to resolve the low DO results **within 30 days**.

11. The Discharger shall maintain and operate all ponds sufficient to protect the integrity of containment levees and prevent overtopping or overflows. Unless a California civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically). As a means of management and to discern compliance with this Provision, the Discharger shall install and maintain in each pond permanent markers with calibration that indicates the water level at design capacity and enables determination of available operational freeboard.

12. The Discharger shall submit the technical reports and work plans required by this Order for Regional Water Board staff consideration and incorporate comments they may have in a timely manner, as appropriate. The Discharger shall proceed with all work required by the following provisions by the due dates specified.

13. **By 30 June 2009**, the Discharger shall submit a technical report or reports that address:

    a. A design and performance demonstration for the effluent storage ponds. The performance demonstration shall establish that the pond design will be protective of groundwater quality and that seepage from the ponds will not contribute to groundwater exceeding applicable groundwater limitations;

b. A Use Area Management Plan describing the areas (Use Area) to receive recycled water and the associated water and nutrient loading balances for the Use Area. The report shall demonstrate that the Use Area is sufficient for the recycled water to be applied at plant uptake rates for both nutrient and hydraulic loading. The report will address the type of crops to be irrigated and the level of treatment that will be maintained to recycle the wastewater in accordance with all applicable regulations and guidelines.

The design and performance demonstration for the effluent storage ponds and the Use Area Management Plan can be combined for ease of submittal or submitted under separate cover. This Provision will be considered satisfied following written acceptance from the Executive Officer.

14. **By 30 June 2009**, the Discharger shall update the O&M Plan to include a sludge handling and disposal plan.

15. Upon completion of tasks set forth in Provisions H.13 and H.14, the Regional Water Board will consider the evidence proved regarding groundwater and the discharge and reopen the WDRs to evaluate the effluent limitations and conditions of this Order to ensure consistency with water quality policies and plans and the CWC, as appropriate.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 25 April 2008.

PAMELA C. CREEDON, Executive Officer

Order Attachments:

Monitoring and Reporting Program
A Vicinity Map – WWTF
B. Treatment, Storage, and Disposal Layout
C. International Symbol for Recycled Water

Information Sheet
Standard Provisions (1 March 1991) (separate attachment to Discharger only)

Map Source:
NAIP Aerial Photograph (2005)

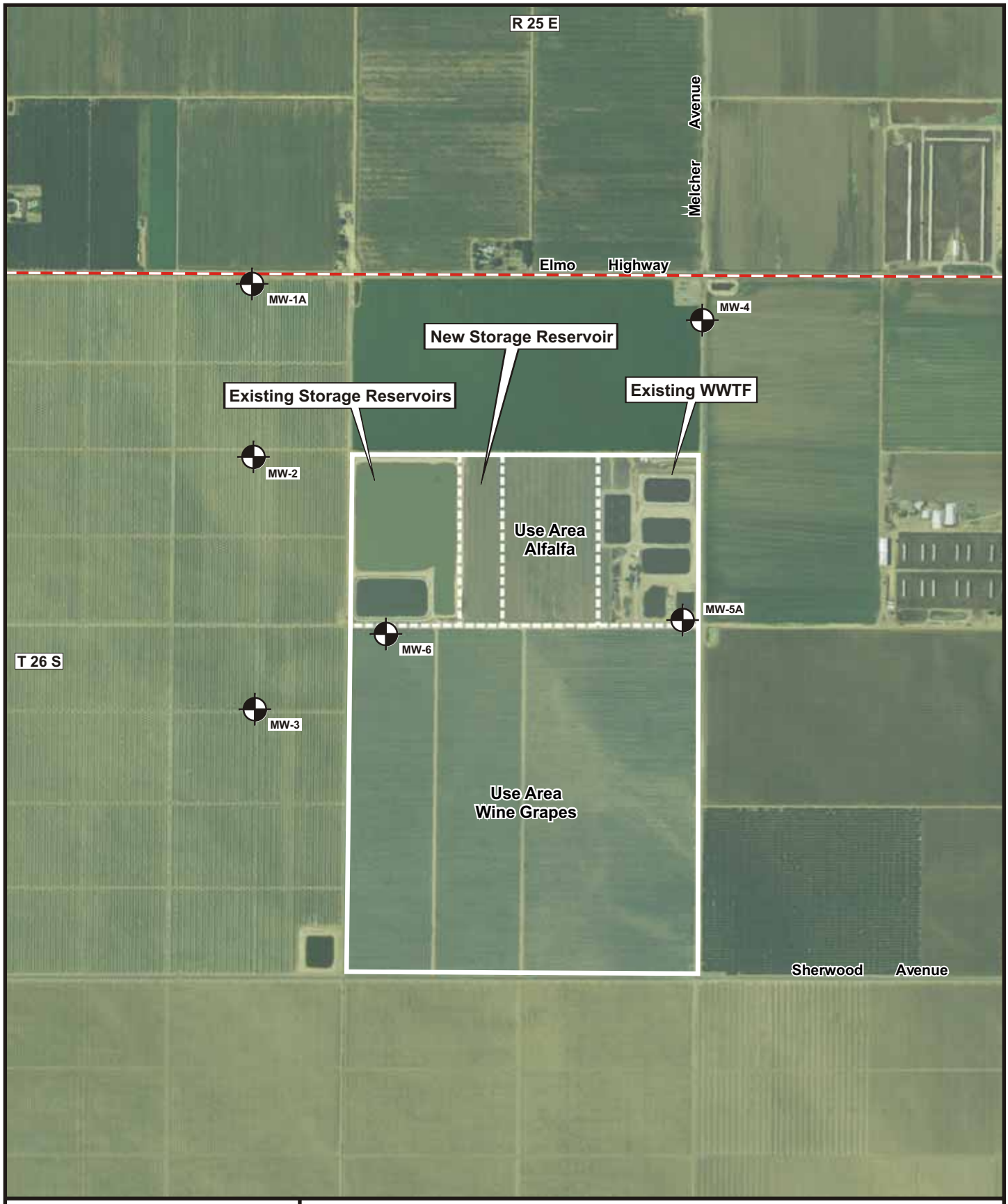
Section 9, T26S R25E, MDB&M

SCALE
1 inch = 2,000 feet

SITE LOCATION MAP

ORDER NO. R5 - 2008 - 0072
GENERAL WASTE DISCHARGE REQUIREMENTS
FOR
CITY OF McFARLAND
WASTEWATER TREATMENT FACILITY
KERN COUNTY

ATTACHMENT A



Map Source:
NAIP Aerial Photograph (2005)
Section 9, T26S R25E, MDB&M
*Note: All locations are approximate

SCALE
1 inch = 1,000 feet

TREATMENT, STORAGE, & DISPOSAL LAYOUT
ORDER NO. R5 - 2008 - 0072
GENERAL WASTE DISCHARGE REQUIREMENTS
FOR
CITY OF McFARLAND
WASTEWATER TREATMENT FACILITY
KERN COUNTY

ATTACHMENT B

NONPOTABLE WATER INTERNATIONAL SYMBOL

ORDER NO. R5 -2008-0072

WASTE DISCHARGE REQUIREMENTS

FOR

CITY OF MCFARLAND

WASTEWATER TREATMENT FACILITY

KERN COUNTY

ATTACHMENT C

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2008-0072
FOR
CITY OF MCFARLAND
WASTEWATER TREATMENT FACILITY
KERN COUNTY

This Monitoring and Reporting Program (MRP) is required pursuant to California Water Code section 13267.

The Discharger shall not implement any changes to this MRP unless and until the Regional Board adopts or the Executive Officer issues a revised MRP. Changes to sample location shall be established with concurrence of Regional Water Board staff, and a description of the revised stations shall be submitted for approval by the Executive Officer. All samples should be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each sample shall be recorded on the sample chain of custody form. All analyses shall be performed in accordance with Standard Provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991. The results of analyses performed in accordance with specified test procedures, taken more frequently than required at the locations specified in this MRP, shall be reported to the Regional Water Board and used in determining compliance.

Field test instruments (such as pH) may be used provided that:

1. the operator is trained in the proper use of the instrument;
2. the instruments are calibrated prior to each use;
3. instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. field calibration reports are submitted as described in the “Reporting” section of this MRP.

Each laboratory report shall clearly identify the following:

1. analytical method;
2. measured value;
3. units;
4. what constituent a value is reported as;
5. method detection limit (MDL);
6. reporting limit (RL) (i.e., a practical quantitation limit or PQL);
7. documentation of cation/balance for general minerals analysis of supply water and groundwater samples.

All analyses shall be performed in accordance with the latest edition of *Guidelines Establishing Test Procedures for Analysis of Pollutants*, promulgated by EPA (40 CFR 136) or other procedures approved by the Executive Officer, provided the methods have method detection limits equal to or lower than the analytical methods specified in this MRP. In reporting data, the Discharger shall indicate whether any analysis was performed using a method not in conformance with EPA’s Guidelines. Analyses may also comply with the methods and holding

times specified in: *Methods for Chemical Analysis of Water and Wastes* (EPA-600/4-79-020, 1983); *Methods for Determination of Inorganic Substance in Environmental Samples* (EPA/600/R-93/100, 1993); *Standard Methods for the Examination of Water and Wastewater,* 20th Edition (WEF, APHA, AWWA); and *Soil, Plant and Water Reference Methods for the Western Region*, 2003, 2nd Edition, 2003.

If monitoring consistently shows no significant variation in magnitude of a constituent concentration after at least 12 months of monitoring, the Discharger may request the MRP be revised to reduce monitoring frequency. The proposal must include adequate technical justification for reduction in monitoring frequency.

INFLUENT MONITORING

The Discharger shall collect influent samples at the headworks of the treatment facility prior to any treatment of waste. Time of a grab sample shall be recorded. Influent monitoring shall include at least the following:

Constituent	Units	Type of Sample	Sampling Frequency
Flow	mgd	Continuous	Daily[1]
Monthly Average Flow	mgd	Computed	Monthly
BOD_5[2]	mg/L	Grab	Weekly
Monthly Average BOD	mg/L	Calculated	Monthly

[1] Sample frequencies referenced hereafter in this program as daily shall not include weekends or holidays.
[2] Five-day, 20°C biochemical oxygen demand
[3] 8-hour composite sampling as referred to in this program shall be flow-proportioned

EFFLUENT MONITORING

The Discharger shall collect effluent samples at a point in the system following treatment and before discharge to the storage ponds. Time of collection of a grab sample shall be recorded. Effluent monitoring shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency[1]
pH	pH Units	Grab	Weekly
BOD			
Concentration	mg/L	Grab	Weekly
Monthly Average	mg/L	Calculated	Monthly
TSS			
Concentration	mg/L	Grab	Weekly
Monthly Average	mg/L	Calculated	Monthly

Constituent	Units	Type of Sample	Sampling Frequency[1]
Salinity			
EC[2]	µmhos/cm	Grab	Monthly
TDS[3]	mg/L	Grab	Monthly
Chloride	mg/L	Grab	Monthly
Nitrogen Forms			
Nitrate (as N)	mg/L	Grab	Monthly
Total Kjeldahl Nitrogen (TKN)	mg/L	Grab	Monthly
Total Nitrogen	mg/L	Calculated	Monthly
General Minerals[4]	mg/L	Grab	Annually[5]

1 If results of monitoring a pollutant appear to indicate either the failure to achieve the design treatment goals of the wastewater treatment facility (e.g., the monthly mean for BOD_5 or TSS exceeds 40 mg/L) or potential upset of the treatment process, but monitoring frequency is not sufficient to validate the results, the frequency of sampling shall be increased to confirm the magnitude and duration of such treatment failures, if any, and aid in identification and resolution of the problem.

2 Electrical conductivity at 25°C.

3 Total dissolved solids (TDS) referenced hereafter in this program shall be determined using Environmental Protection Agency (EPA) Method No. 160.1 for combined organic and inorganic TDS and EPA Method No. 160.4 for inorganic TDS or equivalent analytical procedures specified in 40 Code of Federal Regulations (CFR) Part 136.

4 General Minerals as referred to in this program shall include the constituents in the General Minerals Analyte List presented below.

5 In October

General Minerals Analyte List [1]

Alkalinity (as $CaCO_3$)	pH
Bicarbonate (as $CaCO_3$)	Potassium
Calcium	Sodium
Carbonate (as $CaCO_3$)	Specific Electrical Conductivity (EC)
Chloride	Sulfate
Hardness (as $CaCO_3$)	Total Dissolved Solids (TDS)
Magnesium	

[1] General Minerals analyte lists may vary depending on the laboratory, but shall include at least the above analytes and properties. An anion cation balance shall accompany results.

RESERVOIR MONITORING

The storage reservoirs shall be sampled systematically for the parameters specified below. Storage and disposal pond monitoring shall include at least the following:

Constituent/Parameter	Units	Type of Sample	Sampling Frequency
Dissolved Oxygen[1] (DO)	mg/L	Grab[2]	Weekly
Freeboard[3]	feet[4]	Observation	Weekly

1 To address potential for the creation of objectionable odors, the DO content in the upper zone (one foot) of either effluent storage reservoir should not be les than 1.0 mg/L for three consecutive sampling events. If results of monitoring indicate DO concentrations less than 1.0 mg/L, but monitoring frequency is not sufficient to validate the results, the frequency of sampling shall be increased to confirm the magnitude and duration of such low concentrations of DO, if any, and aid in identification and resolution of the problem.

2 Samples shall be collected at a depth of one foot from the storage reservoirs, opposite the inlet, and analyzed for DO. Samples shall be collected between 0700 and 0900 hours.

3 To prevent overtopping, overflows, or levee failures, freeboard in the reservoirs should never be less than two feet in the reservoir (measured vertically).

4 Freeboard shall be monitored to the nearest tenth (0.1) foot.

In addition, the Discharger shall inspect the condition of the storage reservoirs once per week and write visual observations in a bound logbook. Notations shall include observations of whether weeds are developing in the water or along the bank, and their location; whether dead algae, vegetation, scum, or debris are accumulating on the storage and disposal pond surface and their location; whether burrowing animals or insects are present; and the color of the reservoirs (e.g., dark sparkling green, dull green, yellow, gray, tan, brown, etc.). A summary of the entries made in the log during each month shall be submitted along with the monitoring report the following month.

GROUNDWATER MONITORING

Concurrently with groundwater quality sampling, the Discharger shall measure the water level in each well as groundwater depth (in feet and hundredths) and as groundwater surface elevation (in feet and hundreds above mean sea level). The horizontal geodetic location of each monitoring well shall be provided where the point of beginning shall be desribed by the California State Plane Coordinate System, 1983 datum.

Prior to collecting samples and after measuring the water level, each monitoring well shall be adequately purged to remove water that has been standing within the well screen and casing that may not be chemically representative of formation water. Depending on the hydraulic conductivity of the geologic setting, the volume removed during purging is typically from 3 to 5 volumes of the standing water within the well casing and screen, or additionally the filter pack pore volume.

The Discharger shall include in its submittal of groundwater elevation data, a contour map based on said data showing the gradient and direction of groundwater flow under/around the facility and effluent disposal area(s). The groundwater contour map shall also include the

location of the monitoring wells and active storage and land disposal areas (i.e., areas receiving treated effluent).

Samples shall be collected quarterly from approved monitoring wells and analyzed for the following constituents:

Constituent/Parameter	Units	Type of Sample	Frequency
Depth to groundwater	Feet[1]	Measured	Quarterly[2]
Groundwater elevation	Feet above mean sea level	Calculated	Quarterly[2]
Electrical Conductance	umhos/cm	Grab	Quarterly[2]
TDS	mg/L	Grab	Quarterly[2]
Chloride	mg/L	Grab	Quarterly[2]
Sodium	mg/L	Grab	Quarterly[2]
Nitrogen compounds:			
Nitrate (as NO_3-N)	mg/L	Grab	Quarterly[2]
Total Nitrogen (as N)	mg/L	Calculated	Quarterly[2]
General Minerals	mg/L	Grab	Annually[3]

1. To the nearest hundredth of a foot.
2. January, April, July and October.
3. In October.

WATER SUPPLY MONITORING

The supply water shall be monitored as follows:

Constituent	Units	Measurement	Frequency
EC[1]	µmhos/cm	Grab	Quarterly[2]
Arsenic	mg/L	Grab	Quarterly[2]
General Minerals	mg/L	Grab	Annually[3]

1 EC shall be reported as a flow-weighted average from all supply wells.
2 January, April, July and October.
3 In October.

SLUDGE MONITORING

To ensure that discharges to the WWTF are not inerfering with treatment process, the Discharger shall collect a composite sample of sludge annually, as set forth by Title 40 Code of federal Regulations (CFR) Part 503.16. Any Notice of Necessary Information (NANI) form prepared for submittal to the United States Environmental Protection Agency shall be forwarded to the Regional Board.

Composite samples shall be collected in accordance with the Environmental Protection Agency's *POTW Sludge Sampling And Analysis Guidance Document* (EPA/ 833B89100, August 1989) and test for metals:

Arsenic	Copper	Nickel
Cadmium	Lead	Selenium
Molybdenum	Mercury	Zinc

The control of pathogens and the reduction of vector attraction shall be achieved in accordance with the Environmental Protection Agency's *Control of Pathogens and Vectors In sewage Sludge* (EPA/625-R-92/013, July 2003).

Sampling records shall be retained for a minimum of five years. A log shall be kept of sludge quantities generated and of handling, application, and disposal activities. The frequency of entries is discretionary; however, a log should be complete enough to serve as a basis for part of the annual report.

USE AREA MONITORING

Monitoring of the land application area shall be conducted daily (when recycled water is being applied)and the results shall be included in an annual monitoring report. Evidence of erosion, field saturation, runoff, or the presence of nuisance conditions shall be noted in the annual monitoring report. Effluent monitoring results shall be used in calculations to ascertain loading rates at the application area. Monitoring of the land application areas shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency
Acreage Applied[1]	Acres	Calculated	Daily[2]
Application Rate[3]	Gal/acre/day	Calculated	Daily[2]
BOD_5 Loading Rate[3]	lbs/acre/day	Calculated[4]	Monthly
Total Nitrogen Loading Rate[3]	lbs/acre/month	Calculated[4]	Monthly

[1] Land application areas shall be identified.

[2] While recycled water is being applied and for at least 48-hours following application.

[3] For each land application area.

[4] BOD_5 and Total Nitrogen loading rates shall be calculated using the daily applied volume of wastewater, daily application area, and a running average of the three most recent results of BOD_5 and Total Nitrogen, which shall also be reported along with supporting calculations.

REPORTING

The Discharger shall report monitoring data and information as required in this MRP and as required in the Standard Provisions and Reporting Requirements. Daily, weekly, semi-monthly, and monthly data shall be reported in monthly monitoring reports.

Monitoring data and/or discussions submitted concerning WWTF performance must also be signed and certified by the chief plant operator. When reports contain laboratory analyses

performed by the Discharger and the chief plant operator is not in the direct line of supervision of the laboratory, reports must also be signed and certified by the chief of the laboratory.

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner that illustrates clearly, whether the Discharger complies with waste discharge requirements. If the Discharger monitors any pollutant at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the discharge monitoring report.

A. Monthly Reports

Daily, weekly, and monthly monitoring data shall be reported in monthly monitoring reports. Monthly monitoring reports shall be submitted to the Regional Board **by the 1st day of the second month following sampling** (i.e., the January Report is due by 1 March). At a minimum, the reports shall include at the minimum:

1. Results of influent, effluent, pond, and use area (land application) monitoring;
2. Calculated Monthly Average Daily Flow;
3. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format;
4. Copies of laboratory analytical reports; and
5. A calibration log verifying calibration of all hand-held monitoring instruments and devices used to comply with the prescribed monitoring program.

B. Quarterly Reports

Wastewater: Daily, weekly, monthly, and quarterly monitoring data shall be reported in quarterly monitoring reports. Quarterly monitoring reports shall be submitted to the Regional Water Board **by the 1st day of the second month after the calendar quarter** (i.e., the 1st Quarter Report is due by 1 May, 2nd Quarter Report is due by 1 August, and the 3rd Quarter Report is due 1 November). The monthly reports required on 1 May, 1 August, and 1 November shall be combined with the quarterly report for ease of submittal. Quarterly monitoring reports shall include all monitoring data required in the monthly monitoring schedule, and the data from quarterly effluent and water supply monitoring events.

Groundwater: Quarterly groundwater monitoring data shall be reported in quarterly monitoring reports and submitted to the Regional Water Board as detailed in the previous section. Quarterly monitoring reports shall include all monitoring data required from quarterly groundwater monitoring events. The quarterly groundwater monitoring reports shall contain:

1. Quarterly groundwater contour maps;
2. Graphs of the laboratory analytical data for all samples taken from each well within at least the previous five calendar years. Each such graph shall plot over time for a given monitoring well the concentration of one or more waste constituents; and
3. All monitoring analytical data obtained during the quarter presented in tabular form and included with previous data obtained for the given well.

C. Annual Reports

Wastewater: An Annual Report shall be prepared as a fourth quarter monitoring report. The Annual Report will include all monitoring data required in the monthly/quarterly schedule plus the results of any annually sampled constituents (general minerals, selected metals, etc). The Annual Report shall be submitted to the Regional Board **by 1 February of the year following the year the samples were collected.** In addition to the data normally presented, the Annual Report shall include the following:

1. The names, certificate grades, and general responsibilities of all persons in charge of wastewater treatment and disposal;
2. The names and telephone numbers of persons to contact regarding the WWTF for emergency and routine situations;
3. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibrations (standard Provision C.4);
4. A statement whether the current operation and maintenance manual, and contingency plan, reflect the WWTF as currently constructed and operated, and the dates when these documents were last reviewed for adequacy;
5. The results of an annual evaluation conducted pursuant to Standard Provisions E.4 and a figure depicting monthly average discharge flow for the previous five calendar years;
6. A summary of sludge monitoring, including:
    a. Annual sludge production in dry tons and percent solids;
    b. A schematic diagram showing sludge handling facilities and solids flow diagram; and
    c. A description of disposal methods, including the following information related to the disposal methods used at the WWTF. If more than one method is used, include the percentage of sludge production disposed of by each method.

i. For **landfill disposal**, include (a) the Order numbers that regulate the landfill(s) used, (b) the present classifications of the landfill(s) used, and (c) the names and locations of the facilities receiving the sludge.
ii. For **land application**, include: (a) the locations of the site(s), and (b) the Order number of any WDRs that regulates the site(s).
iii. For **incineration**, include: (a) the names and location of the site(s) where sludge incineration occurs, (b) the Order numbers of WDRs that regulate the site(s), (c) the disposal method of ash, and (d) the names and locations of facilities receiving ash (if applicable); and
iv. For **composting**, include: (a) the location of the site(s), and (b) the order numbers of any WDRs that regulate the site(s).

7. A summary of all recycled water operations for the previous year (i.e., from October through September). The summary shall discuss total monthly water application; total wastewater recycled annually; total nutrient loading annually from applied wastewater, biosolids, and chemical fertilizers; and total estimated amount of nutrients removed through crop harvest. The summary shall also review the use area management plan (described in Provision F.7) and make recommendations regarding continuation or modification of the plan. In short, the summary shall present a mass balance relative to constituents of concern and hydraulic loading along with supporting data and calculations.
8. A summary and discussion of the compliance record for the reporting period. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with this Order.
9. A statement regarding whether the current operation and maintenance manual, and contingency plan, reflect the groundwater cleanup system as currently constructed and operated, and the dates when these documents were last reviewed for adequacy.

Groundwater: An Annual Groundwater Monitoring Report shall be prepared as a fourth quarter groundwater monitoring report. The Annual Groundwater Monitoring Report will include all groundwater monitoring data required in the monthly/quarterly groundwater monitoring schedule plus the results of any annually sampled groundwater constituents (general minerals, selected metals, etc). The Annual Groundwater Monitoring Report shall be submitted to the Regional Board **by 1 February of the year following the year the samples were collected.** In addition to the data normally presented in the quarterly groundwater monitoring reports, the Annual Report shall include the following:

1. Quarterly groundwater contour maps from the previous four quarters;
2. Graphs of the analytical data for all samples collected from each monitoring well for at least five calender years. Each such graph shall plot over time for a given monitoring well the concentration of one or more waste constituents specified herein and selected in concurrence with Regional Water Board staff. Graphs

shall be plotted at a scale appropriate to show trends or variations in water quality, and shall plot each datum, rather than plotting mean values.

3. All monitoring data obtained during the previous monitring events for at least the last five calendar years.
4. The most recent water supply report for the City of McFarland (Consumer Confidence Report) including laboratory data;

All technical reports required herein must be overseen and certified by a California registered civil engineer, certified engineering geologist, or certified hydrogeologist in accordance with California Business and Professions Code, sections 6735, 7835, and 7835.1.

All reports submitted in response to this Order shall comply with the signatory requirements in Standard Provision B.3.

A transmittal letter shall accompany each self-monitoring report. The letter shall discuss any violations during the reporting period and all actions taken or planned for correcting violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory.

The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Ordered by: _____

PAMELA C. CREEDON, Executive Officer

25 April 2008

(Date)

DKP/JSP: 2/21/08

INFORMATION SHEET

ORDER NO. R5-2008-0072
CITY OF MCFARLAND
WASTEWATER TREATMENT FACILITY
KERN COUNTY

Background
The City of McFarland (Discharger or City) operates a wastewater collection, treatment, and disposal facility (WWTF) for the residents and small industry of the City of McFarland. The WWTF has an average daily flow of about 1.0 million gallons per day (mgd).

The Discharger submitted a report of waste discharge (RWD) dated in June 2004, in support of a discharge to land of 1.55 mgd of wastewater from the existing Wastewater Treatment Facility (hereafter "WWTF"). Additional information was included in a 17 May 2005 Final Geotechnical Investigation report prepared by BSK regarding modification and expansion (hereafter Expansion Project) of the WWTF. The existing WWTF provides secondary treatment of the wastewater stream. Treatment includes screening to remove large solids, aeration, and sedimentation. Effluent is discharged to approximately seven acres of lined (soil cement) aeration lagoons. Effluent then is discharged to approximately 30 acres of unlined evaporation/percolation ponds (Disposal Ponds) and/or an approximately 270-acre Use Area.

Waste Discharge Requirements (WDRs) Order No. 89-154, adopted by the Regional Water Board on 11 August 1989, currently limits the discharge flow to 1.1 million gallons per day (mgd). The WDRs also establish monthly average and daily maximum limits for settleable solids (SS) of 0.2 milliliter per liter (mL/L) and 1.0 mL/L and biochemical oxygen demand (BOD) of 40 milligram per liter (mg/L) and 80 mg/L. WDRs Order No. 89-154 does not reflect the configuration of the Expansion Project.

The Expansion Project consists of constructing a new 30-acre Disposal Pond and re-cropping of city owned land to meet agronomic requirements for discharge of effluent to land. The Discharger has not submitted a technical report describing the construction of the new storage pond. The 17 May 2005 Final Geotechnical Investigation report proposed expanding the eastern wall of the western disposal pond. The expansion project as designed would have added 25 acres of storage and increased the total storage from about 236 acre-feet to 361 acre-feet. Regional Water Board staff concurred with the proposed expansion project in a 22 May 2006 letter to the Discharger. However, during a 16 May 2007 site inspection, it was observed that the eastern wall of the pond had not been removed and a separate 30-acre pond was being constructed in the same area. While the new design appears to be adequate, a technical report describing the storage ponds is required from the Discharger.

The Regional Water Board's 22 May 2007 letter requested the Discharger address the amount of land that would be required to recycle wastewater due to the proposed expansion project removing 20 acres of the available alfalfa. The Discharger earlier provided a 23 June 2006 *McFarland Storage Pond Expansion – Progress Update* indicating that 100 acres of land planted with alfalfa was required to meet the discharge requirements and proposed converting 75-acres planted with Sudan grass to alfalfa as well as converting 80 acres of wine grapes. The proposed 155 acres exceeded the indicated required proposed 100-acre area. However, information provided by the operator in July 2007 indicated the Discharger was now looking

into acquiring additional land (not the vineyard) to meet their recycling requirements and is still discharging wastewater to the nearby wine grape orchard in violation of Discharge Specification No. B.12 of Order No. 89-154 for continuing to irrigate crops other than fodder, fiber, or seed crops. When the WDRs were adopted in 1989, Title 22 also allowed the discharge of non-disinfected secondary treated wastewater to food crops where recycled water does not come into contact with the edible portion of the food crop and where the food crop undergoes commercial pathogen-destroying processing before being consumed by humans. In January 2003, the California Department of Health Services (now the Department of Public Health [DPH]) issued a memorandum stating that contact with recycled water is likely to occur in vineyards and that there may be a potential for pathogens to gain access to the interior of fruits. The DPH now recommends that all vineyards be irrigated with water that meets the requirements of disinfected secondary-2.2 recycled water as defined in Title 22. Regional Water Board staff notified the Discharger of this information in a 9 August 2004 letter. The proposed WDRs require an updated Use Area Management Plan and Final Construction report be submitted.

Solids and Biosolids Disposal
Screenings from the headworks are placed in a dumpster prior to disposal at an offsite landfill. The Discharger removed accumulated solids from the aeration lagoons in 2005 and 2006 because they had indicated the accumulated solids were contributing to the WWTF's recurring exceedance of the effluent BOD and nitrogen limits. This Order will require the Discharger to update the O&M Plan to include a sludge management plan.

The WWTF has no sludge storage facilities. All sludge removed from the ponds will be hauled offsite to an appropriate disposal facility by a licensed disposal carrier.

Groundwater Conditions
Regional groundwater flows west southwesterly and the depth of water occurs at about 90 to 100 feet below ground surface (bgs), according to information recorded in the WWTF monitoring wells. The WWTF appears to be just east of the eastern edge of the "Corcoran Clay" or "E-clay layer." Drillers logs indicate a clay layer at about 200 feet bgs in some borings, but none in others, drawing into question the extent of the clay layer in this area.

In 2001, the City began monitoring groundwater in five wells (MW-1 through MW-5) at the WWTF. Wells MW-1 (northern property boundary) and MW-5 (southeastern property corner) went dry in 2004. The Discharger installed replacement wells MW-1A and MW-5A in January 2007 and added well MW-6 along the southern property boundary. The two-upgradient wells MW-4 and MW-5/5A typically have the highest EC (about 950 to 1,500 umhos/cm) and nitrate as nitrogen concentrations (about 17 to 44 mg/L) indicating these wells likely do not represent true background conditions. Well MW-1 (cross to downgradient) has had high EC (up to 1,700 umhos/cm) and nitrate (up to 48.5 mg/L) concentrations in the past, but concentrations have decreased considerably since 2001. The lowest EC and nitrogen concentrations are observed in downgradient wells MW-2, MW-3, and MW-6.

Compliance History

The Discharger consistently exceeded the effluent limitation for BOD specified in WDRs Order No. 89-154 in 2005 and 2006, but results indicated improvement in 2007. Discharger self-monitoring reports (SMRs) in 2006 show the Discharger exceeded the monthly average BOD and TSS effluent limit of 40 mg/L in 7 and 6 months respectively. During 2007 monitoring events, the discharger exceeded the limit for BOD only three times and TSS four times. Table 1 summarizes the effluent BOD and TSS concentrations from 2007.

TABLE 1. Effluent Quality

Month	BOD (mg/L)	TSS (mg/L)	Month	BOD (mg/L)	TSS (mg/L)	Month	BOD (mg/L)	TSS (mg/L)
Jan-07	**54**	28	May-07	22	37	Sep-07	24	31
Feb-07	**70**	**60**	June-07	20	28	Oct-07	32	37
Mar-07	36	39	July-07	31	23	Nov-07	40	**59**
Apr-07	35	**51**	Aug-07	40	27	Dec-07	**70**	**73**

Bolded values note violations of the effluent limit

Since 2000, the Discharger was issued five Notice of Violation (NOVs). A November 1999 inspection led to the issuance of a February 2000 NOV issued for exceeding the EC limit of source water plus 500 umhos/cm, failing to monitor for the required constituents at the required frequency, failing to meter flow, failing to maintain a freeboard of 3 feet in the storage ponds, and for failing to provide backup power. A follow up inspection in August 2000 led to the issuance of a 12 March 2001 NOV. The NOV included all of the previous concerns (with the exception of the backup power issue) and included in addition violations concerning overflow of untreated waste, failing to properly dispose of solids, and for submitting incomplete reports. Subsequent NOVs were issued in August 2003 and June 2005 for the same issues as listed above. The Discharger has since made considerable progress in addressing the various issues of violation. The May 2007 pre-WDR inspection by Regional Water Board staff did not reveal operational violations at the WWTF.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The Basin Plan indicates the greatest long-term problem facing the entire Tulare Lake Basin is increasing salinity in groundwater, a process accelerated by man's activities and particularly affected by intensive irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. The Regional Water Board encourages proactive management of waste streams by dischargers to control addition of salt through use, and has established an incremental EC limitation of 500 µmhos/cm as a measure of the maximum permissible addition of salt constituents through use.

Discharges to areas that may recharge good quality groundwaters shall not exceed an EC of 1,000 µmhos/cm, a chloride content of 175 mg/L, or boron content of 1.0 mg/L.

Antidegradation
The antidegradation directives of State Water Board Resolution No. 68-16 (Resolution 68-16), "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policy and procedures for complying with this directive are set forth in the Basin Plan.

Constituents typically elevated in domestic wastewater threaten the beneficial uses of groundwater if not adequately controlled by a treatment process or attenuated in the soil profile prior to discharge to first encountered groundwater. Discharges that rely on percolation for disposal may result in the percolation of excess organic carbon, and the mobilization of other constituents.

The discharge from the Expansion Project will likely not degrade the beneficial uses of groundwater because:

a. For salinity, the Basin Plan contains effluent limits (EC of the source water plus 500 µmhos/cm, or a maximum of 1,000 µmhos/cm) that considered Resolution 68-16. The discharge meets these limits and therefore consistent with Resolution 68-16.

b. For nitrogen, effluent concentrations exceed typical nitrogen limits of 10 mg/L for total nitrogen. However, the McFarland area is known for high nitrate concentrations in groundwater. The effluent nitrogen concentrations are lower than that in background (upgradient) monitoring wells. While the Discharger is required to evaluate its system to ensure it is removing nitrogen efficiently, the current concentrations will not degrade the existing groundwater as it is lower than background concentrations.

Treatment Technology and Control
The Expansion Project will provide treatment and control of the discharge that incorporates:

a. Secondary treatment of the wastewater;
b. Appropriate biosolids storage and disposal practices;
c. An Operation and Maintenance (O&M) manual; and
d. Certified operators to ensure proper operation and maintenance.

Title 27
Title 27, CCR, section 20005 et seq. (Title 27) contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for full containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and

specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent in a classified waste is acceptable under Title 27 regulations.

Discharges of domestic sewage and treated effluent can be treated and controlled to a degree that will not result in unreasonable degradation of groundwater. For this reason, the Discharger has been conditionally exempted from Title 27. Treatment and storage facilities for sludge that are part of the WWTF are considered exempt from Title 27 under section 20090(a), provided that the facilities not result in a violation of any water quality objective. However, residual sludge (for the purposes of the proposed Order, sludge that will not be subjected to further treatment by the WWTF) is not exempt from Title 27. Solid waste (e.g., grit and screenings) that results from treatment of domestic sewage and industrial waste also is not exempt from Title 27. This residual sludge and solid waste are subject to the provisions of Title 27.

Accordingly, the municipal discharge of effluent and the operation of treatment or storage facilities associated with a municipal wastewater treatment plant can be allowed without requiring compliance with Title 27, but only if resulting degradation of groundwater is in accordance with the Basin Plan.

CEQA
The Kern County Community Development Program (CDP) circulated an Environmental Assessment/Initial Study for reclamation of sewage at the current WWTF site in September 1997. The Kern County CDP circulated another Environmental Assessment/Initial Study in September 1999 in support of an expansion of the WWTF. The Discharger certified an initial study and mitigated negative declaration (MND) in August 2001 in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et, seq.) and the State CEQA guidelines (Title 14, Division 6, California Code of Regulations, as amended). The MND indicates that the discharge will comply with Regional Water Board regulations, which will mitigate any groundwater impacts. To mitigate the Expansion Project's groundwater quality impacts to less than significant levels, the terms and conditions of this proposed Order and accompanying enforcement order are appropriate and necessary.

Proposed Order Terms and Conditions

Discharge Prohibitions, Effluent Limitations, Discharge Specifications, and Provisions
The proposed Order prohibits discharge to surface waters and water drainage courses.

The proposed Order would carry over the current Order's monthly average daily discharge flow limitation until the City completes the Expansion Project and submits technical reports documenting the construction of the new pond, a Use Area Management Plan, an update of the Dischargers O&M Plan to include a schedule for sludge removal from the aeration lagoons, and an assessment of the potential effluent stored in the unlined storage ponds and aeration lagoons to impact groundwater. The proposed Order would carry over the previous Order's

effluent limits for BOD of 40 mg/L (monthly average), and 80 mg/L (daily maximum). These limitations are based on Basin Plan minimum performance standards for municipal facilities.

The discharge requirements regarding dissolved oxygen and freeboard are consistent with Regional Water Board policy for the prevention of nuisance conditions, and are applied to all such facilities.

The proposed WDRs would prescribe groundwater limitations that implement water quality objectives for groundwater from the Basin Plan. The limitations require that the discharge not cause or contribute to exceedance of these objectives or natural background water quality, whichever is greatest.

The WDRs would also require the Discharger assess its discharge on a constituent-by-constituent basis for consistency with Regional Water Board plans and policies, including Resolution No. 68-16. This assessment would identify those constituents that threaten the beneficial uses of groundwater. This may result in the WDRs being reopened and additional or modified effluent limitations imposed.

Monitoring Requirements

Section 13267 of the CWC authorizes the Regional Water Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the State. In recent years there has been an increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment of civil administrative liability where appropriate.

The proposed Order includes influent and effluent monitoring requirements, pond monitoring, groundwater monitoring, water supply monitoring, and septage monitoring. The monitoring is necessary to evaluate groundwater quality and the extent of the degradation from the discharge.

The Discharger must monitor groundwater for constituents present in the discharge that are capable of reaching groundwater and violating groundwater limitations if its treatment and control, and any dependency of the process on sustained environmental attenuation, proves inadequate. For constituents listed in Section G, Groundwater Limitations, of the WDRs, the Discharger must, as a part of each monitoring event, compare concentrations of constituents found in each monitoring well (or similar type of groundwater monitoring device) to the background concentrations or to prescribed numerical limitations to determine compliance.

The proposed Order does not require the Discharger to monitor total coliform organisms (TCO) in the groundwater, but proposes a Groundwater Limitation of 2.2 MPN/100 mL. The Groundwater Limitation is necessary to protect municipal beneficial uses. Given the existing site-specific conditions, it is unlikely that the presence of pathogens resulting from groundwater

monitoring is a result of the percolation of wastewater. The presence of pathogens in groundwater would likely occur from compromises in the monitoring well's construction. The proposed Order may be re-opened or additional groundwater monitoring required if site conditions warrant.

Reopener

The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. The proposed Order would set limitations based on the information provided thus far. If applicable laws and regulations change, or once new information is obtained that will change the overall discharge and its potential to impact groundwater, it may be appropriate to reopen the Order.

Proposed Enforcement Order

The Discharger recycles non-disinfected treated wastewater to nearby grape vineyards in violation of Discharge Specification B.12. An accompanying draft Cease and Desist Order would require the Discharger to use recycled water only on fodder, fiver, or seed crops not eaten by humans or used for grazing of non-milking cattle.

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APPENDIX G: RECYCLED WATER USES ALLOWED

Recycled Water Uses Allowed[1] in California

Use of Recycled Water	Treatment Level			
	Disinfected Tertiary Recycled Water	Disinfected Secondary – 2.2 Recycled Water	Disinfected Secondary – 23 Recycled Water	Undisinfected Secondary Recycled Water
Irrigation of:				
Food crops where recycled water contacts the edible portion of the crop, including all root crops	**Allowed**	Not Allowed	Not Allowed	Not Allowed
Parks and playgrounds	**Allowed**	Not Allowed	Not Allowed	Not Allowed
School yards	**Allowed**	Not Allowed	Not Allowed	Not Allowed
Residential landscaping	**Allowed**	Not Allowed	Not Allowed	Not Allowed
Unrestricted-access golf courses	**Allowed**	Not Allowed	Not Allowed	Not Allowed
Any other irrigation uses not prohibited by other provisions of the California Code of Regulations	**Allowed**	Not Allowed	Not Allowed	Not Allowed
Food crops, surface-irrigated, above-ground edible portion, and not contacted by recycled water	**Allowed**	**Allowed**	Not Allowed	Not Allowed
Cemeteries	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Freeway landscaping	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Restricted-access golf courses	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Ornamental nursery stock and sod farms with unrestricted public access	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Pasture for milk animals for human consumption	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Non-edible vegetation with access control to prevent use as a park, playground or school yard	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Orchards with no contact between edible potion and recycled water	**Allowed**	**Allowed**	**Allowed**	**Allowed**
Vineyards with no contact between edible portion and recycled water	**Allowed**	**Allowed**	**Allowed**	**Allowed**
Non food-bearing trees, including Christmas trees not irrigated less than 14 days before harvest	**Allowed**	**Allowed**	**Allowed**	**Allowed**
Fodder and fiber crops and pasture for animals not producing milk for human consumption	**Allowed**	**Allowed**	**Allowed**	**Allowed**
Seed crops not eaten by humans	**Allowed**	**Allowed**	**Allowed**	**Allowed**
Food crops undergoing commercial pathogen-destroying processing before consumption by humans	**Allowed**	**Allowed**	**Allowed**	**Allowed**
Ornamental nursery stock, sod farms not irrigated less than 14 day before harvest	**Allowed**	**Allowed**	**Allowed**	**Allowed**
Supply for impoundment:				
Non-restricted recreational impoundments, with supplemental monitoring for pathogenic organisms	**Allowed**[2]	Not Allowed	Not Allowed	Not Allowed
Restricted recreational impoundments and publicly-accessible fish hatcheries	**Allowed**	**Allowed**	Not Allowed	Not Allowed
Landscape impoundments without decorative fountains	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Supply for cooling or air conditioning:				
Industrial or commercial cooling or air conditioning involving cooling tower, evaporative condenser, or spraying that creates a mist	**Allowed**[3]	Not Allowed	Not Allowed	Not Allowed
Industrial or commercial cooling or air conditioning not involving cooling tower, evaporative condenser, or spraying that creates a mist	**Allowed**	**Allowed**	**Allowed**	Not Allowed

Recycled Water Uses Allowed[1] in California
(continued)

Use of Recycled Water	Treatment Level			
	Disinfected Tertiary Recycled Water	Disinfected Secondary – 2.2 Recycled Water	Disinfected Secondary – 23 Recycled Water	Undisinfected Secondary Recycled Water
Other uses:				
Groundwater recharge	**Allowed** under special case-by-case permits by RWQCBs[4]			
Flushing toilets and urinals	**Allowed**	Not Allowed	Not Allowed	Not Allowed
Priming drain traps	**Allowed**	Not Allowed	Not Allowed	Not Allowed
Industrial process water that may contact workers	**Allowed**	Not Allowed	Not Allowed	Not Allowed
Structural fire fighting	**Allowed**	Not Allowed	Not Allowed	Not Allowed
Decorative fountains	**Allowed**	Not Allowed	Not Allowed	Not Allowed
Commercial laundries	**Allowed**	Not Allowed	Not Allowed	Not Allowed
Consolidation of backfill material around potable water pipelines	**Allowed**	Not Allowed	Not Allowed	Not Allowed
Artificial snow making for commercial outdoor uses	**Allowed**	Not Allowed	Not Allowed	Not Allowed
Commercial car washes, not heating the water, excluding the general public from washing process	**Allowed**	Not Allowed	Not Allowed	Not Allowed
Industrial process water that will not come into contact with workers	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Industrial boiler feedwater	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Non-structural fire fighting	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Backfill consolidation around non-potable piping	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Soil compaction	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Mixing concrete	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Dust control on roads and streets	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Cleaning roads, sidewalks, and outdoor work areas	**Allowed**	**Allowed**	**Allowed**	Not Allowed
Flushing sanitary sewers	**Allowed**	**Allowed**	**Allowed**	**Allowed**

This summary is prepared from the December 2, 2000-adopted Title 22 Water Recycling Criteria and supersedes all earlier versions. Prepared by Bahman Sheikh and edited by EBMUD Office of Water Recycling, who acknowledge this is a summary and not the formal version of the regulations referenced above.

[1] Refer to the full text of the December 2, 2000 version of Title 22: California Code of Regulations, Chapter 3 Water Recycling Criteria. This chart is only an informal summary of the uses allowed in this version.

[2] Allowed with "conventional tertiary treatment." Additional monitoring for two years or more is necessary with direct filtration.

[3] Drift eliminators and/or biocides are required if public or employees can be exposed to mist.

[4] Refer to Groundwater Recharge Guidelines, available from the California Department of Public Health.

APPENDIX H: SUMMARY OF BIOSOLIDS CRITERIA FOR LAND APPLICATION

Table H.1 Biosolids Pollutant Concentration Limits for Land Application
Wastewater Treatment Plant Master Plan

Pollutant	California General Order Ceiling Limits (mg/kg)[1]	503.13 Table 1 Ceiling Concentrations (mg/kg)[1]	503.13 Table 3 High Quality Pollutant Concentrations (mg/kg)[1]
Arsenic	75	75	41
Cadmium	85	85	39
Copper	4,300	4,300	1,500
Lead	840	840	300
Mercury	57	57	17
Molybdenum	75	75	NA[2]
Nickel	420	420	420
Selenium	100	100	100
Zinc	7,500	7,500	2,800

Notes:
1. Dry weight basis.
2. Temporarily suspended by EPA pending further consideration. Value was 18 mg/kg.

Table H.2 Annual and Cumulative Land Application Rates
Wastewater Treatment Plant Master Plan

Pollutant	California General Order Cumulative Pollutant Loading Rate (lbs/acre)	503.13 Table 2 Cumulative Pollutant Loading Rate (kg/hectare)	503.13 Table 4 Annual Pollutant Loading Rate (kg/hectare)
Arsenic	36	41	2.0
Cadmium	34	39	1.9
Copper	1,336	1,500	75
Lead	267	300	15
Mercury	15	17	0.85
Molybdenum	16	--	--
Nickel	374	420	21
Selenium	89	100	5.0
Zinc	2,494	2,800	140

Table H.3	Class A Pathogen Reduction Alternatives Wastewater Treatment Plant Master Plan	
	Alternative	**Description**
A1:	Time and Temperature	Fecal coliform shall be less than 1,000 MPN/gram, or Salmonella sp. shall be less than 3 MPN/4 grams of total solids at the time of disposal. Maintain certain temperature and time period based on the percent solids and prescribed equations (see 503 Regulations for details).
A2:	Biosolids Treated in a High pH-High Temperature Process	Maintain biosolids at certain elevated temperature and pH for prescribed period of time (see 503 Regulations for details).
A3:	Biosolids Treated in Other Processes	The density of enteric viruses in the biosolids after pathogen treatment must be less than 1 PFU per 4 grams of total solids. The density of viable helminth ova in the swage sludge after pathogen treatment must be less than 1 per 4 grams of total solids. Report operating parameters to indicate consistent pathogen reduction treatment.
A4:	Biosolids in Unknown Processes	The density of enteric viruses in the biosolids after pathogen treatment must be less than 1 PFU per 4 grams of total solids. The density of viable helminth ova in the sewage sludge after pathogen treatment must be less than 1 per 4 grams of total solids.
A5:	Processes to Further Reduce Pathogens (PFRP)	
	Composting	Using either the within-vessel composting method or the aerated static pile composting method, the temperature of the sewage sludge is maintained at 55 degrees Celsius or higher for three days. Using the windrow composting method, the temperature of the sewage sludge is maintained at 55 degrees or higher for 15 days or longer. During the period when the compost is maintained at 55 degrees or higher, there shall be a minimum of five turnings of the windrow.

Table H.3 Class A Pathogen Reduction Alternatives
Wastewater Treatment Plant Master Plan

Alternative	Description
Heat Drying	Sewage sludge is dried by direct or indirect contact with hot gases to reduce the moisture content of the sewage sludge to 10 percent or lower. Either the temperature of the sewage sludge particles exceeds 80 degrees Celsius or the wet bulk temperature of the gas in contact with the sewage sludge as the sewage sludge leaves the dryer exceed 80 degrees Celsius.
Heat Treatment	Liquid sewage sludge is heated to a temperature of 180 degrees Celsius or higher for 30 minutes.
Thermophilic Aerobic Digestion	Liquid sewage sludge is agitated with air or oxygen to maintain aerobic conditions and the mean cell residence time of the sewage sludge is 10 days at 55 to 60 degrees Celsius.
Beta Ray Irradiation	Sewage sludge is irradiated with beta rays from an accelerator at dosages of at least 1.0 megarad at room temperature (ca. 20 degrees Celsius).
Gamma Ray Irradiation	Sewage sludge is irradiated with gamma rays from certain isotopes, such as Cobalt 60 and Cesium 137, at room temperature (ca. 20 degrees Celsius).
Pasteurization	The temperature of the sewage sludge is maintained at 70 degrees Celsius or higher for 30 minutes or longer.
Use of Processes Equivalent to obtain PFRP	Demonstrate operating parameters and/or pathogen levels to be PFRP equivalent subject to permitting authority approval.

Table H.4 Class B Pathogen Reduction Alternatives
Wastewater Treatment Plant Master Plan

Alternative	Description
B1: Monitoring of Fecal Coliform	The geometric mean of seven samples of treated biosolids, collected at time of use or disposal shall meet a fecal coliform density of less than 2 million colony forming units or most probable number per gram of sewage sludge solids (dry weight basis).
B2: Processes to Significantly Reduce Pathogens (PSRP)	Sewage sludge is treated by one of the five PSRP methods listed below.
Aerobic Digestion	Sewage sludge is agitated with air or oxygen to maintain aerobic conditions for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 40 days at 20 degrees Celsius and 60 days at 15 degrees Celsius.
Air Drying	Sewage sludge is dried on sand beds or on paved or unpaved basins. The sewage sludge dries for a minimum of three months. During two of the three months, the ambient average daily temperature is above zero degrees Celsius.
Anaerobic Digestion	Sewage sludge is treated in the absence of air for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 15 days at 35 to 55 degrees Celsius and 60 days at 20 degrees Celsius.
Composting	Using either the within-vessel, static aerated pile, or windrow composting methods, the temperature of the sewage sludge is raised to 40 degrees Celsius or higher and remains at 40 degrees Celsius or higher for five days. For four hours during the five days, the temperature in the compost pile exceeds 55 degrees Celsius.
Lime Stabilization	Sufficient lime is added to the sewage sludge to raise the pH of the sewage sludge to 12 after two hours of contact.
B3: Use of Processes Equivalent to PSRP	Demonstrate operating parameters and/or pathogen levels to be PSRP equivalent subject to permitting authority approval.

Table H.5	40 CFR 503 Vector Attraction Reduction Requirements Wastewater Treatment Plant Master Plan
Option	**Process**
(1)	The mass of volatile solids in the sewage sludge shall be reduced by a minimum of 38 percent during sewage sludge treatment.
(2)	When the 38 percent volatile solids reduction requirement cannot be met for an anaerobically digested sewage sludge, vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 degrees Celsius. When, at the end of the 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.
(3)	When the 38 percent volatile solids reduction requirement in cannot be met for an anaerobically digested sewage sludge, vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of two percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 degrees Celsius. When, at the end of the 30 days, the volatile solid sin the sewage sludge at the beginning of that period is reduced by less than 15 percent, vector attraction reduction is achieved.
(4)	The specific oxygen uptake rate (SOUR) for sewage sludge treated in an aerobic process shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 20 degrees Celsius.
(5)	Sewage sludge shall be treated in an aerobic process for 14 days or longer. During that time, the temperature of the sewage sludge shall be higher than 40 degrees Celsius and the average temperature of the sewage sludge shall be higher than 45 degrees Celsius.
(6)	The pH of sewage sludge shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for two hours and then at 11.5 or higher for an additional 22 hours at 25 degrees Celsius.
(7)	The percent solids of sewage sludge that does not contain unstabilized solids shall be equal to or greater than 75 percent based on the moisture content and total solids prior to mixing with other materials.
(8)	The percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.
(9)	Sewage sludge shall be injected below the surface of the land. No significant amount of the sewage sludge shall be present on the land surface within one hour after the sewage sludge is injected. When the sewage sludge that is injected below the surface of the land is Class A with respect to pathogens, the sewage sludge shall be injected below the land surface within eight hours after being discharged from the pathogen reduction process.

Table H.5	40 CFR 503 Vector Attraction Reduction Requirements Wastewater Treatment Plant Master Plan
Option	**Process**
(10)	Sewage sludge applied to the land surface or placed on a surface disposal site shall be incorporated into the soil within six hours after application to or placement on the land. When sewage sludge that is incorporated into the soil is Class A with respect to pathogens, the sewage sludge shall be applied to or placed on the land within eight hours after being discharged from the pathogen treatment process.
(11)	Sewage sludge placed on a surface disposal site shall be covered with soil or other material at the end of each operating day.
(12)	The pH of domestic septage shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for 30 minutes at 25 degrees Celsius.

APPENDIX I: ALTERNATIVE COSTS

Summary of Estimates

Alternative	Estimated Costs
Alternative 1 - Biolac	$8,217,000.00
Alternative 2 - Ox. Ditch	$9,633,800.00
Alternative 3 - IFAS	$10,146,180.00

Alternative 1 - BIOLAC

Item	Description		Estimated Quantity	Unit Price	
1	Mobilization		1	$100,000	$100,000
2	Headworks		1	$714,000	$714,000
		Excavation	1	$120,000	
		Concrete	1	$180,000	
		Concrete Coating	1	$8,000	
		Metals	1	$45,000	
		Finishes	1	$20,000	
		Bar Screen	1	$125,000	
		Compactor	1	$71,000	
		Three influent pumps	3	$75,000	
		Sluice Gates	1	$10,000	
		Misc Metals & Valves	1	$60,000	
4	Aeration Basins		1	$1,055,000	$1,055,000
		Site Work		$20,000	
		Shotcrete		$85,000	
		Metals		$40,000	
		Inlet & Outlet Structures		$120,000	
		Equipments & Install		$750,000	
		Mechanical		$40,000	
			1	$329,000	$329,000
5	Blowers & Canopy	Site Work		$44,000	
		Concrete		$85,000	
		Canopy		$90,000	
		Blowers Install		$30,000	
		Misc. Piping		$80,000	
6	Secondary Clarifiers		1	$1,220,000	$1,220,000
		2 -65 ft Clarifiers Exc. & Conc.		$500,000	
		2- 65 ft Clarifier Mech & Install		$500,000	
		Misc. Piping		$80,000	
		Misc Metals		$140,000	
7	RAS/WAS Pump Sta		1	$390,000	$390,000
		RAS/WAS PUMP Station		$180,000	
		Pumps and install		$75,000	
		Piping manifold		$120,000	
		Flow Meters		$15,000	
8	Screw Press		1	$352,000	$352,000
		Equipment		$297,000	
		Install		$40,000	
		Misc. Piping		$15,000	
9	Sludge Beds (Modify Pond 1A & 3		1	$932,000	$932,000
		Construct 4 Sludge Beds (@ 20,000sf/bed with decant box)	1	$932,000	
10	Motor Control Center		1	$60,000	$60,000
		Construct new Motor Control Center @ 168 sf x $ 350/sf	1	$60,000	
11	Effluent Pump Station		1	$200,000	$200,000
		Construct new Effluent PS (submersible PS configuration)	1	$200,000	
12					
	Start up and de-bugging		1	$50,000	$50,000
13	Demobilization		1	$50,000	$50,000
SUBTOTAL TOTAL					**$5,452,000**
13	Yard Piping	15%			$818,000
14	Coatings	2%			$109,000
15	Paving, Grading, etc	5%			$273,000
16	Electrical	10%			$545,000
17	Controls	5%			$273,000
				ESTIMATED TOTAL	**$7,470,000**
		10%		ESTIMATING CONTINGENCY	$747,000
				Total Project Costs	**$8,217,000**

Alternative 2 - OXIDATION DITCH

Item	Description		Estimated Quantity	Unit Price	
1	Mobilization		1	$100,000	**$100,000**
2	Headworks		1	$714,000	**$714,000**
		Excavation	1	$120,000	
		Concrete	1	$180,000	
		Concrete Coating	1	$8,000	
		Metals	1	$45,000	
		Finishes	1	$20,000	
		Bar Screen	1	$125,000	
		Compactor	1	$71,000	
		Three influent pumps	3	$75,000	
		Sluice Gates	1	$10,000	
		Misc Metals & Valves	1	$60,000	
4	Oxidation Ditch		1	$2,325,000	**$2,325,000**
		Site Work		$250,000	
		Concrete & Shotcrete		$1,100,000	
		Metals		$125,000	
		Coatings		$40,000	
		Equipments & Install		$570,000	
		Mechanical		$240,000	
5	Secondary Clarifiers		1	$1,220,000	**$1,220,000**
		2 -65 ft Clarifiers Exc. & Conc.		$500,000	
		2- 65 ft Clarifier Mech & Install		$500,000	
		Misc. Piping		$80,000	
		Misc Metals		$140,000	
6	RAS/WAS Pump Sta		1	$390,000	**$390,000**
		RAS/WAS PUMP Station		$180,000	
		Pumps and install		$75,000	
		Piping manifold		$120,000	
		Flow Meters		$15,000	
7	Screw Press		1	$352,000	**$352,000**
		Equipment		$297,000	
		Install		$40,000	
		Misc. Piping		$15,000	
8	Sludge Beds		1	$932,000	**$932,000**
		Construct 4 Sludge Beds (@ 5344sf/bed)w/ Underdrain	1	$932,000	
9	Motor Control Center		1	$58,800	**$58,800**
		Construct new Motor Control Center @ 168 sf x $ 350/sf	1	$58,800	
10	Effluent Pump Station		1	$200,000	$200,000
		Construct new Effluent PS (submersible PS configuration)	1	$200,000	
11	Start up and de-bugging		1	$50,000	**$50,000**
12	Demobilization		1	$50,000	**$50,000**
SUBTOTAL TOTAL					**$6,391,800**
12	Yard Piping	15%			**$959,000**
13	Coatings	2%			**$128,000**
14	Paving, Grading, etc	5%			**$320,000**
15	Electrical	10%			**$639,000**
16	Controls	5%			**$320,000**
				ESTIMATED TOTAL	**$8,757,800**
		10%		**ESTIMATING CONTINGENCY**	**$876,000**
				Total CONSTRUCTION COSTS	**$9,633,800**

Alternative 3 - IFAS

Item	Description		Estimated Quantity	Unit Price	
1	Mobilization		1	$100,000	**$100,000**
2	Headworks		1	$714,000	**$714,000**
		Excavation	1	$120,000	
		Concrete	1	$180,000	
		Concrete Coating	1	$8,000	
		Metals	1	$45,000	
		Finishes	1	$20,000	
		Bar Screen	1	$125,000	
		Compactor	1	$71,000	
		Three influent pumps	3	$75,000	
		Sluice Gates	1	$10,000	
		Misc Metals & Valves	1	$60,000	
4	IFAS Basins		1	$2,865,000	**$2,865,000**
		Site Work		$120,000	
		Concrete		$445,000	
		Metals		$80,000	
		Coatings		$30,000	
		Equipment & Install		$2,150,000	
		Mechanical		$40,000	
5	Secondary Clarifiers		1	$1,220,000	**$1,220,000**
		2 -65 ft Clarifiers Exc. & Conc.		$500,000	
		2- 65 ft Clarifier Mech & Install		$500,000	
		Misc. Piping		$80,000	
		Misc Metals		$140,000	
6	RAS/WAS Pump Sta		1	$390,000	**$390,000**
		RAS/WAS PUMP Station		$180,000	
		Pumps and install		$75,000	
		Piping manifold		$120,000	
		Flow Meters		$15,000	
7	Screw Press		1	$352,000	**$352,000**
		Equipment		$297,000	
		Install		$40,000	
		Misc. Piping		$15,000	
8	Sludge Beds		1	$932,000	**$932,000**
		Construct 4 Sludge Beds (@ 5344sf/bed)w/ Underdrain	1	$932,000	
9	Motor Control Center		1	$58,800	**$58,800**
		Construct new Motor Control Center @ 168 sf x $ 350/sf	1	$58,800	
10	Start up and de-bugging		1	$50,000	**$50,000**
11	Demobilization		1	$50,000	**$50,000**
SUBTOTAL TOTAL					**$6,731,800**
12	Yard Piping	15%			**$1,010,000**
13	Coatings	2%			**$135,000**
14	Paving, Grading, etc	5%			**$337,000**
15	Electrical	10%			**$673,000**
16	Controls	5%			**$337,000**
				ESTIMATED TOTAL	**$9,223,800**
		10%		ESTIMATING CONTINGENCY	**$922,380**
				TOTAL CONSTRUCTION COSTS	**$10,146,180**

APPENDIX J: ALTERNATIVE LIFE CYCLE COSTS

McFarland WASTEWATER TREATMENT PLANT
SUMMARY OF ALTERNATIVE LIFE CYCLE COSTS

Alternative	Capital Cost	Annual O&M Cost	Present Worth O&M Costs	Alternative Present Worth Value	Comparison
Alt No. 1 - Biolac	$ 8,217,000	$ 438,440	$ 8,593,661	$ 16,810,661	100.0%
Alt No. 2 - Oxidation Ditch	$ 9,633,800	$ 477,340	$ 9,356,122	$ 18,989,922	113.0%
Alt No. 3 - IFAS	$ 10,146,180	$ 469,440	$ 9,201,278	$ 19,347,458	115.1%

	Annual Power Cost	Comparison
Alt No. 1 - Biolac	$ 155,700	100.0%
Alt No. 2 - Oxidation Ditch	$ 161,600	103.8%
Alt No. 3 - IFAS	$ 193,440	124.2%

McFarland WASTEWATER TREATMENT PLANT
ALTERNATIVE NO. 1 - BIOLAC

ESTIMATED ANNUAL O&M COSTS

8217000
POV **9633800**

Equipment	Horsepower (each)	Number	Annual Usage (Hours)	Costs ($)	Percent of Time %
Bar Screens	5	1	1752	$ 800	20%
Compactor	5.0	1	1752	$ 800	20%
Lift Pumps	15	2	5842.92	$ 15,700	67%
Blowers for Aeration Basins	100	2	6570	$ 117,600	75%
Secondary Clarifier Mechanism	1	2	8760	$ 1,600	100%
Scum pumps	1	2	6570	$ 1,200	75%
RAS/WAS Pumps	10	2	5843	$ 10,500	67%
Screw Press Feed Pump	15	1	4380	$ 5,900	50%
Sludge Mixer	2	1	4380	$ 800	50%
Screw Press	2	1	4380	$ 800	50%
Subtotal				$ 155,700	

LABOR COSTS

Personnel	Wage Rate ($)	Number	Annual Hours (Hours)	Costs ($)	
Supervisors	50	1	1040	$ 52,000	50%
Operator II	40	1	2080	$ 83,200	100%
OIT	28	1	2080	$ 58,240	100%
Subtotal				$ 193,440	

MATERIALS & SUPPLIES

Equipment	Equipment Cost ($)	Percentage Rate (%)	Number	Costs ($)
Bar Screens & Compactor	$ 140,000	5%	1	$ 7,000
Lift Pumps	$ 25,000	5%	3	$ 3,750
Blowers for Aeration Basins	$ 60,000	5%	3	$ 9,000
Actuator Valves	$ 3,000	5%	20	$ 3,000
Secondary Clarifier Mechanism	$ 130,000	5%	2	$ 13,000
Scum Pumps	$ 8,000	5%	2	$ 800
RAS/WAS Pumps	$ 15,000	5%	3	$ 2,250
Scew Press Feed Pump	$ 10,000	5%	1	$ 500
Screw Press	$ 267,000	5%	2	$ 26,700
Subtotal				$ 66,000

Power, Labor, Materials **Subtotal** $ 415,140

Biosolids Treatment & Disposal	Unit Cost ($/ton)	Quantity (tons/yr)	Costs ($)
McCarthy Farms	35.00	460	$ 16,100

SCADA/Instrumentation Support	Unit Cost ($/Hr)	Time (Hrs)	
Contract Support	75	96	$ 7,200

Total Annul O&M Cost	$ 438,440
Present Worth Value of 30 years of Operation	$ 8,593,661
Alternative Present Worth Value	$ 8,593,661

FACTORS

Power	0.120	kwh
Capital Recovery Factor	0.051019	
Interest Rate	0.03	%
Perionds	30	

McFarland WASTEWATER TREATMENT PLANT
ALTERNATIVE NO. 2 - Oxidation Ditch

ESTIMATED ANNUAL O&M COSTS

8217000
POV **9633800**

Equipment	Horsepower (each)	Number	Annual Usage (Hours)		Costs ($)	Percent of Time %
Bar Screens	5	1	1752	$	800	20%
Compactor	5.0	1	1752	$	800	20%
Lift Pumps	15	2	5842.92	$	15,700	67%
Aerator	200	1	6570	$	117,600	75%
Anoxic Mixers	5	2	6570	$	5,900	75%
Secondary Clarifier Mechanism	1	2	8760	$	1,600	100%
Scum pumps	1	2	6570	$	1,200	75%
RAS/WAS Pumps	10	2	5843	$	10,500	67%
Screw Press Feed Pump	15	1	4380	$	5,900	50%
Sludge Mixer	2	1	4380	$	800	50%
Screw Press	2	1	4380	$	800	50%
Subtotal				$	161,600	

LABOR COSTS

Personnel	Wage Rate ($)	Number	Annual Hours (Hours)		Costs ($)	
Supervisors	50	1	1040	$	52,000	50%
Operator II	40	1	2080	$	83,200	100%
OIT	28	1	2080	$	58,240	100%
Subtotal				$	193,440	

MATERIALS & SUPPLIES

Equipment	Equipment Cost ($)	Percentage Rate (%)	Number		Costs ($)
Bar Screens & Compactor	$ 140,000	5%	1	$	7,000
Lift Pumps	$ 25,000	5%	3	$	3,750
Aerator	$ 200,000	5%	2	$	20,000
Anoxic Mixers	$ 50,000	5%	2	$	5,000
Ditch Equipment	$ 200,000	5%	2	$	20,000
Secondary Clarifier Mechanism	$ 130,000	5%	2	$	13,000
Scum Pumps	$ 8,000	5%	2	$	800
RAS/WAS Pumps	$ 15,000	5%	3	$	2,250
Scew Press Feed Pump	$ 10,000	5%	1	$	500
Screw Press	$ 267,000	5%	2	$	26,700
Subtotal				$	99,000
	Power, Labor, Materials		**Subtotal**	$	454,040

Biosolids Treatment & Disposal	Unit Cost ($/ton)	Quantity (tons/yr)		Costs ($)
McCarthy Farms	35.00	460	$	16,100

SCADA/Instrumentation Support	Unit Cost ($/Hr)	Time (Hrs)		
Contract Support	75	96	$	7,200
Total Annul O&M Cost			$	477,340
Present Worth Value of 30 years of Operation			$	9,356,122
Alternative Present Worth Value			$	9,356,122

FACTORS

Power	0.120	kwh
Capital Recovery Factor	0.051019	
Interest Rate	0.03	%
Perionds	30	

McFarland WASTEWATER TREATMENT PLANT
ALTERNATIVE NO. 3 - IFAS

ESTIMATED ANNUAL O&M COSTS

8217000
POV **9633800**

Equipment	Horsepower (each)	Number	Annual Usage (Hours)		Costs ($)	Percent of Time %
Bar Screens	5	1	1752	$	800	20%
Compactor	5.0	1	1752	$	800	20%
Lift Pumps	15	2	5842.92	$	15,700	67%
Anoxic Mixers	3	3	8760	$	7,100	100%
Aerators	15	12	6570	$	105,900	75%
Mixed Liquor Recir. Pumps	3	3	8760	$	7,100	100%
Secondary Clarifier Mechanism	1	2	8760	$	1,600	100%
Scum pumps	1	2	6570	$	1,200	75%
RAS/WAS Pumps	10	2	5843	$	10,500	67%
Screw Press Feed Pump	15	1	4380	$	5,900	50%
Sludge Mixer	2	1	4380	$	800	50%
Screw Press	2	1	4380	$	800	50%
Subtotal				$	158,200	

LABOR COSTS

Personnel	Wage Rate ($)	Number	Annual Hours (Hours)		Costs ($)	
Supervisors	50	1	1040	$	52,000	50%
Operator II	40	1	2080	$	83,200	100%
OIT	28	1	2080	$	58,240	100%
Subtotal				$	193,440	

MATERIALS & SUPPLIES

Equipment	Equipment Cost ($)	Percentage Rate (%)	Number		Costs ($)
Bar Screens & Compactor	$ 140,000	5%	1	$	7,000
Lift Pumps	$ 25,000	5%	3	$	3,750
Aerator	$ 45,000	5%	12	$	27,000
Anoxic Mixers	$ 50,000	5%	3	$	7,500
Recir. Pumps - ML	$ 40,000	5%	3	$	6,000
Secondary Clarifier Mechanism	$ 130,000	5%	2	$	13,000
Scum Pumps	$ 8,000	5%	2	$	800
RAS/WAS Pumps	$ 15,000	5%	3	$	2,250
Scew Press Feed Pump	$ 10,000	5%	1	$	500
Screw Press	$ 267,000	5%	2	$	26,700
Subtotal				$	94,500
	Power, Labor, Materials		**Subtotal**	$	446,140

Biosolids Treatment & Disposal	Unit Cost ($/ton)	Quantity (tons/yr)		Costs ($)
McCarthy Farms	35.00	460	$	16,100

SCADA/Instrumentation Support	Unit Cost ($/Hr)	Time (Hrs)		
Contract Support	75	96	$	7,200
Total Annul O&M Cost			$	469,440
Present Worth Value of 30 years of Operation			$	9,201,278
Alternative Present Worth Value			$	9,201,278

FACTORS

Power	0.120	kwh
Capital Recovery Factor	0.051019	
Interest Rate	0.03	%
Periods	30	

Appendix B

Air Quality Modeling Results

McFarland WWTP Expansion Construction

Kern-San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	80.00	User Defined Unit	80.00	0.00	0

1.2 Other Project Characteristics

Urbani ation	Rural	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	32
Climate one	3			**Operational Year**	2014
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 - Acreage of WWTP

Construction Phase - Estimated Construction Schedule

Off-road Equipment - Estimated Equipment Listing

Off-road Equipment - Estimated Equipment Listing

Off-road Equipment - Estimated Equipment Listing

Off-road Equipment - Estimated Equipment Listing

Off-road Equipment - Estimated Equipment Listing

Off-road Equipment - Estimated Equipment Listing

Off-road Equipment - Estimated Equipment Listing

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Off-road Equipment - Estimated Equipment Listing

Off-road Equipment - Estimated Equipment Listing

Off-road Equipment - Estimated Equipment Listing

Off-road Equipment - Estimated Equipment Listing

Off-road Equipment - Estimated Equipment Listing

Off-road Equipment - Estimated Equipment Listing

Grading - Estimated disturbed acres

Trips and VMT - Estimated 20 employees during construction operations

Vehicle Trips -

Consumer Products - Construction Run Only

Area Coating - Construction Run Only

Landscape Equipment - Construction Run Only

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	PhaseName	Architectural Coating	Architectural Coating Phase 1
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tblConstructionPhase	NumDays	1,550.00	174.00
tblConstructionPhase	NumDays	100.00	21.00
tblConstructionPhase	NumDays	155.00	44.00
tblConstructionPhase	NumDays	110.00	11.00
tblConstructionPhase	NumDays	100.00	21.00
tblConstructionPhase	NumDays	155.00	44.00
tblConstructionPhase	NumDays	1,550.00	174.00
tblConstructionPhase	NumDays	110.00	11.00
tblConstructionPhase	NumDays	110.00	10.00
tblConstructionPhase	NumDays	100.00	21.00
tblConstructionPhase	NumDays	155.00	44.00
tblConstructionPhase	NumDays	1,550.00	174.00
tblConstructionPhase	NumDays	110.00	11.00
tblConstructionPhase	NumDays	110.00	10.00
tblConstructionPhase	NumDays	100.00	21.00
tblConstructionPhase	NumDays	155.00	44.00
tblConstructionPhase	NumDays	1,550.00	174.00
tblConstructionPhase	NumDays	110.00	11.00
tblConstructionPhase	NumDays	110.00	10.00
tblConstructionPhase	NumDays	100.00	21.00
tblConstructionPhase	NumDays	155.00	44.00
tblConstructionPhase	NumDays	1,550.00	174.00
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tblConstructionPhase	NumDays	110.00	10.00
tblConstructionPhase	PhaseEndDate	5/29/2015	5/31/2015
tblConstructionPhase	PhaseEndDate	8/29/2014	8/31/2014
tblDemolition	PhaseName	Demolition	Demolition Phase 1
tblGrading	AcresOfGrading	0.00	2.00
tblGrading	AcresOfGrading	0.00	2.00
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tblGrading	AcresOfGrading	0.00	2.00
tblGrading	AcresOfGrading	0.00	2.00
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tblGrading	PhaseName		Grading Phase 3
tblGrading	PhaseName		Grading Phase 2
tblGrading	PhaseName		Grading Phase 4
tblGrading	PhaseName		Grading Phase 5
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tblOffRoadEquipment	LoadFactor	0.36	0.36
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tblOffRoadEquipment	LoadFactor	0.40	0.40
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tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.42	0.42
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tblOffRoadEquipment	LoadFactor	0.37	0.37
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tblOffRoadEquipment	LoadFactor	0.38	0.38
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tblOffRoadEquipment	LoadFactor	0.40	0.40
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tblOffRoadEquipment	LoadFactor	0.40	0.40
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tblOffRoadEquipment	LoadFactor	0.42	0.42

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tblOffRoadEquipment	LoadFactor	0.37	0.37
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tblOffRoadEquipment	LoadFactor	0.36	0.36
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tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
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tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
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tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Tractors/Loaders/Backhoes
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tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
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tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
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tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Other Material Handling Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
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tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
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tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
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tblOffRoadEquipment	OffRoadEquipmentType		Excavators

tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00

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tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOnRoadDust	PhaseName	Demolition	Demolition Phase 1
tblOnRoadDust	PhaseName	Grading	Grading Phase 1
tblOnRoadDust	PhaseName	Building Construction	Building Construction Phase 1
tblOnRoadDust	PhaseName	Paving	Paving Phase 1
tblOnRoadDust	PhaseName	Architectural Coating	Architectural Coating Phase 1
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	PhaseName	Demolition	Demolition Phase 1
tblTripsAndVMT	PhaseName	Grading	Grading Phase 1
tblTripsAndVMT	PhaseName	Building Construction	Building Construction Phase 1
tblTripsAndVMT	PhaseName	Paving	Paving Phase 1
tblTripsAndVMT	PhaseName	Architectural Coating	Architectural Coating Phase 1
tblTripsAndVMT	PhaseName		Architectural Coating Phase 2
tblTripsAndVMT	PhaseName		Demolition Phase 3
tblTripsAndVMT	PhaseName		Grading Phase 3
tblTripsAndVMT	PhaseName		Building Construction Phase 3
tblTripsAndVMT	PhaseName		Paving Phase 3
tblTripsAndVMT	PhaseName		Architectural Coating Phase 3
tblTripsAndVMT	PhaseName		Demolition Phase 2
tblTripsAndVMT	PhaseName		Grading Phase 2
tblTripsAndVMT	PhaseName		Building Construction Phase 2
tblTripsAndVMT	PhaseName		Paving Phase 2
tblTripsAndVMT	PhaseName		Demolition Phase 4
tblTripsAndVMT	PhaseName		Grading Phase 4
tblTripsAndVMT	PhaseName		Building Construction Phase 4
tblTripsAndVMT	PhaseName		Paving Phase 4
tblTripsAndVMT	PhaseName		Architectural Coating Phase 4

tblTripsAndVMT	PhaseName		Demolition Phase 5
tblTripsAndVMT	PhaseName		Grading Phase 5
tblTripsAndVMT	PhaseName		Building Construction Phase 5
tblTripsAndVMT	PhaseName		Paving Phase 5
tblTripsAndVMT	PhaseName		Architectural Coating Phase 5
tblTripsAndVMT	WorkerTripNumber	8.00	20.00
tblTripsAndVMT	WorkerTripNumber	23.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	20.00
tblTripsAndVMT	WorkerTripNumber	23.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	20.00
tblTripsAndVMT	WorkerTripNumber	23.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	20.00
tblTripsAndVMT	WorkerTripNumber	23.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	20.00
tblTripsAndVMT	WorkerTripNumber	23.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

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					
2014	0.3541	3.6485	2.2536	3.2700e-003	0.2852	0.1986	0.4838	0.1509	0.1857	0.3366			305.4775	0.0772	0.0000	307.0984
2015	0.5414	5.4445	3.3180	5.1600e-003	0.2820	0.3020	0.5840	0.1503	0.2834	0.4337			473.5329	0.1152	0.0000	475.9512
2016	0.5087	5.1262	3.2456	5.1500e-003	0.2704	0.2806	0.5509	0.1475	0.2631	0.4106			468.2339	0.1138	0.0000	470.6242
2017	0.4684	4.7234	3.1491	5.1300e-003	0.2704	0.2546	0.5250	0.1475	0.2386	0.3861			459.8745	0.1124	0.0000	462.2355
2018	0.4087	4.1071	3.0250	5.1500e-003	0.2704	0.2158	0.4862	0.1475	0.2023	0.3498			455.0063	0.1117	0.0000	457.3511
2019	0.1296	1.2753	0.9506	1.8100e-003	1.7300e-003	0.0668	0.0685	6.9000e-004	0.0630	0.0637			156.7542	0.0352	0.0000	157.4939
Total	**2.4108**	**24.3250**	**15.9419**	**0.0257**	**1.3801**	**1.3183**	**2.6984**	**0.7444**	**1.2362**	**1.9805**			**2,318.8792**	**0.5655**	**0.0000**	**2,330.7543**

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					
2014	0.3541	3.6484	2.2536	3.2700e-003	0.1229	0.1986	0.3215	0.0619	0.1857	0.2477			305.4772	0.0772	0.0000	307.0981
2015	0.5414	5.4445	3.3180	5.1600e-003	0.1197	0.3020	0.4217	0.0614	0.2834	0.3448			473.5323	0.1152	0.0000	475.9507
2016	0.5087	5.1262	3.2456	5.1500e-003	0.1081	0.2806	0.3887	0.0586	0.2631	0.3216			468.2334	0.1138	0.0000	470.6237
2017	0.4684	4.7234	3.1491	5.1300e-003	0.1081	0.2546	0.3627	0.0586	0.2386	0.2972			459.8740	0.1124	0.0000	462.2350
2018	0.4087	4.1070	3.0250	5.1500e-003	0.1081	0.2158	0.3239	0.0586	0.2023	0.2609			455.0058	0.1117	0.0000	457.3506
2019	0.1296	1.2753	0.9506	1.8100e-003	1.7300e-003	0.0668	0.0685	6.9000e-004	0.0630	0.0637			156.7540	0.0352	0.0000	157.4937
Total	**2.4108**	**24.3249**	**15.9419**	**0.0257**	**0.5687**	**1.3183**	**1.8870**	**0.2998**	**1.2362**	**1.5359**			**2,318.8767**	**0.5655**	**0.0000**	**2,330.7517**

	ROG	NOx	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**	**58.79**	**0.00**	**30.07**	**59.73**	**0.00**	**22.45**	**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	Demolition Phase 1	Demolition	6/1/2014	6/30/2014	5	21	
2	Grading Phase 1	Grading	7/1/2014	8/31/2014	5	44	
3	Building Construction Phase 1	Building Construction	9/1/2014	4/30/2015	5	174	
4	Paving Phase 1	Paving	5/1/2015	5/15/2015	5	11	
5	Architectural Coating Phase 1	Architectural Coating	5/16/2015	5/31/2015	5	10	
6	Demolition Phase 2	Demolition	6/1/2015	6/29/2015	5	21	
7	Grading Phase 2	Grading	6/30/2015	8/28/2015	5	44	
8	Building Construction Phase 2	Building Construction	8/29/2015	4/28/2016	5	174	
9	Paving Phase 2	Paving	4/29/2016	5/13/2016	5	11	
10	Architectural Coating Phase 2	Architectural Coating	5/14/2016	5/27/2016	5	10	
11	Demolition Phase 3	Demolition	5/28/2016	6/27/2016	5	21	
12	Grading Phase 3	Grading	6/28/2016	8/26/2016	5	44	
13	Building Construction Phase 3	Building Construction	8/27/2016	4/27/2017	5	174	
14	Paving Phase 3	Paving	4/28/2017	5/12/2017	5	11	
15	Architectural Coating Phase 3	Architectural Coating	5/13/2017	5/26/2017	5	10	
16	Demolition Phase 4	Demolition	5/27/2017	6/26/2017	5	21	
17	Grading Phase 4	Grading	6/27/2017	8/25/2017	5	44	
18	Building Construction Phase 4	Building Construction	8/26/2017	4/26/2018	5	174	
19	Paving Phase 4	Paving	4/27/2018	5/11/2018	5	11	
20	Architectural Coating Phase 4	Architectural Coating	5/12/2018	5/25/2018	5	10	
21	Demolition Phase 5	Demolition	5/26/2018	6/25/2018	5	21	
22	Grading Phase 5	Grading	6/26/2018	8/24/2018	5	44	
23	Building Construction Phase 5	Building Construction	8/25/2018	4/25/2019	5	174	
24	Paving Phase 5	Paving	4/26/2019	5/10/2019	5	11	
25	Architectural Coating Phase 5	Architectural Coating	5/11/2019	5/24/2019	5	10	

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 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition Phase 1	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Demolition Phase 1	Excavators	1	8.00	162	0.38
Demolition Phase 1	Rubber Tired Loaders	1	8.00	199	0.36
Building Construction Phase 1	Concrete/Industrial Saws	2	8.00	81	0.73
Building Construction Phase 1	Rubber Tired Loaders	1	8.00	199	0.36
Grading Phase 1	Excavators	3	8.00	162	0.38
Building Construction Phase 1	Other Construction Equipment	1	8.00	171	0.42
Grading Phase 1	Rubber Tired Dozers	2	8.00	255	0.40
Grading Phase 1	Other Material Handling Equipment	2	8.00	167	0.40
Grading Phase 1	Other Construction Equipment	2	8.00	171	0.42
Building Construction Phase 1	Cranes	1	8.00	226	0.29
Paving Phase 1	Graders	1	8.00	174	0.41
Paving Phase 1	Rubber Tired Loaders	1	8.00	199	0.36
Building Construction Phase 1	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving Phase 1	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving Phase 1	Pavers	1	8.00	125	0.42
Demolition Phase 2	Excavators	1	8.00	162	0.38
Demolition Phase 2	Rubber Tired Loaders	1	8.00	199	0.36
Architectural Coating Phase 1	Air Compressors	1	8.00	78	0.48
Demolition Phase 2	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading Phase 2	Excavators	3	8.00	162	0.38
Grading Phase 2	Rubber Tired Dozers	2	8.00	255	0.40
Grading Phase 2	Other Material Handling Equipment	2	8.00	167	0.40
Grading Phase 2	Other Construction Equipment	2	8.00	171	0.42
Building Construction Phase 2	Cranes	1	8.00	226	0.29
Building Construction Phase 2	Concrete/Industrial Saws	2	8.00	81	0.73
Building Construction Phase 2	Rubber Tired Loaders	1	8.00	199	0.36
Building Construction Phase 2	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction Phase 2	Other Construction Equipment	1	8.00	171	0.42
Paving Phase 2	Graders	1	8.00	174	0.41
Paving Phase 2	Pavers	1	8.00	125	0.42
Paving Phase 2	Rubber Tired Loaders	1	8.00	199	0.36
Paving Phase 2	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating Phase 2	Air Compressors	1	8.00	78	0.48
Demolition Phase 3	Excavators	1	8.00	162	0.38
Demolition Phase 3	Rubber Tired Loaders	1	8.00	199	0.36
Demolition Phase 3	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading Phase 3	Excavators	3	8.00	162	0.38
Grading Phase 3	Rubber Tired Dozers	2	8.00	255	0.40
Grading Phase 3	Other Material Handling Equipment	2	8.00	167	0.40
Grading Phase 3	Other Construction Equipment	2	8.00	171	0.42
Building Construction Phase 3	Cranes	1	8.00	226	0.29

Building Construction Phase 3	Concrete/Industrial Saws	2	8.00	81	0.73
Building Construction Phase 3	Rubber Tired Loaders	1	8.00	199	0.36
Building Construction Phase 3	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction Phase 3	Other Construction Equipment	1	8.00	171	0.42
Paving Phase 3	Graders	1	8.00	174	0.41
Paving Phase 3	Pavers	1	8.00	125	0.42
Paving Phase 3	Rubber Tired Loaders	1	8.00	199	0.36
Paving Phase 3	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating Phase 3	Air Compressors	1	8.00	78	0.48
Demolition Phase 4	Excavators	1	8.00	162	0.38
Demolition Phase 4	Rubber Tired Loaders	1	8.00	199	0.36
Demolition Phase 4	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading Phase 4	Excavators	3	8.00	162	0.38
Grading Phase 4	Rubber Tired Dozers	2	8.00	255	0.40
Grading Phase 4	Other Material Handling Equipment	2	8.00	167	0.40
Grading Phase 4	Other Construction Equipment	2	8.00	171	0.42
Building Construction Phase 4	Cranes	1	8.00	226	0.29
Building Construction Phase 4	Concrete/Industrial Saws	2	8.00	81	0.73
Building Construction Phase 4	Rubber Tired Loaders	1	8.00	199	0.36
Building Construction Phase 4	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction Phase 4	Other Construction Equipment	1	8.00	171	0.42
Paving Phase 4	Graders	1	8.00	174	0.41
Paving Phase 4	Pavers	1	8.00	125	0.42
Paving Phase 4	Rubber Tired Loaders	1	8.00	199	0.36
Paving Phase 4	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating Phase 4	Air Compressors	1	8.00	78	0.48
Demolition Phase 5	Excavators	1	8.00	162	0.38
Demolition Phase 5	Rubber Tired Loaders	1	8.00	199	0.36
Demolition Phase 5	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading Phase 5	Excavators	3	8.00	162	0.38
Grading Phase 5	Rubber Tired Dozers	2	8.00	255	0.40
Grading Phase 5	Other Material Handling Equipment	2	8.00	167	0.40
Grading Phase 5	Other Construction Equipment	2	8.00	171	0.42
Building Construction Phase 5	Cranes	1	8.00	226	0.29
Building Construction Phase 5	Concrete/Industrial Saws	2	8.00	81	0.73
Building Construction Phase 5	Rubber Tired Loaders	1	8.00	199	0.36
Building Construction Phase 5	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction Phase 5	Other Construction Equipment	1	8.00	171	0.42
Paving Phase 5	Graders	1	8.00	174	0.41
Paving Phase 5	Pavers	1	8.00	125	0.42
Paving Phase 5	Rubber Tired Loaders	1	8.00	199	0.36
Paving Phase 5	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating Phase 5	Air Compressors	1	8.00	78	0.48

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
Demolition Phase 1	3	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating Phase 2	1	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Grading Phase 1	9	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

Building Construction Phase 1	7	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving Phase 1	4	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating Phase 1	1	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Demolition Phase 3	3	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Grading Phase 3	9	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Building Construction Phase 3	7	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Paving Phase 3	4	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating Phase 3	1	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Demolition Phase 2	3	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Grading Phase 2	9	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Building Construction Phase 2	7	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Paving Phase 2	4	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Demolition Phase 4	3	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Grading Phase 4	9	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Building Construction Phase 4	7	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Paving Phase 4	4	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating Phase 4	1	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Demolition Phase 5	3	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Grading Phase 5	9	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Building Construction Phase 5	7	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Paving Phase 5	4	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating Phase 5	1	20.00			16.80		20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition Phase 1 - 2014

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	0.0137	0.1631	0.0811	1.5000e-004		8.0000e-003	8.0000e-003		7.3600e-003	7.3600e-003			14.6883	4.3400e-003	0.0000	14.7795
Total	**0.0137**	**0.1631**	**0.0811**	**1.5000e-004**		**8.0000e-003**	**8.0000e-003**		**7.3600e-003**	**7.3600e-003**			**14.6883**	**4.3400e-003**	**0.0000**	**14.7795**

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
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	1.1700e-003	1.8200e-003	0.0181	3.0000e-005	2.6300e-003	2.0000e-005	2.6500e-003	7.0000e-004	2.0000e-005	7.2000e-004			2.6915	1.5000e-004	0.0000	2.6947
Total	**1.1700e-003**	**1.8200e-003**	**0.0181**	**3.0000e-005**	**2.6300e-003**	**2.0000e-005**	**2.6500e-003**	**7.0000e-004**	**2.0000e-005**	**7.2000e-004**			**2.6915**	**1.5000e-004**	**0.0000**	**2.6947**

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	0.0137	0.1631	0.0811	1.5000e-004		8.0000e-003	8.0000e-003		7.3600e-003	7.3600e-003			14.6883	4.3400e-003	0.0000	14.7794
Total	**0.0137**	**0.1631**	**0.0811**	**1.5000e-004**		**8.0000e-003**	**8.0000e-003**		**7.3600e-003**	**7.3600e-003**			**14.6883**	**4.3400e-003**	**0.0000**	**14.7794**

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
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	1.1700e-003	1.8200e-003	0.0181	3.0000e-005	2.6300e-003	2.0000e-005	2.6500e-003	7.0000e-004	2.0000e-005	7.2000e-004			2.6915	1.5000e-004	0.0000	2.6947
Total	**1.1700e-003**	**1.8200e-003**	**0.0181**	**3.0000e-005**	**2.6300e-003**	**2.0000e-005**	**2.6500e-003**	**7.0000e-004**	**2.0000e-005**	**7.2000e-004**			**2.6915**	**1.5000e-004**	**0.0000**	**2.6947**

3.3 Grading Phase 1 - 2014

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					0.2660	0.0000	0.2660	0.1458	0.0000	0.1458			0.0000	0.0000	0.0000	0.0000
Off-Road	0.1429	1.6272	1.0805	1.2600e-003		0.0809	0.0809		0.0745	0.0745			121.5995	0.0359	0.0000	122.3542
Total	**0.1429**	**1.6272**	**1.0805**	**1.2600e-003**	**0.2660**	**0.0809**	**0.3470**	**0.1458**	**0.0745**	**0.2202**			**121.5995**	**0.0359**	**0.0000**	**122.3542**

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
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	2.4500e-003	3.8200e-003	0.0378	7.0000e-005	5.5100e-003	5.0000e-005	5.5600e-003	1.4600e-003	4.0000e-005	1.5100e-003			5.6394	3.2000e-004	0.0000	5.6461
Total	**2.4500e-003**	**3.8200e-003**	**0.0378**	**7.0000e-005**	**5.5100e-003**	**5.0000e-005**	**5.5600e-003**	**1.4600e-003**	**4.0000e-005**	**1.5100e-003**			**5.6394**	**3.2000e-004**	**0.0000**	**5.6461**

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					0.1038	0.0000	0.1038	0.0569	0.0000	0.0569			0.0000	0.0000	0.0000	0.0000
Off-Road	0.1429	1.6272	1.0805	1.2600e-003		0.0809	0.0809		0.0745	0.0745			121.5994	0.0359	0.0000	122.3540
Total	**0.1429**	**1.6272**	**1.0805**	**1.2600e-003**	**0.1038**	**0.0809**	**0.1847**	**0.0569**	**0.0745**	**0.1313**			**121.5994**	**0.0359**	**0.0000**	**122.3540**

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
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	2.4500e-003	3.8200e-003	0.0378	7.0000e-005	5.5100e-003	5.0000e-005	5.5600e-003	1.4600e-003	4.0000e-005	1.5100e-003			5.6394	3.2000e-004	0.0000	5.6461
Total	**2.4500e-003**	**3.8200e-003**	**0.0378**	**7.0000e-005**	**5.5100e-003**	**5.0000e-005**	**5.5600e-003**	**1.4600e-003**	**4.0000e-005**	**1.5100e-003**			**5.6394**	**3.2000e-004**	**0.0000**	**5.6461**

3.4 Building Construction Phase 1 - 2014

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	0.1890	1.8448	0.9604	1.6100e-003		0.1095	0.1095		0.1038	0.1038			149.5801	0.0358	0.0000	150.3319
Total	**0.1890**	**1.8448**	**0.9604**	**1.6100e-003**		**0.1095**	**0.1095**		**0.1038**	**0.1038**			**149.5801**	**0.0358**	**0.0000**	**150.3319**

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
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	4.9000e-003	7.6400e-003	0.0757	1.4000e-004	0.0110	9.0000e-005	0.0111	2.9300e-003	9.0000e-005	3.0100e-003			11.2787	6.4000e-004	0.0000	11.2922
Total	**4.9000e-003**	**7.6400e-003**	**0.0757**	**1.4000e-004**	**0.0110**	**9.0000e-005**	**0.0111**	**2.9300e-003**	**9.0000e-005**	**3.0100e-003**			**11.2787**	**6.4000e-004**	**0.0000**	**11.2922**

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	0.1890	1.8448	0.9604	1.6100e-003		0.1095	0.1095		0.1038	0.1038			149.5799	0.0358	0.0000	150.3317
Total	**0.1890**	**1.8448**	**0.9604**	**1.6100e-003**		**0.1095**	**0.1095**		**0.1038**	**0.1038**			**149.5799**	**0.0358**	**0.0000**	**150.3317**

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
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	4.9000e-003	7.6400e-003	0.0757	1.4000e-004	0.0110	9.0000e-005	0.0111	2.9300e-003	9.0000e-005	3.0100e-003			11.2787	6.4000e-004	0.0000	11.2922
Total	**4.9000e-003**	**7.6400e-003**	**0.0757**	**1.4000e-004**	**0.0110**	**9.0000e-005**	**0.0111**	**2.9300e-003**	**9.0000e-005**	**3.0100e-003**			**11.2787**	**6.4000e-004**	**0.0000**	**11.2922**

3.4 Building Construction Phase 1 - 2015

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	0.1766	1.7346	0.9322	1.5800e-003		0.1015	0.1015		0.0961	0.0961			145.1449	0.0345	0.0000	145.8692
Total	**0.1766**	**1.7346**	**0.9322**	**1.5800e-003**		**0.1015**	**0.1015**		**0.0961**	**0.0961**			**145.1449**	**0.0345**	**0.0000**	**145.8692**

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
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	4.1700e-003	6.5900e-003	0.0646	1.4000e-004	0.0108	9.0000e-005	0.0109	2.8600e-003	8.0000e-005	2.9400e-003			10.6484	5.7000e-004	0.0000	10.6603
Total	**4.1700e-003**	**6.5900e-003**	**0.0646**	**1.4000e-004**	**0.0108**	**9.0000e-005**	**0.0109**	**2.8600e-003**	**8.0000e-005**	**2.9400e-003**			**10.6484**	**5.7000e-004**	**0.0000**	**10.6603**

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	0.1766	1.7346	0.9322	1.5800e-003		0.1015	0.1015		0.0961	0.0961			145.1447	0.0345	0.0000	145.8690
Total	**0.1766**	**1.7346**	**0.9322**	**1.5800e-003**		**0.1015**	**0.1015**		**0.0961**	**0.0961**			**145.1447**	**0.0345**	**0.0000**	**145.8690**

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
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	4.1700e-003	6.5900e-003	0.0646	1.4000e-004	0.0108	9.0000e-005	0.0109	2.8600e-003	8.0000e-005	2.9400e-003			10.6484	5.7000e-004	0.0000	10.6603
Total	**4.1700e-003**	**6.5900e-003**	**0.0646**	**1.4000e-004**	**0.0108**	**9.0000e-005**	**0.0109**	**2.8600e-003**	**8.0000e-005**	**2.9400e-003**			**10.6484**	**5.7000e-004**	**0.0000**	**10.6603**

3.5 Paving Phase 1 - 2015

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	0.0131	0.1442	0.0669	1.1000e-004		7.5200e-003	7.5200e-003		6.9200e-003	6.9200e-003			10.4846	3.1300e-003	0.0000	10.5503
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**0.0131**	**0.1442**	**0.0669**	**1.1000e-004**		**7.5200e-003**	**7.5200e-003**		**6.9200e-003**	**6.9200e-003**			**10.4846**	**3.1300e-003**	**0.0000**	**10.5503**

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
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	5.3000e-004	8.4000e-004	8.2600e-003	2.0000e-005	1.3800e-003	1.0000e-005	1.3900e-003	3.7000e-004	1.0000e-005	3.8000e-004			1.3620	7.0000e-005	0.0000	1.3635
Total	**5.3000e-004**	**8.4000e-004**	**8.2600e-003**	**2.0000e-005**	**1.3800e-003**	**1.0000e-005**	**1.3900e-003**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**			**1.3620**	**7.0000e-005**	**0.0000**	**1.3635**

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	0.0131	0.1442	0.0669	1.1000e-004		7.5200e-003	7.5200e-003		6.9200e-003	6.9200e-003			10.4846	3.1300e-003	0.0000	10.5503
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**0.0131**	**0.1442**	**0.0669**	**1.1000e-004**		**7.5200e-003**	**7.5200e-003**		**6.9200e-003**	**6.9200e-003**			**10.4846**	**3.1300e-003**	**0.0000**	**10.5503**

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
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	5.3000e-004	8.4000e-004	8.2600e-003	2.0000e-005	1.3800e-003	1.0000e-005	1.3900e-003	3.7000e-004	1.0000e-005	3.8000e-004			1.3620	7.0000e-005	0.0000	1.3635
Total	**5.3000e-004**	**8.4000e-004**	**8.2600e-003**	**2.0000e-005**	**1.3800e-003**	**1.0000e-005**	**1.3900e-003**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**			**1.3620**	**7.0000e-005**	**0.0000**	**1.3635**

3.6 Architectural Coating Phase 1 - 2015

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					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Off-Road	2.7100e-003	0.0171	0.0127	2.0000e-005		1.4700e-003	1.4700e-003		1.4700e-003	1.4700e-003			1.7022	2.2000e-004	0.0000	1.7068
Total	**2.7100e-003**	**0.0171**	**0.0127**	**2.0000e-005**		**1.4700e-003**	**1.4700e-003**		**1.4700e-003**	**1.4700e-003**			**1.7022**	**2.2000e-004**	**0.0000**	**1.7068**

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
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	4.9000e-004	7.7000e-004	7.5100e-003	2.0000e-005	1.2500e-003	1.0000e-005	1.2600e-003	3.3000e-004	1.0000e-005	3.4000e-004			1.2382	7.0000e-005	0.0000	1.2396
Total	**4.9000e-004**	**7.7000e-004**	**7.5100e-003**	**2.0000e-005**	**1.2500e-003**	**1.0000e-005**	**1.2600e-003**	**3.3000e-004**	**1.0000e-005**	**3.4000e-004**			**1.2382**	**7.0000e-005**	**0.0000**	**1.2396**

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					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Off-Road	2.7100e-003	0.0171	0.0127	2.0000e-005		1.4700e-003	1.4700e-003		1.4700e-003	1.4700e-003			1.7022	2.2000e-004	0.0000	1.7068
Total	**2.7100e-003**	**0.0171**	**0.0127**	**2.0000e-005**		**1.4700e-003**	**1.4700e-003**		**1.4700e-003**	**1.4700e-003**			**1.7022**	**2.2000e-004**	**0.0000**	**1.7068**

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
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	4.9000e-004	7.7000e-004	7.5100e-003	2.0000e-005	1.2500e-003	1.0000e-005	1.2600e-003	3.3000e-004	1.0000e-005	3.4000e-004			1.2382	7.0000e-005	0.0000	1.2396
Total	**4.9000e-004**	**7.7000e-004**	**7.5100e-003**	**2.0000e-005**	**1.2500e-003**	**1.0000e-005**	**1.2600e-003**	**3.3000e-004**	**1.0000e-005**	**3.4000e-004**			**1.2382**	**7.0000e-005**	**0.0000**	**1.2396**

3.7 Demolition Phase 2 - 2015

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	0.0136	0.1588	0.0814	1.5000e-004		7.7900e-003	7.7900e-003		7.1600e-003	7.1600e-003			14.5808	4.3500e-003	0.0000	14.6723
Total	**0.0136**	**0.1588**	**0.0814**	**1.5000e-004**		**7.7900e-003**	**7.7900e-003**		**7.1600e-003**	**7.1600e-003**			**14.5808**	**4.3500e-003**	**0.0000**	**14.6723**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	1.0200e-003	1.6100e-003	0.0158	3.0000e-005	3.5000e-004	2.0000e-005	3.7000e-004	1.4000e-004	2.0000e-005	1.6000e-004			2.6002	1.4000e-004	0.0000	2.6031
Total	**1.0200e-003**	**1.6100e-003**	**0.0158**	**3.0000e-005**	**3.5000e-004**	**2.0000e-005**	**3.7000e-004**	**1.4000e-004**	**2.0000e-005**	**1.6000e-004**			**2.6002**	**1.4000e-004**	**0.0000**	**2.6031**

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	0.0136	0.1588	0.0814	1.5000e-004		7.7900e-003	7.7900e-003		7.1600e-003	7.1600e-003			14.5808	4.3500e-003	0.0000	14.6722
Total	**0.0136**	**0.1588**	**0.0814**	**1.5000e-004**		**7.7900e-003**	**7.7900e-003**		**7.1600e-003**	**7.1600e-003**			**14.5808**	**4.3500e-003**	**0.0000**	**14.6722**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	1.0200e-003	1.6100e-003	0.0158	3.0000e-005	3.5000e-004	2.0000e-005	3.7000e-004	1.4000e-004	2.0000e-005	1.6000e-004			2.6002	1.4000e-004	0.0000	2.6031
Total	**1.0200e-003**	**1.6100e-003**	**0.0158**	**3.0000e-005**	**3.5000e-004**	**2.0000e-005**	**3.7000e-004**	**1.4000e-004**	**2.0000e-005**	**1.6000e-004**			**2.6002**	**1.4000e-004**	**0.0000**	**2.6031**

3.8 Grading Phase 2 - 2015

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					0.2660	0.0000	0.2660	0.1458	0.0000	0.1458			0.0000	0.0000	0.0000	0.0000
Off-Road	0.1406	1.5809	1.0677	1.2500e-003		0.0788	0.0788		0.0725	0.0725			119.5149	0.0357	0.0000	120.2642
Total	**0.1406**	**1.5809**	**1.0677**	**1.2500e-003**	**0.2660**	**0.0788**	**0.3448**	**0.1458**	**0.0725**	**0.2182**			**119.5149**	**0.0357**	**0.0000**	**120.2642**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	2.1400e-003	3.3700e-003	0.0330	7.0000e-005	7.3000e-004	4.0000e-005	7.8000e-004	2.9000e-004	4.0000e-005	3.3000e-004			5.4480	2.9000e-004	0.0000	5.4541
Total	**2.1400e-003**	**3.3700e-003**	**0.0330**	**7.0000e-005**	**7.3000e-004**	**4.0000e-005**	**7.8000e-004**	**2.9000e-004**	**4.0000e-005**	**3.3000e-004**			**5.4480**	**2.9000e-004**	**0.0000**	**5.4541**

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					0.1038	0.0000	0.1038	0.0569	0.0000	0.0569			0.0000	0.0000	0.0000	0.0000
Off-Road	0.1406	1.5809	1.0677	1.2500e-003		0.0788	0.0788		0.0725	0.0725			119.5147	0.0357	0.0000	120.2640
Total	**0.1406**	**1.5809**	**1.0677**	**1.2500e-003**	**0.1038**	**0.0788**	**0.1825**	**0.0569**	**0.0725**	**0.1293**			**119.5147**	**0.0357**	**0.0000**	**120.2640**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	2.1400e-003	3.3700e-003	0.0330	7.0000e-005	7.3000e-004	4.0000e-005	7.8000e-004	2.9000e-004	4.0000e-005	3.3000e-004			5.4480	2.9000e-004	0.0000	5.4541
Total	**2.1400e-003**	**3.3700e-003**	**0.0330**	**7.0000e-005**	**7.3000e-004**	**4.0000e-005**	**7.8000e-004**	**2.9000e-004**	**4.0000e-005**	**3.3000e-004**			**5.4480**	**2.9000e-004**	**0.0000**	**5.4541**

3.9 Building Construction Phase 2 - 2015

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	0.1821	1.7890	0.9613	1.6300e-003		0.1047	0.1047		0.0991	0.0991			149.7888	0.0356	0.0000	150.5357
Total	**0.1821**	**1.7890**	**0.9613**	**1.6300e-003**		**0.1047**	**0.1047**		**0.0991**	**0.0991**			**149.7888**	**0.0356**	**0.0000**	**150.5357**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	4.3200e-003	6.8200e-003	0.0668	1.4000e-004	1.4800e-003	9.0000e-005	1.5700e-003	5.9000e-004	8.0000e-005	6.7000e-004			11.0199	5.8000e-004	0.0000	11.0322
Total	**4.3200e-003**	**6.8200e-003**	**0.0668**	**1.4000e-004**	**1.4800e-003**	**9.0000e-005**	**1.5700e-003**	**5.9000e-004**	**8.0000e-005**	**6.7000e-004**			**11.0199**	**5.8000e-004**	**0.0000**	**11.0322**

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	0.1821	1.7890	0.9613	1.6300e-003		0.1047	0.1047		0.0991	0.0991			149.7886	0.0356	0.0000	150.5356
Total	**0.1821**	**1.7890**	**0.9613**	**1.6300e-003**		**0.1047**	**0.1047**		**0.0991**	**0.0991**			**149.7886**	**0.0356**	**0.0000**	**150.5356**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	4.3200e-003	6.8200e-003	0.0668	1.4000e-004	1.4800e-003	9.0000e-005	1.5700e-003	5.9000e-004	8.0000e-005	6.7000e-004			11.0199	5.8000e-004	0.0000	11.0322
Total	**4.3200e-003**	**6.8200e-003**	**0.0668**	**1.4000e-004**	**1.4800e-003**	**9.0000e-005**	**1.5700e-003**	**5.9000e-004**	**8.0000e-005**	**6.7000e-004**			**11.0199**	**5.8000e-004**	**0.0000**	**11.0322**

3.9 Building Construction Phase 2 - 2016

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	0.1633	1.6145	0.9083	1.5500e-003		0.0928	0.0928		0.0877	0.0877			142.0142	0.0335	0.0000	142.7172
Total	**0.1633**	**1.6145**	**0.9083**	**1.5500e-003**		**0.0928**	**0.0928**		**0.0877**	**0.0877**			**142.0142**	**0.0335**	**0.0000**	**142.7172**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	3.6200e-003	5.7900e-003	0.0563	1.4000e-004	1.4200e-003	8.0000e-005	1.5000e-003	5.6000e-004	7.0000e-005	6.4000e-004			10.1375	5.1000e-004	0.0000	10.1481
Total	**3.6200e-003**	**5.7900e-003**	**0.0563**	**1.4000e-004**	**1.4200e-003**	**8.0000e-005**	**1.5000e-003**	**5.6000e-004**	**7.0000e-005**	**6.4000e-004**			**10.1375**	**5.1000e-004**	**0.0000**	**10.1481**

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	0.1633	1.6145	0.9083	1.5500e-003		0.0928	0.0928		0.0877	0.0877			142.0140	0.0335	0.0000	142.7170
Total	**0.1633**	**1.6145**	**0.9083**	**1.5500e-003**		**0.0928**	**0.0928**		**0.0877**	**0.0877**			**142.0140**	**0.0335**	**0.0000**	**142.7170**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	3.6200e-003	5.7900e-003	0.0563	1.4000e-004	1.4200e-003	8.0000e-005	1.5000e-003	5.6000e-004	7.0000e-005	6.4000e-004			10.1375	5.1000e-004	0.0000	10.1481
Total	**3.6200e-003**	**5.7900e-003**	**0.0563**	**1.4000e-004**	**1.4200e-003**	**8.0000e-005**	**1.5000e-003**	**5.6000e-004**	**7.0000e-005**	**6.4000e-004**			**10.1375**	**5.1000e-004**	**0.0000**	**10.1481**

3.10 Paving Phase 2 - 2016

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	0.0124	0.1350	0.0659	1.1000e-004		7.0100e-003	7.0100e-003		6.4500e-003	6.4500e-003			10.3441	3.1200e-003	0.0000	10.4096
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**0.0124**	**0.1350**	**0.0659**	**1.1000e-004**		**7.0100e-003**	**7.0100e-003**		**6.4500e-003**	**6.4500e-003**			**10.3441**	**3.1200e-003**	**0.0000**	**10.4096**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	4.7000e-004	7.5000e-004	7.2900e-003	2.0000e-005	1.8000e-004	1.0000e-005	1.9000e-004	7.0000e-005	1.0000e-005	8.0000e-005			1.3119	7.0000e-005	0.0000	1.3133
Total	**4.7000e-004**	**7.5000e-004**	**7.2900e-003**	**2.0000e-005**	**1.8000e-004**	**1.0000e-005**	**1.9000e-004**	**7.0000e-005**	**1.0000e-005**	**8.0000e-005**			**1.3119**	**7.0000e-005**	**0.0000**	**1.3133**

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	0.0124	0.1350	0.0659	1.1000e-004		7.0100e-003	7.0100e-003		6.4500e-003	6.4500e-003			10.3440	3.1200e-003	0.0000	10.4096
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**0.0124**	**0.1350**	**0.0659**	**1.1000e-004**		**7.0100e-003**	**7.0100e-003**		**6.4500e-003**	**6.4500e-003**			**10.3440**	**3.1200e-003**	**0.0000**	**10.4096**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	7.5000e-004	7.2900e-003	2.0000e-005	1.8000e-004	1.0000e-005	1.9000e-004	7.0000e-005	1.0000e-005	8.0000e-005			1.3119	7.0000e-005	0.0000	1.3133
Total	**4.7000e-004**	**7.5000e-004**	**7.2900e-003**	**2.0000e-005**	**1.8000e-004**	**1.0000e-005**	**1.9000e-004**	**7.0000e-005**	**1.0000e-005**	**8.0000e-005**			**1.3119**	**7.0000e-005**	**0.0000**	**1.3133**

3.11 Architectural Coating Phase 2 - 2016

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	2.4600e-003	0.0158	0.0126	2.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003			1.7022	2.0000e-004	0.0000	1.7064
Total	**2.4600e-003**	**0.0158**	**0.0126**	**2.0000e-005**		**1.3100e-003**	**1.3100e-003**		**1.3100e-003**	**1.3100e-003**			**1.7022**	**2.0000e-004**	**0.0000**	**1.7064**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	4.3000e-004	6.8000e-004	6.6300e-003	2.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	7.0000e-005	1.0000e-005	7.0000e-005			1.1926	6.0000e-005	0.0000	1.1939
Total	**4.3000e-004**	**6.8000e-004**	**6.6300e-003**	**2.0000e-005**	**1.7000e-004**	**1.0000e-005**	**1.8000e-004**	**7.0000e-005**	**1.0000e-005**	**7.0000e-005**			**1.1926**	**6.0000e-005**	**0.0000**	**1.1939**

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	2.4600e-003	0.0158	0.0126	2.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003			1.7022	2.0000e-004	0.0000	1.7064
Total	**2.4600e-003**	**0.0158**	**0.0126**	**2.0000e-005**		**1.3100e-003**	**1.3100e-003**		**1.3100e-003**	**1.3100e-003**			**1.7022**	**2.0000e-004**	**0.0000**	**1.7064**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	4.3000e-004	6.8000e-004	6.6300e-003	2.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	7.0000e-005	1.0000e-005	7.0000e-005			1.1926	6.0000e-005	0.0000	1.1939
Total	**4.3000e-004**	**6.8000e-004**	**6.6300e-003**	**2.0000e-005**	**1.7000e-004**	**1.0000e-005**	**1.8000e-004**	**7.0000e-005**	**1.0000e-005**	**7.0000e-005**			**1.1926**	**6.0000e-005**	**0.0000**	**1.1939**

3.12 Demolition Phase 3 - 2016

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	0.0129	0.1490	0.0808	1.5000e-004		7.2500e-003	7.2500e-003		6.6700e-003	6.6700e-003			14.4271	4.3500e-003	0.0000	14.5185
Total	**0.0129**	**0.1490**	**0.0808**	**1.5000e-004**		**7.2500e-003**	**7.2500e-003**		**6.6700e-003**	**6.6700e-003**			**14.4271**	**4.3500e-003**	**0.0000**	**14.5185**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	9.0000e-004	1.4300e-003	0.0139	3.0000e-005	3.5000e-004	2.0000e-005	3.7000e-004	1.4000e-004	2.0000e-005	1.6000e-004			2.5046	1.3000e-004	0.0000	2.5072
Total	**9.0000e-004**	**1.4300e-003**	**0.0139**	**3.0000e-005**	**3.5000e-004**	**2.0000e-005**	**3.7000e-004**	**1.4000e-004**	**2.0000e-005**	**1.6000e-004**			**2.5046**	**1.3000e-004**	**0.0000**	**2.5072**

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	0.0129	0.1490	0.0808	1.5000e-004		7.2500e-003	7.2500e-003		6.6700e-003	6.6700e-003			14.4271	4.3500e-003	0.0000	14.5185
Total	**0.0129**	**0.1490**	**0.0808**	**1.5000e-004**		**7.2500e-003**	**7.2500e-003**		**6.6700e-003**	**6.6700e-003**			**14.4271**	**4.3500e-003**	**0.0000**	**14.5185**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-004	1.4300e-003	0.0139	3.0000e-005	3.5000e-004	2.0000e-005	3.7000e-004	1.4000e-004	2.0000e-005	1.6000e-004			2.5046	1.3000e-004	0.0000	2.5072
Total	**9.0000e-004**	**1.4300e-003**	**0.0139**	**3.0000e-005**	**3.5000e-004**	**2.0000e-005**	**3.7000e-004**	**1.4000e-004**	**2.0000e-005**	**1.6000e-004**			**2.5046**	**1.3000e-004**	**0.0000**	**2.5072**

3.13 Grading Phase 3 - 2016

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					0.2660	0.0000	0.2660	0.1458	0.0000	0.1458			0.0000	0.0000	0.0000	0.0000
Off-Road	0.1335	1.4847	1.0435	1.2500e-003		0.0737	0.0737		0.0678	0.0678			118.2505	0.0357	0.0000	118.9995
Total	**0.1335**	**1.4847**	**1.0435**	**1.2500e-003**	**0.2660**	**0.0737**	**0.3397**	**0.1458**	**0.0678**	**0.2136**			**118.2505**	**0.0357**	**0.0000**	**118.9995**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	1.8800e-003	3.0000e-003	0.0292	7.0000e-005	7.3000e-004	4.0000e-005	7.8000e-004	2.9000e-004	4.0000e-005	3.3000e-004			5.2476	2.6000e-004	0.0000	5.2532
Total	**1.8800e-003**	**3.0000e-003**	**0.0292**	**7.0000e-005**	**7.3000e-004**	**4.0000e-005**	**7.8000e-004**	**2.9000e-004**	**4.0000e-005**	**3.3000e-004**			**5.2476**	**2.6000e-004**	**0.0000**	**5.2532**

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					0.1038	0.0000	0.1038	0.0569	0.0000	0.0569			0.0000	0.0000	0.0000	0.0000
Off-Road	0.1335	1.4847	1.0435	1.2500e-003		0.0737	0.0737		0.0678	0.0678			118.2503	0.0357	0.0000	118.9994
Total	**0.1335**	**1.4847**	**1.0435**	**1.2500e-003**	**0.1038**	**0.0737**	**0.1775**	**0.0569**	**0.0678**	**0.1247**			**118.2503**	**0.0357**	**0.0000**	**118.9994**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	1.8800e-003	3.0000e-003	0.0292	7.0000e-005	7.3000e-004	4.0000e-005	7.8000e-004	2.9000e-004	4.0000e-005	3.3000e-004			5.2476	2.6000e-004	0.0000	5.2532
Total	**1.8800e-003**	**3.0000e-003**	**0.0292**	**7.0000e-005**	**7.3000e-004**	**4.0000e-005**	**7.8000e-004**	**2.9000e-004**	**4.0000e-005**	**3.3000e-004**			**5.2476**	**2.6000e-004**	**0.0000**	**5.2532**

3.14 Building Construction Phase 3 - 2016

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	0.1730	1.7094	0.9617	1.6400e-003		0.0982	0.0982		0.0929	0.0929			150.3680	0.0354	0.0000	151.1123
Total	**0.1730**	**1.7094**	**0.9617**	**1.6400e-003**		**0.0982**	**0.0982**		**0.0929**	**0.0929**			**150.3680**	**0.0354**	**0.0000**	**151.1123**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	3.8400e-003	6.1300e-003	0.0596	1.4000e-004	1.5000e-003	8.0000e-005	1.5900e-003	6.0000e-004	8.0000e-005	6.7000e-004			10.7338	5.4000e-004	0.0000	10.7451
Total	**3.8400e-003**	**6.1300e-003**	**0.0596**	**1.4000e-004**	**1.5000e-003**	**8.0000e-005**	**1.5900e-003**	**6.0000e-004**	**8.0000e-005**	**6.7000e-004**			**10.7338**	**5.4000e-004**	**0.0000**	**10.7451**

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	0.1730	1.7094	0.9617	1.6400e-003		0.0982	0.0982		0.0929	0.0929			150.3678	0.0354	0.0000	151.1121
Total	**0.1730**	**1.7094**	**0.9617**	**1.6400e-003**		**0.0982**	**0.0982**		**0.0929**	**0.0929**			**150.3678**	**0.0354**	**0.0000**	**151.1121**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	3.8400e-003	6.1300e-003	0.0596	1.4000e-004	1.5000e-003	8.0000e-005	1.5900e-003	6.0000e-004	8.0000e-005	6.7000e-004			10.7338	5.4000e-004	0.0000	10.7451
Total	**3.8400e-003**	**6.1300e-003**	**0.0596**	**1.4000e-004**	**1.5000e-003**	**8.0000e-005**	**1.5900e-003**	**6.0000e-004**	**8.0000e-005**	**6.7000e-004**			**10.7338**	**5.4000e-004**	**0.0000**	**10.7451**

3.14 Building Construction Phase 3 - 2017

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	0.1485	1.4763	0.8814	1.5300e-003		0.0831	0.0831		0.0785	0.0785			138.8358	0.0327	0.0000	139.5220
Total	**0.1485**	**1.4763**	**0.8814**	**1.5300e-003**		**0.0831**	**0.0831**		**0.0785**	**0.0785**			**138.8358**	**0.0327**	**0.0000**	**139.5220**

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	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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	3.1100e-003	5.0900e-003	0.0488	1.3000e-004	1.4000e-003	8.0000e-005	1.4800e-003	5.6000e-004	7.0000e-005	6.3000e-004			9.6201	4.6000e-004	0.0000	9.6297
Total	**3.1100e-003**	**5.0900e-003**	**0.0488**	**1.3000e-004**	**1.4000e-003**	**8.0000e-005**	**1.4800e-003**	**5.6000e-004**	**7.0000e-005**	**6.3000e-004**			**9.6201**	**4.6000e-004**	**0.0000**	**9.6297**

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	0.1485	1.4763	0.8814	1.5300e-003		0.0831	0.0831		0.0785	0.0785			138.8357	0.0327	0.0000	139.5218
Total	**0.1485**	**1.4763**	**0.8814**	**1.5300e-003**		**0.0831**	**0.0831**		**0.0785**	**0.0785**			**138.8357**	**0.0327**	**0.0000**	**139.5218**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	3.1100e-003	5.0900e-003	0.0488	1.3000e-004	1.4000e-003	8.0000e-005	1.4800e-003	5.6000e-004	7.0000e-005	6.3000e-004			9.6201	4.6000e-004	0.0000	9.6297
Total	**3.1100e-003**	**5.0900e-003**	**0.0488**	**1.3000e-004**	**1.4000e-003**	**8.0000e-005**	**1.4800e-003**	**5.6000e-004**	**7.0000e-005**	**6.3000e-004**			**9.6201**	**4.6000e-004**	**0.0000**	**9.6297**

3.15 Paving Phase 3 - 2017

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	0.0115	0.1247	0.0650	1.1000e-004		6.4300e-003	6.4300e-003		5.9200e-003	5.9200e-003			10.1750	3.1200e-003	0.0000	10.2405
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**0.0115**	**0.1247**	**0.0650**	**1.1000e-004**		**6.4300e-003**	**6.4300e-003**		**5.9200e-003**	**5.9200e-003**			**10.1750**	**3.1200e-003**	**0.0000**	**10.2405**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	4.1000e-004	6.7000e-004	6.3900e-003	2.0000e-005	1.8000e-004	1.0000e-005	1.9000e-004	7.0000e-005	1.0000e-005	8.0000e-005			1.2598	6.0000e-005	0.0000	1.2610
Total	**4.1000e-004**	**6.7000e-004**	**6.3900e-003**	**2.0000e-005**	**1.8000e-004**	**1.0000e-005**	**1.9000e-004**	**7.0000e-005**	**1.0000e-005**	**8.0000e-005**			**1.2598**	**6.0000e-005**	**0.0000**	**1.2610**

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	0.0115	0.1247	0.0650	1.1000e-004		6.4300e-003	6.4300e-003		5.9200e-003	5.9200e-003			10.1750	3.1200e-003	0.0000	10.2405
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**0.0115**	**0.1247**	**0.0650**	**1.1000e-004**		**6.4300e-003**	**6.4300e-003**		**5.9200e-003**	**5.9200e-003**			**10.1750**	**3.1200e-003**	**0.0000**	**10.2405**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	6.7000e-004	6.3900e-003	2.0000e-005	1.8000e-004	1.0000e-005	1.9000e-004	7.0000e-005	1.0000e-005	8.0000e-005			1.2598	6.0000e-005	0.0000	1.2610
Total	**4.1000e-004**	**6.7000e-004**	**6.3900e-003**	**2.0000e-005**	**1.8000e-004**	**1.0000e-005**	**1.9000e-004**	**7.0000e-005**	**1.0000e-005**	**8.0000e-005**			**1.2598**	**6.0000e-005**	**0.0000**	**1.2610**

3.16 Architectural Coating Phase 3 - 2017

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	2.2200e-003	0.0146	0.0125	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003			1.7022	1.8000e-004	0.0000	1.7059
Total	**2.2200e-003**	**0.0146**	**0.0125**	**2.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**			**1.7022**	**1.8000e-004**	**0.0000**	**1.7059**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	3.7000e-004	6.1000e-004	5.8100e-003	2.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	7.0000e-005	1.0000e-005	7.0000e-005			1.1453	5.0000e-005	0.0000	1.1464
Total	**3.7000e-004**	**6.1000e-004**	**5.8100e-003**	**2.0000e-005**	**1.7000e-004**	**1.0000e-005**	**1.8000e-004**	**7.0000e-005**	**1.0000e-005**	**7.0000e-005**			**1.1453**	**5.0000e-005**	**0.0000**	**1.1464**

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	2.2200e-003	0.0146	0.0125	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003			1.7022	1.8000e-004	0.0000	1.7059
Total	**2.2200e-003**	**0.0146**	**0.0125**	**2.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**			**1.7022**	**1.8000e-004**	**0.0000**	**1.7059**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	6.1000e-004	5.8100e-003	2.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	7.0000e-005	1.0000e-005	7.0000e-005			1.1453	5.0000e-005	0.0000	1.1464
Total	**3.7000e-004**	**6.1000e-004**	**5.8100e-003**	**2.0000e-005**	**1.7000e-004**	**1.0000e-005**	**1.8000e-004**	**7.0000e-005**	**1.0000e-005**	**7.0000e-005**			**1.1453**	**5.0000e-005**	**0.0000**	**1.1464**

3.17 Demolition Phase 4 - 2017

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	0.0121	0.1376	0.0800	1.5000e-004		6.6400e-003	6.6400e-003		6.1100e-003	6.1100e-003			14.1997	4.3500e-003	0.0000	14.2911
Total	**0.0121**	**0.1376**	**0.0800**	**1.5000e-004**		**6.6400e-003**	**6.6400e-003**		**6.1100e-003**	**6.1100e-003**			**14.1997**	**4.3500e-003**	**0.0000**	**14.2911**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	7.8000e-004	1.2700e-003	0.0122	3.0000e-005	3.5000e-004	2.0000e-005	3.7000e-004	1.4000e-004	2.0000e-005	1.6000e-004			2.4050	1.1000e-004	0.0000	2.4074
Total	**7.8000e-004**	**1.2700e-003**	**0.0122**	**3.0000e-005**	**3.5000e-004**	**2.0000e-005**	**3.7000e-004**	**1.4000e-004**	**2.0000e-005**	**1.6000e-004**			**2.4050**	**1.1000e-004**	**0.0000**	**2.4074**

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	0.0121	0.1376	0.0800	1.5000e-004		6.6400e-003	6.6400e-003		6.1100e-003	6.1100e-003			14.1997	4.3500e-003	0.0000	14.2911
Total	**0.0121**	**0.1376**	**0.0800**	**1.5000e-004**		**6.6400e-003**	**6.6400e-003**		**6.1100e-003**	**6.1100e-003**			**14.1997**	**4.3500e-003**	**0.0000**	**14.2911**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	1.2700e-003	0.0122	3.0000e-005	3.5000e-004	2.0000e-005	3.7000e-004	1.4000e-004	2.0000e-005	1.6000e-004			2.4050	1.1000e-004	0.0000	2.4074
Total	**7.8000e-004**	**1.2700e-003**	**0.0122**	**3.0000e-005**	**3.5000e-004**	**2.0000e-005**	**3.7000e-004**	**1.4000e-004**	**2.0000e-005**	**1.6000e-004**			**2.4050**	**1.1000e-004**	**0.0000**	**2.4074**

3.18 Grading Phase 4 - 2017

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					0.2660	0.0000	0.2660	0.1458	0.0000	0.1458			0.0000	0.0000	0.0000	0.0000
Off-Road	0.1252	1.3729	1.0148	1.2500e-003		0.0680	0.0680		0.0625	0.0625			116.4326	0.0357	0.0000	117.1818
Total	**0.1252**	**1.3729**	**1.0148**	**1.2500e-003**	**0.2660**	**0.0680**	**0.3340**	**0.1458**	**0.0625**	**0.2083**			**116.4326**	**0.0357**	**0.0000**	**117.1818**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	1.6300e-003	2.6600e-003	0.0256	7.0000e-005	7.3000e-004	4.0000e-005	7.7000e-004	2.9000e-004	4.0000e-005	3.3000e-004			5.0391	2.4000e-004	0.0000	5.0442
Total	**1.6300e-003**	**2.6600e-003**	**0.0256**	**7.0000e-005**	**7.3000e-004**	**4.0000e-005**	**7.7000e-004**	**2.9000e-004**	**4.0000e-005**	**3.3000e-004**			**5.0391**	**2.4000e-004**	**0.0000**	**5.0442**

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					0.1038	0.0000	0.1038	0.0569	0.0000	0.0569			0.0000	0.0000	0.0000	0.0000
Off-Road	0.1252	1.3729	1.0148	1.2500e-003		0.0680	0.0680		0.0625	0.0625			116.4325	0.0357	0.0000	117.1816
Total	**0.1252**	**1.3729**	**1.0148**	**1.2500e-003**	**0.1038**	**0.0680**	**0.1717**	**0.0569**	**0.0625**	**0.1194**			**116.4325**	**0.0357**	**0.0000**	**117.1816**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	1.6300e-003	2.6600e-003	0.0256	7.0000e-005	7.3000e-004	4.0000e-005	7.7000e-004	2.9000e-004	4.0000e-005	3.3000e-004			5.0391	2.4000e-004	0.0000	5.0442
Total	**1.6300e-003**	**2.6600e-003**	**0.0256**	**7.0000e-005**	**7.3000e-004**	**4.0000e-005**	**7.7000e-004**	**2.9000e-004**	**4.0000e-005**	**3.3000e-004**			**5.0391**	**2.4000e-004**	**0.0000**	**5.0442**

3.19 Building Construction Phase 4 - 2017

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	0.1592	1.5817	0.9444	1.6400e-003		0.0891	0.0891		0.0842	0.0842			148.7527	0.0350	0.0000	149.4879
Total	**0.1592**	**1.5817**	**0.9444**	**1.6400e-003**		**0.0891**	**0.0891**		**0.0842**	**0.0842**			**148.7527**	**0.0350**	**0.0000**	**149.4879**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	3.3300e-003	5.4500e-003	0.0523	1.4000e-004	1.5000e-003	8.0000e-005	1.5800e-003	6.0000e-004	8.0000e-005	6.7000e-004			10.3072	4.9000e-004	0.0000	10.3176
Total	**3.3300e-003**	**5.4500e-003**	**0.0523**	**1.4000e-004**	**1.5000e-003**	**8.0000e-005**	**1.5800e-003**	**6.0000e-004**	**8.0000e-005**	**6.7000e-004**			**10.3072**	**4.9000e-004**	**0.0000**	**10.3176**

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	0.1592	1.5817	0.9444	1.6400e-003		0.0891	0.0891		0.0842	0.0842			148.7525	0.0350	0.0000	149.4877
Total	**0.1592**	**1.5817**	**0.9444**	**1.6400e-003**		**0.0891**	**0.0891**		**0.0842**	**0.0842**			**148.7525**	**0.0350**	**0.0000**	**149.4877**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	3.3300e-003	5.4500e-003	0.0523	1.4000e-004	1.5000e-003	8.0000e-005	1.5800e-003	6.0000e-004	8.0000e-005	6.7000e-004			10.3072	4.9000e-004	0.0000	10.3176
Total	**3.3300e-003**	**5.4500e-003**	**0.0523**	**1.4000e-004**	**1.5000e-003**	**8.0000e-005**	**1.5800e-003**	**6.0000e-004**	**8.0000e-005**	**6.7000e-004**			**10.3072**	**4.9000e-004**	**0.0000**	**10.3176**

3.19 Building Construction Phase 4 - 2018

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	0.1299	1.2978	0.8548	1.5300e-003		0.0707	0.0707		0.0668	0.0668			137.3021	0.0322	0.0000	137.9779
Total	**0.1299**	**1.2978**	**0.8548**	**1.5300e-003**		**0.0707**	**0.0707**		**0.0668**	**0.0668**			**137.3021**	**0.0322**	**0.0000**	**137.9779**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	2.7100e-003	4.5400e-003	0.0430	1.3000e-004	1.4000e-003	7.0000e-005	1.4700e-003	5.6000e-004	7.0000e-005	6.2000e-004			9.2282	4.2000e-004	0.0000	9.2370
Total	**2.7100e-003**	**4.5400e-003**	**0.0430**	**1.3000e-004**	**1.4000e-003**	**7.0000e-005**	**1.4700e-003**	**5.6000e-004**	**7.0000e-005**	**6.2000e-004**			**9.2282**	**4.2000e-004**	**0.0000**	**9.2370**

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	0.1299	1.2978	0.8548	1.5300e-003		0.0707	0.0707		0.0668	0.0668			137.3020	0.0322	0.0000	137.9778
Total	**0.1299**	**1.2978**	**0.8548**	**1.5300e-003**		**0.0707**	**0.0707**		**0.0668**	**0.0668**			**137.3020**	**0.0322**	**0.0000**	**137.9778**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	2.7100e-003	4.5400e-003	0.0430	1.3000e-004	1.4000e-003	7.0000e-005	1.4700e-003	5.6000e-004	7.0000e-005	6.2000e-004			9.2282	4.2000e-004	0.0000	9.2370
Total	**2.7100e-003**	**4.5400e-003**	**0.0430**	**1.3000e-004**	**1.4000e-003**	**7.0000e-005**	**1.4700e-003**	**5.6000e-004**	**7.0000e-005**	**6.2000e-004**			**9.2282**	**4.2000e-004**	**0.0000**	**9.2370**

3.20 Paving Phase 4 - 2018

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	0.0101	0.1077	0.0631	1.1000e-004		5.4800e-003	5.4800e-003		5.0400e-003	5.0400e-003			10.0032	3.1100e-003	0.0000	10.0686
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**0.0101**	**0.1077**	**0.0631**	**1.1000e-004**		**5.4800e-003**	**5.4800e-003**		**5.0400e-003**	**5.0400e-003**			**10.0032**	**3.1100e-003**	**0.0000**	**10.0686**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	3.5000e-004	5.9000e-004	5.6300e-003	2.0000e-005	1.8000e-004	1.0000e-005	1.9000e-004	7.0000e-005	1.0000e-005	8.0000e-005			1.2085	6.0000e-005	0.0000	1.2096
Total	**3.5000e-004**	**5.9000e-004**	**5.6300e-003**	**2.0000e-005**	**1.8000e-004**	**1.0000e-005**	**1.9000e-004**	**7.0000e-005**	**1.0000e-005**	**8.0000e-005**			**1.2085**	**6.0000e-005**	**0.0000**	**1.2096**

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	0.0101	0.1077	0.0631	1.1000e-004		5.4800e-003	5.4800e-003		5.0400e-003	5.0400e-003			10.0032	3.1100e-003	0.0000	10.0686
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**0.0101**	**0.1077**	**0.0631**	**1.1000e-004**		**5.4800e-003**	**5.4800e-003**		**5.0400e-003**	**5.0400e-003**			**10.0032**	**3.1100e-003**	**0.0000**	**10.0686**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	5.9000e-004	5.6300e-003	2.0000e-005	1.8000e-004	1.0000e-005	1.9000e-004	7.0000e-005	1.0000e-005	8.0000e-005			1.2085	6.0000e-005	0.0000	1.2096
Total	**3.5000e-004**	**5.9000e-004**	**5.6300e-003**	**2.0000e-005**	**1.8000e-004**	**1.0000e-005**	**1.9000e-004**	**7.0000e-005**	**1.0000e-005**	**8.0000e-005**			**1.2085**	**6.0000e-005**	**0.0000**	**1.2096**

3.21 Architectural Coating Phase 4 - 2018

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	1.9900e-003	0.0134	0.0124	2.0000e-005		1.0000e-003	1.0000e-003		1.0000e-003	1.0000e-003			1.7022	1.6000e-004	0.0000	1.7056
Total	**1.9900e-003**	**0.0134**	**0.0124**	**2.0000e-005**		**1.0000e-003**	**1.0000e-003**		**1.0000e-003**	**1.0000e-003**			**1.7022**	**1.6000e-004**	**0.0000**	**1.7056**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	3.2000e-004	5.4000e-004	5.1200e-003	2.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	7.0000e-005	1.0000e-005	7.0000e-005			1.0986	5.0000e-005	0.0000	1.0997
Total	**3.2000e-004**	**5.4000e-004**	**5.1200e-003**	**2.0000e-005**	**1.7000e-004**	**1.0000e-005**	**1.8000e-004**	**7.0000e-005**	**1.0000e-005**	**7.0000e-005**			**1.0986**	**5.0000e-005**	**0.0000**	**1.0997**

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	1.9900e-003	0.0134	0.0124	2.0000e-005		1.0000e-003	1.0000e-003		1.0000e-003	1.0000e-003			1.7022	1.6000e-004	0.0000	1.7056
Total	**1.9900e-003**	**0.0134**	**0.0124**	**2.0000e-005**		**1.0000e-003**	**1.0000e-003**		**1.0000e-003**	**1.0000e-003**			**1.7022**	**1.6000e-004**	**0.0000**	**1.7056**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	5.4000e-004	5.1200e-003	2.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	7.0000e-005	1.0000e-005	7.0000e-005			1.0986	5.0000e-005	0.0000	1.0997
Total	**3.2000e-004**	**5.4000e-004**	**5.1200e-003**	**2.0000e-005**	**1.7000e-004**	**1.0000e-005**	**1.8000e-004**	**7.0000e-005**	**1.0000e-005**	**7.0000e-005**			**1.0986**	**5.0000e-005**	**0.0000**	**1.0997**

3.22 Demolition Phase 5 - 2018

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	0.0104	0.1161	0.0778	1.5000e-004		5.4400e-003	5.4400e-003		5.0100e-003	5.0100e-003			13.9687	4.3500e-003	0.0000	14.0600
Total	**0.0104**	**0.1161**	**0.0778**	**1.5000e-004**		**5.4400e-003**	**5.4400e-003**		**5.0100e-003**	**5.0100e-003**			**13.9687**	**4.3500e-003**	**0.0000**	**14.0600**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	6.8000e-004	1.1400e-003	0.0108	3.0000e-005	3.5000e-004	2.0000e-005	3.7000e-004	1.4000e-004	2.0000e-005	1.6000e-004			2.3071	1.1000e-004	0.0000	2.3093
Total	**6.8000e-004**	**1.1400e-003**	**0.0108**	**3.0000e-005**	**3.5000e-004**	**2.0000e-005**	**3.7000e-004**	**1.4000e-004**	**2.0000e-005**	**1.6000e-004**			**2.3071**	**1.1000e-004**	**0.0000**	**2.3093**

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	0.0104	0.1161	0.0778	1.5000e-004		5.4400e-003	5.4400e-003		5.0100e-003	5.0100e-003			13.9687	4.3500e-003	0.0000	14.0600
Total	**0.0104**	**0.1161**	**0.0778**	**1.5000e-004**		**5.4400e-003**	**5.4400e-003**		**5.0100e-003**	**5.0100e-003**			**13.9687**	**4.3500e-003**	**0.0000**	**14.0600**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	1.1400e-003	0.0108	3.0000e-005	3.5000e-004	2.0000e-005	3.7000e-004	1.4000e-004	2.0000e-005	1.6000e-004			2.3071	1.1000e-004	0.0000	2.3093
Total	**6.8000e-004**	**1.1400e-003**	**0.0108**	**3.0000e-005**	**3.5000e-004**	**2.0000e-005**	**3.7000e-004**	**1.4000e-004**	**2.0000e-005**	**1.6000e-004**			**2.3071**	**1.1000e-004**	**0.0000**	**2.3093**

3.23 Grading Phase 5 - 2018

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					0.2660	0.0000	0.2660	0.1458	0.0000	0.1458			0.0000	0.0000	0.0000	0.0000
Off-Road	0.1072	1.1520	0.9573	1.2500e-003		0.0563	0.0563		0.0518	0.0518			114.6129	0.0357	0.0000	115.3622
Total	**0.1072**	**1.1520**	**0.9573**	**1.2500e-003**	**0.2660**	**0.0563**	**0.3224**	**0.1458**	**0.0518**	**0.1976**			**114.6129**	**0.0357**	**0.0000**	**115.3622**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	1.4200e-003	2.3800e-003	0.0225	7.0000e-005	7.3000e-004	4.0000e-005	7.7000e-004	2.9000e-004	4.0000e-005	3.3000e-004			4.8338	2.2000e-004	0.0000	4.8385
Total	**1.4200e-003**	**2.3800e-003**	**0.0225**	**7.0000e-005**	**7.3000e-004**	**4.0000e-005**	**7.7000e-004**	**2.9000e-004**	**4.0000e-005**	**3.3000e-004**			**4.8338**	**2.2000e-004**	**0.0000**	**4.8385**

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					0.1038	0.0000	0.1038	0.0569	0.0000	0.0569			0.0000	0.0000	0.0000	0.0000
Off-Road	0.1072	1.1520	0.9573	1.2500e-003		0.0563	0.0563		0.0518	0.0518			114.6127	0.0357	0.0000	115.3620
Total	**0.1072**	**1.1520**	**0.9573**	**1.2500e-003**	**0.1038**	**0.0563**	**0.1601**	**0.0569**	**0.0518**	**0.1087**			**114.6127**	**0.0357**	**0.0000**	**115.3620**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	1.4200e-003	2.3800e-003	0.0225	7.0000e-005	7.3000e-004	4.0000e-005	7.7000e-004	2.9000e-004	4.0000e-005	3.3000e-004			4.8338	2.2000e-004	0.0000	4.8385
Total	**1.4200e-003**	**2.3800e-003**	**0.0225**	**7.0000e-005**	**7.3000e-004**	**4.0000e-005**	**7.7000e-004**	**2.9000e-004**	**4.0000e-005**	**3.3000e-004**			**4.8338**	**2.2000e-004**	**0.0000**	**4.8385**

3.24 Building Construction Phase 5 - 2018

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	0.1408	1.4060	0.9260	1.6600e-003		0.0766	0.0766		0.0724	0.0724			148.7440	0.0349	0.0000	149.4761
Total	**0.1408**	**1.4060**	**0.9260**	**1.6600e-003**		**0.0766**	**0.0766**		**0.0724**	**0.0724**			**148.7440**	**0.0349**	**0.0000**	**149.4761**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	2.9300e-003	4.9200e-003	0.0466	1.4000e-004	1.5200e-003	8.0000e-005	1.6000e-003	6.0000e-004	7.0000e-005	6.8000e-004			9.9972	4.6000e-004	0.0000	10.0068
Total	**2.9300e-003**	**4.9200e-003**	**0.0466**	**1.4000e-004**	**1.5200e-003**	**8.0000e-005**	**1.6000e-003**	**6.0000e-004**	**7.0000e-005**	**6.8000e-004**			**9.9972**	**4.6000e-004**	**0.0000**	**10.0068**

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	0.1408	1.4060	0.9260	1.6600e-003		0.0766	0.0766		0.0724	0.0724			148.7438	0.0349	0.0000	149.4759
Total	**0.1408**	**1.4060**	**0.9260**	**1.6600e-003**		**0.0766**	**0.0766**		**0.0724**	**0.0724**			**148.7438**	**0.0349**	**0.0000**	**149.4759**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	2.9300e-003	4.9200e-003	0.0466	1.4000e-004	1.5200e-003	8.0000e-005	1.6000e-003	6.0000e-004	7.0000e-005	6.8000e-004			9.9972	4.6000e-004	0.0000	10.0068
Total	**2.9300e-003**	**4.9200e-003**	**0.0466**	**1.4000e-004**	**1.5200e-003**	**8.0000e-005**	**1.6000e-003**	**6.0000e-004**	**7.0000e-005**	**6.8000e-004**			**9.9972**	**4.6000e-004**	**0.0000**	**10.0068**

3.24 Building Construction Phase 5 - 2019

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	0.1157	1.1612	0.8281	1.5200e-003		0.0610	0.0610		0.0576	0.0576			134.2033	0.0315	0.0000	134.8644
Total	**0.1157**	**1.1612**	**0.8281**	**1.5200e-003**		**0.0610**	**0.0610**		**0.0576**	**0.0576**			**134.2033**	**0.0315**	**0.0000**	**134.8644**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	2.4100e-003	4.0800e-003	0.0385	1.3000e-004	1.3800e-003	7.0000e-005	1.4600e-003	5.5000e-004	7.0000e-005	6.2000e-004			8.7863	3.9000e-004	0.0000	8.7945
Total	**2.4100e-003**	**4.0800e-003**	**0.0385**	**1.3000e-004**	**1.3800e-003**	**7.0000e-005**	**1.4600e-003**	**5.5000e-004**	**7.0000e-005**	**6.2000e-004**			**8.7863**	**3.9000e-004**	**0.0000**	**8.7945**

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	0.1157	1.1612	0.8281	1.5200e-003		0.0610	0.0610		0.0576	0.0576			134.2031	0.0315	0.0000	134.8642
Total	**0.1157**	**1.1612**	**0.8281**	**1.5200e-003**		**0.0610**	**0.0610**		**0.0576**	**0.0576**			**134.2031**	**0.0315**	**0.0000**	**134.8642**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	2.4100e-003	4.0800e-003	0.0385	1.3000e-004	1.3800e-003	7.0000e-005	1.4600e-003	5.5000e-004	7.0000e-005	6.2000e-004			8.7863	3.9000e-004	0.0000	8.7945
Total	**2.4100e-003**	**4.0800e-003**	**0.0385**	**1.3000e-004**	**1.3800e-003**	**7.0000e-005**	**1.4600e-003**	**5.5000e-004**	**7.0000e-005**	**6.2000e-004**			**8.7863**	**3.9000e-004**	**0.0000**	**8.7945**

3.25 Paving Phase 5 - 2019

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	9.1400e-003	0.0968	0.0621	1.1000e-004		4.8500e-003	4.8500e-003		4.4700e-003	4.4700e-003			9.8394	3.1100e-003	0.0000	9.9047
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**9.1400e-003**	**0.0968**	**0.0621**	**1.1000e-004**		**4.8500e-003**	**4.8500e-003**		**4.4700e-003**	**4.4700e-003**			**9.8394**	**3.1100e-003**	**0.0000**	**9.9047**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	3.2000e-004	5.4000e-004	5.1000e-003	2.0000e-005	1.8000e-004	1.0000e-005	1.9000e-004	7.0000e-005	1.0000e-005	8.0000e-005			1.1645	5.0000e-005	0.0000	1.1655
Total	**3.2000e-004**	**5.4000e-004**	**5.1000e-003**	**2.0000e-005**	**1.8000e-004**	**1.0000e-005**	**1.9000e-004**	**7.0000e-005**	**1.0000e-005**	**8.0000e-005**			**1.1645**	**5.0000e-005**	**0.0000**	**1.1655**

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	9.1400e-003	0.0968	0.0621	1.1000e-004		4.8500e-003	4.8500e-003		4.4700e-003	4.4700e-003			9.8393	3.1100e-003	0.0000	9.9047
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**9.1400e-003**	**0.0968**	**0.0621**	**1.1000e-004**		**4.8500e-003**	**4.8500e-003**		**4.4700e-003**	**4.4700e-003**			**9.8393**	**3.1100e-003**	**0.0000**	**9.9047**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	5.4000e-004	5.1000e-003	2.0000e-005	1.8000e-004	1.0000e-005	1.9000e-004	7.0000e-005	1.0000e-005	8.0000e-005			1.1645	5.0000e-005	0.0000	1.1655
Total	**3.2000e-004**	**5.4000e-004**	**5.1000e-003**	**2.0000e-005**	**1.8000e-004**	**1.0000e-005**	**1.9000e-004**	**7.0000e-005**	**1.0000e-005**	**8.0000e-005**			**1.1645**	**5.0000e-005**	**0.0000**	**1.1655**

3.26 Architectural Coating Phase 5 - 2019

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	1.7800e-003	0.0122	0.0123	2.0000e-005		8.6000e-004	8.6000e-004		8.6000e-004	8.6000e-004			1.7022	1.4000e-004	0.0000	1.7052
Total	**1.7800e-003**	**0.0122**	**0.0123**	**2.0000e-005**		**8.6000e-004**	**8.6000e-004**		**8.6000e-004**	**8.6000e-004**			**1.7022**	**1.4000e-004**	**0.0000**	**1.7052**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

Worker	2.9000e-004	4.9000e-004	4.6300e-003	2.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	7.0000e-005	1.0000e-005	7.0000e-005			1.0586	5.0000e-005	0.0000	1.0596
Total	**2.9000e-004**	**4.9000e-004**	**4.6300e-003**	**2.0000e-005**	**1.7000e-004**	**1.0000e-005**	**1.8000e-004**	**7.0000e-005**	**1.0000e-005**	**7.0000e-005**			**1.0586**	**5.0000e-005**	**0.0000**	**1.0596**

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	1.7800e-003	0.0122	0.0123	2.0000e-005		8.6000e-004	8.6000e-004		8.6000e-004	8.6000e-004			1.7022	1.4000e-004	0.0000	1.7052
Total	**1.7800e-003**	**0.0122**	**0.0123**	**2.0000e-005**		**8.6000e-004**	**8.6000e-004**		**8.6000e-004**	**8.6000e-004**			**1.7022**	**1.4000e-004**	**0.0000**	**1.7052**

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
Vendor						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	4.9000e-004	4.6300e-003	2.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	7.0000e-005	1.0000e-005	7.0000e-005			1.0586	5.0000e-005	0.0000	1.0596
Total	**2.9000e-004**	**4.9000e-004**	**4.6300e-003**	**2.0000e-005**	**1.7000e-004**	**1.0000e-005**	**1.8000e-004**	**7.0000e-005**	**1.0000e-005**	**7.0000e-005**			**1.0586**	**5.0000e-005**	**0.0000**	**1.0596**

Appendix C

San Joaquin Valley Air Pollution Control District Non-Residential On-Site Mitigation Checklist

APPENDIX C

On-Site Emission Reduction Checklist for Proposed Rule 9510 (Indirect Source Review) and Rule 3180 (Administrative Fees for Air Impact Assessment Applications) and On-Site Enhancing Measures List

November 17, 2005

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MIXED USE OR NON-RESIDENTIAL ON-SITE EMISSION REDUCTION LIST

No.	Measure – Objective
	LOCATION
Bicycle Infrastructure	
M-1	Project is located within 1/2 mile of existing or planned Class I or II bike lanes on arterial/collector streets, or where a suitable parallel route exists. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*
Mass Transit Infrastructure	
M-2	Project is located within 1/4-1/2 mile of a transit stop. *(URBEMIS Location: Operation Emissions: Mitigation Measures: Transit Service Node)*
	* Office floor area ratio is 0.75 greater within 1/4 mile of existing transit stop.
Mixed Use/Density	
M-3	Include high density residential, mixed, or retail/commercial uses on site or locate near (within a 1/2 mile of project center). *(URBEMIS Location: Operational Emissions: Mitigation Measures: Mix of Uses Node and/or Operational Emissions: Mitigation Measures: Local Serving Retail)*
	* Day care facilities
	* Restaurant or cafeteria
	* Bank or ATM
	* Dry cleaners
	* Post office / services
	* Entertainment (movie / video)
	* Recreation facility / fitness center
	* Public Park
	* Residential development / On-site employee living spaces
M-4	Average Residential density is 7 Dwelling Units (DU) per acre or greater. *(URBEMIS Location: Land Use Selection - Acreage)*
	▪ Project contains ancillary residential units - "Granny Flats"
M-5	Designate a portion of residential units as deed-restricted below-market-rate (BMR) housing. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Affordable Housing Node)*
	▪ Include Affordable Housing/Senior Housing/ Assisted Living
	BICYCLE/PEDESTRIAN
Bicycle Storage	
M-6	Provide Class I and Class II bicycle parking facilities on-site. Bicycle parking facilities should be near destination points and easy to find. At least one bicycle parking space for every 20 vehicle parking spaces. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
	* One bicycle parking space for every 10 car parking spaces is considered appropriate.
	* Provide secure bicycle storage at public parking facilities.

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
M-7	Provide shower and locker facilities to encourage employees to bike and/or walk to work, typically one shower and three lockers for every 25 employees. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
M-8	Provide Class I bicycle parking at apartment complexes or condos without garages. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*

Pedestrian- Bicycle Oriented Infrastructure

M-9	Install Class I or II bike lanes on arterial/collector streets, or where a suitable route exists. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*
M-10	Install complete, separate, safe, and convenient pedestrian sidewalks/paths that connect multiple uses. This can be implemented through the following project designs: *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*
	* Provide direct pedestrian connections
	* Provide paths and building access which are physically separated from street parking lot traffic and that eliminates physical \barriers such as walls, berms, landscaping and slopes that impede the use of pedestrians, bicycle facilities, or public transportation vehicles
	* Place store entrances close to adjacent sidewalks.
	* Provide pedestrian signalization and signage to improve pedestrian safety
	* Provide continuous sidewalks separated from the roadway by landscaping and on-street parking.
	* Provide clearly delineated crosswalks at intersections.
	* Provide on and off-site pedestrian facility improvements such as overpasses and wider sidewalks
	* Provide on and off-site pedestrian facility improvements such as trails linking them to designated pedestrian commuting routes and/or on-site overpasses and wider sidewalks.
	* Provide street lighting
	* Provide shaded pathways (e.g. provide street trees or building overhangs)
	* Link cul-de-sacs and dead-end streets to encourage pedestrian and bicycle travel
	* Provide traffic calming modifications to project roads, such as narrower streets, speed platforms, bulb-outs and intersection modifications designed to reduce vehicle speeds, to encourage pedestrian and bicycle travel.
	* Provide a parking lot design that-includes clearly marked and shaded pedestrian pathways between transit facilities and building entrances
	* Provide pedestrian access between bus service and major transportation points and destination points within the project.
	* Minimize building setback to adjacent existing or planned pedestrian infrastructure
	* Setback distance is minimized between development and transit, bicycle, or pedestrian corridor
	* Setback distance is minimized between development and neighboring properties

TRANSPORTATION DESIGN

Signage

M-11	Provide a display case or kiosk displaying transportation information in a prominent area accessible to employees, residents, or visitors. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
	* Display Bike Route Maps
	* Display Bus Schedules
	* Display other transportation information such as carpooling, carsharing, etc.

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
Streets	
M-12	Project design uses models by the Local Government Commission (LGC) in the "Smart Growth Guidebook," such as: street block patterns that form an interconnected grid, short block faces, numerous alleys and narrow streets. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*
PARKING	
Strategies: Pricing and Preferential Parking	
M-13	Develop and implement parking pricing strategies, such as charging parking lot fees to low occupancy (single occupant vehicles) vehicles. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
M-14	Provide preferential parking spaces near the entrance of buildings for those who carpool/vanpool/rideshare and provide signage. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
Parking Amount	
M-15	Provide parking reduction. The following are guidelines: *(URBEMIS Location: Operational Emissions: Mitigation Measures: Parking Supply)*
	* Office 25%
	* Medical office 8%
	* Commercial 5%
	* Industrial 10%
	* Additional 10-20% if located along transit station
BUILDING/SITE DESIGN	
Energy Efficiency	
M-16	Increase the building energy efficiency rating above what is required by Title 24 requirements. This can be accomplished by any combination of measures. The following is an idea list of measures that may be implemented to achieve this measure (this list should not be considered comprehensive): *(URBEMIS Location: Area Emissions: Mitigation Measures Node)*
	General
	* Participate in and implement available PUC energy-efficient rebate programs including air conditioning, gas heating, refrigeration, and lighting programs.
	* Install efficient heating and other appliances, such as water heaters, cooking equipment, refrigerators, furnaces and boiler units beyond Title 24 requirements (see Title 24, Part 6, Energy Efficiency Standards for Residential and Nonresidential Buildings: http://www.energy.ca.gov/title24/standard)
	* Capture waste heat and re-employ it in nonresidential buildings.
	* Trees should be carefully selected and located to protect the building(s) from energy consuming environmental conditions and to shade paved areas
	* Improve the thermal integrity/efficiency of buildings, and reduce the thermal load with automated and timed temperature controls or occupant sensors.
	Roof
	* Install "Green Roof" System
	* Install EPA/DOE Energy Star labeled roof materials
	* Install roof photovoltaic energy systems as a standard feature (on new homes)

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
M-16	*Solar Design*
Cont	* Design buildings with proper orientation, fenestration, and other design components that maximize the potential of passive cooling and heating, include shading master plan
	Components
	* Use devices that minimize the combustion of fossil fuels.
	* Install low nitrogen oxide (NOx) hot water heaters.
	* Install high efficiency Energy Star heating or ground source heat pumps
	* Install energy efficient interior lighting.
	* Install built-in energy efficient appliances.
	* Install door sweeps and weather stripping if more efficient doors and windows are not available.
	* Install energy-efficient and automated controls for air conditioning
	* Install of energy-efficient lighting (includes controls) and process systems such as water heaters, furnaces and boiler units.
	* Install electrical outlets on the exterior walls of both the front and back of residences or all commercial buildings to promote the use of electric landscape maintenance equipment.
	* Install electric vehicle recharging station with both conductive and inductive charging capabilities in residential garages / parking lots.
	* Install a gas outlet for use with outdoor cooking appliances, and in any proposed fireplaces, including outdoor recreational fireplaces or pits.
	* Use low energy street lights (i.e. sodium).
	* Use low energy traffic signals (i.e. light emitting diode).
	* Install Medium Efficiency Filters
	* Install High Efficiency Filters
	* Install HEPA (High Efficiency Particle Arrestance) Filters
	* Install "whole-house" or "fresh-air" ventilation system

Building Maintenance/Indoor Air Quality

M-17	Reduce VOC emissions from Architectural Coatings⊗ *(URBEMIS Location: Area Emissions: Architectural Coatings - Nonresidential)*
	* Use Low-VOC Coatings
	* Use surfaces that do not require coatings, such as stone or brick
	* Use No-VOC Coatings

Fuel Combustion

M-18	Provide Electrical outlets at front and rear of residences for the use of electrically powered landscape equipment (See Measure 47 below) *(URBEMIS Location: Area Emissions: Mitigation Measures Node)*
M-19	Provide electrical outlets at non-residential units for the use of electrically powered landscape equipment. In combination with Measure M-31 below. *(URBEMIS Location: Area Emissions: Mitigation Measures Node)*
M-20	Reduce Wood Fireplaces and/or Woodstove above that required by District Rule 4901. *(URBEMIS Location: Area Emissions: Hearth Fuel Combustion Node)*

OPERATIONAL MEASURES

Telecommunication

M-23	Implement an employee telecommuting policy *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
	* Install videoconferencing system
	* Include teleconferencing capabilities, such as web cams or satellite linkage, which will allow employees to attend meetings remotely without requiring them to travel out of the area.

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
M-23	* Offer low cost financing to employees for the purchase of telecommuting equipment, or lend company-owned equipment.
Cont	* Provide satellite work offices when appropriate. Applicable to office/industrial and educational institutions.

Alternative Transit

M-24	Provide guaranteed ride home⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
M-25	Provide carpool matching assistance⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
M-26	Provide Car-Sharing Services⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
M-27	Employ or appoint an Employee Transportation Coordinator to work with the TMA and the District⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
	* Implement a rideshare program
	* Provide incentives to employees to carpool/vanpool, take public transportation, telecommute, walk, bike, etc.
	* Participate in an employee "flash-pass" program, which provides free travel on transit buses.
	* Provide transit pass subsidy (100%) and/or commute alternative allowance
	* Participate in alternative transportation programs such as CalTrans rideshare where deemed appropriate by local transportation planning agencies and/or APCD
	* Provide transit-use incentives, as approved by applicable transportation planning agencies such as subsidized transit passes and accommodation of unusual work schedules to encourage transit use
	* Provide funds for on line computer rideshare matching.
	* Provide an employer subsidized shuttle service to connect to existing transit sites.
	* Provide an employer subsidized free or reduced transit fares for midday central business district trips.
	* Provide financial incentives to carpoolers for vehicle tune-up or maintenance
	* Implement a lunchtime shuttle to reduce single occupant vehicle trips.
	* Provide Flextime for non-SOV (single occupancy vehicle) commuters
	* Maintain a fleet of bicycles for employee and business use
M-28	Provide transit pass subsidy (100%) and/or commute alternative allowance⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
M-29	Provide a display case or kiosk displaying transportation information in a prominent area accessible to employees or residents. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
	* Provide ridesharing information in a homeowner's association package.

Work Schedules

M-30	Implement alternative work schedules such as compressed workweek schedules where weekly work hours are compressed into fewer than five days.⊗ Examples of these options are: 9/80, 4/40, 3/36 *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*

Landscaping

M-31	Project provides and/or requires use of electric maintenance equipment; including, but not limited to electric lawn mowers, electric leaf blowers. In combination with measure M-19. *(URBEMIS Location: Area Emission: Mitigation Measures Node)*
	* Prohibit gas powered landscape maintenance equipment within developments.

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
M-31 *Cont*	* Contract only with commercial landscapers who operate with equipment that complies with the most recent California Air Resources Board certification standards, or standards adopted no more than three years prior to date of use.
	* Provide battery powered or electric landscape maintenance equipment for new residences, commercial and industrial land uses.

Fleet / Engines

M-32	Implement clean air business practices such as using low-emission delivery vehicles, contract with alternative-fuel waste hauling companies, contracting with carrier, delivery, security, or other services utilizing electric, low-emission, alternative fuel, convert fleet to cleaner vehicles or utilizing heavy-duty vehicles that are CARB certified to optional low-emission standards for NOx.⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: On-Road Trucks)*
	Medium Trucks - 5,751 to 8,500 lbs
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel fuel
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Cleaire Longview (ultra low diesel)
	Light Heavy - 8,501 to 10,000 lbs
	* DCM DOC Muffler w/series 6000 or 6100 catalyst
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel fuel
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Cleaire Longview (ultra low diesel)
	Light Heavy - 10,001 to 14,000 lbs
	* DCM DOC Muffler w/series 6000 or 6100 catalyst
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel fuel
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Cleaire Longview (ultra low diesel)
	Medium Heavy - 14,001 to 33,000 lbs
	* AZ Purifier & AZ Purimuffler (Cummins & Navistart: 1991-03)
	* DCM DOC Muffler w/series 6000 or 6100 catalyst
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel fuel
	* DPM DPF muffler with/Series 6300 catalyst formulation
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Lubrizol Engine Control Systems Purifilter
	* Cleaire Longview (ultra low diesel)

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
M-32	*Heavy Heavy - 33,001 to 60,000 lbs*
Cont	* DCM DOC Muffler w/series 6000 or 6100 catalyst
	* Cleaire Flash and Match oxidation catalyst
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel Fuel
	* DPM DPF muffler w/series 6300 catalyst formulation
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Lubrizol Engine Control Systems Purifilter
	* Cleaire Flash Match system (Cummins M11 engines only)
	* Cleaire Longview (ultra low diesel)
	Line Haul Vehicles >60,000 lbs
	* DCM DOC Muffler w/series 6000 or 6100 catalyst
	* Cleaire Flash and Match oxidation catalyst
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel Fuel
	* DPM DPF muffler w/series 6300 catalyst formulation
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Lubrizol Engine Control Systems Purifilter
	* Cleaire Flash Match system (Cummins M11 engines only)
	* Cleaire Longview (ultra low diesel)
	Urban Bus
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel Fuel
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Cleaire Longview (ultra low diesel)
	School Bus
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel Fuel
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Cleaire Longview (ultra low diesel)
	General
	* Utilize electric fleet vehicles
	* Utilize Ultra Low-Emission fleet vehicles
	* Utilize methanol fleet vehicles
	* Utilize liquid propane gas fleet vehicles

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
M-32	* Utilize compressed natural gas fleet vehicles
Cont	* Replace diesel fleet with alternative fuel engine technology and infrastructure
	* Retrofit existing equipment to reduce emissions using methods such as particulate filters, oxidation catalysts, or other approved technologies.
	* Fleet vehicles that use clean-burning fuels as may be practicable
	* Adopt a Vehicle Idling Policy requiring all vehicles under company control to adhere to a 5 minute idling policy.
	* Conversion to cleaner engines
	* Use of cleaner (reduced sulfur) fuel
	* Regular maintenance – keep equipment well tuned
	* Add-on control devices, e.g., particulate traps, catalytic oxidizers
	* Repower/Retrofit heavy-duty diesel fleet with cleaner diesel engine technology and/or diesel particulate filter after-treatment technology
	* Replace diesel fleet with alternative fuel engine technology and infrastructure
	* Replace auxiliary power units with cleaner engine technology, alternative fuels, or require electric connection while at loading dock
	* Replace diesel fleet vehicles with cleaner fueled low emission vehicles (i.e. school buses, buses, on- and off- road heavy duty vehicles, lighter duty trucks and passenger vehicles)

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

RESIDENTIAL ON-SITE EMISSION REDUCTION LIST

No.	Measure - Objective
	LOCATION
	Bicycle Infrastructure
R-1	Project is located within 1/2 mile of existing or planned Class I or II bike lanes on arterial/collector streets, or where a suitable parallel route exists. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*
	Mass Transit Infrastructure
R-2	Project is located within 1/4-1/2 mile of a transit stop. *(URBEMIS Location: Operation Emissions: Mitigation Measures: Transit Service Node)*
	Mixed Use/Density
R-3	Include high density residential, mixed, or retail/commercial uses on site or locate near (within a 1/2 mile of project center) these uses to minimize the need for trips. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Mix of Uses Node and/or Operational Emissions: Mitigation Measures: Local Serving Retail)*
	* Day care facilities
	* Restaurant or cafeteria
	* Bank or ATM
	* Dry cleaners
	* Post office/services
	* Entertainment (movie/video)
	* Recreation facility/fitness center
	* Public Park
	* Residential development/On-site employee living spaces
R-4	Average Residential density is 7 Dwelling Units (DU) per acre or greater. *(URBEMIS Location: Land Use Selection- Acreage)*
	* Project contains ancillary residential units - "Granny Flats"
R-5	Designate a portion of residential units as deed-restricted below-market-rate (BMR) housing. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Affordable Housing Node)*
	* Include Affordable Housing/Senior Housing/ Assisted Living
	BICYCLE/PEDESTRIAN
	Bicycle Storage
R-6	Provide Class I bicycle parking at apartment complexes or condos without garages *(URBEMIS Location: Operational Emissions: Mitigation Measure: Transportation Demand Management Node)*
	Pedestrian- Bicycle Oriented Infrastructure
R-7	Install Class I or II bike lanes on arterial/collector streets, or where a suitable route exists. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*
R-8	Install complete, separate, safe, and convenient pedestrian sidewalks/paths that connect multiple uses. This can be implemented through the following project designs: *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*
	* Provide direct pedestrian connections

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
R-18	* Provide paths and building access which are physically separated from street parking lot traffic and that eliminates physical \barriers such as walls, berms, landscaping and slopes that impede the use of pedestrians, bicycle facilities, or public transportation vehicles.
Cont	* Place store entrances close to adjacent sidewalks.
	* Provide pedestrian signalization and signage to improve pedestrian safety
	* Provide continuous sidewalks separated from the roadway by landscaping and on-street parking.
	* Provide clearly delineated crosswalks at intersections.
	* Provide on and off-site pedestrian facility improvements such as overpasses and wider sidewalks
	* Provide on and off-site pedestrian facility improvements such as trails linking them to designated pedestrian commuting routes and/or on-site overpasses and wider sidewalks.
	* Provide street lighting
	* Provide shaded pathways (e.g. provide street trees or building overhangs)
	* Link cul-de-sacs and dead-end streets to encourage pedestrian and bicycle travel
	* Provide traffic calming modifications to project roads, such as narrower streets, speed platforms, bulb-outs and intersection modifications designed to reduce vehicle speeds, to encourage pedestrian and bicycle travel.
	* Provide pedestrian access between bus service and major transportation points and destination points within the project.

Transportation Design

Signage

R-9	Provide a display case or kiosk displaying transportation information in a prominent area accessible to residents, or visitors. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
	* Display Bike Route Maps
	* Display Bus Schedules
	* Display other transportation information such as carpooling, carsharing, etc.

Streets

R-10	Project design uses models by the Local Government Commission (LGC) in the "Smart Growth Guidebook," such as: street block patterns that form an interconnected grid, short block faces, numerous alleys and narrow streets. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*

Building/Site Design

Energy Efficiency

R-12	Increase the building energy efficiency rating above what is required by Title 24 requirements. This can be accomplished by any combination of measures. The following is an idea list of measures that may be implemented to achieve this measure (this list should not be considered comprehensive): *(URBEMIS Location: Area Emissions: Mitigation Measures Node)* *General*
	* Participate in and implement available PUC energy-efficient rebate programs including air conditioning, gas heating, refrigeration, and lighting programs.

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
R-12	* Install efficient heating and other appliances, such as water heaters, cooking equipment, refrigerators, furnaces and boiler units beyond Title 24 requirements (see Title 24, Part 6, Energy Efficiency Standards for Residential and Nonresidential Building
Cont	* Trees should be carefully selected and located to protect the building(s) from energy consuming environmental conditions and to shade paved areas
	* Improve the thermal integrity/efficiency of buildings, and reduce the thermal load with automated and timed temperature controls or occupant sensors.
	Roof
	* Install "Green Roof" Technology
	* Install EPA/DOE Energy Star labeled roof materials
	* Install roof photovoltaic energy systems as a standard feature (on new homes)
	Solar Design
	* Design buildings with proper orientation, fenestration, and other design components that maximize the potential of passive cooling and heating, include shading master plan
	Components
	* Use devices that minimize the combustion of fossil fuels.
	* Install low nitrogen oxide (NOx) hot water heaters.
	* Install high efficiency Energy Star heating or ground source heat pumps
	* Install energy efficient interior lighting.
	* Install built-in energy efficient appliances.
	* Install door sweeps and weather stripping if more efficient doors and windows are not available.
	* Install energy-efficient and automated controls for air conditioning
	* Install of energy-efficient lighting (includes controls) and process systems such as water heaters, furnaces and boiler units.
	* Install electrical outlets on the exterior walls of both the front and back of residences to promote the use of electric landscape maintenance equipment.
	* Install electric vehicle recharging station with both conductive and inductive charging capabilities in residential garages / parking lots.
	* Install a gas outlet for use with outdoor cooking appliances, and in any proposed fireplaces, including outdoor recreational fireplaces or pits.
	* Use low energy street lights (i.e. sodium).
	* Use low energy traffic signals (i.e. light emitting diode).
	* Install Medium Efficiency Filters
	* Install High Efficiency Filters
	* Install HEPA (High Efficiency Particle Arrestance) Filters
	* Install "whole-house" or "fresh-air" ventilation system

Fuel Combustion

R-13	Provide Electrical outlets at front and rear of residences for the use of electrically powered landscape equipment (See Measure R-18 below). *(URBEMIS Location: Area Emissions: Mitigation Measures Node)*
R-14	Reduce Wood Fireplaces and/or Woodstove above that required by District Rule 4901. *(URBEMIS Location: Area Emissions: Hearth Fuel Combustion Node)*

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
	OPERATIONAL MEASURES
Alternative Transit	
R-15	Provide Car-Sharing Services⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
R-16	Transit pass subsidy (100%) and/or commute alternative allowance⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
R-17	Provide a display case or kiosk displaying transportation information in a prominent area accessible to residents. *(URBEMIS Location: Operational Emissions: Mitigation Measure: Transportation Demand Management Node)* * Provide ridesharing information in a homeowner's association package. * Provide an opportunity to receive either a complimentary bicycle or electric bicycle retrofit kit to each residential buyer * Provide electric shuttle or minibus service to transit stops * Provide free transfers between all shuttles and transit. * Operation of a shuttle bus to shopping, health care, public services sites and other nearby trip attractors to reduce automobile use.
Landscaping	
R-18	Project provides and/or requires use of electric maintenance equipment; including, but not limited to electric lawn mowers, electric leaf blowers, etc (In combination with measure R-13 above).⊗ *(URBEMIS Location: Area Emissions: Mitigation Measures Node)* * Prohibit gas powered landscape maintenance equipment within developments. * Contract only with commercial landscapers who operate with equipment that complies with the most recent California Air Resources Board certification standards, or standards adopted no more than three years prior to date of use. * Provide battery powered or electric landscape maintenance equipment for new residences.

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

ON-SITE ENHANCING MEASURES

No.	Measure - Objective
	LOCATION
Mass Transit Infrastructure	
A	* Project is located within one mile of a park and ride lot operated by a transportation agency.
	TRANSPORTATION DESIGN
Transit Support	
B	Include transit support features in the project where deemed appropriate by the local agency with jurisdiction over the project as demand and service routes warrant subject to review and approval by local transportation planning agencies, including (but not limited to):
	* On-site/off-site turnouts
	* Route signs and displays
	* Bus turnouts/bulbs
	* Street lighting
	* Passenger benches
	* Shelters at transit access points
C	Develop park-and-ride lots
Streets	
D	Make street design/speeds consistent with requirements for neighborhood electric vehicles
	PARKING
Parking Amount	
E	Use of any excess parking over zone code requirements as on-site parking-n-ride lots.
Parking Construction	
F	Provide a parking lot design that includes clearly marked and shaded pedestrian pathways between transit facilities and building entrances
G	Loading and unloading facilities for transit and carpool/vanpool users. (Provide Signage)
H	Provide grass paving or reflective surface paving for unshaded parking lot areas, driveways, or fire lanes that reduce standard paving by 10% or more.
	* Portland concrete is the preferred paving material
	* Other reflective surfaces to be determined in consultation with SJVAPCD.
	* "Chip Seal" methodology
	* Green Pavement http://www.invisiblestructures.com/GP2/grasspave.htm
I	Structural soil should be used under paved areas to improve tree growth.
J	Provide electric vehicle charging facilities with preferential parking

ON-SITE ENHANCING MEASURES

No.	Measure - Objective
	BUILDING/SITE DESIGN
Telecommuting Infrastructure	
K	Provide necessary infrastructure for telecommuting
	* Provide fiber optic wiring and connections
	* Provide T1 wiring and connections
	* Install a teleconferencing facility
	* Install a on-site telecommunications center
	* Build new homes with internal wiring/cabling that allows telecommuting, teleconferencing, and telelearning
Landscaping	
L	Plant trees sufficient to shade 1/2 the paved area within 15 years after development is constructed.
M	Landscape with low-emission native drought-resistant species (plants, trees and bushes) to reduce the demand for gas powered landscape maintenance equipment. Contact the District for a list of low-emission trees and shrubs.
	OPERATIONAL MEASURES
Telecommunication	
N	Provide free-access telework terminals in multi-family projects
O	Provide a community videoconferencing system coordinated with TMA.
P	Design and implement "Shop by Telephone" or "Shop-by-Computer" services. Applicable to shopping centers and retail facilities.
Goods Movement	
Q	Establish delivery services. Applicable to retail facilities (frequent use), shopping centers, and restaurants.
R	If the development is a grocery store or large retail facility, provide home delivery service for customers.
S	Schedule goods movement for off-peak traffic hours.

FINAL

McFARLAND WASTEWATER TREATMENT PLANT EXPANSION PROJECT INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION

RESPONSE TO COMMENTS

PREPARED FOR:

City of McFarland
401 West Kern Avenue, McFarland, CA 93250
Contact: Mario Gonzales, Public Works Director
661-792-3091

PREPARED BY:

ICF International
4900 California Avenue, Tower B, Suite 210
Bakersfield, CA 93309
Contact: Steve Esselman, Project Manager
661-377-2151

July 2014

ICF International. 2014. McFarland Wastewater Treatment Plan Expansion Project Initial Study/Mitigated Negative Declaration: Response to Comments. Final. July. (ICF 00022.14.) Bakersfield, CA. Prepared for City of McFarland, McFarland, CA.

Contents

Chapter 4

IS/MND Response to Comments

Purpose

As defined by Section 15050 of the California Environmental Quality Act (CEQA) Guidelines, the City of McFarland (City) is serving as Lead Agency for the preparation of the Initial Study/Mitigated Negative Declaration (IS/MND) for the McFarland Wastewater Treatment Plant Expansion Project (project). This IS/MND Response to Comments presents comments received during the 30-day public comment period regarding the adequacy of the IS/MND and responses to those comments. The publically circulated IS/MND, this IS/MND Response to Comments, and the Mitigation Monitoring and Reporting Program will be used by the City Council in the decision-making process for the proposed project.

Environmental Review Process

The IS/MND (State Clearinghouse No. 2014051073) was circulated for a 30-day public review period beginning on May 27, 2014, and ending on June 26, 2014. Three written comment letters were received on the IS/MND. A list of commenters on the IS/MND is provided below. A copy of each comment letter and a response to each comment are also provided.

Commenters

Letter 1 – Scott Morgan, State Clearinghouse and Planning Unit (June 24, 2014)

Letter 2 – Ahmad Kashkoli, State Water Resource Control Board (June 11, 2014)

Letter 3 – Dave Singleton, Native American Heritage Commission (May 30, 2014)

Response to Comments

The comment letters received on the IS/MND are addressed in their entirety below.

Comment Letter 1. Scott Morgan, State Clearinghouse and Planning Unit (June 24, 2014)

Edmund G. Brown Jr.
Governor

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse and Planning Unit

Ken Alex
Director

June 24, 2014

Mario Gonzales
City of McFarland
401 West Kern Avenue
McFarland, CA 93250

Subject: McFarland Wastewater Treatment Plant Expansion Project
SCH#: 2014051073

Dear Mario Gonzales:

The State Clearinghouse submitted the above named Mitigated Negative Declaration to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on June 23, 2014, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

1-A

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Enclosures
cc: Resources Agency

RECEIVED
JUN 30 2014
BY:

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2014051073
Project Title McFarland Wastewater Treatment Plant Expansion Project
Lead Agency McFarland, City of

Type MND Mitigated Negative Declaration

Description The project would increase the capacity at the WWTP from 1.55 million gallons per day (mgd) to 2.5 mgd. The City proposes to convert the existing treatment process from aerated lagoons to an extended aeration-activated sludge process. The project would replace the existing dual headworks with a single headworks (with lift pump) and construct two new secondary clarifiers, a new return activated sludge (RAS) and waste activated sludge (WAS) pump station, and a new effluent pump station. Lagoons 3 and I-A would be converted into sludge drying beds.

Lead Agency Contact

Name Mario Gonzales
Agency City of McFarland
Phone 661 792 3091 **Fax**
email
Address 401 West Kern Avenue
City McFarland **State** CA **Zip** 93250

Project Location

County Kern
City McFarland
Region
Lat / Long 35° 40' N / 119° 16' 40" W
Cross Streets Melcher Avenue between Sherwood Road and Elmo Highway
Parcel No. 060-050-24
Township 26S **Range** 25E **Section** 9 **Base** MDB&M

Proximity to:

Highways No
Airports No
Railways No
Waterways No
Schools No
Land Use The wastewater treatment plant is designated as a Public and Institutional (PI) in the City of McFarland General Plan and zoned Heavy Industrial (M-3) by the City's zoning ordinance.

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Schools/Universities; Septic System; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife; Growth Inducing; Landuse

Reviewing Agencies Resources Agency; Department of Fish and Wildlife, Region 4; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, District 6; CA Department of Public Health; Air Resources Board; State Water Resources Control Board, Divison of Financial Assistance; Regional Water Quality Control Bd., Region 5 (Fresno); Department of Toxic Substances Control; Native American Heritage Commission; State Water Resources Control Board

Date Received 05/23/2014 **Start of Review** 05/23/2014 **End of Review** 06/23/2014

Response to Comment Letter 1. Scott Morgan, State Clearinghouse and Planning Unit (June 24, 2014)

1-A. Thank you for your comments. The oversight of the State Clearinghouse and Planning Unit (State Clearinghouse) in the public review of this document is appreciated. The commenter states that the State Clearinghouse submitted the IS/MND to selected state agencies for review and received comments, which are addressed below. The commenter also acknowledges that the Lead Agency has complied with the State Clearinghouse review requirements pursuant to CEQA. The comments have been noted for the record.

Comment Letter 2. Ahmad Kashkoli, State Water Resources Control Board (June 11, 2014)

CEQA
6/23/14
F

California Water Boards

Edmund G. Brown Jr., Governor

Matthew Rodriguez, Secretary for Environmental Protection

State Water Resources Control Board

JUN 1 1 2014

Mario Gonzales
City of McFarland
401 West Kern Avenue
McFarland, CA 93250

RECEIVED
JUN 13 2014
STATE CLEARING HOUSE

Dear Mr. Gonzales:

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION (IS/MND) FOR CITY OF MCFARLAND (CITY); MCFARLAND WASTEWATER TREATMENT PLANT EXPANSION (PROJECT); KERN COUNTY; STATE CLEARINGHOUSE NO. 2014051073

We understand that the City may be pursuing Clean Water State Revolving Fund (CWSRF) financing for this Project. As a funding agency and a state agency with jurisdiction by law to preserve, enhance, and restore the quality of California's water resources, the State Water Resources Control Board (State Water Board) is providing the following information and comments for the environmental document prepared for the Project.

Please provide us with the following documents applicable to the proposed Project if seeking CWSRF or other State Water Board funding: (1) one copy of the draft and final IS/MND, (2) the resolution adopting the IS/MND and a Mitigation Monitoring and Reporting Program (MMRP) making California Environmental Quality Act (CEQA) findings, (3) all comments received during the review period and the City's response to those comments, (4) the adopted MMRP, and (5) the Notice of Determination filed with the Kern County Clerk and the Governor's Office of Planning and Research, State Clearinghouse.

2-A In addition, we would appreciate notices of any hearings or meetings held regarding environmental review of any projects to be funded by the State Water Board.

The CWSRF Program is partially funded by the United States Environmental Protection Agency and requires additional "CEQA-Plus" environmental documentation and review. Three enclosures are included that further explain the CWSRF Program environmental review process and the additional federal requirements. For the complete environmental application package, please visit: http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/srf_forms.shtml. The State Water Board is required to consult directly with agencies responsible for implementing federal environmental laws and regulations. Any environmental issues raised by federal agencies or their representatives will need to be resolved prior to State Water Board approval of a CWSRF financing commitment for the proposed Project. For further information on the CWSRF Program, please contact Mr. Ahmad Kashkoli, at (916) 341-5855.

It is important to note that prior to a CWSRF financing commitment, projects are subject to provisions of the Federal Endangered Species Act (ESA), and must obtain Section 7 clearance from the United States Department of the Interior, Fish and Wildlife Service (USFWS), and/or United States Department of Commerce National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) for any potential effects to special status species.

Please be advised that the State Water Board will consult with USFWS, and/or NMFS regarding all federal special-status species that the Project has the potential to impact if the Project is to be funded under the CWSRF Program. The City will need to identify whether the Project will involve any direct effects from construction activities, or indirect effects such as growth inducement, that may affect federally listed threatened, endangered, or candidate species that are known, or have a potential to occur on-site, in the surrounding areas, or in the service area, and to identify applicable conservation measures to reduce such effects.

In addition, CWSRF projects must comply with federal laws pertaining to cultural resources, specifically Section 106 of the National Historic Preservation Act (Section 106). The State Water Board has responsibility for ensuring compliance with Section 106 and the State Water Board must consult directly with the California State Historic Preservation Officer (SHPO). SHPO consultation is initiated when sufficient information is provided by the CWSRF applicant. The City must retain a consultant that meets the Secretary of the Interior's Professional Qualifications Standards (http://www.nps.gov/history/local-law/arch_stnds_9.htm) to prepare a Section 106 compliance report.

2-A cont.

Note that the City will need to identify the Area of Potential Effects (APE), including construction and staging areas, and the depth of any excavation. The APE is three-dimensional and includes all areas that may be affected by the Project. The APE includes the surface area and extends below ground to the depth of any Project excavations. The records search request should extend to a ½-mile beyond the Project APE. The appropriate area varies for different projects but should be drawn large enough to provide information on what types of sites may exist in the vicinity.

Other federal environmental requirements pertinent to the Project under the CWSRF Program include the following (for a complete list of all environmental requirements please visit: http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/docs/forms/application_environmental_package.pdf):

A. Compliance with the Federal Clean Air Act: (a) Provide air quality studies that may have been done for the Project; and (b) if the Project is in a nonattainment area or attainment area subject to a maintenance plan; (i) provide a summary of the estimated emissions (in tons per year) that are expected from both the construction and operation of the Project for each federal criteria pollutant in a nonattainment or maintenance area, and indicate if the nonattainment designation is moderate, serious, or severe (if applicable); (ii) if emissions are above the federal de minimis levels, but the Project is sized to meet only the needs of current population projections that are used in the approved State Implementation Plan for air quality, quantitatively indicate how the proposed capacity increase was calculated using population projections.

B. Compliance with the Coastal Zone Management Act: Identify whether the Project is within a coastal zone and the status of any coordination with the California Coastal Commission.

C. Protection of Wetlands: Identify any portion of the proposed Project area that should be evaluated for wetlands or United States waters delineation by the United States Army Corps of Engineers (USACE), or requires a permit from the USACE, and identify the status of coordination with the USACE.

D. Compliance with the Farmland Protection Policy Act: Identify whether the Project will result in the conversion of farmland. State the status of farmland (Prime, Unique, or Local Statewide Importance) in the Project area and determine if this area is under a Williamson Act Contract.

E. Compliance with the Migratory Bird Treaty Act: List any birds protected under this act that may be impacted by the Project and identify conservation measures to minimize impacts.

F. Compliance with the Flood Plain Management Act: Identify whether or not the Project is in a Flood Management Zone and include a copy of the Federal Emergency Management Agency flood zone maps for the area.

G. Compliance with the Wild and Scenic Rivers Act: Identify whether or not any Wild and Scenic Rivers would be potentially impacted by the Project and include conservation measures to minimize such impacts.

Following are specific comments on the City's draft IS/MND:

1. Table-1 on page 2-10 of the IS/MND lists unmitigated and mitigated construction emissions. Please describe the mitigation measures that will be incorporated to reduce PM_{10} and $PM_{2.5}$ emissions and add them into the MMRP as a separate Air Quality mitigation measure.

2. Page 2-10 also states: "this project would not result in additional air quality emissions during the operational period beyond the baseline condition." If seeking financing for the CWSRF Program, please include a table of operational emissions similar to the format of Table-1 on page 2-10.

3. Please differentiate whether the western burrowing owl and Swainson's hawk are federally endangered or federally threatened species in Table-2 on page 2-14.

4. Page 2-17 states: "If an active kit fox is detected within the area of work or the 200-foot buffer zone, the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS) shall be contacted immediately to determine the best course of action." The State Water Board encourages establishing mitigation measures beforehand based off of standards set by CDFW and USFWS.

2-A cont.

5. Page 2-17 also indicates a biologist will use "non-invasive methods" during pre-disturbance burrowing owl surveys. Please specify what these "non-invasive methods" will be.

6. Page 2-19 states: "It is likely that such disturbance has already destroyed any surficial archaeological resources present within the footprint." Previous construction may have impacted an archaeological site that has not been previously documented. Please conduct a records search from an appropriate information center to support the findings stated throughout the Cultural Resources discussion "a" thru "d" on page 2-19 and page 2-20. If pursuing funding from the CWSRF program, the records search must extend to a half-mile beyond the Project APE.

7. The analyses for the Geology and Soils section mentions uncertainties on page 2-22 and page 2-23 because of the lack of a site-specific geotechnical hazards investigation. For instance, page 2-23 states: "It is currently unknown whether the proposed project site is located on expansive soils..." Consider preparing the geotechnical hazards report as soon as possible to adequately answer the CEQA Appendix G Checklist questions and if appropriate, prepare mitigation measures within the Geology and Soils section.

8. Page 2-23 states: "the project would not result in substantial soil erosion or the loss of topsoil." The explanation for this statement was based off of soil erosion from runoff. Please consider soil erosion through wind and incorporate the appropriate erosion control measures into MM WQ-1.

9. Discussion questions "g" and "h" on page 2-31 reference a 500-year floodplain while the CEQA Appendix G checklist uses the 100-year floodplain as a threshold of significance. Please re-do the analyses for questions "g" and "h" based off the 100-year floodplain.

10. Please change the finding for discussion "a" on page 2-46 from "less-than-significant" to "less-than-significant with mitigation incorporated" since the discussion states: "Mitigation has been established in this Initial Study...[to] reduce impacts to a less than significant level."

2-A cont.

11. Please clarify what "to the greatest extent feasible" means for MM GHG-1.

Thank you for the opportunity to review the City's draft IS/MND. If you have any questions or concerns, please feel free to contact me at (916) 341-5855, or by email at Ahmad.Kashkoli@waterboards.ca.gov, or contact Vicki Lin at (916) 327-9117, or by email at Vicki.Lin@waterboards.ca.gov.

Sincerely,

Ahmad Kashkoli
Senior Environmental Scientist

Enclosures (3)

1. Clean Water State Revolving Fund Environmental Review Requirements
2. Quick Reference Guide to CEQA Requirements for State Revolving Fund Loans
3. Basic Criteria for Cultural Resources Reports

cc: State Clearinghouse
(Re: SCH# 2014051073)
P.O. Box 3044
Sacramento, CA 95812-3044

Response to Comment Letter 2. Ahmad Kashkoli, State Water Resources Control Board (June 11, 2014)

2-A. Thank you for your comments. The participation of the State Water Resources Control Board (SWRCB) in the public review of this document is appreciated. The commenter states that the City may be pursuing Clean Water State Revolving Fund (CWSRF) financing for the project. This is incorrect. The City is not pursuing CWSRF financing at this time; therefore, it does not need to comply with the CEQA-Plus process or provide the CWSRF with requested documentation. In the future, if the City decides to pursue CWSRF financing, the City shall provide the requested documentation and provide additional analyses in the form of an addendum to the IS/MND in order to comply with the CEQA-Plus process, including compliance with the federal Endangered Species Act, National Historic Preservation Act, and federal Clean Air Act.

The commenter states that the project must comply with the federal Clean Air Act, including determining if the project would result in emissions above the *de minimis* in accordance with population projections. The City has quantified air quality emissions to CEQA standards in the IS/MND. If the City decides to pursue CWSRF financing in the future, the City shall provide the requested documentation and provide additional analyses in the form of an addendum to the IS/MND in order to comply with the CEQA-Plus process, including compliance with the federal Clean Air Act.

The commenter states that the project must comply with the Coastal Zone Management Act if the City were to seek CWSRF financing. The project is located in the Central Valley of California; therefore, the project is not located within a coastal zone and the City does not coordinate with the California Coastal Commission.

The commenter states that the City should identify any portion of the project area that should be evaluated for wetlands or waters of the United States and identify the status of coordination with the U.S. Army Corps of Engineers. As discussed on page 2-17 of the IS/MND, the project site does not contain the proper vegetation (i.e., hydrophytes or water-loving plants), soil (i.e., hydric or waterlogged soils), and hydrology (i.e., inundated or saturated where anaerobic conditions occur) to be defined as a jurisdictional wetland according to the U.S. Army Corps of Engineers' *Wetland Delineation Manual*. Therefore, the project area does not contain wetlands or waters of the United States that need to be evaluated, and coordination with the U.S. Army Corps of Engineers is not required.

The commenter states that the project must comply with the Farmland Protection Policy Act if the City were to seek CWSRF financing. As discussed on pages 2-7 and 2-8 of the IS/MND, the project site is designated as "Vacant or Disturbed Land" by the Farmland Mapping and Monitoring Program and is not under a Williamson Act Land Use Contract. Therefore, the project would not convert active farmland to non-agricultural use and complies with the Farmland Protection Policy Act.

The commenter states that the project must comply with the Migratory Bird Treaty Act (MBTA) and the City must list any birds that may be affected by the project. Table 2 provides a list of special-status species, including birds, that have the potential to occur within the project area. As discussed on pages 2-17 and 2-18 of the IS/MND, the project

has the potential to result in noise levels or fugitive dust emissions severe enough to cause harassment and nest abandonment, which would be a violation of the MBTA. Mitigation has been developed for the project that would reduce these impacts to a less-than-significant level. The mitigation includes performing a pre-construction survey for migratory birds and, if needed, establishing buffer zones until nests are vacated, juveniles have fledged, and there is no evidence of a subsequent attempt at nesting. With this mitigation, the City would be in compliance with the MBTA.

The commenter states that the City must comply with the Flood Plain Management Act if the City were to seek CWSRF financing. As discussed on page 2-31 of the IS/MND, the project is not found within the 500-year floodplain; therefore, it is also not located within the 100-year floodplain. The project is compliant with the Flood Plain Management Act. If the City decides to pursue CWSRF financing, the City shall provide the SWRCB with a copy of the flood zone map of the area as requested.

The commenter states that the project must comply with the Wild and Scenic Rivers Act if the City were to seek CWSRF financing. The project site is not located near any rivers.

The commenter requests that the Lead Agency provide the mitigation that reduces construction emissions for particulate matter less than 10 microns (PM10) and less than 2.5 microns (PM2.5). Appendix C of the IS/MND provides the "San Joaquin Valley Air Pollution Control District Non-Residential On-Site Mitigation Checklist." The City shall use this checklist and recommendations in this checklist, at the City's discretion, to reduce construction emissions. Additionally, this checklist provides the basis for the mitigated emissions shown in Table 1 of the IS/MND. However, it should be noted that unmitigated construction emissions as a result of the project were determined by a qualified air quality modeler to not exceed thresholds for criteria pollutants; therefore, mitigation is not warranted.

The commenter states that if the City is pursuing CWSRF funding, then operational emissions needs to be quantified in the same way construction emissions were in the IS/MND. As stated above, the City is currently not pursuing CWSRF funding. The comment has been noted for the record.

The commenter asks the Lead Agency to determine if the western burrowing owl and Swainson's hawk are federally endangered or threatened species. As shown in Table 2 of the IS/MND, neither the burrowing owl nor the Swainson's hawk have a federal designation.

The commenter recommends establishing mitigation measures for San Joaquin kit fox beforehand according to standards set by the wildlife agencies. The comment has been noted for the record.

The commenter requests specificity about what "non-invasive methods" would be employed during pre-disturbance surveys for burrowing owl. Non-invasive survey methods for burrowing owl presence include looking for signs of burrowing owls, such as suitable burrows as well as owl pelts, prey remains, and whitewash near such burrows. Additional non-invasive methods for observing the presence of owls include using binoculars at a distance or setting up motion-sensing equipment and a camera, if

necessary, near a possible burrow in order to obtain photographic evidence of an owl's presence.

The commenter recommends conducting a records search to support the findings that project would not affect surficial archaeological resources. As stated in the IS/MND, the project occurs within the fence line of an existing wastewater treatment plant. Given the previous and continuous disturbance of the site due to its active use, it is highly unlikely that the project would affect surficial archaeological deposits. The IS/MND provides mitigation in the event that previously unknown archaeological or paleontological resources are unearthed. Therefore, the City finds the mitigation sufficient given the level of disturbance at the site, and a records search is unwarranted. In the event that the City seeks CWSRF financing in the future, the City shall adhere to all requirements of the CEQA-Plus process, including requirements to protect cultural resources.

The commenter recommends the preparation of a geotechnical hazards report. As discussed on page 2-22 of the IS/MND, the City, prior to project plan approval, shall prepare a site-specific geotechnical hazards investigation and shall incorporate earthwork recommendations to mitigate for described geotechnical hazards into project plans that are to be submitted to the City of McFarland Building Department for approval.

The commenter requests incorporation of mitigation for potential wind erosion as a result of the project. Although wind erosion is not explicitly discussed in the IS/MND, mitigation on page 2-30 adequately lessens the possibility of wind erosion as a result of the project. This mitigation includes employing best management practices such as proper stockpiling and disposal of demolition debris, concrete, and soil; protection of existing storm drain inlets; stabilization of disturbed areas; erosion controls; proper management of construction materials; waste management; aggressive litter control; and sediment controls.

The commenter states that the IS/MND references the 500-year floodplain but does not base the analysis on the 100-year floodplain. The analysis states that the project is not within the 500-year floodplain and, therefore, is also not within the 100-year floodplain. The analysis is sufficient for purposes of CEQA.

The commenter requests that the City change the finding for "a" on page 2-46 from "less than significant" to "less than significant with mitigation incorporated" since the discussion states, "Mitigation has been established in this Initial Study... [to] reduce impacts to a level of less than significant." The City acknowledges that this is an error and thanks the commenter for making the error known. The finding should have been designated as "less than significant with mitigation incorporated." This error does not change any of the significance determinations in the IS/MND to a potentially significant impact; therefore, recirculation of this IS/MND is not warranted as a result of this error.

Comment Letter 3. Dave Singleton, Native American Heritage Commission (May 30, 2014)

06/06/14
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E

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Boulevard, Suite 100
West Sacramento, CA 95691
(916) 373-3715
Fax (916) 373-5471
Web Site www.nahc.ca.gov:
ds_nahc@pacbell.net
e-mail: ds_nahc@pacbell.net

May 30, 2014

RECEIVED
JUN 06 2014
STATE CLEARING HOUSE

Mr. Mario Gonzales, Planner
City of McFarland
401 West kern Avenue
McFarland, CA 93250

Sent by U.S. Mail
No. of Pages: 3
RE: SCH#2014051073 CEQA Notice of Completion;; Mitigated Negative Declaration for the **"McFarland Wastewater Treatment Plant Expansion Project;"** located in the City of McFarland; Kern County, California

Dear Mr. Gonzales

The Native American Heritage Commission (NAHC) has reviewed the above-referenced environmental document.

The California Environmental Quality Act (CEQA) states that any project which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA guidelines 15064.5(b).. To adequately comply with this provision and mitigate project-related impacts on archaeological resources, the Commission recommends the following actions be required:

3-A

Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, pursuant to California Environmental Quality Act (CEQA) §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities. Also, California Public Resources Code Section 21083.2 require documentation and analysis of archaeological items that meet the standard in Section 15064.5 (a)(b)(f).

If there is federal jurisdiction of this project due to funding or regulatory provisions; then the following may apply: the National Environmental Policy Act (NEPA 42 U.S.C 4321-43351) and Section 106 of the National Historic Preservation Act (16 U.S.C 470 *et seq.*) and 36 CFR Part 800.14(b) require consultation with culturally affiliated Native American tribes to determine if the proposed project may have an adverse impact on cultural resources

We suggest that this (additional archaeological activity) be coordinated with the NAHC, if possible. The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. Any information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure pursuant to California Government Code Section 6254.10.

A list of appropriate Native American Contacts for consultation concerning the project site has been provided and is attached to this letter to determine if the proposed active might impinge on any cultural resources.

California Government Code Section 65040.12(e) defines "environmental justice" to provide "fair treatment of People...with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations and policies." (The California Code is consistent with the Federal Executive Order 12898 regarding 'environmental justice.' Also, applicable to state agencies is Executive Order B-10-11 requires consultation with Native American tribes their elected officials and other representatives of tribal governments to provide meaningful input into the development of legislation, regulations, rules, and policies on matters that may affect tribal communities.

3-A cont.

Lead agencies should consider first, avoidance for sacred and/or historical sites, pursuant to CEQA Guidelines 15370(a). Then if the project goes ahead then, lead agencies include in their mitigation and monitoring plan provisions for the analysis and disposition of recovered artifacts, pursuant to California Public Resources Code Section 21083.2 in consultation with culturally affiliated Native Americans.

Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, CEQA §15064.5(e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

Sincerely,

Dave Singleton
Program Analyst

CC: State Clearinghouse

Attachment: Native American Contacts list

Response to Comment Letter 3. Dave Singleton, Native American Heritage Commission (May 30, 2014)

3-A. Thank you for your comments. The Native American Heritage Commission's (NAHC's) participation in and assistance with the public review of this document is appreciated. The commenter states that the NAHC has reviewed the document and recommends that the Lead Agency include mitigation for the identification and evaluation of accidentally discovered archaeological resources pursuant to CEQA and California Public Resources Code. As discussed on page 2-19 of the IS/MND, mitigation had been developed that states, "If previously unknown archaeological and/or paleontological resources are discovered during construction activities, such activities shall cease after discovery and a qualified cultural resources specialist shall be contacted to determine the significance of a find and next steps."

The commenter states that if there is federal jurisdiction, then federal law, including the National Environmental Policy Act (NEPA), may apply. At this time there is no federal jurisdiction over the project because the Lead Agency is not pursuing federal funding, including through the CWSRF.

The NAHC recommends coordinating with NAHC, consulting with Native American contacts, avoiding sacred and/or historical sites, and providing provisions for the discovery of Native American human remains. The project takes place entirely within the fence line of an existing wastewater treatment plant, and mitigation has been provided to protect archaeological and paleontological resources as a result of the project; therefore, coordination with NAHC and consulting with Native American contacts is not warranted and the proposed project is not found within a sacred and/or historical site. As discussed above, if archaeological resources, including previously unknown Native American remains, are found during the project's implementation, the City shall comply with mitigation measures to determine the significance of the find and to determine next steps. No additional mitigation is warranted.

Appendix A

Mitigation Monitoring and Reporting Program

Mitigation Monitoring and Reporting Program for McFarland Wastewater Treatment Plant Expansion Project					
Impact	**Mitigation Measure**	**Timeframe for Implementation**	**Responsible Monitoring Agency**	**Date**	**Initials**
	Biological Resources				
#1	**MM BIO-1. Pre-Disturbance San Joaquin Kit Fox Surveys.** The City shall have a qualified biologist conduct pre-disturbance surveys for the kit fox no less than 14 days and no more than 30 days prior to any construction-related activities. The primary objective is to identify kit fox habitat features (potential dens and refuges) on the project site and within a 200-foot buffer zone, and to evaluate them sufficiently to ascertain if a kit fox is using them. If an active kit fox den is detected within the area of work or the 200-foot buffer zone, the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS) shall be contacted immediately to determine the best course of action. If no kit fox activity is detected, the project work shall continue as planned, and a brief written report shall be submitted to the CDFW and USFWS within 5 days of completion of the surveys.	No less than 14 days and no more than 30 days prior to any construction-related activities	City of McFarland Planning Department; U.S. Fish and Wildlife Service, if necessary; and California Department of Fish and Game, if necessary		
		Steps to Compliance: A. The City shall be responsible for a preconstruction survey, which shall be performed by a qualified biologist. B. If necessary, the qualified biologist shall contact CDFW and USFWS to determine next steps. C. If necessary, the qualified biologist shall implement next steps in consultation with the wildlife agencies. D. The qualified biologist shall prepare a brief report to be submitted to the wildlife agencies within 5 days of completion of the preconstruction survey. E. City of McFarland Planning Department shall verify compliance.			

Mitigation Monitoring and Reporting Program for McFarland Wastewater Treatment Plant Expansion Project					
Impact	**Mitigation Measure**	**Timeframe for Implementation**	**Responsible Monitoring Agency**	**Date**	**Initials**
#2	**MM BIO-2. Pre-Disturbance Burrowing Owl Surveys and Exclusion.** The City shall retain a qualified biologist to conduct pre-disturbance burrowing owl surveys on the project site prior to construction or site preparation activities. The surveys shall be conducted no more than 30 days prior to commencement of construction activities. Occupied burrows should not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by CDFW verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation, or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. If burrowing owls are observed using burrows during the surveys, owls shall be excluded from all active burrows through the use of exclusion devices placed in occupied burrows in accordance with CDFW protocols. In such case, exclusion devices shall not be placed until the young have fledged, as determined by a qualified biologist, and found to be no longer dependent upon the burrow. Specifically, exclusion devices, utilizing one-way doors, shall be installed in the entrance of all active burrows. The devices shall be left in the burrows for at least 48 hours to ensure that all owls have been excluded from the burrows. Each of the burrows shall then be excavated by hand and backfilled to prevent reoccupation. Exclusion shall continue until the owls have been successfully excluded from the site, as determined by a qualified biologist.	No more than 30 days prior to commencement of construction activities	City of McFarland Planning Department		
	Steps to Compliance: A. The City shall be responsible for a preconstruction survey, which shall be performed by a qualified biologist. B. If burrowing owls are observed, then owls shall be excluded from all active burrows through the use of exclusion devices placed in occupied burrows in accordance with CDFW protocols. C. The City of McFarland Planning Department shall verify compliance.				

Mitigation Monitoring and Reporting Program for McFarland Wastewater Treatment Plant Expansion Project					
Impact	**Mitigation Measure**	**Timeframe for Implementation**	**Responsible Monitoring Agency**	**Date**	**Initials**
#3	**MM BIO-3. Pre-Disturbance Nesting Surveys and No Active Nest Disruptions.** The City shall have pre-disturbance surveys conducted by a qualified biologist (e.g., experienced with the nesting behavior of bird species of the region) within 30 days prior to ground disturbance activities associated with construction or grading, which would occur during the nesting/breeding season of native bird species potentially nesting on the site (typically February through September in the project region). These surveys would determine if active nests of bird species protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are present in the construction zone or within 300 feet (500 feet for raptors) of the construction zone. If active nests are found, clearing and construction within 300 feet of the nest (500 feet for raptors), or at a distance deemed sufficient by the qualified biologist, shall be postponed or halted until the nest is vacated and juveniles have fledged, and there is no evidence of a subsequent attempt at nesting. Limits of construction to avoid an active nest shall be established in the field with flagging, fencing, or other appropriate barrier, and construction personnel shall be instructed on the sensitivity of nest areas. The biologist shall serve as a construction monitor during those periods when construction activities shall occur near active nest areas to ensure that no inadvertent impacts on these nests shall occur. The results of the survey and any avoidance measures taken shall be submitted to the City and CDFW within 30 days of completion of the pre-disturbance surveys and/or construction monitoring to document compliance with applicable state and federal laws pertaining to the protection of native birds.	Within 30 days prior to ground disturbance activities associated with construction or grading, which would occur during the nesting/breeding season of native bird species potentially nesting on the site	City of McFarland Planning Department		
		Steps to Compliance: A. The City shall be responsible for a preconstruction survey, which shall be performed by a qualified biologist. B. If active nests are found during the breeding season, then a sufficient buffer shall be established until the nests are vacated, juveniles have fledged, and there is no evidence of a subsequent attempt at nesting. C. If necessary, the qualified biologist shall act as a construction monitor. D. If necessary, the qualified biologist shall prepare a brief report to be submitted to the City and CDFW within 30 days of completion of the preconstruction survey. E. The City of McFarland Planning Department shall verify compliance.			
Justification: Changes or alterations to the project have been required to reduce the potentially significant environmental effects identified in the IS/MND to the extent feasible.					

Mitigation Monitoring and Reporting Program for McFarland Wastewater Treatment Plant Expansion Project					
Impact	**Mitigation Measure**	**Timeframe for Implementation**	**Responsible Monitoring Agency**	**Date**	**Initials**
	Cultural Resources				
#4	**MM CUL-1. Previously Unknown Cultural Resources.** If previously unknown archaeological and/or paleontological resources are discovered during construction activities, such activities shall cease after discovery and a qualified cultural resources specialist shall be contacted to determine the significance of a find and next steps.	During construction	City of McFarland Planning Department		
		Steps to Compliance: A. If necessary, work shall cease and the project proponent shall retain a qualified archaeologist and/or paleontologist to assess finds and recommended procedures. B. The qualified cultural resources specialist shall assess the significance of the find and determine next steps. C. The City of McFarland Planning Department shall verify compliance.			
Justification: Changes or alterations to the project have been required to reduce the potentially significant environmental effects identified in the IS/MND to the extent feasible.					

Mitigation Monitoring and Reporting Program for McFarland Wastewater Treatment Plant Expansion Project					
Impact	**Mitigation Measure**	**Timeframe for Implementation**	**Responsible Monitoring Agency**	**Date**	**Initials**
	Geology and Soils				
#5	**MM GEO-1. Geotechnical Hazards Report.** Prior to project plan approval, a site-specific geotechnical hazards investigation shall be prepared for the proposed project by a qualified engineer, and recommendations for earthwork shall be described in a report. The report shall include potential for seismic-related ground failure as well as whether the project site is located on a geologic unit or soil that is unstable, or could become unstable, as a result of the proposed project. The report shall also describe whether the project site is located on expansive soil as defined in the Uniform Building Code. Earthwork recommendations to mitigate for described geotechnical hazards in the report shall be incorporated into project plans to be submitted to the City of McFarland Building Department for approval.	Prior to project plan approval	City of McFarland Building Department		
		Steps to Compliance: A. The City shall ensure that a geotechnical hazards evaluation shall be prepared, as outlined in the mitigation. B. The City shall incorporate recommendations of the investigation into the project plans. C. The City of McFarland Building Department shall verify compliance.			
Justification: Changes or alterations to the project have been required to reduce the potentially significant environmental effects identified in the IS/MND to the extent feasible.					

Mitigation Monitoring and Reporting Program for McFarland Wastewater Treatment Plant Expansion Project					
Impact	**Mitigation Measure**	**Timeframe for Implementation**	**Responsible Monitoring Agency**	**Date**	**Initials**
	Greenhouse Gas Emissions				
#6	**MM GHG-1. Non-Residential On-Site Mitigation Checklist.** To the greatest extent feasible, the San Joaquin Valley Air Pollution Control District's "Non-Residential On-Site Mitigation Checklist" shall be incorporated into the project design.	Prior to project plan approval	City of McFarland Building Department		
		Steps to Compliance: A. The City shall incorporate the "Non-Residential On-Site Mitigation Checklist" tot the greatest extent feasible into the project design. B. The City of McFarland Building Department shall verify compliance.			
Justification: Changes or alterations to the project have been required to reduce the potentially significant environmental effects identified in the IS/MND to the extent feasible.					

Mitigation Monitoring and Reporting Program for McFarland Wastewater Treatment Plant Expansion Project					
Impact	**Mitigation Measure**	**Timeframe for Implementation**	**Responsible Monitoring Agency**	**Date**	**Initials**
	Hydrology and Water Quality				
#7	**MM WQ-1. Best Management Practices.** Prepare a SWPPP and implement BMPs for the proposed project to capture and treat polluted runoff from the proposed project site during the construction period. Recommended BMPs include proper stockpiling and disposal of demolition debris, concrete, and soil; protection of existing storm drain inlets; stabilization of disturbed areas; erosion controls; proper management of construction materials; waste management; aggressive litter control; and sediment controls.	Prior to project plan approval	City of McFarland Building Department		
		Steps to Compliance: A. The City shall prepare a SWPPP that specifies BMPs. B. The City of McFarland Building Department shall approve the SWPPP and verify compliance.			
Justification: Changes or alterations to the project have been required to reduce the potentially significant environmental effects identified in the IS/MND to the extent feasible.					

Notice of Determination 2016 and Phase 1 Cultural Resources Assessment 2016

RECEIVED WITH FEE
RECEIPT # 1513224

Print Form

Notice of Determination

Appendix D

To:
☒ Office of Planning and Research
U.S. Mail: P.O. Box 3044, Sacramento, CA 95812-3044
Street Address: 1400 Tenth St., Rm 113, Sacramento, CA 95814

☒ County Clerk
County of: Kern
Address:

From:
Public Agency: City of McFarland
Address: 401 West Kern Avenue, McFarland, CA 93250
Contact: Mario Gonzales
Phone: 661-702-3091

FILED
KERN COUNTY
JUN 10 2016
MARY B. BEDARD
AUDITOR CONTROLLER-COUNTY CLERK
BY _____ DEPUTY

Lead Agency (if different from above):
Address:
Contact:
Phone:

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

State Clearinghouse Number (if submitted to State Clearinghouse): 2014051073

Project Title: City of McFarland Wastewater Treatment Plant Expansion Project

Project Applicant: City of McFarland

Project Location (include county): Melcher Avenue between Sherwood Road and Elmo Highway in Kern County

Project Description:
The project would increase the capacity at the WWTP from 1.55 million gallons per day (mgd) to 2.5 mgd. The City proposes to convert the existing treatment process from aerated lagoons to an extended aeration-activated sludge process. The project would replace the existing dual headworks with a single headworks (with lift pump) and construct two new secondary clarifiers, a new return activated sludge (RAS) and waste activated sludge (WAS) pump station, and a new effluent pump station. Lagoons 3 and 1-A would be converted into sludge drying beds.

COPY

This is to advise that the City of McFarland (☒ Lead Agency or ☐ Responsible Agency) has approved the above described project on May 26, 2016 (date) and has made the following determinations regarding the above described project.

1. The project [☐ will ☒ will not] have a significant effect on the environment.
2. ☐ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☒ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [☒ were ☐ were not] made a condition of the approval of the project.
4. A mitigation reporting or monitoring plan [☒ was ☐ was not] adopted for this project.
5. A statement of Overriding Considerations [☐ was ☒ was not] adopted for this project.
6. Findings [☐ were ☒ were not] made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval, or the negative Declaration, is available to the General Public at:
401 West Kern Avenue, McFarland, CA 93250

Signature (Public Agency): _____ Title: Planning Director

Governor's Office of Planning & Research

Date: June 6, 2016 Date Received for filing at OPR: NOV 10 2016

Authority cited: Sections 21083, Public Resources Code.
Reference Section 21000-21174, Public Resources Code.

Notice of Environmental Document
Posted by County Clerk on 6/10/16
and for 30 days thereafter, Pursuant to
Section 21152(C), Public Resources Code

STATE CLEARINGHOUSE
Revised 2011

5268

State of California — Department of Fish and Wildlife

2016 ENVIRONMENTAL FILING FEE CASH RECEIPT

DFW 753.5a (Rev. 12/15/15) Previously DFG 753.5a

RECEIPT NUMBER	
15 — 06102016 — 15132214	
STATE CLEARINGHOUSE NUMBER *(if applicable)*	
2014051073	

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY.

LEAD AGENCY	LEAD AGENCY EMAIL	DATE
CITY OF MCFARLAND		6/10/2016
COUNTY/STATE AGENCY OF FILING		**DOCUMENT NUMBER**
Kern		5268

PROJECT TITLE

CITY OF MCFARLAND WASTEWATER TREAMENT PLANET EXPANSION PROJECT

PROJECT APPLICANT NAME	PROJECT APPLICANT EMAIL		PHONE NUMBER
CITY OF MCFARLAND			(661) 792-3091
PROJECT APPLICANT ADDRESS	**CITY**	**STATE**	**ZIP CODE**
401 WEST KERN AVENUE	MCFARLAND	CA	93250

PROJECT APPLICANT *(check appropriate box)*

☒ Local Public Agency ☐ School District ☐ Other Special District ☐ State Agency ☐ Private Entity

CHECK APPLICABLE FEES:

☐ Environmental Impact Report (EIR)	$3,070.00	$	
☒ Mitigated/Negative Declaration (MND)(ND)	$2,210.25	$	2,210.25
☐ Certified Regulatory Program document (CRP)	$1,043.75	$	0.00
☐ Exempt from fee			
☐ Notice of Exemption (attach)			
☐ CDFW No Effect Determination (attach)			
☐ Fee previously paid (attach previously issued cash receipt copy)			
☐ Water Right Application or Petition Fee (State Water Resources Control Board only)	$850.00	$	
☒ County documentary handling fee		$	50.00
☐ Other _____		$	

PAYMENT METHOD:

☐ Cash ☐ Credit ☒ Check ☐ Other **TOTAL RECEIVED** $ 2,260.25

SIGNATURE	AGENCY OF FILING PRINTED NAME AND TITLE
X [signature]	KERN COUNTY CLERK/ M. DOMINGUEZ/ OST

Governor's Office of Planning & Research

NOV 10 2016

STATE CLEARINGHOUSE

ORIGINAL - PROJECT APPLICANT | COPY - CDFW/ASB | COPY - LEAD AGENCY | COPY - COUNTY CLERK | DFW 753.5a (Rev. 20151215)

A
PHASE I CULTURAL RESOURCE SURVEY FOR WASTEWATER PLANT EXPANSION PROJECT, CITY OF MCFARLAND, CALIFORNIA

PREPARED FOR
CITY OF MCFARLAND

PREPARED BY
HUDLOW CULTURAL RESOURCE ASSOCIATES

AUGUST 2016

A
PHASE I CULTURAL RESOURCE SURVEY FOR WASTEWATER PLANT EXPANSION PROJECT, CITY OF MCFARLAND, CALIFORNIA

Submitted to:
City of McFarland
401 W. Kern Avenue
McFarland, California 93250

Keywords:
Pond 7.5' Quadrangle, City of McFarland,
National Historic Preservation Act of 1966

Submitted by:
Hudlow Cultural Resource Associates
1405 Sutter Lane
Bakersfield, California 93309

Author:
Scott M. Hudlow

September 2016

Management Summary

At the request of the City of McFarland, a Phase I Cultural Resource Survey was conducted on ten acres for a proposed wastewater plant expansion project. The property lies at the northwest corner of Perkins Avenue and Melcher Avenue in the City of McFarland, California. The Phase I Cultural Resource Survey consisted of a pedestrian survey of two locations, which total approximately ten acres and a cultural resource record search.

No cultural resources were identified. No further work is required. If archaeological resources are encountered during the course of construction, a qualified archaeologist should be consulted for further evaluation.

If human remains or potential human remains are observed during construction, work in the vicinity of the remains will cease, and they will be treated in accordance with the provisions of State Health and Safety Code Section 7050.5. The protection of human remains follows California Public Resources Codes, Sections 5097.94, 5097.98, and 5097.99.

Table of Contents

List of Figures

1.0 Introduction

At the request of the City of McFarland, *Hudlow Cultural Resource Associates* conducted a Phase I Cultural Resource Survey on approximately ten acres, for a proposed wastewater plant expansion project. The site is at the northwest corner of Perkins and Melcher Avenues in the City of McFarland, California. This project is being undertaken in accordance with the National Historic Preservation Act of 1966. The Phase I Cultural Resource Survey consisted of a pedestrian survey of the site and a cultural resources record search.

2.0 Survey Location

The project area is in the City of McFarland. It is in the E ½ of the SE ¼ of the NE ¼ of Section 9, T.26S., R.25E., Mount Diablo Baseline and Meridian, as displayed on the United States Geological Survey (USGS) Pond 7.5-minute quadrangle map (Figure 1). The proposed wastewater treatment plant expansion project lies at the northwest corner of Perkins and Melcher Avenues in the City of McFarland, California. Two areas were identified as locations for the potential wastewater treatment plant expansion project, both areas were surveyed.

3.0 Record Search

A record search of the project area and the environs within one mile was conducted at the Southern San Joaquin Archaeological Information Center. Scott M. Hudlow conducted the record search, RS# 16-356, on August 30, 2016. The record search revealed that no cultural resource surveys have been conducted within one mile of the project area. No cultural resource has been located within one mile of the current project area.

Additionally, a Sacred Lands File search was requested from the Native American Heritage Commission. The search revealed that no Native American cultural resources are located in close proximity to the current project area (Appendix II). Although no positive results were obtained from the Sacred Lands File search, Native American consultation letters were sent out on September 14, 2016, notifying each interested Kern County Native Contact, per the list provided by the Native American Heritage Commission. Seven parties were sent letters. These letters both describe the project and provide maps for further reference (Appendix II). By September 28, 2016, one party returned a response, which had no comment (Appendix II).

4.0 Environmental Background

The project area is located at elevations between 325 and 330 feet above mean sea level in the Great Central Valley, which is composed of two valleys--the Sacramento Valley and the San Joaquin Valley. The project area is located in the southern San Joaquin Valley, south of the White River. The project

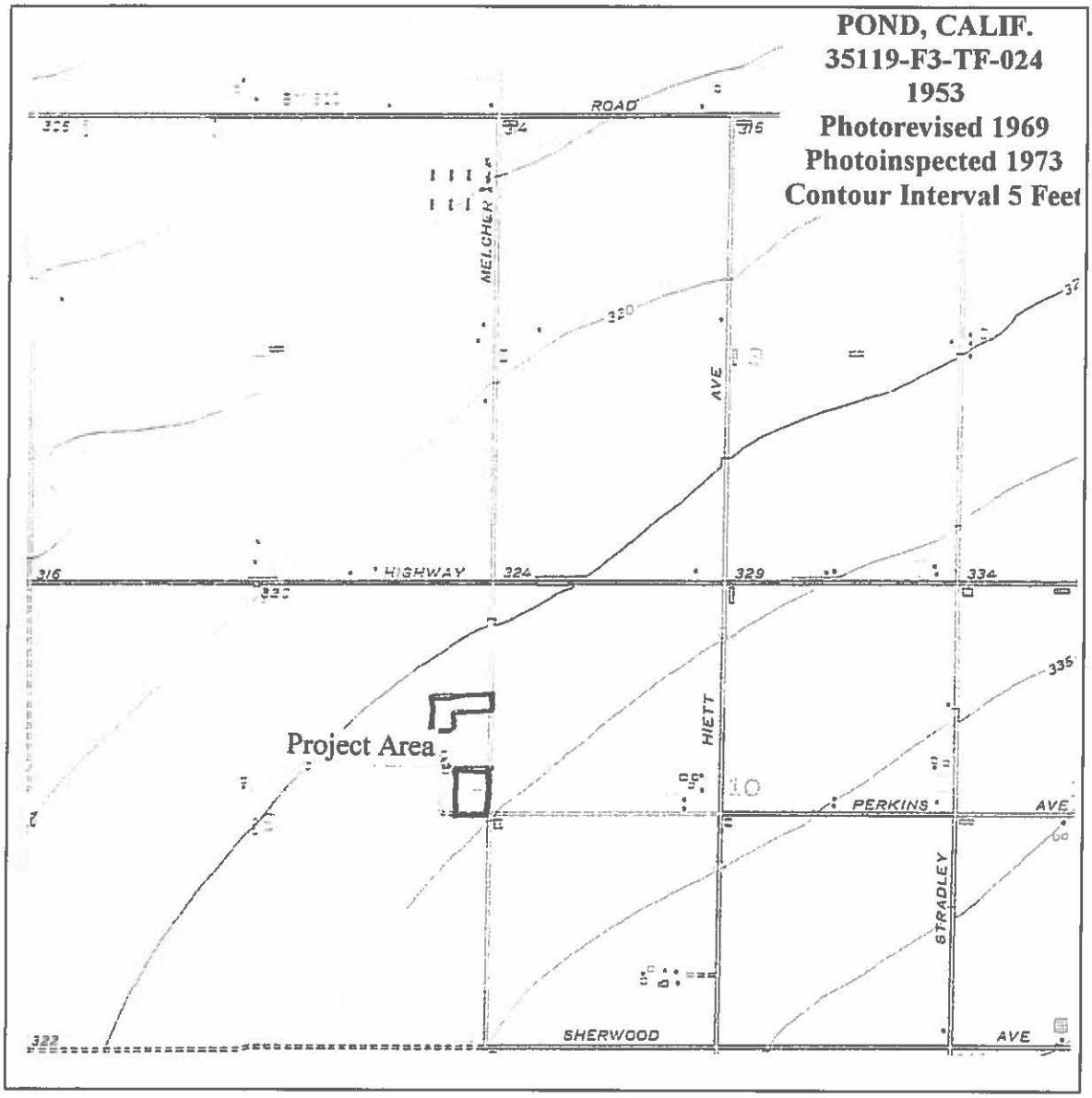

Figure 1
Project Area Location Map

area is an active wastewater treatment plant, which has been scarped clean of native vegetation; however, the wastewater treatment plant was formerly agricultural fields, remnant tomato plants were identified.

5.0 Prehistoric Archaeological Context

Limited archaeological research has been conducted in the southern San Joaquin Valley. Thus, consensus on a generally agreed upon regional cultural chronology has yet to be developed. Most cultural sequences can be summarized into several distinct time periods: Early, Middle, and Late. Sequences differ in their inclusion of various "horizons," "technologies," or "stages." A prehistoric archaeological summary of the southern San Joaquin Valley is available in Moratto (Moratto 1984).

Despite the preoccupation with chronological issues in most of the previous research, most suggested chronological sequences are borrowed from other regions with minor modifications based on sparse local data.

The following chronology is based on Parr and Osborne's Paleo-Indian, Proto-Archaic, Archaic, Post-Archaic periods (Parr and Osborne 1992:44-47). Most existing chronologies focus on stylistic changes of time-sensitive artifacts such as projectile points and beads rather than addressing the socioeconomic factors, which produced the myriad variations. In doing so, these attempts have encountered similar difficulties. These cultural changes are implied as environmentally determined, rather than economically driven.

Paleo-Indians, whom roamed the region approximately 12,000 years ago, were highly mobile individuals. Their subsistence is assumed to have been primarily big game, which was more plentiful 12,000 years ago than in the late twentieth century. However, in the Great Basin and California, Paleo people were also foragers who exploited a wide range of resources. Berries, seeds, and small game were also consumed. Their technology was portable, including manos (Parr and Osborne 1992:44). The paleo period is characterized by fluted Clovis and Folsom points, which have been identified throughout North America. The Tulare Lake region in Kings County has yielded several Paleo-Indian sites, which have included fluted points, scrapers, chipped crescents, and Lake Mojave-type points (Morratto 1984:81-2).

The Proto-Archaic period, which dates from approximately 11,000 to 8,000 years ago, was characterized by a reduction in mobility and conversely an increase in sedentism. This period is classified as the Western Pluvial Lake Tradition or the Proto-Archaic, of which the San Dieguito complex is a major aspect (Moratto 1984: 90-99; Warren 1967). An archaeological site along Buena Vista Lake in southwestern Kern County displays a similar assemblage to the San Dieguito type-site. Claude Warren proposes that a majority of Proto-Archaic southern California could be culturally classified as the San Dieguito Complex (Warren 1967). The Buena Vista Lake site yielded manos, millingstones, large

stemmed and foliate points, a mortar, and red ochre. During this period, subsistence patterns began to change. Hunting focused on smaller game and plant collecting became more integral. Large stemmed, lancelote (foliate) projectile points represent lithic technology. Millingstones become more prevalent. The increased sedentism possibly began to create regional stylistic and cultural differences not evident in the paleo period.

The Archaic period persisted in California for the next 4000 years. In 1959, Warren and McKusiak proposed a three-phase chronological sequence based on a small sample of burial data for the Archaic period (Moratto 1984:189; Parr and Osborne 1992:47). It is distinguished by increased sedentism and extensive seed and plant exploitation. Millingstones, shaped through use, were abundant. Bedrock manos and metates were the most prevalent types of millingstones (Parr and Osborne 1992:45). The central valley began to develop distinct cultural variations, which can be distinguished by different regions throughout the valley, including Kern County.

In the Post-Archaic period enormous cultural variations began manifesting themselves throughout the entire San Joaquin Valley. This period extends into the contact period in the seventeenth, eighteenth and nineteenth centuries. Sedentary village life was emblematic of the Post-Archaic period, although hunting and gathering continued as the primary subsistence strategy. Agriculture was absent in California, partially due to the dense, predictable, and easily exploitable natural resources. The ancestral Yokuts have possibly been in the valley for the last three thousand years, and by the eighteenth century were the largest pre-contact population, approximately 40,000 individuals, in California (Moratto 1984).

6.0 Ethnographic Background

The Yokuts are a Penutian-speaking, non-political cultural group. Penutian speakers inhabit the San Joaquin Valley, the Bay Area, and the Central Sierra Nevada Mountains. The Yokuts are split into three major groups, the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts.

The southern San Joaquin Valley in the Bakersfield and associated Kern County area was home to the Yokuts tribelet, Yawelmani. The tribelets averaged 350 people in size, had a special name for themselves, and spoke a unique dialect of the Yokuts language. Land was owned collectively and every group member enjoyed the right to utilize food resources. The Yawelmani inhabited a strip of the southeastern San Joaquin Valley, north of the Kern River to the Tehachapi Mountains on the south, and from the mountains on the east, to approximately the old south fork of the Kern River on the west (Wallace 1978:449; Parr and Osborne 1992:19). The Yawelmani were the widest ranging of the Yokuts tribelets. One half dozen villages were located along the Kern River, including *Woilo* ("planting place" or "sowing place"), which was located in downtown Bakersfield, where the original

Amtrak station was located. A second village was located across the Kern River from *Woilo*, on the west bank.

The Southern Valley Yokuts established a mixed domestic economy emphasizing fishing, hunting, fowling, and collecting shellfish, roots, and seeds. Fish were the most prevalent natural resource; fishing was a productive activity throughout the entire year. Fish were caught in many different manners, including nets, conical basket traps, catching with bare hands, shooting with bows and arrows, and stunning fish with mild floral toxins. Geese, ducks, mud hens and other waterfowl were caught in snares, long-handled nets, stuffed decoys, and brushing brush to trick the birds to fly low into waiting hunters. Mussels were gathered and steamed on beds of tule. Turtles were consumed, as were dogs, which might have been raised for consumption (Wallace 1978:449-450).

Wild seeds and roots provided a large portion of the Yokuts' diet. Tule seeds, grass seeds, fiddleneck, alfilaria were also consumed. Acorns, the staple crop for many California native cultures, were not common in the San Joaquin Valley. Acorns were traded into the area, particularly from the foothills. Land mammals, such as rabbits, ground squirrels, antelope and tule elk, were not hunted often (Wallace 1978:450).

The Yokuts occupied permanent structures in permanent villages for most of the year. During the late and early summer, families left for several months to gather seeds and plant foods, shifting camp locations when changing crops. Several different types of fiber-covered structures were common in Yokuts settlements. The largest was a communal tule mat-covered, wedge-shaped structure, which could house upward of ten individuals. These structures were established in a row, with the village chief's house in the middle and his messenger's houses were located at the ends of the house row. Dance houses and assembly buildings were located outside the village living area (Nabokov and Easton 1989:301).

The Yokuts also built smaller, oval, single-family tule dwellings. These houses were covered with tall mohya stalks or with sewn tule mats. These small houses were framed by bent-pole ribs, which met a ridgepole held by two crotched poles. The Yokuts also built a cone-shaped dwelling, which was framed with poles tied together with a hoop and then covered with tule or grass. These cone-shaped dwellings were large enough to contain multiple fireplaces (Nabokov and Easton 1989:301). Other structures included mat-covered granaries for storing food supplies, and a dirt-covered communally owned sweathouse.

Clothing was minimal; men wore a breechclout or were naked. Women wore a narrow fringed apron. Rabbitskin or mud hen blankets were worn during the cold season. Moccasins were worn in certain places; however, most people went barefoot. Men wore no head coverings, but women wore basketry caps

when they carried burden baskets on their heads. Hair was worn long. Women wore tattoos from the corners of the mouth to the chin; both men and women had ear and nose piercings. Bone, wood or shell ornaments were inserted into the ears and noses (Wallace 1978:450-451).

Tule dominated the Yokut's material culture. It was used for many purposes, including sleeping mats, wall coverings, cradles, and basketry. Ceramics are uncommon to Yokuts culture as is true throughout most California native cultures. Basketry was common to Yokuts culture. Yokuts made cooking containers, conical burden baskets, flat winnowing trays, seed beaters, and necked water bottles. Yokuts also manufactured wooden digging sticks, fire drills, mush stirrers, and sinew-backed bows. Knives, projectile points, and scraping tools were chipped from imported lithic materials including obsidian, chert, and chalcedony. Stone mortars and pestles were secured in trade. Cordage was manufactured from milkweed fibers, animal skins were tanned, and awls were made from bone. Marine shells, particularly olivella shells, were used in the manufacture of money and articles of personal adornment. Shells were acquired from the Chumash along the coast (Wallace 1978:451-453).

The basic social and economic unit was the nuclear family. Lineages were organized along patrilineal lines. Fathers transmitted totems, particular to each paternal lineage, to each of his children. The totem was a bird or animal that no lineage member would kill or eat; the totems were dreamed of and prayers were given to the totems. The mother's totem was not passed to her offspring, but was treated with respect. Families sharing the same totem formed an exogamous lineage. The lineage had no formal leader nor did it own land. The lineage was a mechanism for transmitting offices and performing ceremonial functions. The lineages formed two moieties, East and West, which consisted of several different lineages. Moieties were customarily exogamous. Children followed the paternal moiety. Certain official positions within the villages were associated with certain totems. The most important was the Eagle lineage from which the village chief was appointed. A member of the Dove lineage acted as the chief's assistant. He supervised food distribution and gave commands during ceremonies. Another hereditary position was common to the Magpie lineage, was that of spokesman or crier.

7.0 Field Procedures and Methods

On August 30, 2016 Scott M. Hudlow (for qualifications see Appendix I) conducted a pedestrian survey of the entire proposed project area. Hudlow surveyed in east/west transects across the both locations at 5-meter (16 feet) intervals. All archaeological material more than fifty years of age or earlier encountered during the inventory would have been recorded.

8.0 Report of Findings

No cultural resources were identified.

9.0 Management Recommendations

At the request of the City of McFarland, a Phase I Cultural Resource Survey was conducted on ten acres for a proposed wastewater plant expansion project. The property lies at the northwest corner of Perkins Avenue and Melcher Avenue in the City of McFarland, California. The Phase I Cultural Resource Survey consisted of a pedestrian survey of two locations, which total approximately ten acres and a cultural resource record search.

No cultural resources were identified. No further work is required. If archaeological resources are encountered during the course of construction, a qualified archaeologist should be consulted for further evaluation.

If human remains or potential human remains are observed during construction, work in the vicinity of the remains will cease, and they will be treated in accordance with the provisions of State Health and Safety Code Section 7050.5. The protection of human remains follows California Public Resources Codes, Sections 5097.94, 5097.98, and 5097.99.

10.0 References

Moratto, Michael J.
1984 *California Archaeology*. Orlando, Florida, Academic Press.

Nabokov, Peter and Robert Easton
1989 *Native American Architecture*. Oxford University Press, New York, New York.

Parr, Robert E. and Richard Osborne
1992 *Route Adoption Study for Highway 58, Kern County, California.* Report on file, Southern San Joaquin Archaeological Information Center, California State University, Bakersfield, Bakersfield, California.

Peak, Melissa
2014 *Determination of Eligibility and Effect for the McFarland Senior Apartments Project, City of McFarland, Kern County, California.* Report on file, Southern San Joaquin Archaeological Information Center, California State University, Bakersfield, Bakersfield, California.

Schiffman, Robert and Alan Gold
2004 *Cultural Resource Survey for an 80-Acre Mixed-Use Development between Elmo Highway and Perkins Avenue near McFarland, Kern*

County, California. Report on file, Southern San Joaquin Archaeological Information Center, California State University, Bakersfield, Bakersfield, California.

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1978 "Southern Valley Yokuts" in *Handbook of North American Indians*. Vol. 8, California, Robert F. Heizer, ed. Washington, D.C.: Smithsonian Institution, pp. 437-445.

Warren, Claude N. and M. B. McKusiak
1959 A Burial Complex from the southern San Joaquin Valley. Los Angeles: *University of California, Los Angeles, Archaeological Survey Annual Report, 1959*: 17-26.

Warren, Claude N.
1967 "The San Dieguito Complex: A Review and Hypothesis" *American Antiquity* 32(2): 168-185.

Appendix I

Scott M. Hudlow
1405 Sutter Lane
Bakersfield, California 93309
(661) 834-9183

Education

The George Washington University
M.A. American Studies, 1993
Specialization in Historical Archaeology
and Architectural History

University of California, Berkeley
B.A. History, 1987
B.A. Anthropology, 1987
Specialization in Historical Archaeology
and Colonial History

Public Service

3/94-12/02 *Historic Preservation Commission.* City of Bakersfield, Bakersfield, California 93305.

7/97-12/01 *Newsletter Editor. California History Action,* newsletter for the California Council for the Promotion of History.

Relevant Work Experience

8/96- *Adjutant Faculty.* Bakersfield College, 1801 Panorama Drive, Bakersfield, California, 93305. Teach History 17A, Introduction to American History and Anthropology 5, Introduction to North American Indians.

Owner, Sole Proprietorship. Hudlow Cultural Resource Associates. 1405 Sutter Lane, Bakersfield California 93309. Operate small cultural resource management business. Manage contracts, respond to RFP's, bill clients, manage temporary employees. Conduct Phase I archaeological and architectural surveys for private and public clients; including the cultural resource survey, documentary photography, measured drawings, mapping of structures, filing of survey forms, historic research, assessing impact and writing reports. Evaluated archaeological and architectural sites and properties in lieu of their eligibility for the National Register of Historic Places in association with Section 106 and 110 requirements of the National Historic Preservation Act of 1966 and CEQA (California Environmental Quality Act).

Full resume available upon request.

Appendix II

STATE OF CALIFORNIA — Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
Fax (916) 373-5471

September 13, 2016

Scott Hudlow
Hudlow Cultural Resources Associates

Sent by E-mail: shudlow@sbcglobal.net

RE: Proposed Cultural Resources Survey for City of McFarland Wastewater Treatment Plant Expansion Project, City of McFarland, Pond USGS Quadrangle, Kern County, California

Dear Mr. Hudlow:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.

I suggest you contact all of the listed Tribes. If they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. By contacting all those on the list, your organization will be better able to respond to claims of failure to consult. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst

Native American Heritage Commission
Native American Contact List
Kern County
9/13/2016

Kitanemuk & Yowlumne Tejon Indians
Della Dominguez, Chairperson
115 Radio Street — Kitanemuk
Bakersfield, CA, 93305 — Southern Valley
Phone: (626)339-6785 — Yokut
deedominguez@juno.com

Santa Rosa Rancheria Tachi Yokut Tribe
Rueben Barrios, Chairperson
P.O. Box 8 — Southern Valley
Lemoore, CA, 93245 — Yokut
Phone: (559)924-1278
Fax: (559)924-3583

Table Mountain Rancheria
Leanne Walker-Grant, Chairperson
P.O. Box 410 — Yokut
Friant, CA, 93626
Phone: (559)822-2587
Fax: (559)822-2693

Tejon Indian Tribe
Octavio Escobedo, Chairperson
1731 Hasti-acres Drive, Suite 108 — Kitanemuk
Bakersfield, CA, 93309
Phone: (661) 834 - 8566
Fax: (661) 834-8564
oescobedo@tejontribe.net

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589 — Yokut
Porterville, CA, 93258
Phone: (559)781-4271
Fax: (559)781-4610
chairman@tulerivertribe-nsn.gov

Tule River Indian Tribe
Kerri Vera,
P. O. Box 589 — Yokut
Porterville, CA, 93258
Phone: (559) 783 - 8892
Fax: (559) 783-8932

Tule River Indian Tribe
Joey Garfield, Tribal Archaeologist
P. O. Box 589 — Yokut
Porterville, CA, 93258
Phone: (559) 783 - 8892
Fax: (559) 783-8932

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 Cultural Resource Survey for City of McFarland Wastewater Treatment Plant Expansion, Kern County.

Delia Dominquez, Chairperson
Kitanemuk and Yowlumne Tejon Indians
115 Radio Street
Bakersfield, California 93305

September 14, 2016

Ms. Dominquez,

The City of McFarland announces its intention to develop approximately ten acres to improve an existing wastewater treatment plant. The site lies at the northeast corner of Perkins and Melcher Avenue in the City of McFarland, California. After consultation with the Native American Heritage Commission, the project area is not known to have Native American cultural resources in close proximity. The archaeological work and reporting was performed in a manner consistent with SHPO guidelines. These guidelines are prescribed in "Instructions for Recording Historical Resources", "Archaeological Resources Management Reports (ARMR) Recommended Contents and Format," and "Guidelines for Archaeological Research Designs".

The City of McFarland retained Hudlow Cultural Resource Associates of Bakersfield, California to conduct this archaeological work.

This project falls within California Environmental Quality Act guidelines and is subject to Native comment and consultation pursuant to SB 18. As such, this letter informs your group that this project is preceding and requests comments with respect to the proposed project as outlined above.

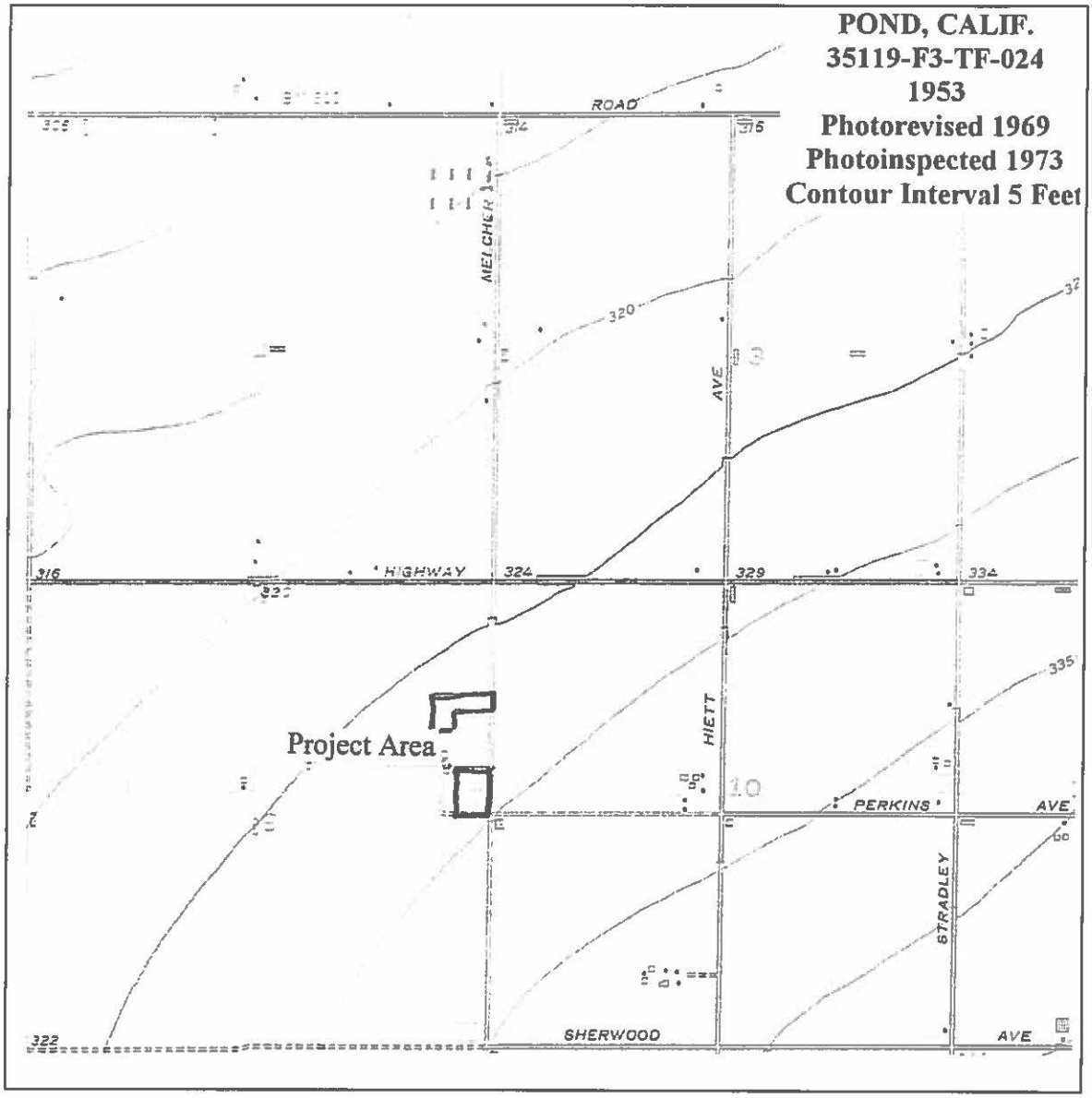
If you have any questions, comments, or need additional information, please inform Scott M. Hudlow in writing on or before September 28, 2016. My business address is below.

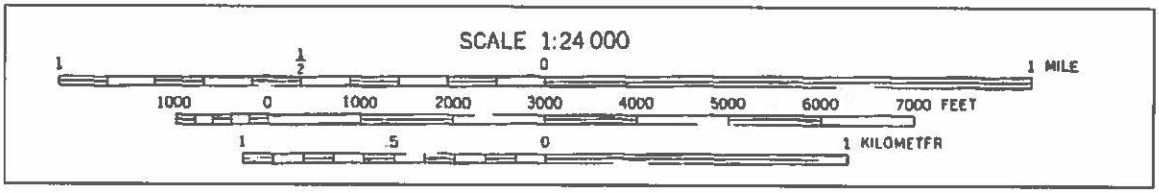
Hudlow Cultural Resource Associates
1405 Sutter Lane
Bakersfield, California 93309
(661) 834-9183
shudlow@sbcglobal.net

Sincerely,

Scott M. Hudlow
Hudlow Cultural Resource Associates

enclosures





Project Area Location Map

Santa Rosa Rancheria Tachi
Yokuts Tribe
Reuben Barrios, Chairperson
P.O. Box 8
Lemoore, California 93245

September 14, 2016

Mr. Barrios,

The City of McFarland announces its intention to develop approximately ten acres to improve an existing wastewater treatment plant. The site lies at the northeast corner of Perkins and Melcher Avenue in the City of McFarland, California. After consultation with the Native American Heritage Commission, the project area is not known to have Native American cultural resources in close proximity. The archaeological work and reporting was performed in a manner consistent with SHPO guidelines. These guidelines are prescribed in "Instructions for Recording Historical Resources", "Archaeological Resources Management Reports (ARMR) Recommended Contents and Format," and "Guidelines for Archaeological Research Designs".

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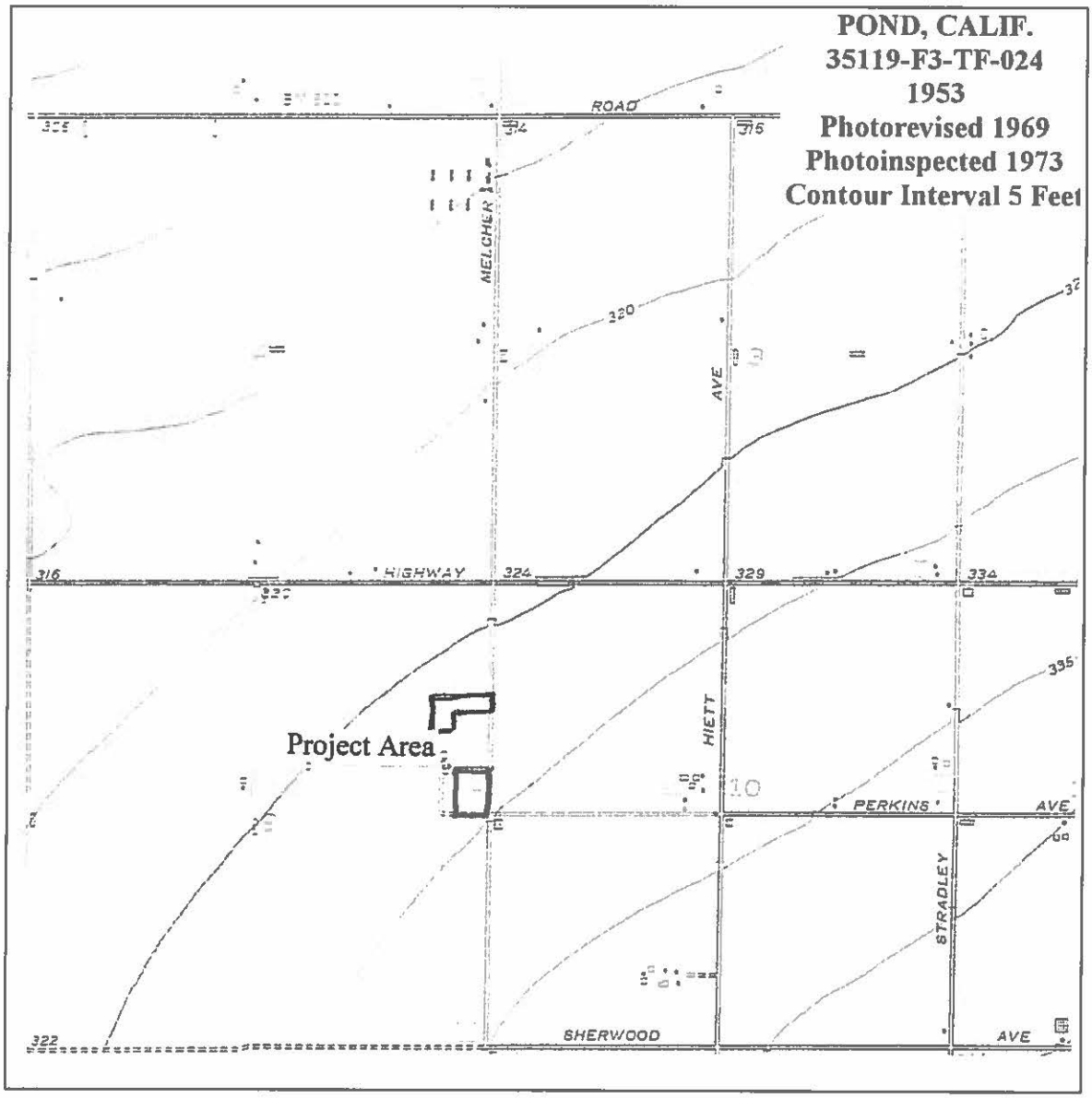
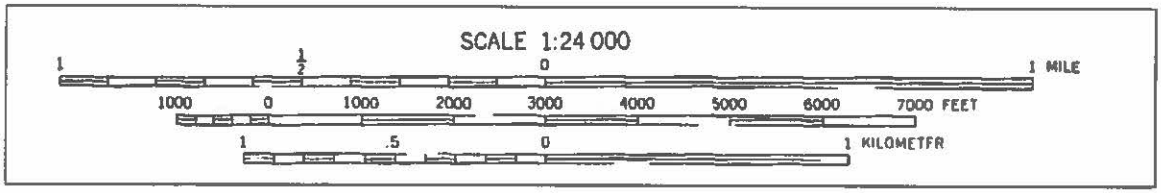
(661) 834-9183
shudlow@sbcglobal.net

Sincerely,

Scott M. Hudlow
Hudlow Cultural Resource Associates

enclosures





Project Area Location Map

Table Mountain Rancheria
Leanne Walker-Grant, Chairperson
P.O. Box 410
Friant, California 93626

September 14, 2016

Ms. Walker-Grant,

The City of McFarland announces its intention to develop approximately ten acres to improve an existing wastewater treatment plant. The site lies at the northeast corner of Perkins and Melcher Avenue in the City of McFarland, California. After consultation with the Native American Heritage Commission, the project area is not known to have Native American cultural resources in close proximity. The archaeological work and reporting was performed in a manner consistent with SHPO guidelines. These guidelines are prescribed in "Instructions for Recording Historical Resources", "Archaeological Resources Management Reports (ARMR) Recommended Contents and Format," and "Guidelines for Archaeological Research Designs".

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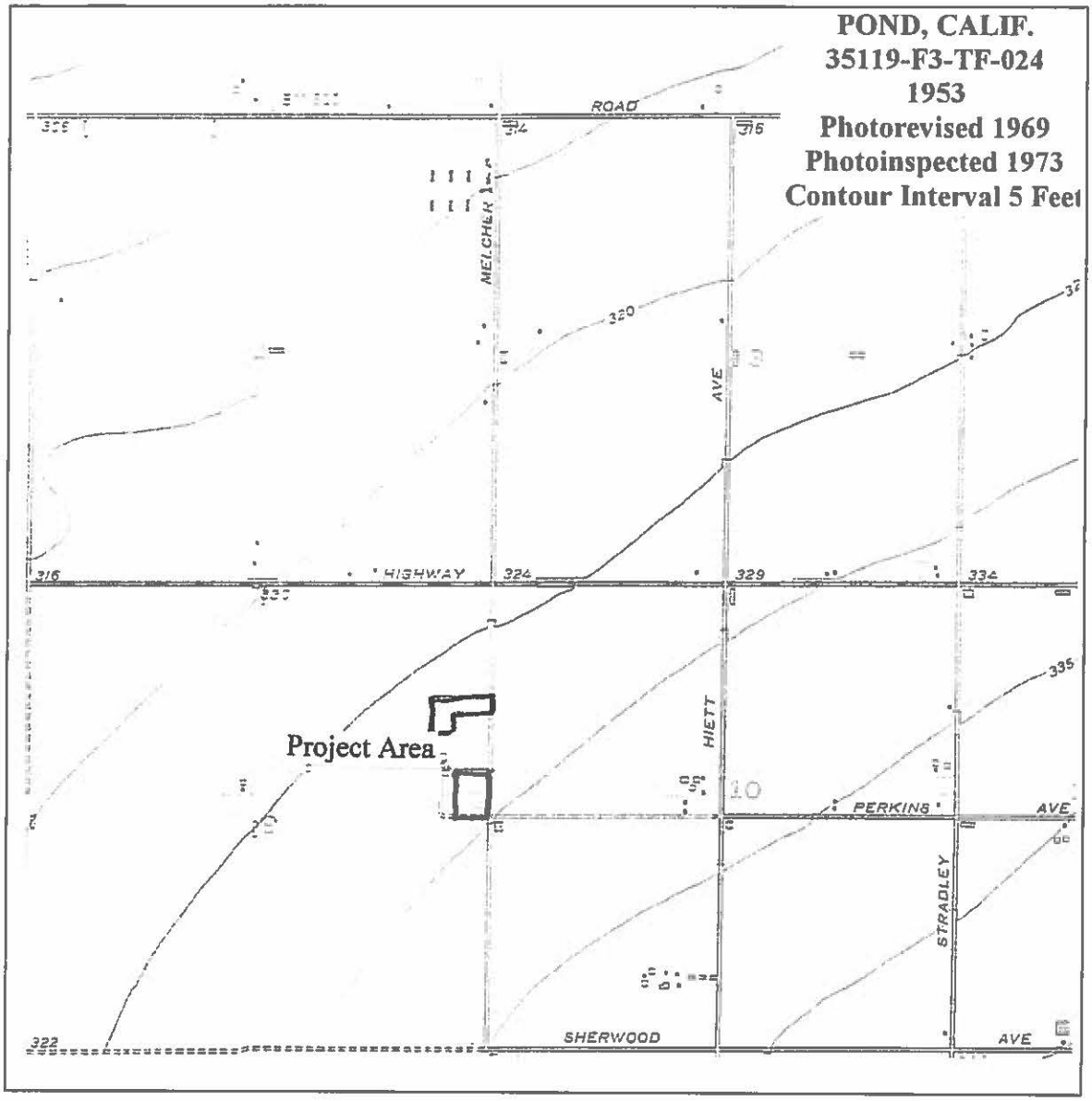

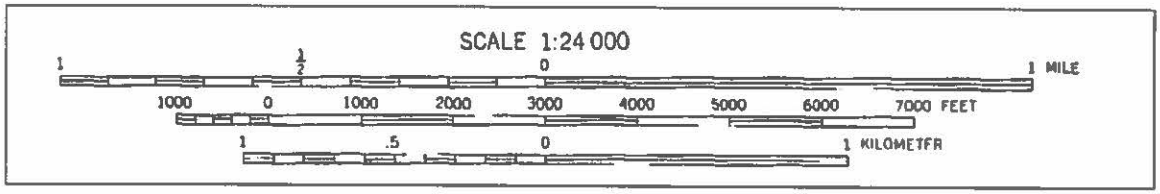

Project Area Location Map

Tejon Indian Tribe
Octavio Escobedo, Chairperson
1731 Hasti-Acres Drive
Suite 108
Bakersfield, California 93309

September 14, 2016

Mr. Escobedo,

The City of McFarland announces its intention to develop approximately ten acres to improve an existing wastewater treatment plant. The site lies at the northeast corner of Perkins and Melcher Avenue in the City of McFarland, California. After consultation with the Native American Heritage Commission, the project area is not known to have Native American cultural resources in close proximity. The archaeological work and reporting was performed in a manner consistent with SHPO guidelines. These guidelines are prescribed in "Instructions for Recording Historical Resources", "Archaeological Resources Management Reports (ARMR) Recommended Contents and Format," and "Guidelines for Archaeological Research Designs".

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1405 Sutter Lane
Bakersfield, California 93309
(661) 834-9183
shudlow@sbcglobal.net

Sincerely,

Scott M. Hudlow
Hudlow Cultural Resource Associates

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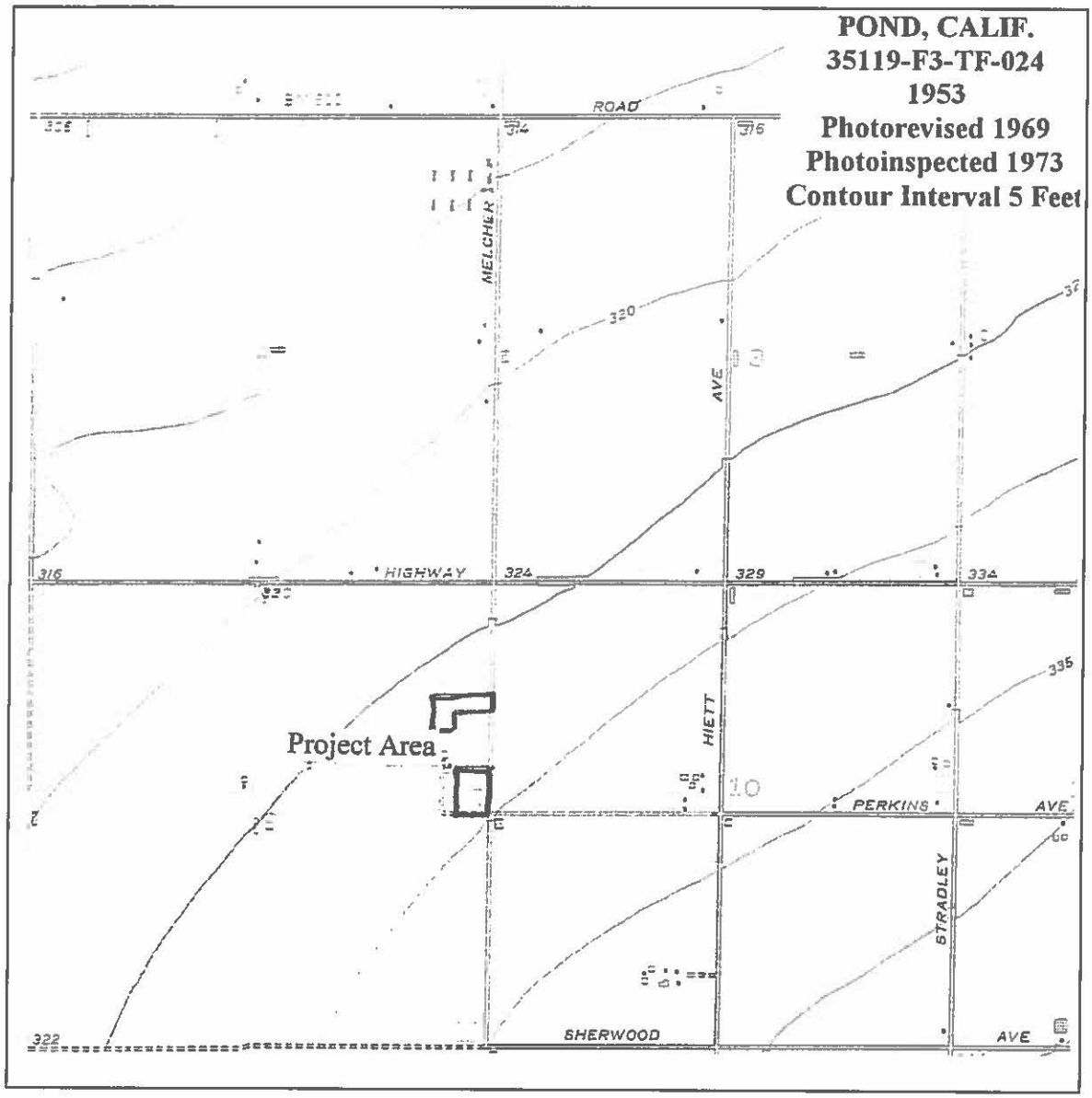

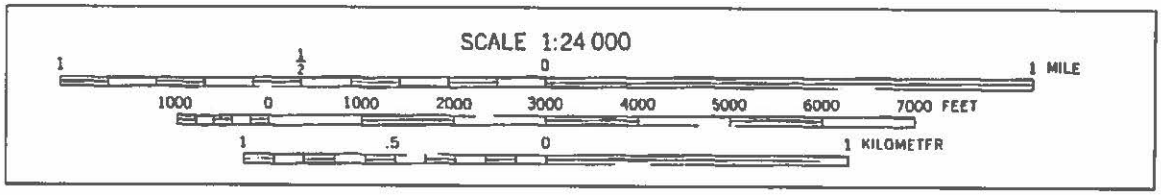

Project Area Location Map

Tule River Indian Reservation
Neil Peyron, Chairperson
P. O. Box 589
Porterville, California 93258

September 14, 2016

Mr. Peyron,

The City of McFarland announces its intention to develop approximately ten acres to improve an existing wastewater treatment plant. The site lies at the northeast corner of Perkins and Melcher Avenue in the City of McFarland, California. After consultation with the Native American Heritage Commission, the project area is not known to have Native American cultural resources in close proximity. The archaeological work and reporting was performed in a manner consistent with SHPO guidelines. These guidelines are prescribed in "Instructions for Recording Historical Resources", "Archaeological Resources Management Reports (ARMR) Recommended Contents and Format," and "Guidelines for Archaeological Research Designs".

The City of McFarland retained Hudlow Cultural Resource Associates of Bakersfield, California to conduct this archaeological work.

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Hudlow Cultural Resource Associates
1405 Sutter Lane
Bakersfield, California 93309
(661) 834-9183
shudlow@sbcglobal.net

Sincerely,

Scott M. Hudlow
Hudlow Cultural Resource Associates

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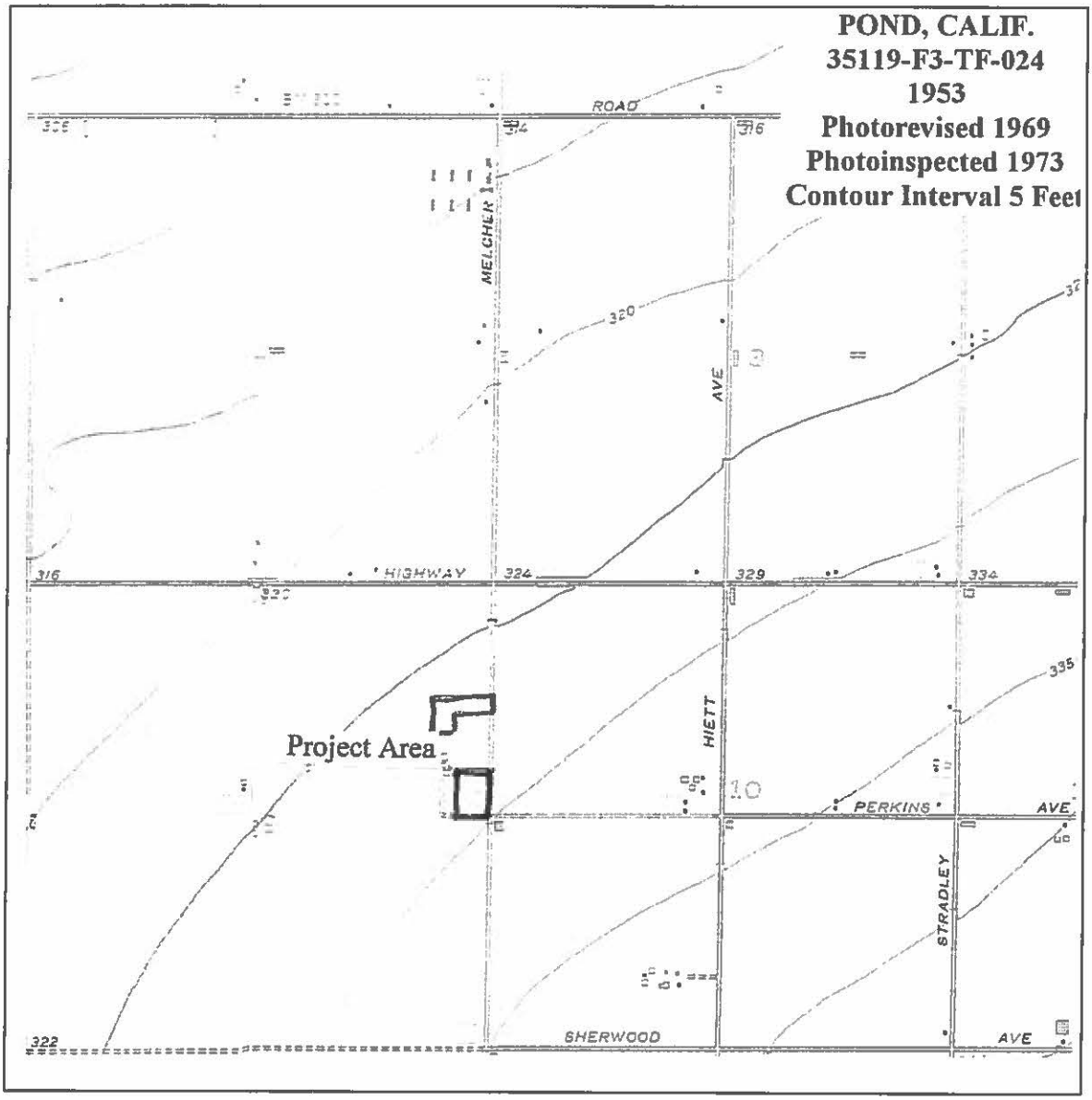

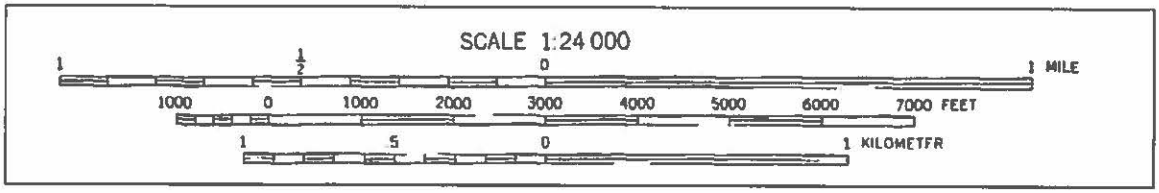

Project Area Location Map

Tule River Indian Reservation
Kerri Vera, Chairperson
P. O. Box 589
Porterville, California 93258

September 14, 2016

Ms. Vera,

The City of McFarland announces its intention to develop approximately ten acres to improve an existing wastewater treatment plant. The site lies at the northeast corner of Perkins and Melcher Avenue in the City of McFarland, California. After consultation with the Native American Heritage Commission, the project area is not known to have Native American cultural resources in close proximity. The archaeological work and reporting was performed in a manner consistent with SHPO guidelines. These guidelines are prescribed in "Instructions for Recording Historical Resources", "Archaeological Resources Management Reports (ARMR) Recommended Contents and Format," and "Guidelines for Archaeological Research Designs".

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If you have any questions, comments, or need additional information, please inform Scott M. Hudlow in writing on or before September 28, 2016. My business address is below.

Hudlow Cultural Resource Associates
1405 Sutter Lane
Bakersfield, California 93309
(661) 834-9183
shudlow@sbcglobal.net

Sincerely,

Scott M. Hudlow
Hudlow Cultural Resource Associates

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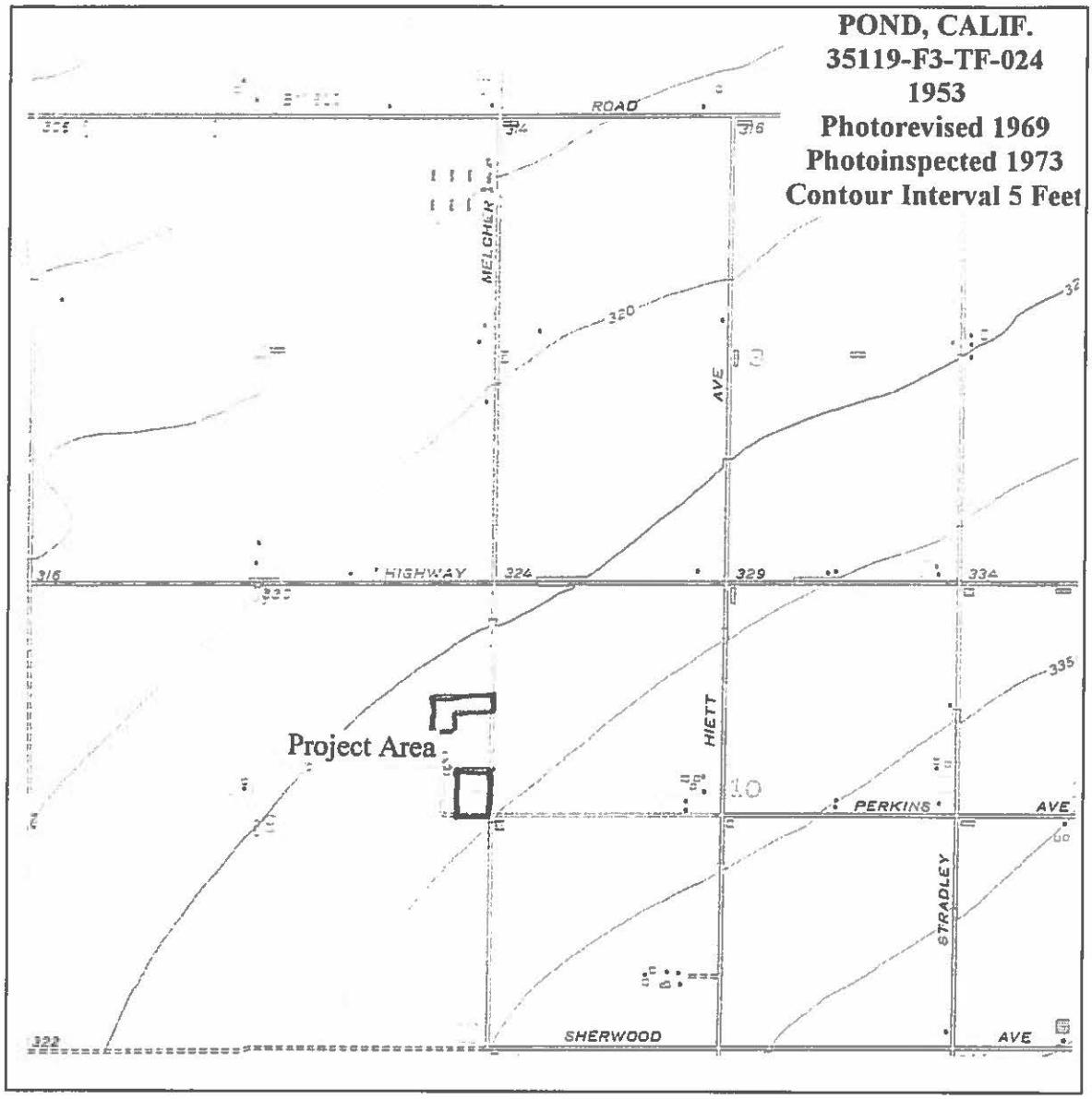

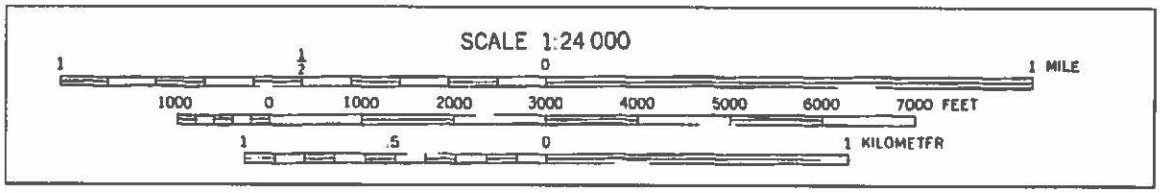

Project Area Location Map

Tule River Indian Tribe
Joey Garfield, Tribal Archaeologist
P.O. Box 589
Porterville, California 93258

September 14, 2016

Mr. Garfield,

The City of McFarland announces its intention to develop approximately ten acres to improve an existing wastewater treatment plant. The site lies at the northeast corner of Perkins and Melcher Avenue in the City of McFarland, California. After consultation with the Native American Heritage Commission, the project area is not known to have Native American cultural resources in close proximity. The archaeological work and reporting was performed in a manner consistent with SHPO guidelines. These guidelines are prescribed in "Instructions for Recording Historical Resources", "Archaeological Resources Management Reports (ARMR) Recommended Contents and Format," and "Guidelines for Archaeological Research Designs".

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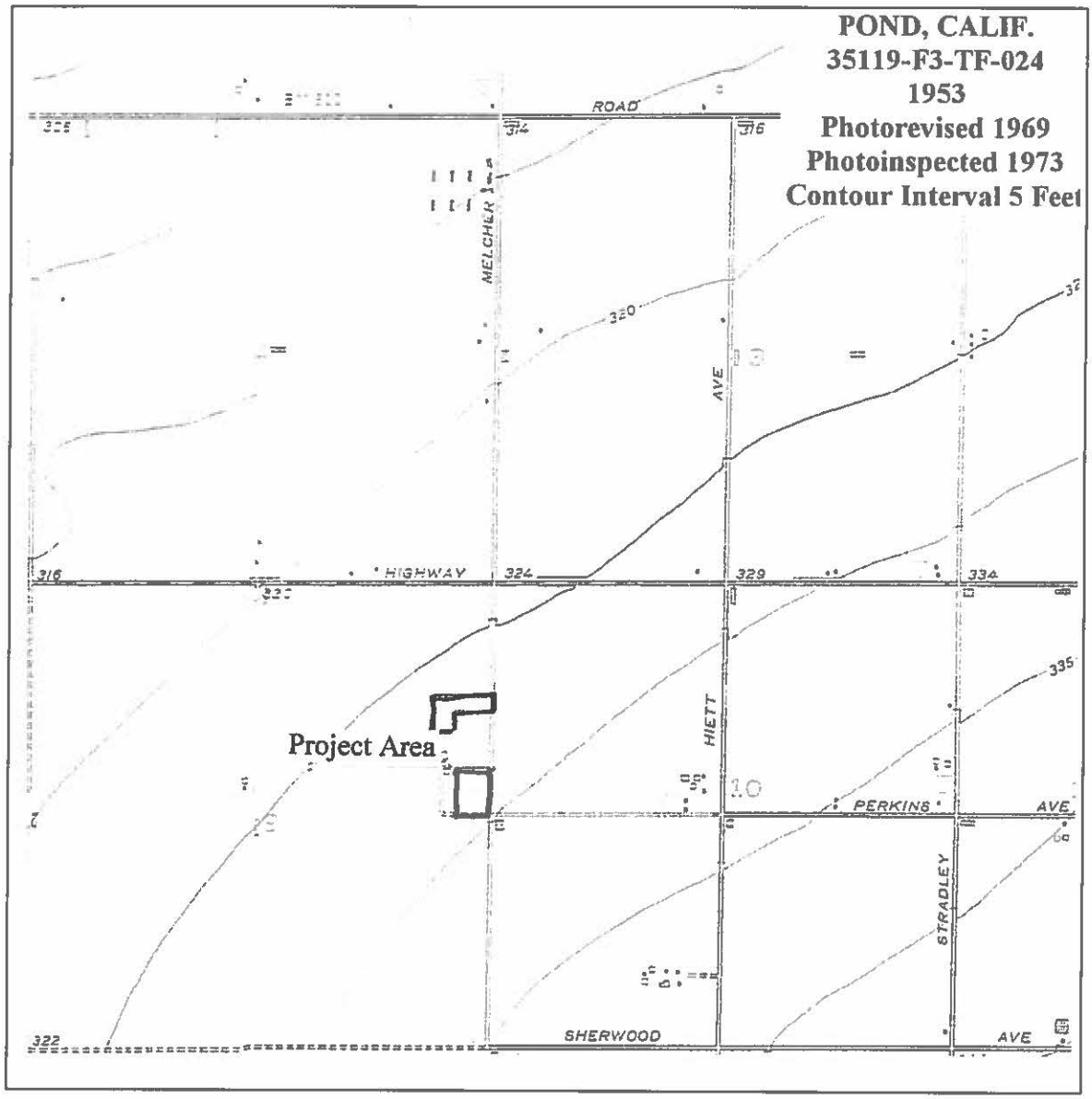
If you have any questions, comments, or need additional information, please inform Scott M. Hudlow in writing on or before September 28, 2016. My business address is below.

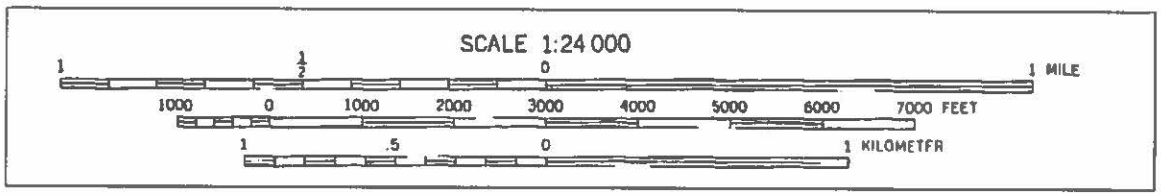
Hudlow Cultural Resource Associates
1405 Sutter Lane
Bakersfield, California 93309
(661) 834-9183
shudlow@sbcglobal.net

Sincerely,

Scott M. Hudlow
Hudlow Cultural Resource Associates

enclosures





Project Area Location Map

TABLE MOUNTAIN RANCHERIA
TRIBAL GOVERNMENT OFFICE

September 20, 2016

Scott M. Hudlow
Hudlow Cultural Resource Associates
1405 Sutter Lane
Bakersfield, Ca. 93309

RE: Northeast corner of Perkins ad Melcher Avenue in the City of McFarland, California

To: Scott M. Hudlow

This is in response to your letter dated September 14, 2016, regarding the Northeast corner of Perkins ad Melcher Avenue in the City of McFarland, California.

We appreciate receiving notice; however, this project site is beyond our area of interest.

Sincerely,

Bob Pennell
Cultural Resources Director

23736
Sky Harbour Road
Post Office
Box 410
Friant
California
93626
(559) 822-2587
Fax
(559) 822-2693

Biological Analysis Report (BAR) 2022

BIOLOGICAL ANALYSIS REPORT

CITY OF MCFARLAND

MCFARLAND WASTEWATER TREATMENT PLANT EXPANSION

JANUARY 2022

BIOLOGIAL ANALYSIS REPORT

MCFARLAND WASTEWATER TREATMENT PLANT EXPANSION PROJECT

Prepared for:

City of McFarland
401 West Kern Street
McFarland, California 93250
Contact Person: Kenny Williams, Interim City Manager
Phone: 661.458.1425

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Bakersfield, CA 93309
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Phone: (661) 616-2600

January 2022

Project #210460

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Acronyms and Abbreviations

BAR	Biological Analysis Report
BIOS	Biogeography Information and Observation System
BSA	Biological Study Area
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
IPaC	Information for Planning and Construction
MGD	Million Gallons per Day
MBTA	Migratory Bird Treaty Act
NHD	National Hydrography Dataset
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
RWQCB	Regional Water Quality Control Board
SJKF	San Joaquin Kit Fox
SWHA	Swainson's Hawk
USACE	U.S. Army Corps of Engineers
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

Quad Knopf, Inc. (QK) has prepared this Biological Analysis Report (BAR) to evaluate the potential for sensitive biological resources to be impacted by the construction of the wastewater treatment plant expansion project (Project) within the City of McFarland, Kern County, California. The proposed project is located on the Central Valley floor in northern Kern County, California, six miles northwest of State Route (SR) 99 and SR 46 intersection. The area of potential effect (APE) for the proposed Project is almost entirely within the existing McFarland Wastewater Treatment Plant (Plant) located at the northwest corner of Perkins Avenue and Melcher Road in the City of McFarland, California.

The City now proposes to construct Phase 3 of the Master Plan (Years 4-7 in the Master Plan), which includes an expansion of the facility in order to achieve compliance with future Waste Discharge Requirements (WDR) of the Central Valley Regional Water Quality Control Board (RWQCB), and improve water quality of the plant's effluent (Project). The Phase 3 project will include the following components:

- Two new circular secondary clarifiers
- Return Activated Sludge/Waste Activated Sludge (RAS/WAS) pump station
- Effluent Pump Station
- Pipeline to ponds 1, 2 and 3
- New Administration/Laboratory building with parking,
- Installation of four (4) ground water monitoring wells
    - 3 wells to replace existing dried wells
    - 1 new monitoring well
- Irrigation pumping station for ponds 1, 2 and 3
- Elimination of interior berm to ponds 1 and 2

All work will be within the existing facility boundaries with the exception of two new monitoring wells and a pipeline connection that will run outside but adjacent to the fenced perimeter along an existing roadway shoulder.

A database review and reconnaissance site visit were completed by QK Environmental Scientists to characterize existing conditions and determine the potential for special-status species and other sensitive biological resources to occur on-site that may be impacted by the Project.

The sensitive biological resource database and literature search identified two (2) natural communities, 20 plant species, and 23 animal species that have potential to occur on the Project. Of those, all but three animal species were eliminated from consideration in this BAR due to lack of suitable habitat, outside the known range or otherwise unsuitable environmental conditions. The San Joaquin kit fox (*Vulpes macrotis mutica*), American badger (*Taxidea taxus*), and Swainson's hawk (*Buteo swainsoni*) have the potential have the suitable habitat and environmental conditions to occur on the Project site No special-status

plant species or natural communities do not have the suitable habitat or environmental conditions and are not expected to occur on or near the Project area. Direct and indirect impacts of the Project to these three species could include injury or mortality of individuals and loss of suitable habitat. Avoidance minimization measures are recommended which, when implemented, would reduce Project impacts to biological resources to less than significant levels.

SECTION 1 - INTRODUCTION

Quad Knopf, Inc. (QK) has prepared this Biological Analysis Report (BAR) to evaluate the potential for sensitive biological resources that may be impacted by the construction of McFarland Wastewater Treatment Plant Expansion Project (Project) within the City of McFarland (City; the Applicant), Kern County, California.

1.1 - Project Location

The Project is built on approximately 240 acres of land west of the City in northern Kern County, California (Figure 1-1and 1-2). It is bordered by Elmo Highway to the north, Sherwood Avenue to the south, Melcher Road to the east, and an unnamed rural road to the west. The Project is located within Section 9, Township 26S, Range 25E, Mount Diablo Base and Meridian, in the *Pond*, California United States Geological Survey (USGS) 7.5-minute quadrangle.

1.2 - Project Description

The City owns and operates the existing Wastewater Treatment Plant (WWTP), which is located on 80 acres of 240 total acres of City-owned land. The remaining 180 acres are farmland where the treated effluent from the facility is used to irrigate feed and fodder crops at an agronomic rate.

The City completed a Wastewater Master Plan (Master Plan) for the WWTP in September 2013. The Master Plan detailed the conversion the existing aerated lagoon process to an extended aeration activated process that expanded the capacity of the WWTP from 1.5 million gallons per day (MGD) to 2.5 MGD. An Initial Study/Mitigated Negative Declaration (IS/MND) was prepared to satisfy the California Environmental Quality Act (CEQA; 2014051073). The IS/MND and a Mitigation Monitoring and Reporting Program (MMRP) were adopted by the City in 2014.

The City now proposes to construct Phase 3 of the Master Plan (Years 4-7 in the Master Plan), which includes an expansion of the facility in order to achieve compliance with future Waste Discharge Requirements (WDR) of the Central Valley Regional Water Quality Control Board (RWQCB), and improve water quality of the plant's effluent (Project). The Phase 3 project will include the following components:

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    - 3 wells to replace existing dried wells
    - 1 new monitoring well

- Irrigation pumping station for ponds 1, 2 and 3
- Elimination of interior berm to ponds 1 and 2

1.3 - Purpose, Goals, and Objectives

The purpose of this BAR is to identify where potential special-status biological resources may occur within the Project area, determine how those resources may be impacted by the Project, and recommend avoidance, minimization, and mitigation measures to reduce the potential for impact to those resources to a less than significant level. This BAR has been prepared to support an analysis of biological conditions as required by the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA).

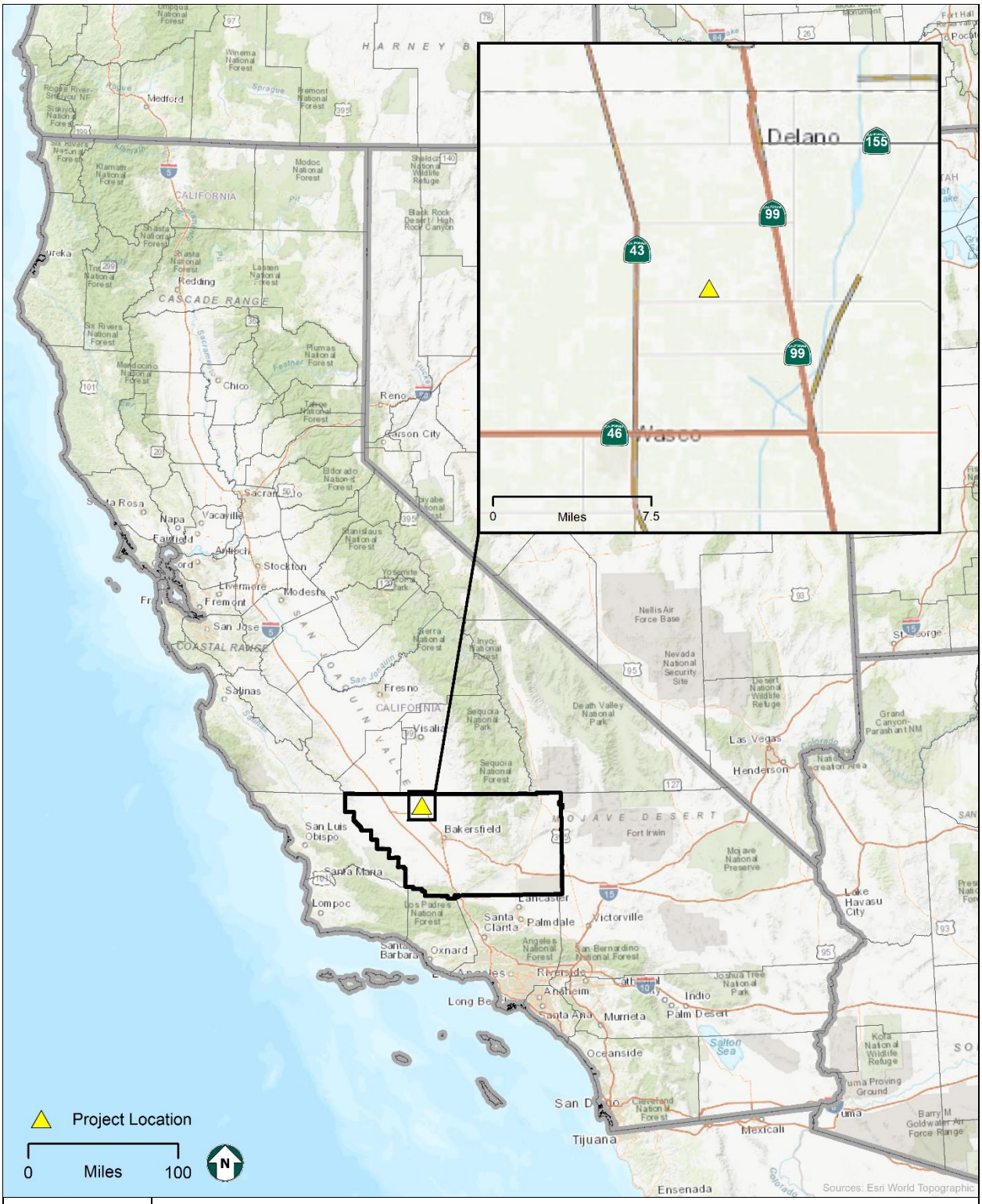

Figure 1-1
Regional Map
McFarland Wastewater Treatment Plant Expansion Project, Kern County, California

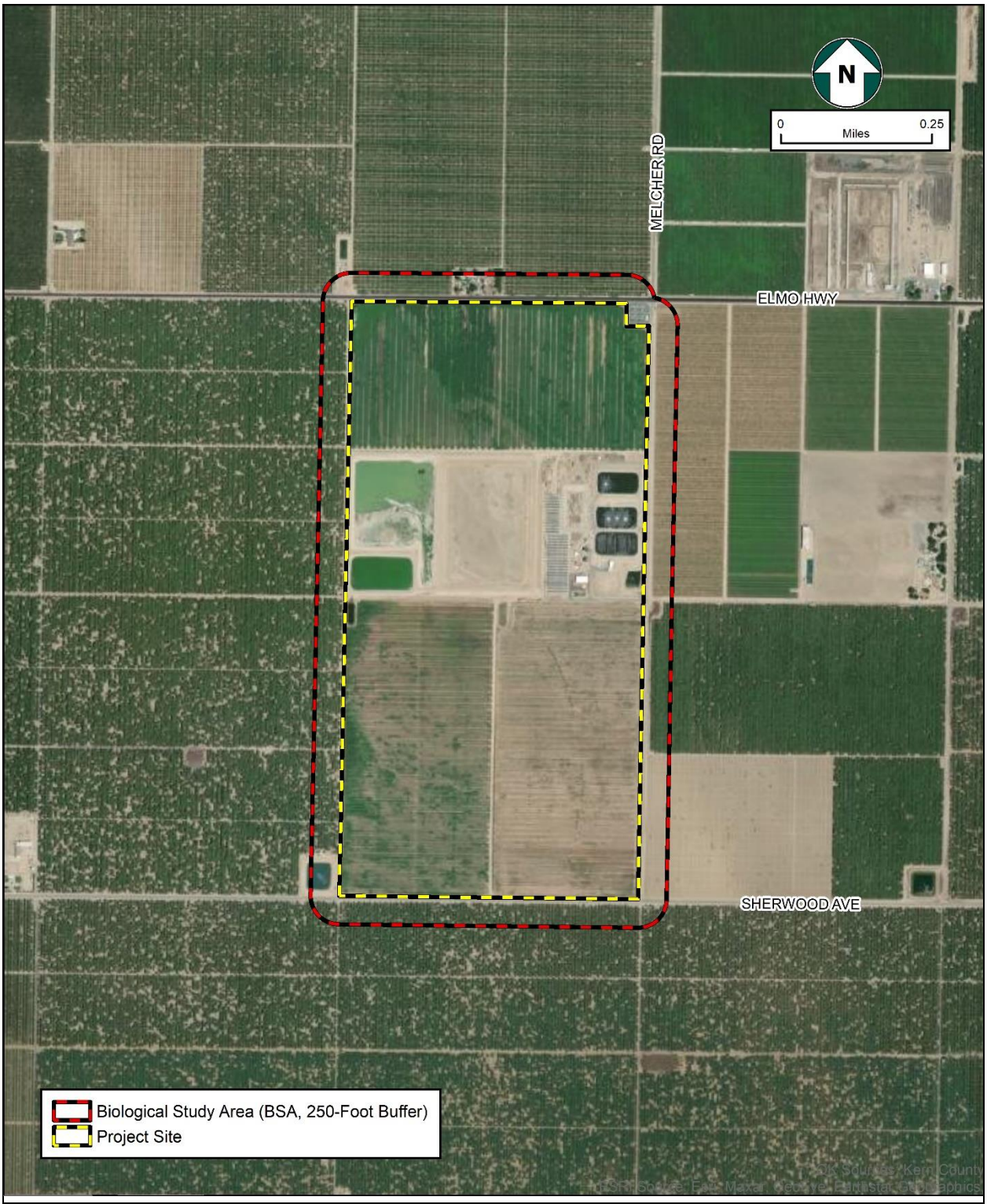

Figure 1-2
McFarland Wastewater Treatment Plant Expansion Project, Kern County, California

SECTION 2 - METHODS

2.1 - Definition of Biological Study Area

The Biological Study Area (BSA) consists of the proposed Project footprint and a surrounding 250-foot survey buffer (Figure 1-2).

2.2 - Definition of Special-Status Species

Special-status species evaluated in this BAR include:

- Species listed as threatened or endangered under the Federal Endangered Species Act (FESA); species that are under review may be included if there is a reasonable expectation of listing within the life of the project,
- Species listed as candidate, threatened, or endangered under the California Endangered Species Act (CESA),
- Species designated as Fully Protected, Species of Special Concern, or Watch List by the California Department of Fish and Wildlife (CDFW),
- Other species included on the CDFW's Special Animals List,
- Plant species with a California Rare Plant Rank (CRPR), and
- Species designated as locally important by the Local Agency and/or otherwise protected through ordinance or local policy.

The potential for each special-status species to occur in the study area was evaluated according to the following criteria:

- No Potential to Occur. Habitat on and adjacent to the site is clearly unsuitable to meet the needs of the species (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime), and species would have been identified on-site if present (e.g., oak trees).
- Yes, Potential to Occur. Conditions on the site may, in some way, support a portion of the species ecology (foraging, reproduction, movement/migration). Negative survey results independent of other information does not exclude the potential for a species to occur.
- Present. Species was observed on the site or has been recorded (e.g., California Natural Diversity Database, California Native Plant Society) on the site recently (within the last 5 years).

2.3 - Literature Review and Database Analysis

The following sources were reviewed for information on sensitive biological resources in the Project vicinity:

- CDFW's California Natural Diversity Database (CDFW 2022a)
- CDFW's Biogeographic Information and Observation System (BIOS; CDFW 2022b)
- CDFW's Special Animals List (CDFW 2022c)
- CDFW's California Wildlife Habitat Relationships (CWHR) System (Mayer and Laudenslayer 1988)
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2022)
- USFWS Information for Planning and Consultation system (USFWS 2022a)
- USFWS Critical Habitat Mapper (USFWS 2022b)
- USFWS National Wetlands Inventory (USFWS 2022c)
- USGS National Hydrography Dataset (USGS 2022a)
- Federal Emergency Management Agency (FEMA) flood zone maps (FEMA 2022)
- U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2022a)
- NRCS List of Hydric Soils (NRCS 2022b)
- Current and historical aerial imagery (Google LLC 2022, Netronline 2022)
- Topographic maps (USGS 2022b)

For each of these data sources, the search was focused on the *Pond* USGS 7.5-minute quadrangle in which the Project is located, plus the surrounding eight (8) quadrangles: *Allensworth, Delano West, Delano East, McFarland, Famoso, Wasco, Wasco SW,* and *Wasco NW*.

The California Natural Diversity Database (CNDDB) provides element-specific spatial information on individually documented occurrences of special-status species and sensitive natural communities. Some of the information available for review in the CNDDB is still undergoing review by the CDFW; these records are identified as unprocessed data. The CNPS database provides similar information as the CNDDB, but at a much lower spatial resolution. Much of this information in these databases is submitted opportunistically and is often focused on protected lands or on lands where various developments have been proposed. Neither database represents data collected during comprehensive surveys for special-status resources in the region. As such, the absence of recorded occurrences in these databases at any specific location does not preclude the possibility that a special-status species could be present. The National Wetlands Inventory (NWI), National Hydrography Dataset (NHD), and Web Soil Survey provide comprehensive data, but at a low resolution that requires confirmation in the field. The CDFW Special Animals List and USFWS Information for Planning and Consultation system provide no spatial data on wildlife occurrences and provide only lists of species that might potentially be present.

The results of database inquiries were reviewed to develop a comprehensive list of sensitive biological resources that may be present in the vicinity of the Project. This list was then evaluated against existing conditions observed during the site visit of the BSA to determine which sensitive resources are or could be present, and then the potential for impacts to those resources to occur from Project implementation.

2.4 - Reconnaissance-Level Field Surveys

A reconnaissance survey of the BSA was conducted on January 17, 2022, by QK Environmental Scientists Eric Madueno and Mitchell Wayman (Table 2-1). The survey consisted of walking meandering pedestrian transects throughout the BSA, where feasible. Those areas were surveyed visually with the aid of binoculars to gather a representative inventory of the plant and wildlife species present. The entire Project BSA was surveyed on foot during the day to optimize observations of biological resources.

Table 2-1
Reconnaissance Survey Personnel and Timing
McFarland Wastewater Treatment Plant Expansion Project, Kern County, California

Date	Personnel	Time	Weather Conditions	Temperature
January 17, 2022	Eric Madueno, Mitchell Wayman	0930-1120	Partly cloudy	50-55°F

General tasks completed during the survey included an inventory of plant and animal species observed, characterization of vegetation associations and habitat conditions, evaluation for presence of wetlands and waters within the BSA, an assessment of the potential for federally- and State- listed and special-status plant and wildlife species to occur on and near the Project site, and assessment for migratory birds and raptors to nest on and near the Project site. All locational data were recorded using Esri Collector for ArcGIS software installed on an iPad and site conditions were documented with representative photographs.

SECTION 3 - REGULATORY SETTING

Regulated or sensitive resources that were studied and analyzed include special-status plant and animal species, nesting birds and raptors, sensitive plant communities, jurisdictional waters and wetlands, wildlife movement areas, and locally protected resources such as protected trees. Regulatory authority over biological resources is shared by federal, State, and local authorities. Primary authority for regulation of general biological resources lies within the land use control and planning authority of local jurisdictions (in this instance, the City of McFarland).

Potential impacts to biological resources were analyzed based on the following list of statutes.

- CEQA
- FESA
- CESA
- Federal Clean Water Act
- California Fish and Game Code
- Migratory Bird Treaty Act
- The Bald and Golden Eagle Protection Act
- Porter-Cologne Water Quality Control Act
- City of McFarland General Plan

SECTION 4 - ENVIRONMENTAL SETTING

This section identifies the regional and local environmental setting of the Project site and BSA and describes existing baseline conditions. The environmental setting of the BSA was obtained from various sources of literature, databases, and aerial photographs. Information on site conditions was collected during the survey of the Project .

4.1 - Physical Characteristics

The Project is in a region dominated by agriculture located on the San Joaquin Valley floor, west of the Sierra Nevada Mountain range in Kern County. It is west of the City of McFarland and encompasses the existing wastewater treatment facility. The BSA contains nine basins associated with the existing facilty, seven of which contained water at the time of the survey, along with several existing buildings. Representative photographs of the current conditions of the BSA are included in Appendix A.

4.1.1 - TOPOGRAPHY

The topography on the site is relatively flat, with an elevation range of approximately 330 to 340 feet above mean sea level.

4.1.2 - CLIMATE

The region in which the Project is located is characterized by a Mediterranean climate of hot summers and wet, mild winters. Average high temperatures range from 56.6°F in January to 98.1°F in August, and it is not uncommon for temperatures to exceed 100°F during the summer (WRCC 2022). Average low temperatures range from 30.7°F in December to 66.4°F in August. Precipitation occurs primarily as rain, most of which falls between November and April. Precipitation may also occur as dense fog during the winter known as Tule Fog. Rain rarely falls during the summer months.

4.1.3 - LAND USE

The BSA encompasses the existing WWTP. Within the BSA has been farmed for decades (Google LLC 2022). Land surrounding the BSA is also used mainly for agricultural purposes, including orchards west and south of the BSA. There is an electrical substation on the southwest corner of Elmo Highway and Melcher Road and rural residences on the north side of Elmo Highway adjacent to the BSA.

4.1.4 - SOILS

The BSA is underlain by three soil types: McFarland loam, Wasco sandy loam, and Kimberlina fine sandy loam (Figure 4-1).

The McFarland series consists of deep, well drained soils that formed in medium textured alluvium from granitic rock sources (NRCS 2022a). McFarland soils are on alluvial fans and

flood plains and have slopes of 0 to 2 percent. The mean annual precipitation is about 7 inches and the mean air temperature is about 64 degrees F. They are at elevations of about 285 to 400 feet. They are used for growing a wide range of irrigated fruits, vegetables, and general farm crops. Vegetation in uncultivated areas is mainly annual grasses and forbs, and the McFarland series is not considered hydric by NRCS (NRCS 2022b).

The Wasco series consists of very deep, well-drained soils on recent alluvial fans and flood plains on slopes between 0 and 5 percent (NRCS 2022a). Wasco sandy loam soils are formed in mixed alluvium derived mainly from igneous and/or sedimentary rock sources. These soils can be found between 225 and 1,000 feet in the southern San Joaquin Valley, and as high as 3,700 feet in the Mojave Desert; the series is of large extent. The climate is arid to semiarid, with hot, dry summers and cool, somewhat moist winters. Mean annual precipitation is 4 to 7 inches and mean annual temperature is between 59 and 62 °F in the Mojave Desert and 62 and 65 °F in the San Joaquin Valley. Wasco soils are used primarily for growing field, forage, and row crops; some areas are used for livestock grazing, wildlife habitat, recreation, and homesites. Natural vegetation is saltbush (*Atriplex* sp.) and annual grasses and forbs. Wasco series soils are not hydric in the vicinity of the Project (NRCS 2022b).

The Kimberlina series consists of very deep, well-drained soils on flood plains and recent alluvial fans (NRCS 2022a). These soils are formed in mixed alluvium derived primarily from igneous and/or sedimentary rock sources. Slopes range from 0 to 9 percent at elevations from 125 to 2,250 feet. The climate is arid with hot, dry summers and cool winters. Mean precipitation is 4 to 8 inches annually and the mean annual air temperature ranges from 59 to 62 °F. Kimberlina soils are used for irrigated field, forage, and row crops, and for livestock grazing. When undisturbed these soils support annual grasses, forbs, and saltbush (*Atriplex* sp.). This soil type may be considered hydric under criteria 2 and/or 4 as defined by NRCS (NRCS 2022b).

4.1.5 - HYDROLOGY

The NWI and NHD map several wetlands within the BSA (Figure 4-2; USFWS 2022c, USGS 2022). All of these water features correspond to various human- made retention ponds and lagoons associated with the existing WWTP. Seven of these ponds contained water at the time of the survey, while two were dry. None of the ponds were vegetated and no impacts are anticipated outside of the Project footprint. The entire Project is situated within an Area of Minimal Flood Hazard as defined by FEMA (FEMA 2022).

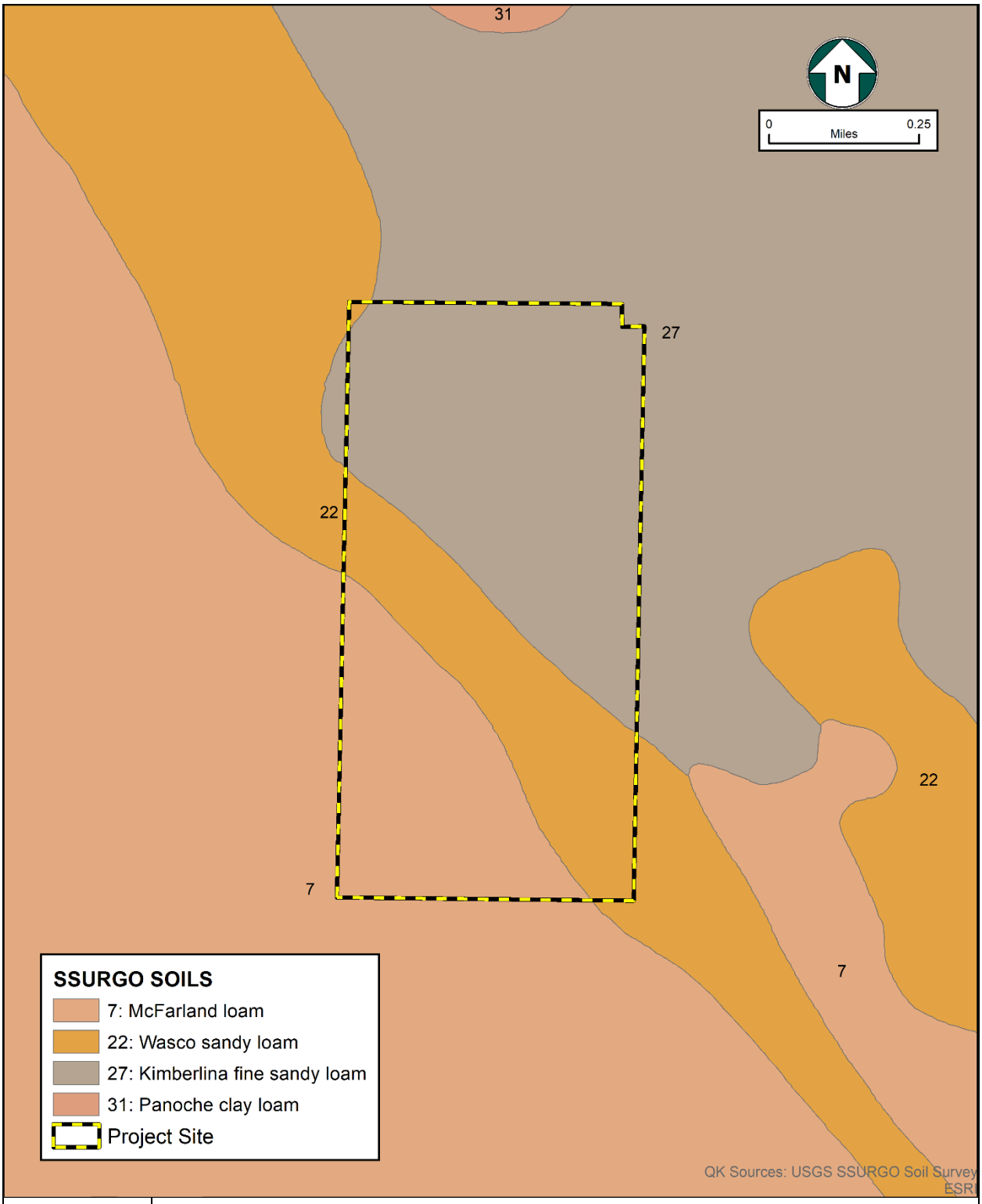

Figure 4-1
Soils Mapped within the BSA
McFarland Wastewater Treatment Plant Expansion Project,
Kern County, California

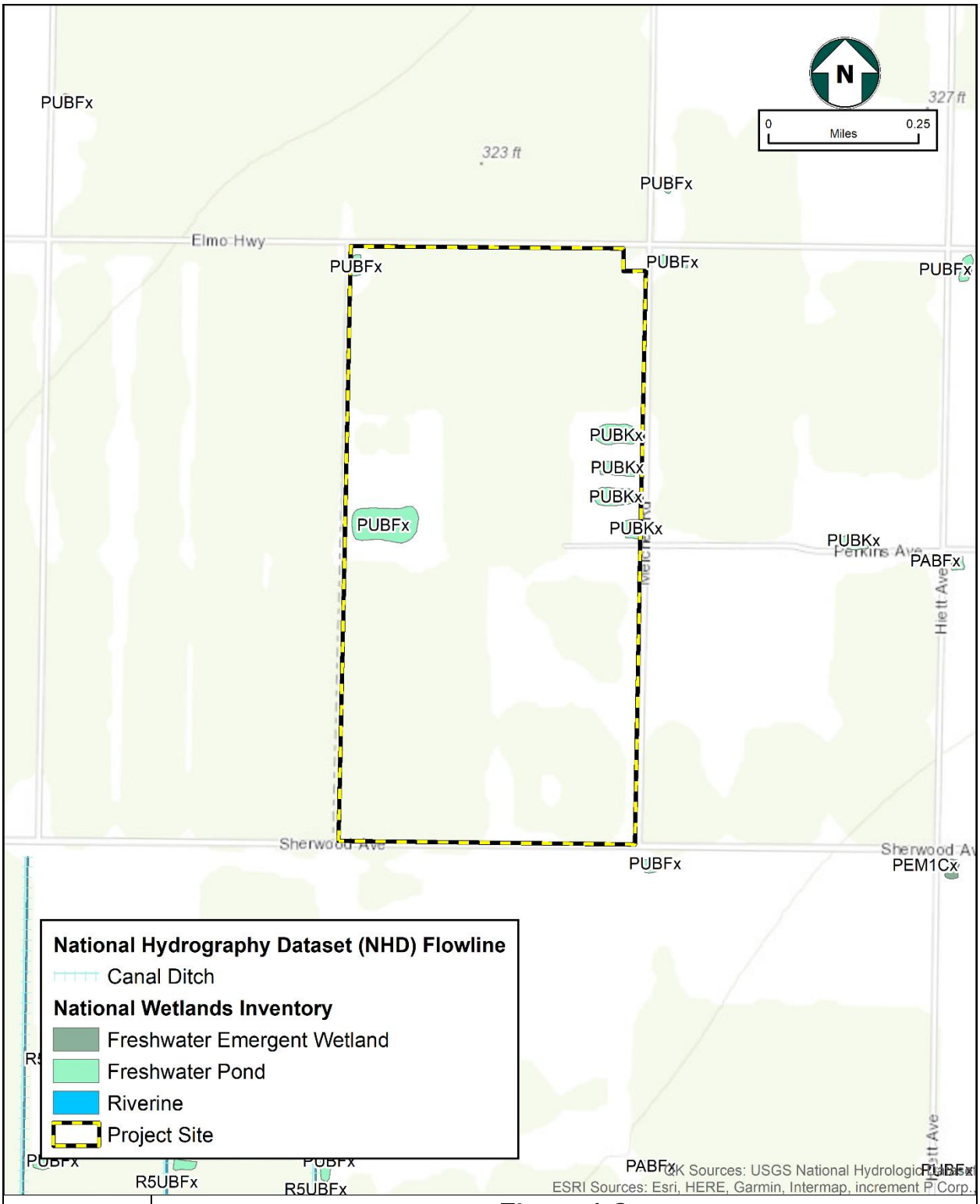

Figure 4-2
NWI & NHD Records of Aquatic Resources
McFarland Wastewater Treatment Plant Expansion Project,
Kern County, California

4.2 - Vegetation and Other Land Cover

Five habitat types were observed within the BSA: Irrigated Hayfield, Barren, Deciduous Orchard, Vineyard, and Urban. The habitats observed on-site have been described in the context of the California Wildlife Habitat Relationships (Mayer and Laudenslayer 1988).

Table 4-1
Habitat Acreages Observed On-Site

Habitat Type	Project Acreages	BSA Acreages
Irrigated Hayfield	232.35	0
Barren	79.16	2.98
Deciduous Orchard	0	52.46
Vineyard	0	22.88
Urban	0	12.76

4.2.1 - IRRIGATED HAYFIELD

Mayer and Laudenslayer (1988) describe This habitat includes alfalfa fields and grass hayfields. (Cereal grain fields, whether harvested for hay, grain or straw, should be classified as IGR or DGR.) Alfalfa usually exists unplowed for approximately 3 years or more, followed by a cereal grain crop, vegetables, potatoes or tomatoes for 1-4 years before being planted to alfalfa again. Most hay fields in the warmer parts of California are monocultures of alfalfa. In cooler areas, both alfalfa and introduced grass hay are common and are regularly irrigated. Occasionally, "native" hay fields are irrigated to enhance their productivity. Native hay fields may include introduced grasses and forbs, but they are managed less intensively and contain a variety of naturally-occurring graminoids and forbs as well. Alfalfa fields generally will be monocultures except for weeds and small inclusions of roads and ditches. Roads will be mostly barren, while ditch banks, if vegetated, will support plants similar to those found in FEW. The mixture of grasses and forbs (mostly legumes) varies according to the region of the state (climate, soils), seed mixture used, tillage, irrigation, years since initial planting, and weed control.

The BSA contains Irrigated alfalfa field habitat within the northern and southern thirds of the Project area. These alfalfa fields also had grazing sheep present in the southeastern portion of the Project.

4.2.2 - BARREN

Mayer and Laudenslayer (1988) describe Barren habitat as a permanently non-vegetated habitat, which is any habitat with <2% total vegetation cover by herbaceous, desert, or non-wildland species and <10% cover by tree or shrub species is defined this way. Barren habitat may be found in combination with many different habitats, depending on the region of the state. Where there is little or no vegetation, structure of the non-vegetated substrate becomes a critical component of the habitat. Certain bird species including cormorants,

hawks, and falcons nest on rock ledges and other species including plovers, stilts, avocets, gulls, terns, nighthawks, and poorwills rely on open ground covered with sand or gravel to construct scrape nests and bank swallows will use vertical cliffs along river corridors to nest and seek cover. Rocky canyon walls above open water are preferred foraging habitat for many species of bats. Some lizard species rely on open sandy soils in the desert for burrowing and laying eggs and some mammals rely on alpine talus slopes for cover. Barren habitat typically consists of an inhospitable environment for plants including extreme temperatures, near-vertical slopes, impermeable substrate, either natural or anthropogenic constant disturbances, or soil lacking or containing excessive organic matter or minerals. Barren habitat can occur throughout California at any elevation.

Barren habitat exists near the center of the Project site within the waste water treatment plant. As well as in small segments in the northwestern and southwestern corners of the BSA.

4.2.3 - DECIDUOUS ORCHARD

Mayer and Laudenslayer (1988) describe Deciduous Orchards as typically open, monoculture tree dominated habitats. Depending on the tree type and pruning methods they are usually low, bushy trees with an open understory and spaced uniformly to facilitate harvest. Common species of Deciduous Orchards include almonds, apples, apricots, cherries, figs, nectarines, peaches, pears, pecans, pistachios, plums, pomegranates, prunes, and walnuts. Trees range in height at maturity for many species from 15 to 30 feet but may be 10 feet or less for some species (pomegranates and some dwarf varieties) or 60 feet or more (pecans and walnuts). Crowns usually touch and are usually in a linear pattern. Spacing between the trunks of trees is uniform depending on desired spread of mature trees. The understory is often managed to prevent understory growth and is composed of bare ground, or is composed of low-growing grasses, legumes, and other herbaceous plants. Wildlife such as deer and rabbit browse on the trees; other wildlife such as squirrels and birds feed on fruit or nuts. Some wildlife (e.g. mourning dove and California quail) may use this habitat for cover and nesting. Other wildlife such as northern flicker, scrub jay, America crow, plain titmouse, Brewer's blackbird, house finch, band-tailed pigeon, yellow-billed magpie, western bluebird, American robin, varied thrush, northern mockingbird, cedar waxwing, yellow-rumped warbler, black-headed grosbeak, Bullock's oriole, gray squirrel, California ground squirrel, desert cottontail, western gray squirrel, coyote, black bear, raccoon, and mule deer commonly feed on nuts or fruits within the orchard. Deciduous Orchards are mostly grown on flat alluvial soils in the valley floors, in rolling foothill areas, or on relatively steep slopes. Most are in valley or foothill areas, with a few, such as, apples and pears, up to 3,000 feet elevation.

Deciduous orchard is present along the north, west, and south boundaries of the BSA.

4.2.4 - VINEYARD

Mayer and Laudenslayer (1988) describe Vineyards as being composed of single species planted in rows, usually supported on wood and wire trellises. vines are normally intertwined in the rows but open between rows. Rows under the vines are usually sprayed

with herbicides to prevent growth of herbaceous plants. Between rows of vines, grasses and other herbaceous plants may be planted or allowed to grow as a cover crop to control erosion.

Vineyards are present along the eastern portion of the BSA.

4.2.5 - URBAN

Mayer and Laudenslayer (1988) describe the structure of urban vegetation varies, with five types of vegetative structure defined: tree grove, street strip, shade tree/lawn, lawn, and shrub cover. Tree groves, common in city parks, green belts, and cemeteries, vary in height, tree spacing, crown shape, and understory conditions, depending upon the species planted and the planting design. However, they have a continuous canopy. Mature tree groves in San Francisco vary in height from 19.3 m (64 ft) (eucalyptus) to 14.5 m (48 ft) (Monterey cypress). Ground cover in these areas range from 0 to 90 percent (McBride and Froehlich 1 984). Street tree strips show variation in spacing of trees, depending upon species and design considerations. Both continuous and discontinuous canopies are observed. Most street tree strips are planted in grass, but other ground covers are not uncommon. Shade trees and lawns are typical of residential areas and reminiscent of natural savannas. Structural variation in the shade tree/lawn type is typical when a large number of species are incorporated in the landscape. Lawns are structurally the most uniform vegetative units of the California urban habitat. A variety of grass species are employed, which are maintained at a uniform height and continuous ground cover. Biomass productivity is greater than natural grasslands because of irrigation and fertilization (Falk 1977). Shrub cover is more limited in distribution than the other structural types. Hedges represent a variation of the urban shrub cover type. Species, planting design, and maintenance control the structural characteristics of this types. Height ranges from 10 cm (4 in) tall to tree height.

Urban development is present in small areas in the north and northeast corner of the BSA.

4.3 - General Wildlife Observations

Wildlife occurring within the BSA was typical for the habitats that were present, including wading birds and waterfowl such as great blue heron (*Ardea herodias*) and American coot (*Fulica americana*). Tracks of raccoon (*Procyon lotor*) and burrows of Botta's pocket gopher (*Thomomys bottae*) were also observed.

No federally or State listed special-status species or sign of them were observed during the survey. A complete list of wildlife observations is included in Appendix B.

SECTION 5 - SENSITIVE BIOLOGICAL RESOURCES

Local, State, and federal agencies regulate special-status species and other sensitive biological resources and require an assessment of their presence or potential for presence to be on-site prior to the approval of proposed development on a property. This section discusses sensitive biological resources observed on the project site and evaluates the potential for the Project site to support additional sensitive biological resources. Assessments for the potential occurrence of special-status species are based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB and CNPS, species occurrence records from other sites in the vicinity of the survey area, previous reports for the project site, and the results of surveys of the Project site.

5.1 - Special-Status Species

There were no special-status plant species identified within the Project site or survey buffer and based on historical disturbance and current conditions none are expected to occur. However, three special-status animal species were determined to have potential to occur on-site and potentially be affected by the Project (Table 5-1). The complete list of species identified by the database search (CNDDB, IPaC CNPS, available literature, etc.) and evaluated for this Project is included in Appendix C. Each species with potential to occur on the site is further discussed in the subsections below.

Table 5-1
Special-Status Species with Potential to Occur On-Site

Scientific Name Common Name	Status Fed/State ESA CRPR/CDFW	Potentially Affected by Project? Yes/No	Viability Threat? Yes/No
Taxidea taxus American badger	-/- -/SSC	Yes	No
Buteo swainsoni *Swainson's hawk*	-/ST -/-	Yes	No
Vulpes macrotis mutica *San Joaquin kit fox*	FE/ST -/-	Yes	No

FE Federally Endangered
FT Federally Threatened
SE State Endangered
ST State Threatened
SSC State Species of Special Concern

5.1.1 - SPECIAL-STATUS PLANT SPECIES

The literature and database review identified 20 special-status plant species known to occur or with potential to occur within the vicinity of the Project (See evaluation table in Appendix D). None of those species were determined to have potential to occur within the BSA because all areas have been previously disturbed and/or are developed and no longer support suitable habitat for those species, outside of the know range of the species, habitat that does not support the species, or other environmental conditions.

5.1.2 - SPECIAL-STATUS ANIMAL SPECIES

The literature review identified 23 special-status animal species known or with potential to occur in the vicinity of the project (see the evaluation table in Appendix C). Of those, three were determined to have the potential to occur on-site.

San Joaquin kit fox

VULPES MACROTIS MUTICA

Status: Federally Endangered, State Threatened

The San Joaquin kit fox (SJKF) is a subspecies of kit fox that is endemic to the San Joaquin Valley, Carrizo Plain, and Cuyama Valley, as well as other small valleys in the western foothills of the Central Valley of California (USFWS 1998). They occupy arid to semi-arid grasslands, open shrublands, savannahs, and grazed lands with loose-textured soils. SJKF are well-established in some urban areas and are highly adaptable to human-altered landscapes. They generally avoid intensively maintained agricultural land but will forage into croplands surrounding suitable habitat. SJKF uses subterranean dens year-round for shelter and pup-rearing. They are nocturnally active but may be above ground near their dens during the day, particularly in the spring. They feed primarily on small mammals, but will consume a variety of prey, and will scavenge for human food.

The nearest CNDDB occurrence (EONDX 67165) is from 2005 and approximately 6 miles northeast of the Project site and is presumed extant (CDFW 2022a). No SJKF were observed during the survey. No kit fox or diagnostic sign (e.g., tracks, scat, prey remains, or dens) were observed during the reconnaissance survey. This species is a highly mobile transient forager which preys on small burrowing mammals and has adapted well to urbanized settings, even feeding on anthropogenic food sources. Suitable foraging and denning habitat are present within the BSA and the species may pass through as a transient.

Swainson's Hawk

BUTEO SWAINSONI

Status: State Threatened

Swainson's hawks occur in grassland, desert, and agricultural landscapes throughout the Central Valley and Antelope Valley (Bechard et al. 2010, Zeiner et al. 1990). Some hawks may be resident, especially in the southern portion of their range, while others may migrate between winter and breeding habitats. They prefer larger isolated trees or small woodlots for nesting, usually with grassland or dry-land grain fields nearby for foraging and have been known to nest in large eucalyptus trees along heavily traveled freeway corridors. Swainson's hawks forage in grassland, open scrub, pasture, and dryland grain agricultural habitats, primarily for rodents. Swainson's hawks exhibit a moderate to high nest site fidelity for successful nest sites.

The nearest occurrence was recorded in 1929, 5 miles southwest of the Project, where a stick nest was observed in a cottonwood tree. (EONDX 91379; CDFW 2022b).

Based on information from the reconnaissance site visit, there are large planted trees in urban areas in the vicinity of the Project. The alfalfa fields within the Project site could provide limited foraging opportunities for the Swainson's hawk.

American Badger

TAXIDEA TAXUS

Status: CDFW Species of Special Concern

The American badger *(Taxidea taxus*) occurs mostly in open, drier stages of shrub, forest, and herbaceous habitats, with friable soils. It feeds mostly on fossorial rodents. It digs burrows for cover and reproduction and can dig a new den each night. Litters are typically born in March and April. This species can be somewhat tolerant of human activities but generally avoids cultivated agricultural habitats.

There were no CNDDB occurrences within 10 miles of the Project. However, the Project is within the known range of the species and it may be present as a transient forager.

5.2 - Sensitive Natural Communities

Sensitive natural communities are designated by various resource agencies including the CDFW, USFWS, Bureau of Land Management, U.S. Forest Service, or are designated by local agencies through policies, ordinances, and regulations. Sensitive natural communities generally have important functions or values for plants and wildlife or are recognized as declining in extent or distribution and warrant some level of protection.

5.2.1 - SENSITIVE PLANT COMMUNITIES

The CNDDB search resulted in two sensitive natural communities occurring in the region of the Project: Valley Saltbush Scrub and Valley Sink Scrub. Neither of these communities were determined to have potential to occur within the BSA because all areas have been previously disturbed and/or are developed and no longer support suitable habitat for sensitive natural communities.

5.2.2 - CRITICAL HABITATS

Habitat may be designated as Critical Habitat by the U.S. Fish and Wildlife Service (USFWS), which are blocks of habitat that may or may not be currently occupied by species that are of the highest priority for the survival, conservation, and recovery of threatened or endangered species.

There are no mapped Critical Habitats on or near the Project site. The nearest Critical Habitat is located approximately 12-miles north-northwest of the Project site for the vernal pool fairy shrimp. Vernal pool fairy shrimp are not present on the Project site nor does the site provide suitable habitat for this species (Figure 5-2).

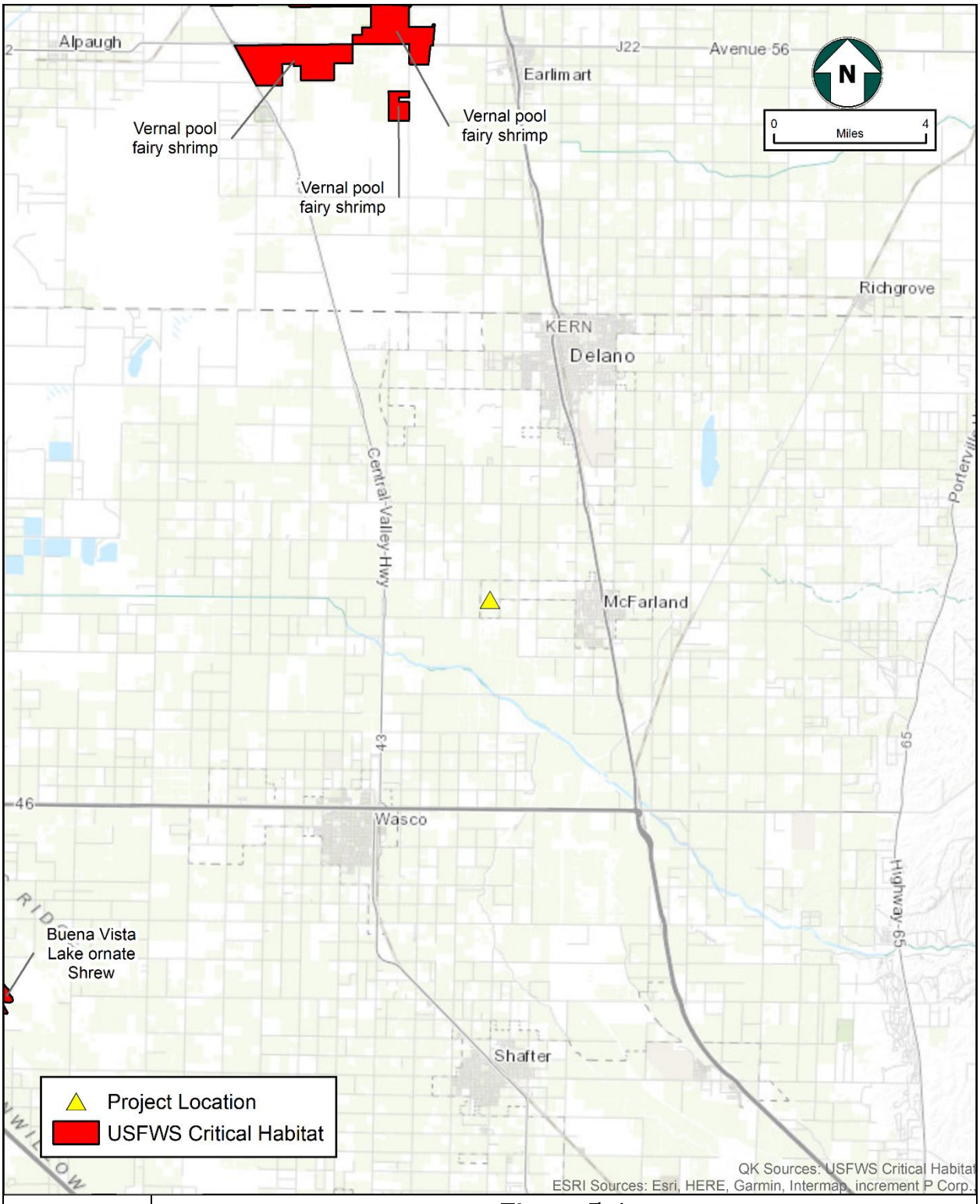

Figure 5-1
Critical Habitat in the Project Vicinity
McFarland Wastewater Treatment Plant Expansion Project,
Kern County, California

5.3 - Jurisdictional Aquatic Resources

The literature review, NHD, and NWI identified seven Waters of the U.S. or wetland features within the Project site, however these are existing artificial retention ponds within the WWTP and are not federally or State jurisdictional.

5.4 - Wildlife Movement

Wildlife movement corridors, also referred to as dispersal corridors or landscape linkages, are generally defined as linear features along which animals can travel from one habitat or resource area to another. Wildlife movement corridors can be large tracts of land that connect regionally important habitats that support wildlife in general, such as stop-over habitat that supports migrating birds or large contiguous natural habitats that support animals with very large home ranges (e.g., coyotes [*Canis latrans*], mule deer [*Odocoileus hemionus californicus*]). They can also be small scale movement corridors, such as riparian zones, that provide connectivity and cover to support movement at a local scale.

The literature review and database search did not identify any wildlife movement corridors on or near the Project site.

5.5 - Resources Protected by Local Policies and Ordinances

The Project does not conflict with the City of McFarland 2040 General Plan.

5.6 - Habitat Conservation Plans

The Project is located within an area covered by the PG&E San Joaquin Valley Operation and Maintenance Habitat Conservation Plan (HCP). This HCP applies to maintenance and operations of PG&E facilities only and does not apply to the Project.

SECTION 6 - IMPACT ANALYSIS AND RECOMMENDED MINIMIZATION MEASURES

This section provides an analysis of the potential for special-status biological resources to be impacted by the proposed Project. The analysis was developed using the CEQA Appendix G questions, but also provides sufficient information to support NEPA documentation.

6.1 - Special-Status Species

The proposed project would have a significant effect on biological resources if it would:

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.*

Avoidance and minimization measures are designed to reduce or eliminate impacts to special-status species during Project construction activities. Detailed specific measures are outlined below for each special-status species that may occur on the Project footprint.

6.1.1 - PROJECT IMPACTS TO SPECIAL-STATUS PLANT SPECIES

There is no suitable habitat for any of the 20 special-status plant species with potential to occur in the vicinity of the Project. Mitigation and minimization measures are not warranted for these species.

6.1.2 - PROJECT IMPACTS TO SPECIAL-STATUS ANIMAL SPECIES

Twenty-three special-status wildlife species were shown to have potential to occur within the BSA or in its vicinity during the database search. Of these, three were determined to potentially occur on the BSA based on current habitat conditions: San Joaquin kit fox, Swainson's hawk, and American badger. Potential impacts to these species are described below.

San Joaquin Kit Fox

There is no evidence that San Joaquin kit fox is present within the BSA, but the alfalfa fields and the presence of gophers within the Project site could provide limited foraging habitat. Because this species is highly mobile, there is a potential that San Joaquin kit fox could become established in these areas or be present from time to time throughout the BSA as transient foragers.

Potential impacts to this species could occur if there is an active San Joaquin kit fox den or transient individual within or near the area of development during construction activities. Potential direct impacts resulting in injury, death, or entrapment in dens, trenches, or pipes could occur if a San Joaquin kit fox occupies the construction area or travels through. Noise, vibration, and the presence of construction workers could alter normal behaviors if kit foxes

are present, which could affect reproductive success and overall fitness. Implementation of mitigation measures BIO-1 through BIO-3would reduce impacts to the species.

Swainson's Hawk

No SWHA were observed during the survey. The Project site is not considered high quality foraging or nesting habitat, however the alfalfa fields on site may provide foraging habitat. Potentially suitable nesting sites are located within 0.5-mile associated with ornamental trees on surrounding residential areas. The current condition of the Project site provides marginal foraging habitat due to a relatively small-available foraging area.

Impacts to individual nesting SWHA outside of the Project site could occur if construction activities occur near an active nest. Noise and vibration from construction of the Project, and the presence of construction workers, could alter the normal behaviors of nesting adults within 0.5-mile of the nest site and affect reproductive success.

Implementation of Measures BIO-1 through BIO-3 would reduce impacts to this species.

American Badger

There is no evidence that American badger is present with the BSA, however the alfalfa fields could provide potential foraging habitat. The presence of gophers within the Project site could provide limited foraging. Because this species is mobile, there is also potential that the American badger could become establish in these areas or be present from time to time throughout the suitable habitat within the BSA as a transient forager.

Potential impacts to this species could occur if there is an active American badger den or transient individual within or near the area of development during construction activities. Potential direct impacts resulting in injury, death, or entrapment in dens, trenches, or pipes could occur if an American badger occupies the construction area or travels through. Noise, vibration, and the presence of construction workers could alter normal behaviors if badgers are present, which could affect reproductive success and overall fitness. Implementation of mitigation measures BIO-1 through BIO-3 as listed below, would reduce any potential impacts to the American badger.

Nesting Birds

Nesting birds are protected by the MBTA. No bird nests were identified during the site survey. However, the BSA supports several habitats for nesting birds, which may nest on trees and shrubs, man-made structures, and directly on the ground. Migratory birds could nest throughout the entire BSA.

Construction activities and vegetation removal could lead to the destruction of nests. Construction-related vibration, noise, and dust production, and human presence could alter the normal behaviors of nesting birds in the vicinity of the Project and lead to nest failure.

To avoid and minimize impacts to migratory birds including special-status bird species, mitigation measures BIO-1 through BIO-3 should be implemented during construction to reduce impacts to nesting birds.

MM BIO-1. The City shall have a qualified biologist conduct pre-disturbance surveys for the kit fox no less than 14 days and no more than 30 days prior to any construction-related activities. The primary objective is to identify kit fox habitat features (potential dens and refuges) on the project site and within a 200-foot buffer zone, and to evaluate them sufficiently to ascertain if a kit fox is using them. If an active kit fox den is detected within the area of work or the 200-foot buffer zone, the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS) shall be contacted immediately to determine the best course of action. If no kit fox activity is detected, the project work shall continue as planned, and a brief written report shall be submitted to the CDFW and USFWS within 5 days of completion of the surveys.

MM BIO-2. The City shall retain a qualified biologist to conduct pre-disturbance burrowing owl surveys on the project site prior to construction or site preparation activities. The surveys shall be conducted no more than 30 days prior to commencement of construction activities. Occupied burrows should not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by CDFW verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation, or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. If burrowing owls are observed using burrows during the surveys, owls shall be excluded from all active burrows through the use of exclusion devices placed in occupied burrows in accordance with CDFW protocols. In such case, exclusion devices shall not be placed until the young have fledged, as determined by a qualified biologist, and found to be no longer dependent upon the burrow. Specifically, exclusion devices, utilizing one-way doors, shall be installed in the entrance of all active burrows. The devices shall be left in the burrows for at least 48 hours to ensure that all owls have been excluded from the burrows. Each of the burrows shall then be excavated by hand and backfilled to prevent reoccupation. Exclusion shall continue until the owls have been successfully excluded from the site, as determined by a qualified biologist.

MM BIO-3. The City shall have pre-disturbance surveys conducted by a qualified biologist (e.g., experienced with the nesting behavior of bird species of the region) within 30 days prior to ground disturbance activities associated with construction or grading, which would occur during the nesting/breeding season of native bird species potentially nesting on the site (typically February through September in the project region). These surveys would determine if active nests of bird species protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are present in the construction zone or within 300 feet (500 feet for raptors) of the construction zone.

If active nests are found, clearing and construction within 300 feet of the nest (500 feet for raptors), or at a distance deemed sufficient by the qualified biologist, shall be postponed or halted until the nest is vacated and juveniles have fledged, and there is no evidence of a subsequent attempt at nesting. Limits of construction to avoid an active nest shall be

established in the field with flagging, fencing, or other appropriate barrier; and construction personnel shall be instructed on the sensitivity of nest areas. The biologist shall serve as a construction monitor during those periods when construction activities shall occur near active nest areas to ensure that no inadvertent impacts on these nests shall occur. The results of the survey and any avoidance measures taken shall be submitted to the City and CDFW within 30 days of completion of the pre-disturbance surveys and/or construction monitoring to document compliance with applicable state and federal laws pertaining to the protection of native birds.

Avoidance and Minimization Measures

The previously adopted IS/MND and Mitigation Monitoring and Reporting Program included three mitigation measures MM BIO-1 through MM BIO-3. Implementation of these measures listed below would reduce impacts of the Project to special-status wildlife species to level that would be less than significant.

6.2 - Sensitive Natural Communities and Critical Habitat

There are no sensitive natural communities present on the Project and there would be ***no impacts*** to sensitive natural communities.

6.3 - Jurisdictional Aquatic Resources

There are no identified jurisdictional water features or federal waters, or wetlands located on or near the Project. Therefore, the Project will result in ***no impacts*** to any waters or wetlands.

6.4 - Wildlife Movement

There are no identified movement corridors on or near the Project site. The Project site may be used by transient foragers such as SJKF. The open landscape creates a foraging habitat, which may be used from time to time by these species. The Project will result in ***no impacts*** to fish or wildlife movement corridors, linkages or nursey sites.

6.5 - Local Policies and Ordinances

The Project does not conflict with the City of McFarland General Plan or any other local ordinances. Therefore, there are no impacts with respect to local policies and ordinance and no measures are warranted Adopted or Approved Plans.

6.6 - Adopted or Approved Plans

The proposed project would have a significant effect on biological resources if it would:

b) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan.

The Project is located within an area covered by the PG&E San Joaquin Valley Operation and Maintenance HCP. This HCP applies only to PG&E's activities and does not apply to this Project. No Project impacts related to adopted or approved plans would occur, and no measures are warranted.

SECTION 7 - LIMITATIONS, ASSUMPTIONS, AND USE RELIANCE

This Biological Analysis Report has been performed in accordance with professionally accepted biological investigation practices conducted at this time and in this geographic area. The findings and opinions conveyed in this report are based upon on-site field examinations, jurisdictional areas, and specified historical and literature sources. The biological investigation is limited by the scope of work performed. Biological surveys conducted as part of this assessment may not have been performed during a particular blooming period, nesting period, or particular portion of the season when positive identification of certain taxa would be expected if present, and therefore cannot be considered definitive. The biological surveys are limited also by the environmental conditions present at the time of the surveys. In addition, general biological (or protocol) surveys do not guarantee that the organisms are not present and will not be discovered in the future within the site. In particular, mobile animal species could occupy the site on a transient basis or re-establish populations in the future. No other guarantees or warranties, expressed or implied, are provided.

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APPENDIX A

REPRESENTATIVE PHOTOGRAPHS

Photograph 1: Reference photo of the Project on the southeast edge, facing north.
GPS Coordinates: 35.681763, 119.276821.
Photograph taken by M. Wayman on January 17, 2022.

Photograph 2: Reference photo WWTP southeast on site, facing west.
GPS Coordinates: 35.681763, 119.276821.
Photograph taken by M. Wayman on January 17, 2022.

Photograph 3: Reference photo WWTP central north on site, facing north.
GPS Coordinates: 35.684614, 119.278074.
Photograph taken by M. Wayman on January 17, 2022.

Photograph 4: Reference photo WWTP central north on site, facing east.
GPS Coordinates: 35.684614, 119.278074.
Photograph taken by M. Wayman on January 17, 2022.

Photograph 5: Reference photo WWTP central north on site, facing south.
GPS Coordinates: 35.684614, 119.278074.
Photograph taken by M. Wayman on January 17, 2022.

Photograph 6: Reference photo WWTP central north on site, facing west.
GPS Coordinates: 35.684614, 119.278074.
Photograph taken by M. Wayman on January 17, 2022.

Photograph 7: Reference photo WWTP southwest on site, facing east.
GPS Coordinates: 35.681651, 119.285277.
Photograph taken by E. Madueno on January 17, 2022.

Photograph 8: Reference photo WWTP southwest on site, facing south.
GPS Coordinates: 35.681651, 119.285277.
Photograph taken by E. Madueno on January 17, 2022.

Photograph 9: Reference photo WWTP southwest on site, facing north.
GPS Coordinates: 35.681651, 119.285277.
Photograph taken by E. Madueno on January 17, 2022.

Photograph 10: Reference photo BSA northeast corner, facing south.
GPS Coordinates: 35.687939, 119.276534.
Photograph taken by E. Madueno on January 17, 2022.

Photograph 11: Reference photo BSA northeast corner, facing northwest.
GPS Coordinates: 35.687939, 119.276534.
Photograph taken by E. Madueno on January 17, 2022.

Photograph 12: Reference photo BSA southwest corner, facing north.
GPS Coordinates: 35.674423, 119.285421.
Photograph taken by M. Wayman on January 17, 2022.

Photograph 13: Reference photo BSA southwest corner, facing east.
GPS Coordinates: 35.674423, 119.285421.
Photograph taken by M. Wayman on January 17, 2022.

Photograph 14: Potential stick nests in tree middle of WWTP lagoon, facing south.
GPS Coordinates: 35.684553, 119.283169.
Photograph taken by E. Madueno on January 17, 2022.

Photograph 15: Reference photo BSA center, facing south.
GPS Coordinates: 35.681456, 119.280805.
Photograph taken by E. Madueno on January 17, 2022.

APPENDIX B

PLANT AND ANIMAL SPECIES OBSERVED WITHIN THE BIOLOGICAL STUDY AREA

Table C-1
Plant Species Observed within the Biological Study Area on 01/17/2022
McFarland Wastewater Treatment Plant Expansion, Kern County, California

Scientific Name	Common Name	Status	Native or Introduced
Herbs			
Amsinckia menziesii	fiddleneck	None	Native
Erigeron canadensis	horseweed	None	Native
Erodium cicutarium	redstem filaree	None	Introduced- Cal-IPC Limited
Malva parviflora	cheeseweed	None	Introduced
Medicago sativa	alfalfa	None	Introduced
Salsola tragus	Russian thistle	None	Introduced- Cal-IPC Limited
Solanum elaeagnifolium	silverleaf nightshade	None	Introduced
Grasses			
Cynodon dactylon	Bermuda grass	None	Introduced- Cal-IPC Moderate
Schismus arabicus	Mediterranean grass	None	Introduced- Cal-IPC Limited

*Cal-IPC = California Invasive Plant Council.
Rating system: **High** = several ecological impacts; **Moderate** = substantial but not severe ecological impacts; **Limited** = minor ecological impacts or not enough information to justify higher score; **Alert** = species ranked as High or Moderate with limited distribution, but potential to spread; **Watch** = could pose a high risk of becoming invasive in the future.

Table C-2
Animal Species Observed within the Biological Study Area on 01/17/2022
McFarland Wastewater Treatment Plant Expansion, Kern County, California

Scientific Name	Common Name	Status	Native or Introduced
Birds			
Ardea herodias	great blue heron	None	Native
Aythya collaris	ring-necked duck	None	Native
Buteo jamaicensis	red-tailed hawk	None	Native
Charadrius vociferus	killdeer	None	Native
Fulica americana	American coot	None	Native
Himantopus mexicanus	black-necked stilt	None	Native
Larus delawarensis	ring-billed gull	None	Native
Mimus polyglottos	northern mockingbird	None	Native
Passer domesticus	house sparrow	None	Introduced
Sayornis nigricans	black phoebe	None	Native
Spatula clypeata	northern shoveler	None	Native
Zenaida macroura	mourning dove	None	Native
Mammals			
Otis aries	domestic sheep	None	Introduced
Procyon lotor	racoon*	None	Native
Thomomys bottae	Botta's pocket gopher*	None	Native

*Indicates only sign of the species was observed (burrows, tracks, etc.)

APPENDIX C

SPECIAL-STATUS SPECIES DATABASE SEARCH RESULTS

Table D-1
Special-Status Plant Species in the Regional Vicinity of the Project Site
McFarland Wastewater Treatment Plant Expansion, Kern County, California

Scientific Name Common Name	Status Fed/State ESA CRPR/CDFW	Habitat Requirements	Potential to Occur	Rationale
Sensitive Natural Communities				
Valley Saltbush Scrub	-/- -/-	This community consists of open, gray or blue-green chenopod scrubs, usually over a low herbaceous annual understory. Areas dominated by *Atriplex polycarpa* or *A. spinifera* may be differentiable from one another. Typically found on sandy to loamy soils without surface alkalinity, largely on rolling, dissected alluvial fans. Found in areas with long, arid summers and short, damp winters, and tule fog is often present during the winters.	No	Habitat to support this community is absent from the Project site.
Valley Sink Scrub	-/- -/-	This community consists of low, open to dense succulent shrublands dominated by alkali tolerant Chenopodiaceae, especially *Allenrolfea occidentalis* or several *Suaeda* species. Understories usually are lacking, though sparse herbaceous cover dominated by *Bromus rubens* develop occasionally. Also consists of saline or alkaline clays. Heavy, saline and/or alkaline clays of lakebeds or playas with *Allenrolfea*, salt grass, *Lasthenia*, etc.	No	Habitat to support this community is absent from the Project site.

Plants				
Allium howellii var. howellii Howell's onion	-/- 4.3	This is a perennial bulbiferous herb that blooms from March to April. It grows in clay or serpentinite soils in valley and foothill grasslands. It occurs at elevations from approximately 164 to 7,218 feet within Fresno, Kings, Kern, Merced, San Benito, Santa Clara, San Luis Obispo, and Tulare counties. Many occurrences of this species are historical and field surveys are needed. It is possibly threatened by grazing and development.	No	Habitat to support this species is absent from the BSA.
Astragalus hornii var. *hornii* Horn's milk vetch	-/- 1B.1	This is a perennial herb that blooms between May and September. It occurs in meadows and seeps, alkali playas, wetlands, salty flats, and along lake margins. It occurs at elevations ranging from approximately 200 to 1,000 feet and is known to occur in Inyo, Kern, San Bernardino, and possibly Tulare counties.	No	Habitat to support this species is absent from the BSA.
Atriplex coronata var. coronata crownscale	-/- 4.2	This is an annual herb that is endemic to California and blooms March to October. It occurs in saline and alkaline soils in chenopod scrub, meadows and seeps, and sandy soils in valley and foothill grassland. It occurs at elevations ranging from approximately sea level to 650 feet Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kern, Madera, Merced, San Joaquin, Solano, Stanislaus, Tulare, and Yolo counties. This species is threatened by competition from non-native plants and is possibly threatened by trampling.	No	Habitat to support this species is absent from the BSA.
Atriplex cordulata var. *erecticaulis*	-/- 1B.2	This annual herb blooms from August to September, sometimes into	No	Habitat to support this species is absent from the BSA.

Earlimart orache		November. It occurs in low-lying, sparsely vegetated valley and foothill grasslands and on mounds between vernal pools at elevations between approximately 130 and 330 feet. It is known primarily from the valley floor in Kings, Kern, and Tulare counties and is threatened by vehicles and possibly development and competition from non-native plants.		
Atriplex coronota var. *vallicola* Lost Hills crownscale	-/- 1B.2	This is an annual herb that is endemic to California and blooms between April and September. It occurs in dry beds of alkaline pools in chenopod scrub, valley and foothill grassland, and vernal pools. It is also found on exposed slopes rich in gypsum. It occurs at elevations ranging from 165 to 2,085 feet. It has been documented on the valley floors and lower foothills of the western Central Valley in Fresno, Kings, Kern, Merced, San Benito, San Luis Obispo, and Tulare counties. It is threatened by grazing, vehicles, and development.	No	Habitat to support this species is absent from the BSA.
Atriplex depressa brittlescale	-/- 1B.2	This is an annual herb that is endemic to California and blooms April to October. It occurs on alkaline and clay soils in chenopod scrub, meadows and seeps, playas, vernal pools, and valley and foothill grassland. It occurs at elevations ranging from sea level to 1,050 feet and is known to occur in Alameda, Contra Costa, Colusa, Fresno, Glenn, Kern, Merced, Solano, Stanislaus, Tulare, and Yolo counties. It is threatened by development, grazing, and trampling; documented on Central	No	Habitat to support this species is absent from the BSA

		Valley floor, foothills, and lower mountains.		
Atriplex minuscula lesser saltscale	-/- 1B.1	This annual herb blooms from May to October. It occurs on alkaline, sandy soils in chenopod scrub, playas, and valley and foothill grassland at elevations between approximately 50 and 655 feet. It has been documented primarily on Central Valley floor, with some lower foothill occurrences. It is threatened by agriculture and solar energy development.	No	Habitat to support this species is absent from the BSA
Atriplex subtilis subtle orache	-/- 1B.2	This is an annual herb that is endemic to California and blooms June, August, September, and possibly October. It occurs on alkaline soils in valley and foothill grassland habitats. It occurs at elevations ranging from approximately 130 to 330 feet and is known to occur in Butte, Fresno, Kings, Kern, Madera, Merced, Stanislaus, and Tulare counties. This species is threatened by agriculture and possibly solar energy development and is documented primarily on Central Valley floor.	No	Habitat to support this species is absent from the BSA.
Calochortus striatus Alkali mariposa-lily	-/- 1B.2	This is a perennial bulbiferous herb that blooms between April and June. It occurs in chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps, and in alkaline or mesic soil. It occurs at elevations ranging from approximately 230 to 5,230 feet. This species is threatened by urbanization, grazing, trampling, road construction, hydrological alterations, and water diversions that result in the lowering of the water table.	No	Habitat to support this species is absent from the BSA.

Caulanthus californicus California jewelflower	FE/SE 1B.1	This is an annual herb that blooms between February and May. It occurs in slightly alkaline sandy soils in chenopod scrub, valley and foothill grassland, and pinyon and juniper woodland, typically at elevations from approximately 200 to 3,280 feet. It occurs in the San Joaquin Valley, Carrizo Plain, and Cuyama Valley from Fresno County south to Santa Barbara County and many occurrences are presumed extirpated. It is threatened by development, grazing, and competition from non-native plants.	No	Habitat to support this species is absent from the BSA.
Cirsium crassicaule Slough thistle	-/- 1B1	This is an annual or perennial herb that blooms from May to August. It occurs in fresh water in chenopod scrub, marshes and swamps (sloughs), and riparian scrub. It occurs at elevations ranging from approximately 9 to 330 feet. This species has been documented on western alluvial plains of Central Valley in Kings, Kern and San Joaquin counties. It is threatened by agriculture and non-native plants. Population sizes can vary widely from year to year	No	Habitat to support this species is absent from the BSA.
Delphinium recurvatum recurved larkspur	-/- 1B.2	This is a perennial herb that blooms between March and June. It occurs in alkaline conditions in chenopod scrub, cismontane woodland, and valley and foothill grassland. It occurs at elevations ranging from approximately 10 to 2,590 feet. This species is endemic to California. It occurs throughout the Central Valley and Coast Ranges from Butte County south. Few occurrences are in the Antelope Valley. This species is threatened by	No	Habitat to support this species is absent from the BSA.

		agriculture and competition from non-native plants.		
Eremalche parry ssp. *kernensis* Kern mallow	-/- 1B.2	This is an annual herb that starts to bloom in January, sometimes February or March, until May. It occurs on dry, open sandy to clay soils, often at the edges of balds in chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland. It occurs at elevations ranging from approximately 230 to 4,230 feet. It has been documented in the southern San Joaquin Valley and Carrizo Plain and surrounding foothills and mountains. This species is threatened by agriculture and development, and possibly non-native plants.	No	Habitat to support this species is absent from the BSA.
Eryngium spinosepalum Spiny-sepaled button-celery	-/- 1B.2	This annual or perennial herb is endemic to California and blooms from April to June. It occurs in vernal pools and moist areas in valley and foothill grasslands at elevations between 260 and 3,200 feet. It has been documented primarily in the foothills of the Sierra Nevada mountains with scattered occurrences on the Central Valley floor and western foothills and lower mountains. The species is threatened by development, grazing, road maintenance, hydrological alterations, and agriculture.	No	Habitat to support this species is absent from the BSA
Lasthenia chrysantha Alkali-sink goldfields	-/- 1B.1	This annual herb blooms from February to June. It occurs in alkaline, vernal pool, and wet saline flats habitat at elevations of 330 feet and under.	No	Habitat to support this species is absent from the BSA
Lasthenia ferrisiae Ferris' goldfields	-/- 4.2	This is an annual herb that blooms from February to May. It occurs in alkaline and clay vernal pools. It occurs at	No	Habitat to support this species is absent from the BSA

		elevations from approximately 65 to 2,295 feet. It is threatened by development, agriculture, vehicles, and foot traffic.		
Lasthenia glabrata ssp. coulteri Coulter's goldfields	-/- 1B.1	This annual species flowers between February and June. It is found in coastal marshes and swamps, and playas and vernal pools in the interior of California at elevations between sea level and 4,000 feet.	No	Habitat to support this species is absent from the BSA
Layia munzii Munz's tidy-tips	-/- 1B.2	This is an annual herb endemic to California that blooms from March to April. It occurs in chenopod scrub and valley and foothill grassland. It occurs at elevations from approximately 492 to 2,297 feet. It is threatened by non-native plants and it possibly threatened by vehicles and foot traffic.	No	Habitat to support this species is absent from the BSA
Monolopia congdonii San Joaquin woolythreads	-/- 1B.2	This is an annual herb endemic to California that can bloom as early as February but typically blooms from March to July. It occurs on serpentine soils in openings of broad leafed upland forest, chaparral, and north coast coniferous forest, as well as cismontane woodland and valley and foothill grassland. It occurs at elevations from approximately 328 to 3,937 feet. It is threatened by development, road maintenance, and road widening and possibly threatened by logging.	No	Habitat to support this species is absent from the BSA
Trichostema ovtum San Joaquin bluecurls	-/- 4.2	This is an annual herb endemic to California that blooms from July to October. It occurs in chenopod scrub and valley and foothill grassland. It occurs at elevations from approximately 213 to 1,050 feet and is possibly threatened by recreational activities.	No	Habitat to support this species is absent from the BSA

Invertebrates				
Bombus crotchii Crotch bumble bee	-/SC -/-	This bee occurs in relatively warm and dry environments, including the inner Coast Range of California and the margins of the Mojave Desert. It inhabits grassland and scrub habitats, where it nests in abandoned rodent burrows, occasionally nesting above ground in tufts of grass, rock piles, or cavities in dead trees. This species is classified as a short-tongued species, whose food plants include *Asclepias, Chaenactis, Lupinus, Medicago, Phacelia,* and *Salvia*. The species is threatened by habitat loss and degradation, including agricultural intensification and rapid urbanization.	No	Habitat to support this species is absent from the BSA. There are no recent CNDDB occurrences within 10 miles of the Project site. There nearest CNDDB occurrence is approximately 11 miles south of the Project site and is from 1953 (EONDX 98833210).
Branchinecta lynchi vernal pool fairy shrimp	FT/- -/-	Occur a variety of vernal pool habitats that range from small, clear pools to large, turbid and alkaline pools; more common in pools less than 0.05 acre, typically as part of larger vernal pool complexes; adults active from early December to early May; pools must hold water for at least 18 days, the minimum to complete the life cycle if temperatures are optimal; eggs laid in spring and persist through dry season as cysts; current California distribution includes the Central Valley and coast ranges; threatened by habitat loss, degradation, and fragmentation, and interference with vernal pool hydrology.	No	There is no vernal pool habitat to support this species within the BSA.
Danaus plexippus Monarch butterfly	FC/- S2S3	This butterfly species occurs in various open habitats including fields, meadows, weedy areas, marshes, and roadsides. Adults make massive	No	Habitat to support this species is absent from the BSA. There are no recent CNDDB occurrences within 10 miles of the Project site.

		migrations from August to October, flying thousands of miles south to hibernate along the California coast and in central Mexico.		
Lytta molesta Molestan blister beetle	-/- G2/S2	This beetle species occurs in grasslands of the Central Valley of California and foothills of the Sierra Nevada. Adults are herbivorous, with many species feeding mostly on flowers, but some feed on foliage.	No	Habitat to support this species is absent from the BSA. There are no recent CNDDB occurrences within 10 miles of the Project site. There is one CNDDB occurrence from the 1900's Located 7 miles southeast of the Project site (EONDX 22646).
Lytta hoppingi Hopping's blister beetle	FC/- -/-	This beetle species occurs in the foothills of the southern end of the Central Valley. Adults have often been found on flowers and have been collected from late March through June. Like other members of the *Lytta* genus, females excavate shallow burrows to oviposit. *Lytta* larvae are nest parasites of solitary bees.	No	Habitat to support this species is absent from the BSA. There are no recent CNDDB occurrences within 10 miles of the Project site. There is one CNDDB occurrence from the 1900's Located approximately 5 miles southwest of the Project site (EONDX 6170).
Fish				
Hypomesus transpacificus delta smelt	FT/SE -/-	Small fish endemic to the San Francisco Estuary and the larger Sacramento-San Joaquin Delta; moves between freshwater and low salinity water throughout year; most spawning happens in tidally influenced backwater sloughs and channel edge waters; historical distribution did not extend beyond Mossdale on the San Joaquin River and Sacramento on the Sacramento River.	No	Habitat to support this species is absent from BSA. There are no CNDDB records within 10 miles of the Project.
Lampetra hubbsi Kern brook lamprey	-/- G1G2/S1S2	There are only six isolated, documented populations: Friant-Kern Canal and lower reaches of Merced River, Kaweah River, Kings River, San Joaquin River, as well as Kings River above Pine Flat Reservoir and San Joaquin River	No	Habitat to support this species is absent from BSA. There are no recent CNDDB occurrences within 10 miles of the Project site. The nearest CNDDB occurrence is located approximately 7.5 miles northeast of

		between Millerton reservoir and Redinger Dam. There is a possible 7th population in the Sacramento River watershed. They prefer silty backwaters of large rivers in foothill regions coarse gravel-rubble substrate required for spawning. They are threatened by dams, agricultural impacts on canals, urbanization, instream mining, and non-native species.		the Project site and is from 1972 (EONDX 28660).
Amphibians				
Rana draytonii California red-legged frog	FT/- SSC	Occurs primarily in and near ponds in forests, woodlands, grasslands, coastal scrub, and stream sides with plant cover. Breeding habitat may be permanent or ephemeral. Adults estivate in animal burrows or other moist refuges when aquatic habitat is dry, up to several miles from an aquatic resource. It is found throughout coastal California from Mendocino County south. Its inland distribution includes the northern Sacramento Valley and the foothills of the Sierra Nevada south to Tulare County (possibly Kern County) at elevations up to 5,000 feet.	No	There is no suitable breeding habitat within or near the BSA. There are no CNDDB records within 10 miles of the Project.
Spea hammondii western spadefoot	-/- SSC	This species is found primarily in grasslands, sometimes valley-foothill woodlands, chaparral, and alkali flats, throughout the Central Valley and its foothills and the Coast Ranges, at elevations from sea level up to 4,460 feet. Spadefoot toads spend the majority of their lives underground in self-constructed burrows or rodent burrows. They emerge in late winter or spring after rainfall to breed in	No	Breeding habitat to support this species is absent from BSA. The nearest recent CNDDB occurrence is approximately 5 miles southeast of the Project (EONDX 73060), found in 2006.

		ephemeral pools or other shallow bodies of water.		
Reptiles				
Arizona elegans occidentalis California glossy snake	-/- -/S2	This subspecies of glossy snake occurs from the eastern part of the San Francisco Bay south to northwestern Baja, California. It appears to prefer microhabitats of open areas with soil loose enough for easy burrowing. It inhabits arid scrub, rocky washes, grasslands, and chaparral. This species is nocturnal and hides under rocks, in existing burrows, or creates its own burrow during daylight hours. It is usually active from late February until November.	No	Suitable habitat is absent from the BSA. The nearest CNDDB occurrence is approximately 9 miles southeast of the Project (EONDX 105520), found in 1935.
Gambelia silus [=sila] blunt-nosed leopard lizard	FE/SE SFP	This species occurs in semiarid habitats within the southern Central Valley and Cuyama Valley. Occupied habitats are flat and have large open areas with scattered shrubs for refuge. Blunt-nosed leopard lizards use small mammal burrows for shelter and spend most of the year underground, surfacing in spring or early summer to breed and forage. Hatchlings emerge in late summer through the fall to forage and may interbreed with long-nosed leopard lizard in Cuyama Valley. The species is threatened by habitat loss and fragmentation, and drought. It is usually found at elevations between 100 and 2,400 feet.	No	Suitable habitat is absent from the BSA. There are multiple CNDDB occurrences within 10 miles of the Project, with the nearest occurrence located approximately 2.5 miles northeast of the Project (EONDX 27813) from 1959.
Masticophis flagellum ruddocki San Joaquin Coachwhip	-/- -/S2	This species occurs in open, dry, treeless areas with little or no cover. They are found in valley grassland and saltbush scrub habitats and avoid areas	No	Habitat to support these species is absent from the BSA. The nearest CNDDB occurrence is located approximately 10 miles northwest of

		that are densely vegetated. They are found from the Sacramento Valley in Colusa County southward to the Grapevine in Kern County and westward to the inner South Coast Ranges. They are threatened by habitat loss and fragmentation, conversion of large suitable habitats to agricultural use in the San Joaquin Valley and urban development in the inner Coast Ranges.		the Project (EONDX 66160) and is from 1975.
Phrynosoma blainvillii Coast horned lizard	-/- -/S2S4	This cryptic lizard prefers sandy, loose soils in grasslands, forests, woodlands, and open chaparral. Individuals are often found along sandy washes and dirt roads with scattered shrubs for cover. This species feeds almost exclusively on ants. It is found in coastal California from Baja California north to the Bay Area, southeastern desert regions, southern Central Valley flats and foothills and the surrounding mountains on drier, warmer slopes, at elevations up to 8,000 feet. The species is threatened by habitat loss and fragmentation and the spread of invasive ant species displacing native prey.	No	Habitat to support this species is absent from the BSA. There is one CNDDB occurrence within 10 miles of the Project located approximately 5 miles northwest (EONDX 34843) from 1991.
Thamnophis gigas giant gartersnake	FT/ST -/-	Highly aquatic snake found in marshes and sloughs, drainage canals, and irrigation ditches; prefers vegetation close to water for basking; does not venture more than 200 feet from aquatic habitat; elevation from sea level to 400 feet; endemic to California; currently ranges from Glenn County to southern edge of San Francisco Bay Delta, and from Merced County to northern Fresno County.	No	Habitat to support this species is absent from the BSA. There are no CNDDB occurrences within 10 miles of the Project.

Birds				
Agelaius tricolor tricolored blackbird	-/ST -/-	Colonial breeder that prefers freshwater, emergent wetlands with tall, dense cattails or tules, but also thickets of willow, blackberry, wild rose, and tall herbs; breeding colonies composed of a minimum of 50 pairs; forages in pastures, grain fields, and similar habitats near breeding areas.	No	Habitat to support this species is absent from the BSA. There are multiple CNDDB occurrences within 10 miles of the Project. The nearest CNDDB occurrence is approximately 1.7 miles southwest of the Project (EONDX 99096) from 2014.
Athene cunicularia burrowing owl	-/- SSC	Occupies variety of open, semi-arid to arid habitats throughout central and southern California, including desert regions; prefers open habitats with few shrubs or trees; most active around sunrise and sunset; utilizes burrows constructed by mammals year-round for shelter and nesting; well documented in urban areas where patches of undeveloped areas are present (e.g., canals, airports, drainage basins), and in areas of dense agricultural development where, particularly where canals provide burrow habitat; forages primarily for rodents and insects within several miles of burrow, usually in open grassy habitats if available; has been observed hunting bats and insects around parking lot lights; threats include development resulting in habitat loss/fragmentation.	No	Habitat to support this species is absent from the BSA. No individuals or sign of the species were observed during the survey. The nearest CNDDB occurrence is from 1982, approximately 5 miles north of the Project (EONDX 6128).
Buteo swainsoni Swainson's hawk	-/ST -/-	Occurs in grassland, desert and agricultural landscapes in the Central Valley and Antelope Valley; hawks may be resident or migrant; breeds in stands with few trees in juniper-sage flats, riparian areas, and oak savannah; also observed breeding in large	Yes	There is suitable foraging habitat throughout the BSA. There are suitable nesting trees within 0.5-mile of the Project. No individuals or sign of the species were observed during the survey. There is one CNDDB occurrence within 10 miles of the

		eucalyptus trees along freeways and in trees over rural residences surrounded by agriculture; may nest on ground if no suitable trees are available; nests are platform of sticks, bark, and fresh leaves at or near top of trees; breeds from late March to late August; forages in grassland, open scrub, and grain fields, primarily for rodents.		Project located approximately 5 miles southwest (EONDX 91379) and is from 1929.
Toxostoma lecontei Le Conte's thrasher	-/- G4/S3	This species is an uncommon-to-rare local resident in southern California deserts. It occurs in open desert wash, desert scrub, alkali desert scrub, desert succulent scrub, and Joshua tree habitat with scattered shrubs. It occurs from Mono County south to the Mexican border and in western and southern San Joaquin Valley. It has rarely been recorded north of Kern County after the 1950s. It feeds on insects and occasionally on seeds, small lizards, and other small vertebrates. It is threatened by loss of habitat due to oil and gas production, overgrazing, and pesticides (DDT).	No	Habitat to support this species is absent from the BSA. No CNDDB occurrences within 10 miles of the Project.
Mammals				
Ammospermophilus nelsoni Nelson's antelope squirrel	-/ST -/S2S3	This species occurs in saltbush scrub and grassland habitats and prefers washes and open shrub areas with sandy soils. Known populations occur in Lokern Natural Area, Elk Hills Carrizo and Elkhorn Plains, Temblor Range and foothills and interior valleys of the Diablo Range and as far north as Merced and San Benito counties. It feeds primarily on insects, green vegetation, seeds, and occasionally on small vertebrates. This species can	No	Habitat to support this species is absent from the BSA. The nearest CNDDB is located approximately 8 miles northwest of the Project (EONDX 30507) and is from 1988.

		excavate burrows or use kangaroo rat burrows for temperature regulation, litter-rearing, shelter, and escape from predators. It is threatened by habitat loss and population fragmentation from agricultural development, urbanization, petroleum extraction, and excessive cattle grazing.		
Perognathus inornatus San Joaquin pocket mouse	-/- -/S2S3	This nocturnal species is found in dry, open grasslands and scrublands on fine-textured soils in the Central (mostly west side) and Salinas Valleys at elevations from 1,100 to 2,000 feet. It digs its own burrows for cover, breeding, and seed caching.	No	Habitat to support this species is absent from the BSA. The nearest CNDDB occurrence is located approximately 10 miles northeast of the Project (EONDX 96183) FROM 2010.
Dipodomys nitratoides nitratoides Tipton kangaroo rat	FE/SE -/-	Inhabits valley saltbush scrub, valley sink scrub, and grasslands; historical known to occur in the southern San Joaquin Valley from southern margins on Tulare lake bed near Lemoore and Hanford, and on the valley floor in Tulare and Kern counties; found only east of the California Aqueduct; population distribution is not continuous and occurs only in small isolated patches; nocturnal foraging species; burrows used for temperature regulation, litter-rearing, shelter, and escape from predators; threatened by habitat loss, fragmentation, degradation; also threatened by land conversions to agricultural, industrial, and urban developments; can quickly inhabit fallow ag fields if a source population is nearby.	No	Habitat to support this species is not present within the BSA. No CNDDB occurrences are present within 10 miles of the Project site.
Taxidea taxus American badger	-/- SSC	This species occurs mostly in open, drier stages of shrub, forest, and herbaceous habitats, with friable soils. It feeds mostly on fossorial rodents. It	Yes	Species may be a transient forager in the vicinity. No potential dens and very few burrows that would provide a prey base were identified on site

		digs burrows for cover and reproduction and can dig a new den each night. Litters are typically born in March and April. This species can be somewhat tolerant of human activities but generally avoids cultivated agricultural habitats.		during the survey. There are no CNDDB occurrences within 10 miles of the Project.
Vulpes macrotis mutica San Joaquin kit fox	FE/ST	This fox species is endemic to the Central Valley and primarily occurs in arid to semi-arid grasslands, open shrublands, savannahs, and grazed lands with loose-textured soils within the San Joaquin Valley, Carrizo Plain, Salinas Valley, Cuyama Valley, and other small valleys in western foothills. Intensively maintained agricultural areas are typically avoided. It is highly adaptable and documented in urban developed areas. It uses burrows year-round for shelter, escape from predators, and rearing young and it will use man-made structures, such as pipes, for denning. Kit fox feed primarily on small mammals, but will also consume birds, reptiles, insects, and scavenge for human food. It is threatened by habitat loss and fragmentation, vehicle strikes, and disease such as the current mange outbreak in urban population in Bakersfield and in nearby natural areas.	Yes	Species may be a transient forager in the vicinity. No potential dens and very few burrows that would provide a prey base were identified on site during the survey. There are multiple CNDDB occurrences within 10 miles of the Project site. The most recent from 2005 is approximately 6 miles northeast of the Project site (EONDX 67165).

CRPR (California Rare Plant Rank):
- 1A Presumed Extinct in California
- 1B Rare, Threatened, or Endangered in California and elsewhere
- 2A Plants presumed extirpated in California, but more common elsewhere
- 2B Plants Rare, Threatened, or Endangered in California, but more common elsewhere

CRPR Threat Code Extension:

- FE Federally Endangered
- FT Federally Threatened
- FC Federal Candidate Species
- FS Federally Sensitive
- SE State Endangered
- ST State Threatened
- SC State Candidate
- SS State Sensitive

.1	Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)	SSC	State Species of Special Concern
.2	Fairly endangered in California (20-80% occurrences threatened)	SFP	State Fully Protected
.3	Not very endangered in California (<20% of occurrences threatened)	SR	State Rare
		WL	Watch List

APPENDIX D

U.S. FISH AND WILDLIFE SERVICE STANDARDIZED RECOMMENDATIONS FOR PROTECTION OF THE ENDANGERED SJKF PRIOR TO OR DURING GROUND DISTURBANCE

U.S. FISH AND WILDLIFE SERVICE
STANDARDIZED RECOMMENDATIONS
FOR PROTECTION OF THE ENDANGERED SAN JOAQUIN KIT FOX
PRIOR TO OR DURING GROUND DISTURBANCE

Prepared by the Sacramento Fish and Wildlife Office
January 2011

INTRODUCTION

The following document includes many of the San Joaquin kit fox (*Vulpes macrotis mutica*) protection measures typically recommended by the U. S. Fish and Wildlife Service (Service), prior to and during ground disturbance activities. **However, incorporating relevant sections of these guidelines into the proposed project is not the only action required under the Endangered Species Act of 1973, as amended (Act) and does not preclude the need for section 7 consultation or a section 10 incidental take permit for the proposed project.** Project applicants should contact the Service in Sacramento to determine the full range of requirements that apply to your project; the address and telephone number are given at the end of this document. Implementation of the measures presented in this document may be necessary to avoid violating the provisions of the Act, including the prohibition against "take" (defined as killing, harming, or harassing a listed species, including actions that damage or destroy its habitat). These protection measures may also be required under the terms of a biological opinion pursuant to section 7 of the Act resulting in incidental take authorization (authorization), or an incidental take permit (permit) pursuant to section 10 of the Act. The specific measures implemented to protect kit fox for any given project shall be determined by the Service based upon the applicant's consultation with the Service.

The purpose of this document is to make information on kit fox protection strategies readily available and to help standardize the methods and definitions currently employed to achieve kit fox protection. The measures outlined in this document are subject to modification or revision at the discretion of the Service.

IS A PERMIT NECESSARY?

Certain acts need a permit from the Service which includes destruction of any known (occupied or unoccupied) or natal/pupping kit fox dens. Determination of the presence or absence of kit foxes and /or their dens should be made during the environmental review process. All surveys and monitoring described in this document must be conducted by a qualified biologist and these activities do not require a permit. A qualified biologist (biologist) means any person who has completed at least four years of university training in wildlife biology or a related science and/or has demonstrated field experience in the identification and life history of the San Joaquin kit fox. In addition, the biologist(s) must be able to identify coyote, red fox,

gray fox, and kit fox tracks, and to have seen a kit fox in the wild, at a zoo, or as a museum mount. Resumes of biologists should be submitted to the Service for review and approval prior to an6y survey or monitoring work occurring.

SMALL PROJECTS

Small projects are considered to be those projects with small foot prints, of approximately one acre or less, such as an individual in-fill oil well, communication tower, or bridge repairs. These projects must stand alone and not be part of, or in any way connected to larger projects (i.e., bridge repair or improvement to serve a future urban development). The Service recommends that on these small projects, the biologist survey the proposed project boundary and a 200-foot area outside of the project footprint to identify habitat features and utilize this information as guidance to situate the project to minimize or avoid impacts. If habitat features cannot be completely avoided, then surveys should be conducted and the Service should be contacted for technical assistance to determine the extent of possible take.

Preconstruction/preactivity surveys shall be conducted no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities or any project activity likely to impact the San Joaquin kit fox. Kit foxes change dens four or five times during the summer months, and change natal dens one or two times per month (Morrell 1972). Surveys should identify kit fox habitat features on the project site and evaluate use by kit fox and, if possible, assess the potential impacts to the kit fox by the proposed activity. The status of all dens should be determined and mapped (see Survey Protocol). Written results of preconstruction/preactivity surveys must be received by the Service within five days after survey completion and prior to the start of ground disturbance and/or construction activities.

If a natal/pupping den is discovered within the project area or within 200-feet of the project boundary, the Service shall be immediately notified and under no circumstances should the den be disturbed or destroyed without prior authorization. If the preconstruction/preactivity survey reveals an active natal pupping or new information, the project applicant should contact the Service immediately to obtain the necessary take authorization/permit.

If the take authorization/permit has already been issued, then the biologist may proceed with den destruction within the project boundary, except natal/pupping den which may not be destroyed while occupied. A take authorization/permit is required to destroy these dens even after they are vacated. Protective exclusion zones can be placed around all known and potential dens which occur outside the project footprint (conversely, the project boundary can be demarcated, see den destruction section).

OTHER PROJECTS

It is likely that all other projects occurring within kit fox habitat will require a take authorization/permit from the Service. This determination would be made by the Service during the early evaluation process (see Survey Protocol). These other projects would include, but are not limited to: Linear projects; projects with large footprints such as urban development; and projects which in themselves may be small but have far reaching impacts (i.e., water storage or conveyance facilities that promote urban growth or agriculture, etc.).

The take authorization/permit issued by the Service may incorporate some or all of the protection measures presented in this document. The take authorization/permit may include measures specific to the needs of the project and those requirements supersede any requirements found in this document.

EXCLUSION ZONES

In order to avoid impacts, construction activities must avoid their dens. The configuration of exclusion zones around the kit fox dens should have a radius measured outward from the entrance or cluster of entrances due to the length of dens underground. The following distances are **minimums**, and if they cannot be followed the Service must be contacted. Adult and pup kit foxes are known to sometimes rest and play near the den entrance in the afternoon, but most above-ground activities begin near sunset and continue sporadically throughout the night. Den definitions are attached as Exhibit A.

Potential den**	50 feet
Atypical den**	50 feet
Known den*	100 feet
Natal/pupping den (occupied and unoccupied)	Service must be contacted

*Known den: To ensure protection, the exclusion zone should be demarcated by fencing that encircles each den at the appropriate distance and does not prevent access to the den by kit foxes. Acceptable fencing includes untreated wood particle-board, silt fencing, orange construction fencing or other fencing as approved by the Service as long as it has openings for kit fox ingress/egress and keeps humans and equipment out. Exclusion zone fencing should be maintained until all construction related or operational disturbances have been terminated. At that time, all fencing shall be removed to avoid attracting subsequent attention to the dens.

**Potential and Atypical dens: Placement of 4-5 flagged stakes 50 feet from the den entrance(s) will suffice to identify the den location; fencing will not be required, but the exclusion zone must be observed.

Only essential vehicle operation on existing roads and foot traffic should be permitted. Otherwise, all construction, vehicle operation, material storage, or any other type of surface-disturbing activity should be prohibited or greatly restricted within the exclusion zones.

DESTRUCTION OF DENS

Limited destruction of kit fox dens may be allowed, if avoidance is not a reasonable alternative, provided the following procedures are observed. The value to kit foxes of potential, known, and natal/pupping dens differ and therefore, each den type needs a different level of protection. **Destruction of any known or natal/pupping kit fox den requires take authorization/permit from the Service**.

Destruction of the den should be accomplished by careful excavation until it is certain that no kit foxes are inside. The den should be fully excavated, filled with dirt and compacted to ensure that kit foxes cannot reenter or use the den during the construction period. If at any point during excavation, a kit fox is discovered inside the den, the excavation activity shall cease immediately and monitoring of the den as described above should be resumed. Destruction of the den may be completed when in the judgment of the biologist, the animal has escaped, without further disturbance, from the partially destroyed den.

Natal/pupping dens: Natal or pupping dens which are occupied will not be destroyed until the pups and adults have vacated and then only after consultation with the Service. Therefore, project activities at some den sites may have to be postponed.

Known Dens: Known dens occurring within the footprint of the activity must be monitored for three days with tracking medium or an infra-red beam camera to determine the current use. If no kit fox activity is observed during this period, the den should be destroyed immediately to preclude subsequent use.

If kit fox activity is observed at the den during this period, the den should be monitored for at least five consecutive days from the time of the observation to allow any resident animal to move to another den during its normal activity. Use of the den can be discouraged during this period by partially plugging its entrances(s) with soil in such a manner that any resident animal can escape easily. Only when the den is determined to be unoccupied may the den be excavated under the direction of the biologist. If the animal is still present after five or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of a biologist, it is temporarily vacant, for example during the animal's normal foraging activities.

The Service encourages hand excavation, but realizes that soil conditions may necessitate the use of excavating equipment. However, extreme caution must be exercised.

Potential Dens: If a take authorization/permit has been obtained from the Service, den destruction may proceed without monitoring, unless other restrictions were issued with the take authorization/permit. If no take authorization/permit has been issued, then potential dens should be monitored as if they were known dens. If any den was considered to be a potential den, but is later determined during monitoring or destruction to be currently, or previously used by kit fox (e.g., if kit fox sign is found inside), then all construction activities shall cease and the Service shall be notified immediately.

CONSTRUCTION AND ON-GOING OPERATIONAL REQUIREMENTS

Habitat subject to permanent and temporary construction disturbances and other types of ongoing project-related disturbance activities should be minimized by adhering to the following activities. Project designs should limit or cluster permanent project features to the smallest area possible while still permitting achievement of project goals. To minimize temporary disturbances, all project-related vehicle traffic should be restricted to established roads, construction areas, and other designated areas. These areas should also be included in preconstruction surveys and, to the extent possible, should be established in locations disturbed by previous activities to prevent further impacts.

1. Project-related vehicles should observe a daytime speed limit of 20-mph throughout the site in all project areas, except on county roads and State and Federal highways; this is particularly important at night when kit foxes are most active. Night-time construction should be minimized to the extent possible. However if it does occur, then the speed limit should be reduced to 10-mph. Off-road traffic outside of designated project areas should be prohibited.

2. To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than 2-feet deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the Service and the California Department of Fish and Game (CDFG) shall be contacted as noted under measure 13 referenced below.

3. Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is

discovered inside a pipe, that section of pipe should not be moved until the Service has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.

4. All food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in securely closed containers and removed at least once a week from a construction or project site.

5. No firearms shall be allowed on the project site.

6. No pets, such as dogs or cats, should be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens.

7. Use of rodenticides and herbicides in project areas should be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional project-related restrictions deemed necessary by the Service. If rodent control must be conducted, zinc phosphide should be used because of a proven lower risk to kit fox.

8. A representative shall be appointed by the project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone number shall be provided to the Service.

9. An employee education program should be conducted for any project that has anticipated impacts to kit fox or other endangered species. The program should consist of a brief presentation by persons knowledgeable in kit fox biology and legislative protection to explain endangered species concerns to contractors, their employees, and military and/or agency personnel involved in the project. The program should include the following: A description of the San Joaquin kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information should be prepared for distribution to the previously referenced people and anyone else who may enter the project site.

10. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. should be

re-contoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but after project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas should be determined on a site-specific basis in consultation with the Service, California Department of Fish and Game (CDFG), and revegetation experts.

11. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape, or the Service should be contacted for guidance.

12. Any contractor, employee, or military or agency personnel who are responsible for inadvertently killing or injuring a San Joaquin kit fox shall immediately report the incident to their representative. This representative shall contact the CDFG immediately in the case of a dead, injured or entrapped kit fox. The CDFG contact for immediate assistance is State Dispatch at (916)445-0045. They will contact the local warden or Mr. Paul Hoffman, the wildlife biologist, at (530)934-9309. The Service should be contacted at the numbers below.

13. The Sacramento Fish and Wildlife Office and CDFG shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. The Service contact is the Chief of the Division of Endangered Species, at the addresses and telephone numbers below. The CDFG contact is Mr. Paul Hoffman at 1701 Nimbus Road, Suite A, Rancho Cordova, California 95670, (530) 934-9309.

14. New sightings of kit fox shall be reported to the California Natural Diversity Database (CNDDB). A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed should also be provided to the Service at the address below.

Any project-related information required by the Service or questions concerning the above conditions or their implementation may be directed in writing to the U.S. Fish and Wildlife Service at:

Endangered Species Division
2800 Cottage Way, Suite W2605
Sacramento, California 95825-1846
(916) 414-6620 or (916) 414-6600

EXHIBIT "A" - DEFINITIONS

"Take" - Section 9 of the Endangered Species Act of 1973, as amended (Act) prohibits the "take" of any federally listed endangered species by any person (an individual, corporation, partnership, trust, association, etc.) subject to the jurisdiction of the United States. As defined in the Act, take means " . . . to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct". Thus, not only is a listed animal protected from activities such as hunting, but also from actions that damage or destroy its habitat.

"Dens" - San Joaquin kit fox dens may be located in areas of low, moderate, or steep topography. Den characteristics are listed below, however, the specific characteristics of individual dens may vary and occupied dens may lack some or all of these features. Therefore, caution must be exercised in determining the status of any den. Typical dens may include the following: (1) one or more entrances that are approximately 5 to 8 inches in diameter; (2) dirt berms adjacent to the entrances; (3) kit fox tracks, scat, or prey remains in the vicinity of the den; (4) matted vegetation adjacent to the den entrances; and (5) manmade features such as culverts, pipes, and canal banks.

"Known den" - Any existing natural den or manmade structure that is used or has been used at any time in the past by a San Joaquin kit fox. Evidence of use may include historical records, past or current radiotelemetry or spotlighting data, kit fox sign such as tracks, scat, and/or prey remains, or other reasonable proof that a given den is being or has been used by a kit fox. The Service discourages use of the terms "active" and "inactive" when referring to any kit fox den because a great percentage of occupied dens show no evidence of use, and because kit foxes change dens often, with the result that the status of a given den may change frequently and abruptly.

"Potential Den" - Any subterranean hole within the species' range that has entrances of appropriate dimensions for which available evidence is insufficient to conclude that it is being used or has been used by a kit fox. Potential dens shall include the following: (1) any suitable subterranean hole; or (2) any den or burrow of another species (e.g., coyote, badger, red fox, or ground squirrel) that otherwise has appropriate characteristics for kit fox use.

"Natal or Pupping Den" - Any den used by kit foxes to whelp and/or rear their pups. Natal/pupping dens may be larger with more numerous entrances than dens occupied exclusively by adults. These dens typically have more kit fox tracks, scat, and prey remains in the vicinity of the den, and may have a broader apron of matted dirt and/or vegetation at one or more entrances. A natal den, defined as a den in which kit fox pups are actually whelped but not necessarily reared, is a more restrictive version of the pupping den. In practice, however, it is difficult to distinguish between the two, therefore, for purposes of this definition either term applies.

"Atypical Den" - Any manmade structure which has been or is being occupied by a San Joaquin kit fox. Atypical dens may include pipes, culverts, and diggings beneath concrete slabs and buildings.

Cultural Resources Technical Memo and Tribal Outreach Documents 2022

TECHNICAL MEMORANDUM

March 17, 2022

Cultural resources records search- McFarland WWTP Project, McFarland, Kern County, CA

Jaymie Brauer, Principal Planner

Robert Parr, MS, RPA, Senior Archaeologist

Cultural Resources Records Search Results (RS#21-482)

A cultural resources records search (RS #21-482) was conducted at the Southern San Joaquin Valley Information Center, CSU Bakersfield for the above referenced Project in the City of McFarland, Kern County to determine whether the proposed project would impact cultural resources.

The Project is located in Kern County, California (Attachment A: Figures 1-4). The Project site is within the east 1/2 of Section 9, T.26S, R.25E (MDB&M) (Figures 1-4).

The City is proposing to complete Phase 3 of the overall Facility Master Plan, which includes the expansion of the existing wastewater treatment plant (WWTP) to achieve compliance with future waste discharge requirements (WDR), and improve water quality of the plant's effluent in the City of McFarland, California. Phase 3 will consist of a new administrative building, two new circular secondary clarifiers, a Return Activated Sludge / Waste Activated Sludge pump station, an effluent pump station, two decanting boxes, and below grade piping to connect an existing aeration basin to the clarifiers and pump stations. In addition, four new monitoring wells will be drilled to monitor water quality.

There will be no ground disturbance beyond the boundary of the disturbed and developed parcel boundary. The details and Area of Potential Effect (APE) dimensions for each component are outlined in Table 1, below.

Table 1 – Project Components

Project Components	Component Locations	Length (ft) North-South	Width (ft) East-West	Depth (ft)
Administration Building	SW corner of Plant	40	20	1.5

Parking Area	SW Corner of Plant	40	100	2
Western Clarifier	SE corner of Plant	100	100	22
Eastern Clarifier	SE corner of Plant	100	100	22
RAS/WAS Pump Station	SE corner of Plant	20	40	3
Effluent Pump Station	SE corner of Plant	25	25	20
GW Monitoring Wells	Drill 3 GW Monitoring well	5	5	180
Storage Pond 1 & 2 Berm elimination	Storage Pond 1 and 2	300	500	2
Effluent Pipeline to Ponds 3	Pipeline parallel to pond 3 (remove existing and replace with PVC)	1,000	4	4
Irrigation Pump Station	Construction an irrigation Pump station-pond 2/3 connection	15	15	8

The Action will be funded through the Clean Water State Revolving Fund (CWSRF) Program. Congress established the federal CWSRF Program, authorizing the United States Environmental Protection Agency (USEPA) to provide grants to state CWSRF programs that make financial assistance through loans and other financing mechanisms for construction of wastewater treatment and water recycling facilities, implementation of nonpoint source and storm drainage pollution control management programs, and development and implementation of estuary conservation and management programs.

Pursuant to the terms of the Programmatic Agreement on Historic Preservation for the State Revolving Fund, the USEPA requires that the State Water Board carry out the requirements of federal regulations under Section 106 of the National Historic Preservation Act, 54 U.S.C. 306108, and its implementing regulations, 36 CFR Part 800. Pursuant to 36 CFR § 800.2(c)(4), and 7 CFR § 1970.5(b)(2) of the regulations, "Environmental Policies and Procedures" (7 CFR Part 1970), USDA has issued a blanket delegation for its applicants to initiate and proceed through Section 106 review. In accordance with this blanket delegation, QK (formerly Quad Knopf, Inc) is initiating Section 106 review on behalf of the proponent. In delegating this authority, USEPA is advocating for the direct interaction between its borrowers and the Tribes in the Project vicinity. USEPA believes this interaction, prior to direct agency involvement, will support and encourage the consideration of impacts to historic properties earlier in project planning.

National Historic Preservation Act (NHPA)

NHPA Section 106 is applicable to federal undertakings, including projects financed or permitted by federal agencies, regardless of whether the activities occur on land that is managed by federal agencies, other governmental agencies, or private landowners. Its purpose is to determine whether adverse effects will occur to significant cultural resources, defined as "historic properties" that are listed in or determined eligible for listing in the National Register of Historic Places (NRHP). The criteria for NRHP eligibility are defined at 36 CFR § 60.4 as follows:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that:
>
> (a) are associated with events that have made a significant contribution to the broad patterns of our history; or
> (b) are associated with the lives of persons significant in our past; or
> (c) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
> (d) have yielded or may be likely to yield, information important in prehistory or history.

There are, however, restrictions on the kinds of historical properties that can be NRHP listed. These have been identified by the Advisory Council on Historic Preservation (ACHP), as follows:

> Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:
>
> (a) A religious property deriving primary significance from architectural or artistic distinction or historical importance; or
> (b) A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
> (c) A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life.
> (d) A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from

association with historic events; or

(e) A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

(f) A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or

(g) A property achieving significance within the past 50 years if it is of exceptional importance [http://www.achp.gov/nrcriteria.html].

Section 106 Criteria of Adverse Effect

In order to comply with Section 106, any effects of the proposed undertaking on historic properties listed in or determined eligible for inclusion in the National Register must be analyzed by applying the Criteria of Adverse Effect [36 CFR 800.5(a)], as follows:

1) An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.

2) Adverse effects on historic properties include, but are not limited to:

   i. Physical destruction of or damage to all or part of the property;
   ii. Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
   iii. Removal of the property from its historic location;
   iv. Change of the character of the property's use or of physical features within the property's setting that contributes to its historic significance;
   v. Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
   vi. Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
   vii. Transfer, lease, or sale of property out of Federal ownership or control

without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

viii. Alteration or destruction of an archaeological site, whether or not recovery of archaeological data from the site is proposed.

Secretary of the Interior's Standards for the Treatment of Historic Properties

As stated in above, the alteration of a historic property in a manner inconsistent with the Secretary of the Interior's Standards (SOIS) for the Treatment of Historic Properties is considered an adverse effect on a historic property. The SOIS include guidelines that correlate to four distinct but related approaches to the treatment of historic properties, preservation, rehabilitation, restoration and reconstruction. The work proposed by the current undertaking falls under the rehabilitation standard, which reorganize the need to alter or add to a historic property to meet continuing or new uses while maintaining historic character. defined by the Secretary of the Interior as "the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property." (Grimmer 2017) The SOIS for Rehabilitation are listed below.

1) A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2) The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
3) Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4) Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5) Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.
6) Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7) Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
8) Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be

undertaken.

9) New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10) New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired

The records search covered an area within one-half mile of the Project and included a review of the *National Register of Historic Places, California Points of Historical Interest, California Registry of Historic Resources, California Historical Landmarks, California State Historic Resources Inventory*, and a review of cultural resource reports on file.

The records search indicated that ninety acres of the subject property previously had been surveyed for cultural resources (Hudlow 2016, 2020). The remaining portion of the property has not been surveyed for cultural resources and it is not known if any exist there. No further cultural resource studies have been conducted within a half mile of the project.

No cultural resources have been identified or recorded on or within a half mile of the project. The Project will not impact cultural resources.

A Sacred Lands File request was also submitted to the Native American Heritage Commission. A response dated March 15, 2022 indicates negative results (see Attachment C).

The results of cultural records search findings and the lack of historical or archaeological resources previously identified within a half mile radius of the proposed Project indicate the potential to encounter subsurface cultural resources to be minimal. Additionally, the Project construction would be conducted within the partially developed and previously disturbed parcel. The potential to uncover subsurface historical or archaeological deposits would be considered unlikely.

Based on the data at hand, construction of the Project does not appear have the potential to result in significant impacts or adverse effects to historical resources or historic properties, and a determination of no adverse effect to cultural resources is recommended. No further action is warranted.

However, there is still a possibility that historical or archaeological materials may be exposed during construction. Grading and trenching, as well as other ground-disturbing actions have the potential to damage or destroy these previously unidentified and potentially significant cultural

resources within the project area, including historical or archaeological resources. Disturbance of any deposits that have the potential to provide significant cultural data would be considered a significant impact.

To reduce the potential impacts of the Project on cultural resources, the following measures are recommended to be included as a NOTE on all site plans.

If prehistoric or historic-era cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified archaeologist can evaluate the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified archaeologist determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from Project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation. Implementation of the mitigation measure below would ensure that the proposed Project would not cause a substantial adverse change in the significance of a historical resource.

If human remains are discovered during construction or operational activities, further excavation or disturbance shall be prohibited pursuant to Section 7050.5 of the California Health and Safety Code. The specific protocol, guidelines, and channels of communication outlined by the Native American Heritage Commission, in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), and Senate Bill 447 (Chapter 44, Statutes of 1987), shall be followed. Section 7050.5(c) shall guide the potential Native American involvement, in the event of discovery of human remains, at the direction of the county coroner.

Robert E. Parr, MS, RPA
Senior Archaeologist

Attachment A- Figures
Attachment B- Sacred Lands File Response by the Native American Heritage Commission and Tribal Outreach.

(all reports on file at the Southern San Joaquin Valley Information Center, California State University, Bakersfield)

Hudlow, Scott M.
2016 A Phase I Cultural Resource Survey for Wastewater Plant Expansion Project, City of McFarland, California. (KE-04997)

2020 A Phase I Cultural Resource Survey for a Bioenergy Plant Project, City of McFarland, California. (KE-05232)

TECHNICAL MEMORANDUM

Attachment A-
Figures

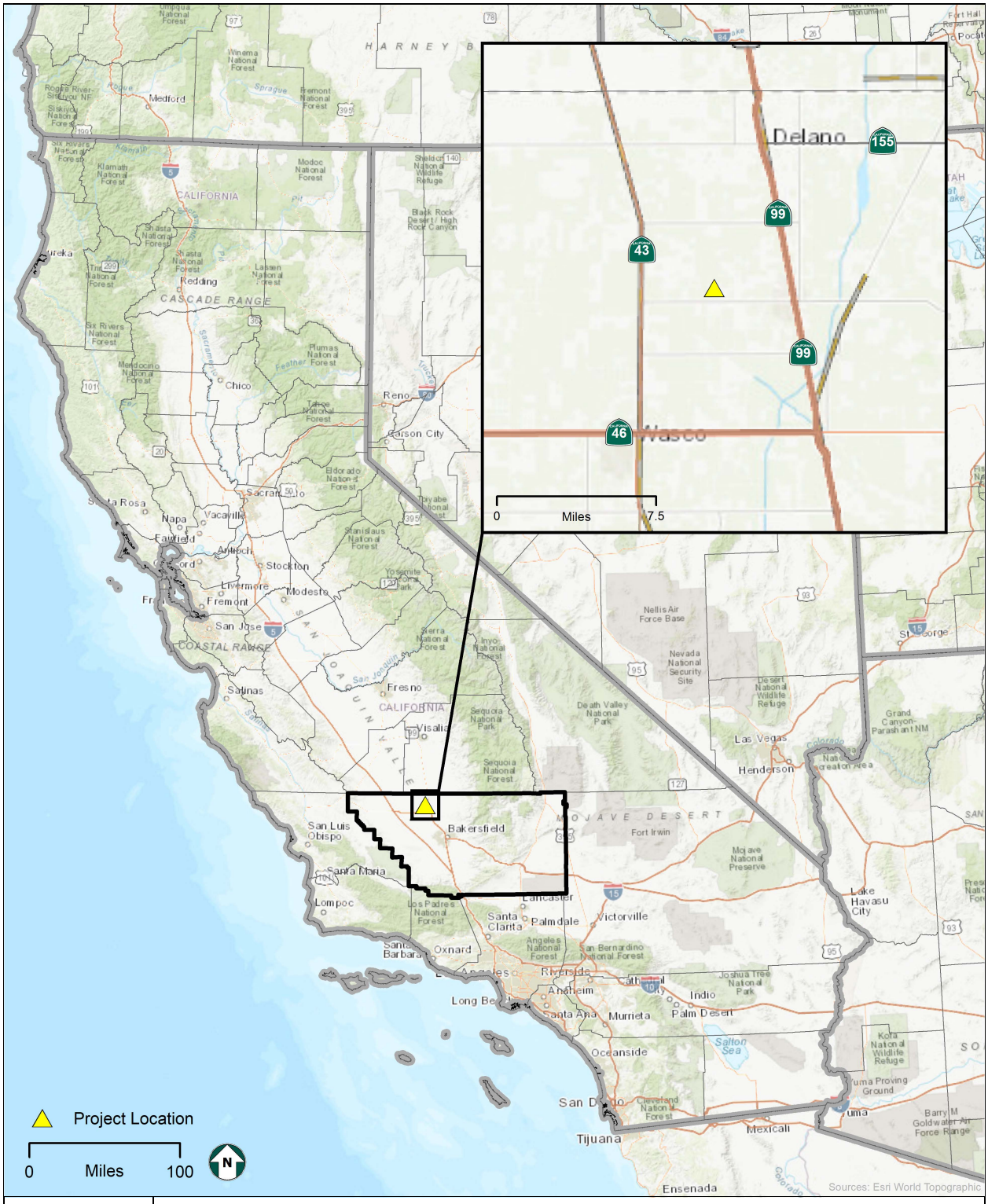

Figure - 1
Regional Location

Figure - 2
Project Area

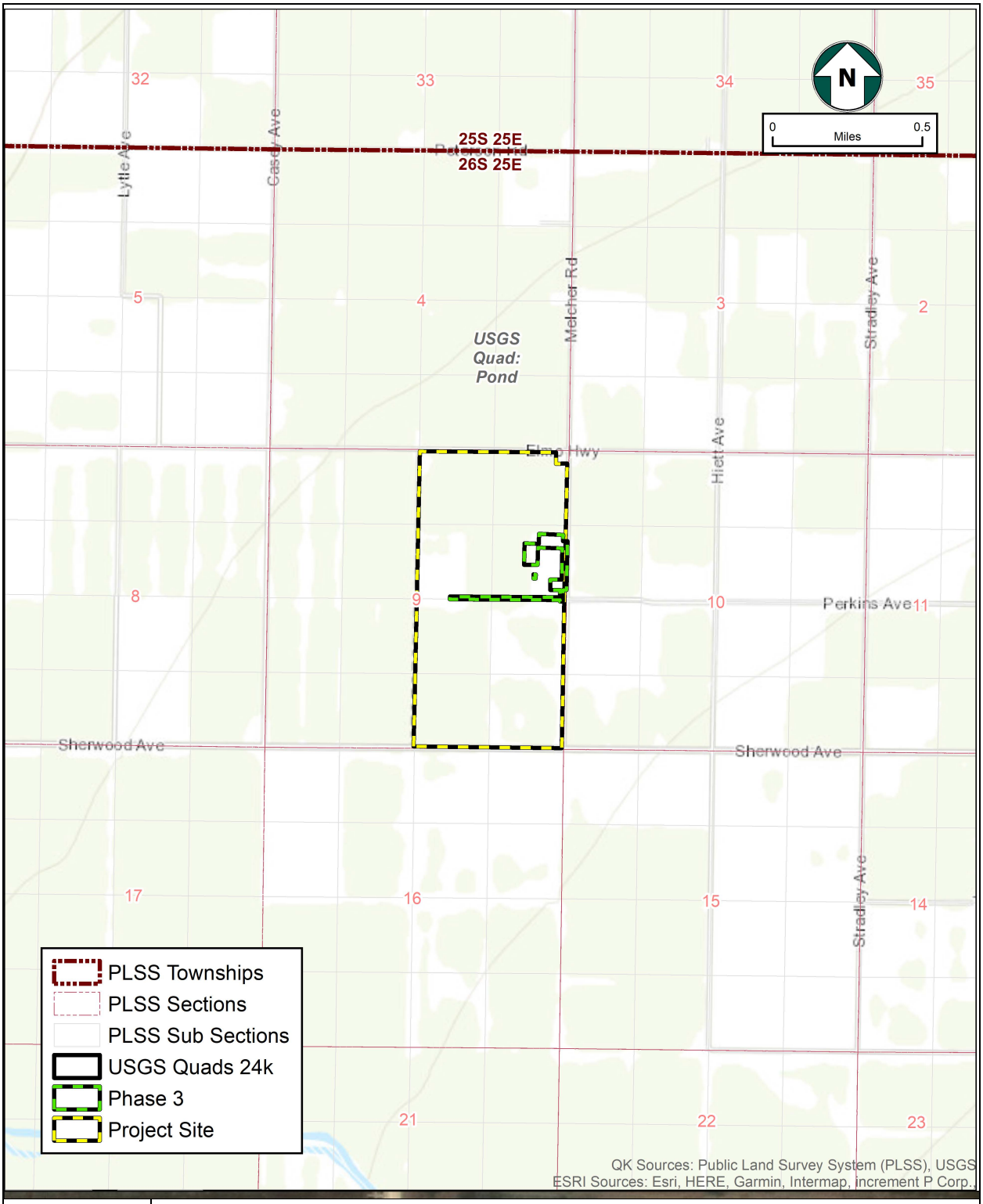

Figure - 3
PLSS/USGS Quad

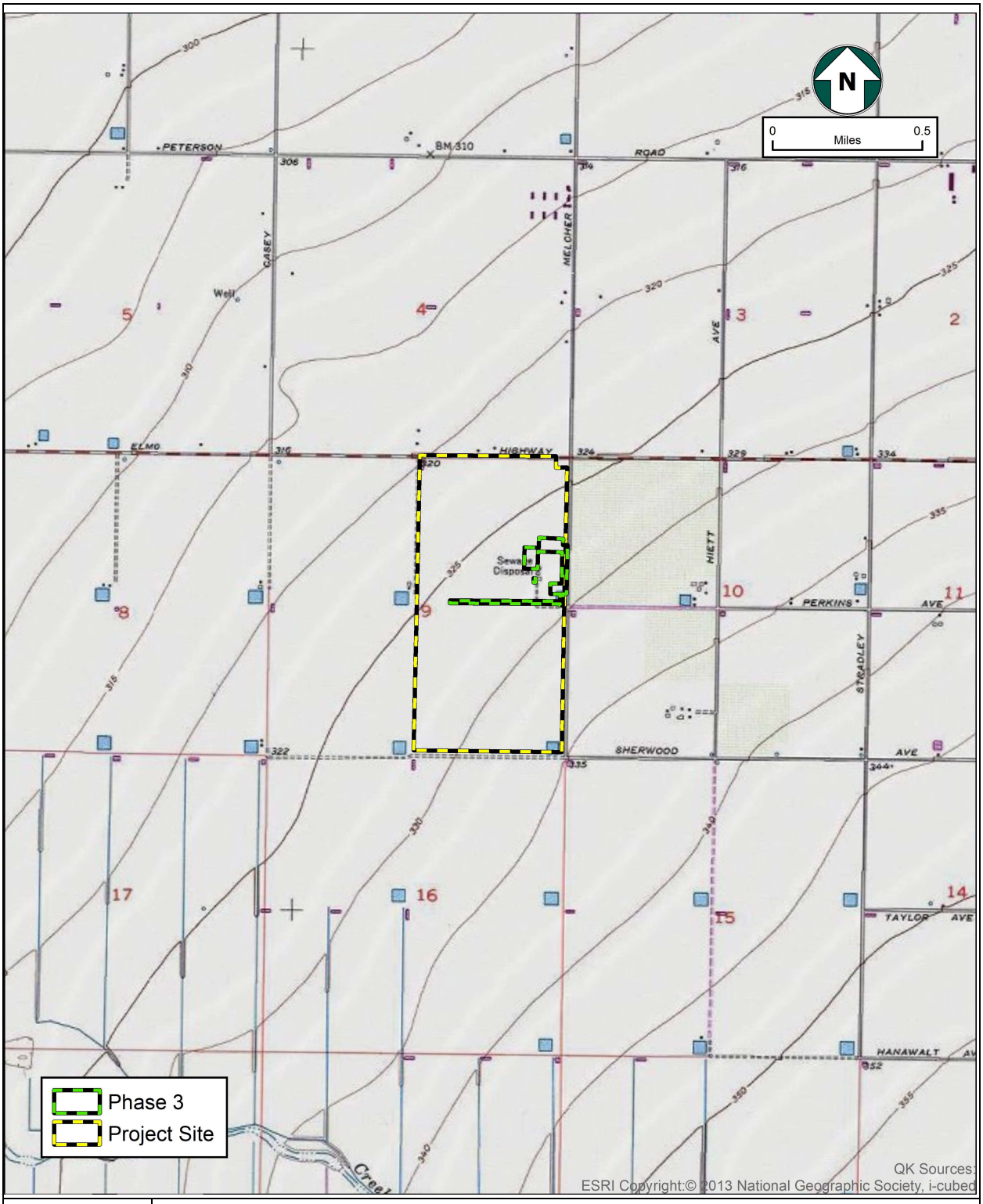

Figure - 4
Topo

TECHNICAL MEMORANDUM

Attachment B-
Sacred Lands File Response by the
Native American Heritage Commission
Tribal Outreach

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

March 15, 2022

Jaymie Brauer
Quad Knopf

Via Email to: jaymie.brauer@qkinc.com

Re: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, McFarland WWTP Project (210460), Kern County

Dear Mr. Brauer:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

    - Any report that may contain site forms, site significance, and suggested mitigation measures.

      All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Cameron.vela@nahc.ca.gov.

Sincerely,

Cameron Vela

Cameron Vela
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Tribal Consultation List
Kern County
3/15/2022

Big Pine Paiute Tribe of Owens Valley
Sally Manning, Environmental Director
P. O. Box 700
Big Pine, CA, 93513
Phone: (760) 938 - 2003
s.manning@bigpinepaiute.org
Paiute-Shoshone

Big Pine Paiute Tribe of the Owens Valley
Danelle Gutierrez, Tribal Historic Preservation Officer
P.O. Box 700
Big Pine, CA, 93513
Phone: (760) 938 - 2003
Fax: (760) 938-2942
d.gutierrez@bigpinepaiute.org
Paiute-Shoshone

Big Pine Paiute Tribe of the Owens Valley
James Rambeau, Chairperson
P. O. Box 700
Big Pine, CA, 93513
Phone: (760) 938 - 2003
Fax: (760) 938-2942
j.rambeau@bigpinepaiute.org
Paiute-Shoshone

Chumash Council of Bakersfield
Julio Quair, Chairperson
729 Texas Street
Bakersfield, CA, 93307
Phone: (661) 322 - 0121
chumashtribe@sbcglobal.net
Chumash

Kitanemuk & Yowlumne Tejon Indians
Delia Dominguez, Chairperson
115 Radio Street
Bakersfield, CA, 93305
Phone: (626) 339 - 6785
2deedominguez@gmail.com
Kitanemuk
Southern Valley
Yokut

Santa Rosa Rancheria Tachi Yokut Tribe
Leo Sisco, Chairperson
P.O. Box 8
Lemoore, CA, 93245
Phone: (559) 924 - 1278
Fax: (559) 924-3583
Southern Valley
Yokut

Tejon Indian Tribe
Octavio Escobedo, Chairperson
P.O. Box 640
Arvin, CA, 93203
Phone: (661) 834 - 8566
oescobedo@tejonindiantribe-nsn.gov
Kitanemuk

Tejon Indian Tribe
Colin Rambo,
P.O. Box 640
Arvin, CA, 93203
Phone: (661) 834 - 8566
colin.rambo@tejonindiantribe-nsn.gov
Kitanemuk

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589
Porterville, CA, 93258
Phone: (559) 781 - 4271
Fax: (559) 781-4610
neil.peyron@tulerivertribe-nsn.gov
Yokut

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 Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed McFarland WWTP Project (210460), Kern County.

ATTACHMENT A
PROJECT FIGURES

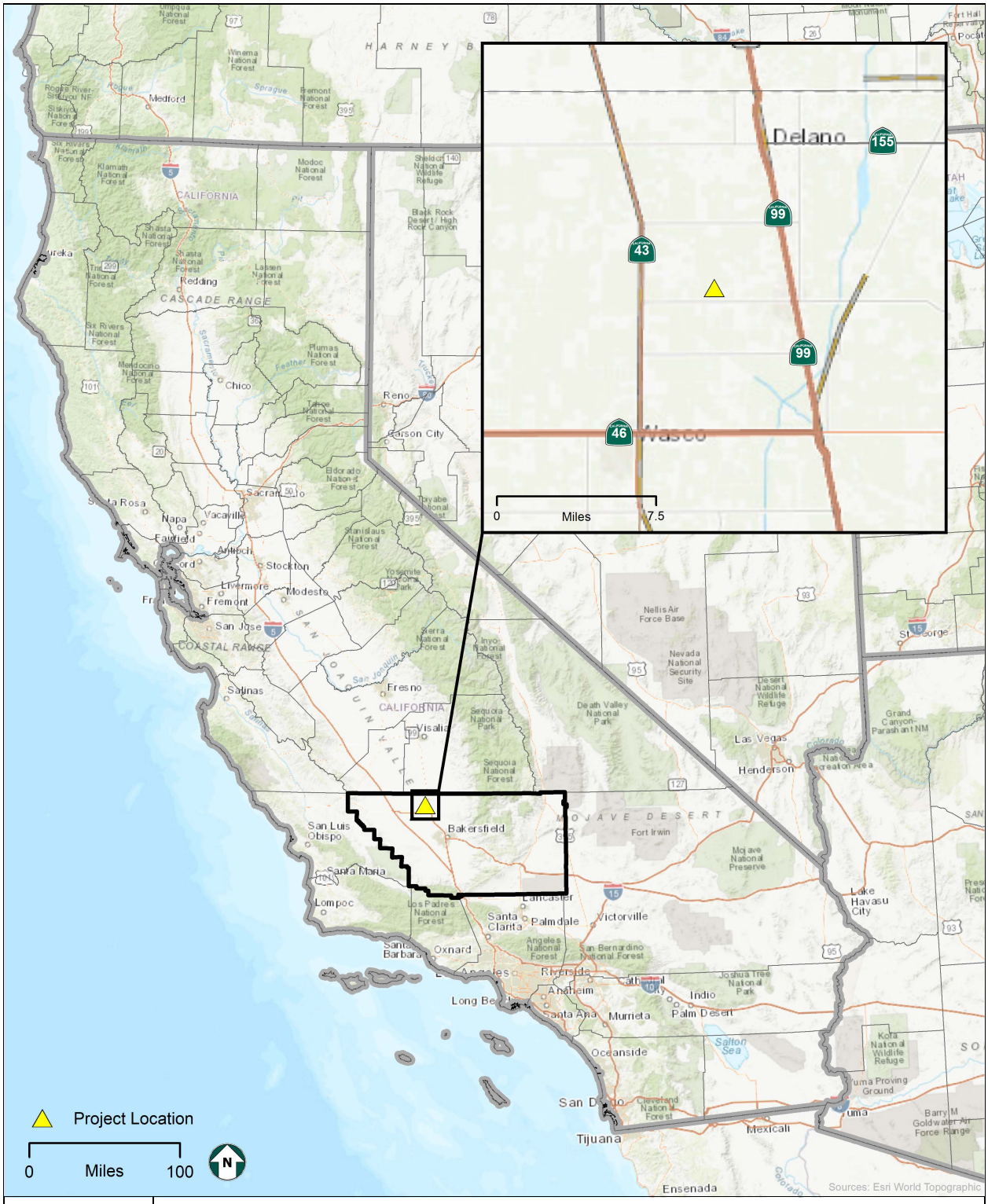

Figure - 1
Regional Location

Figure - 2
Project Area

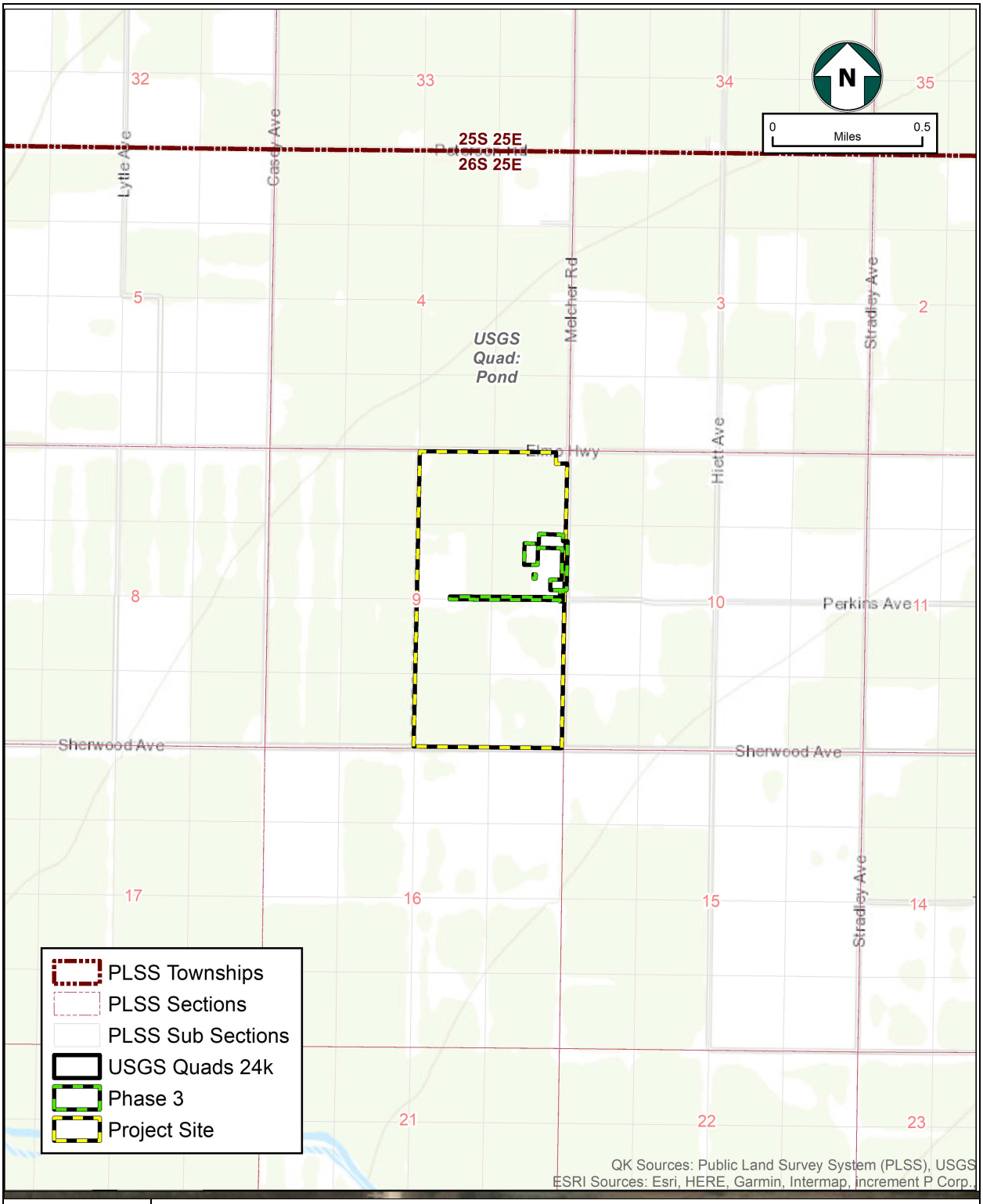

Figure - 3
PLSS/USGS Quad

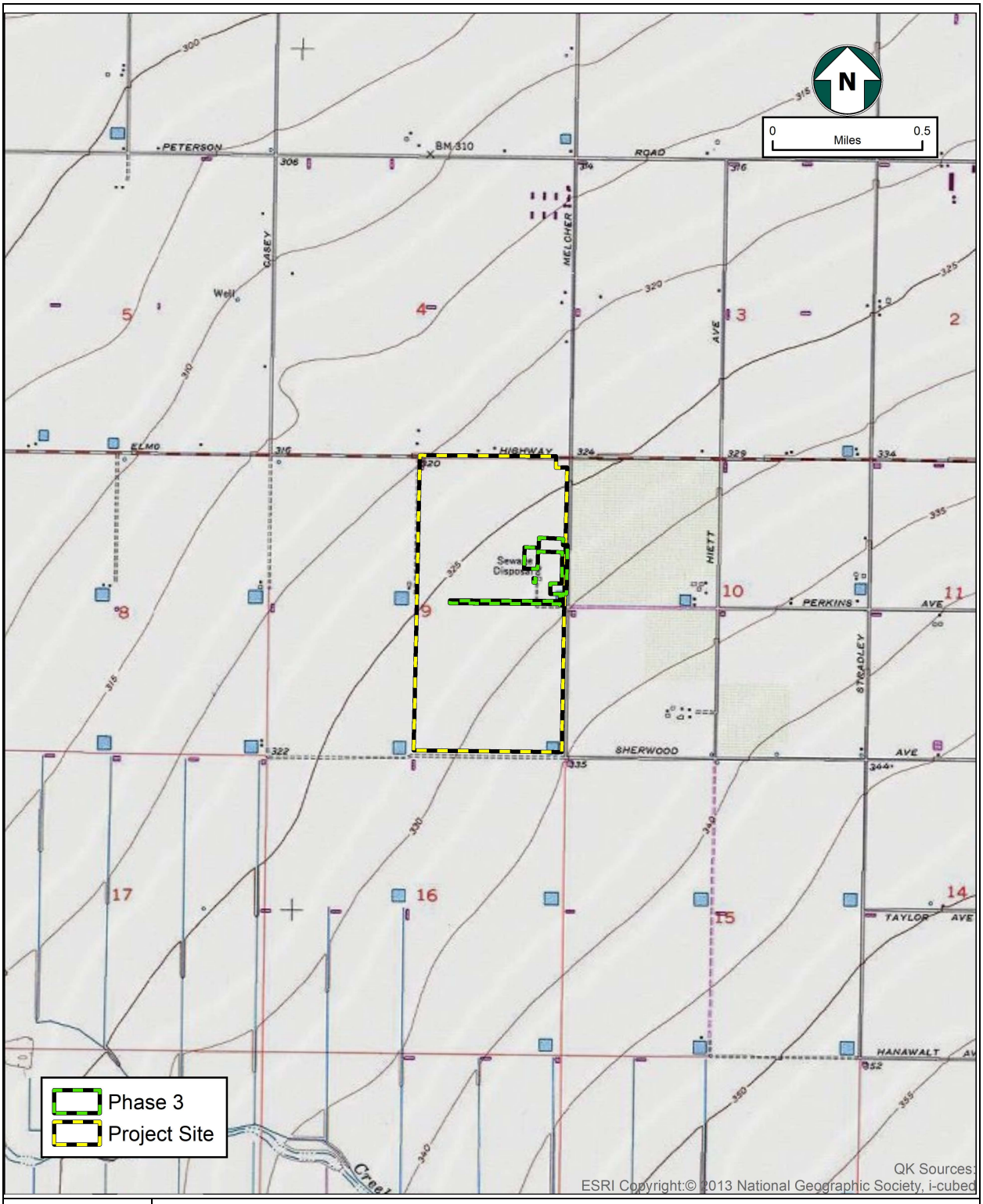

Figure - 4
Topo

THE CITY OF
McFarland
TRADITION • UNITY • EXCELLENCE

401 W. Kern Avenue
McFarland, CA 93250
661-792-3091 Office
6610792-3093 Fax

January 12, 2022

FROM: City of McFarland

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). A Formal Notification of a Decision to Undertake a Project and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).

Dear Chairperson:

The City of McFarland has decided to undertake the Wastewater Treatment Plant Expansion Project (Project). The City of McFarland is designated as Lead Agency under the California Environmental Quality Act (CEQA).

The City is proposing to complete Phase 3 of the overall Facility Master Plan, which includes the expansion of the existing wastewater treatment plant (WWTP) to achieve compliance with future waste discharge requirements (WDR), and improve water quality of the plant's effluent in the City of McFarland, California. Your tribe was previously contacted during the environmental review process for Phases 1 and 2. The City is now requesting your review of the proposed construction of Phase 3. Phase 3 will consist of a new administrative building, two new circular secondary clarifiers, a Return Activated Sludge / Waste Activated Sludge pump station, an effluent pump station, two decanting boxes, and below grade piping to connect an existing aeration basin to the clarifiers and pump stations. In addition, four new monitoring wells will be drilled to monitor water quality.

Figure 1 is a map of the regional location and Figure 2 shows the Project's aerial location. Figure 3 shows the PLSS/USGS quadrangle and Figure 4 shows the topography of the area.

The Project includes expansion of the existing water treatment plant and wells. Pursuant to PRC § 21080.3.1 (b), you have 30 days from the receipt of this letter to request consultation, in writing, with the City of McFarland.

Should you have any comments or questions please contact QK consultant Jaymie Brauer at (661) 616-2600 or at jaymie.brauer@QKinc.com

Very Respectfully,

Chief Kenny Williams
City Manager

Enclosures: Figures 1-4

McFarland WTTP Tribal Consultation Letter

Tribe	Contact	Comments
Kitanemuk	Colin Rambo colin.rambo@tejonindiantribe-nsn.gov Octavio Escobedo oescobedo@tejonindiantribe-nsn.gov	Letter sent via email 1/17/22 No response. Followed up via phone call 3/23/22, no comments at this time.
Yokut	kerri.vera@tulerivertribe-nsn.gov neil.peyron@tulerivertribe-nsn.gov	Letter sent via email 1/17/22 Followed up via phone call 3/23/22, no comments at this time.
Kilanemuk, Southern Valley, Yokut	Delia Dominguez deedominguez@juno.com 2deedominguez@gmail.com	Sent via email 3/16 Followed up via phone call 3/23/22, no comments at this time.
Paiute-Shoshone	s.manning@bigpinepaiute.org d.gutierrez@bigpinepaiute.org j.rambeau@bigpinepaiute.org	Sent via email 3/16 Followed up via phone call 3/23/22, project is out of their boundary. No comments.
Chumash	chumashtribe@sbcglobal.net	Sent via email 3/16 Followed up via phone call 3/23/22, no response.
Southern Valley Yokuts	Leo Sisco, Chairsperson P.O. Box 8 Lemoore, CA 93245	Sent letter on 3/17/22 Followed up via phone call 3/23/22, no comments at this time.