

# Exhibit E

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**FINAL**

**INITIAL STUDY/MITIGATED NEGATIVE DECLARATION**

for the

**SPRINGFIELD WATER SYSTEM  
IMPROVEMENTS PROJECT**

Prepared for:



**PAJARO / SUNNY MESA**  
COMMUNITY SERVICES DISTRICT

Pajaro Sunny Mesa Community Services District  
136 San Juan Road  
Royal Oaks, CA 95076

Prepared by:



Denise Duffy & Associates  
947 Cass Street, Suite 5  
Monterey, CA 93940

October 2020

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## ATTACHMENTS

Attachment A – Comment Letters Received

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## CHAPTER 1. INTRODUCTION

**BACKGROUND:** The Pajaro/Sunny Mesa Community Services District (District) circulated an Initial Study/Mitigated Negative Declaration (IS/MND) on the Springfield Water System Improvements Project (Proposed Project) and has determined that the Proposed Project will not have a significant effect on the environment. The District will therefore consider adoption of a MND for the Proposed Project at the regularly scheduled Board hearing on October 22, 2020.

**PROJECT DESCRIPTION:** The Proposed Project involves the expansion and enhancement of the Springfield Water System and will include replacement of an existing well and water system and development of a new source of potable water supply, storage, treatment, pumping facilities, and distribution system improvements. The Project components include Moss Landing Middle School site improvements, distribution pipeline, and replacement pipeline to connect to the existing residents and mobile home park and other connection improvements.

The new facilities described above are needed to replace inadequate facilities that now serve residents in the area. The current system has consistently failed to meet water quality standards. Existing well (SW-1) and system facilities are impacted by nitrate contamination, seawater intrusion, sulfate contamination, and 1,2,3, trichloropropane contamination. Additionally, the current well location is surrounded by agricultural operations and access to this location is constrained at certain times by neighboring agricultural operations. A physical separation between the existing SW-1 well and the improved water system will be created to prevent future supply of contaminated water to the new system. As part of the Proposed Project, SW-1 will be taken out of regular service and will only be used in emergency situations<sup>1</sup>. The new well (SW-2) will be located at the existing disturbed area at the Moss Landing Middle School.

**PUBLIC REVIEW PERIOD:** The 30-day public review period for the IS/MND commenced on August 13, 2020 and ended on September 11, 2020.

**COMMENTS RECEIVED:** The following lists the comment letters received to date. The comments are summarized, and responses are provided in the **Comments and Responses** section of this Final IS/MND:

- A. Local Agency Formation Commission of Monterey County
- B. California Department of Transportation, District 5
- C. California Department of Fish and Wildlife

Copies of the letters referenced above are included as **Attachment A** to this Final IS/MND.

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<sup>1</sup> January 2022 Update: The approved IS/MND noted that Pajaro Sunny Mesa Community Services District's (PSMCS) SW-1 could be used as an emergency backup for non-potable uses. PSMCS has clarified/updated this information as follows: PSMCS is working to reach an agreement with the Moss Landing Mobile Home Park (Park) to use the Park's well as an emergency backup well for non-potable use, if needed. As such, SW-1 would be demolished in accordance with County of Monterey requirements.

## CHAPTER 2. COMMENTS AND RESPONSES

### Letter A: Keith McKenna, Executive Officer, Local Agency Formation Commission of Monterey County

**Comment A-1:** Although LAFCO is not a Responsible Agency under CEQA for the Proposed Project, LAFCO's policies encourage the efficient provision of government services within LAFCO-approved and mapped boundaries where sufficient capacity exists to meet service needs. The Proposed Project is consistent with these policies.

**Response A-1:** Comment noted.

### Letter B: Chris Bjornstad, Associate Transportation Planner, California Department of Transportation (Caltrans), District 5

**Comment B-1:** If any future work is completed in the State of California's (State) right-of-way, it will require an encroachment permit from Caltrans and must be done to Caltrans engineering and environmental standards, at no cost to the State. The conditions of approval and the requirements for the encroachment permit are issued at the sole discretion of the Caltrans Permits Office, and nothing in this letter shall be implied as limiting those future conditioned and requirements. Additional information regarding the encroachment permit process can be found on the Caltrans Encroachment Permit Website: <http://www.dot.ca.gov/trafficops/ep/index.html>.

**Response B-1:** Comment is noted. Text has been added to the IS/MND to note requirement for an encroachment permit within State's right-of-way. See added language in the **Changes to the Draft IS/MND** Section of this Final IS/MND. All applicable permit requirements for pipeline construction within the State's right-of-way will be followed.

**Comment B-2:** Caltrans states all future work in, on, under, over, or affecting State highway right-of-way is subject to a Caltrans encroachment permit. Depending on the complexity of the Proposed Project improvements requiring an encroachment permit, Caltrans oversight may be the more appropriate avenue for project review and approval by Caltrans. Caltrans requests that the District consult with the Caltrans District 5 Permit Engineer to determine the most appropriate permitting system for the Proposed Project.

**Response B-2:** Comment noted.

**Comment B-3:** All future work will need to conform to the Caltrans Encroachment Permits Manual, Chapter 600. Additional utility installation requirements, which may apply, are found in Chapter 17 of the Project Development Procedures Manual. Deviations from Caltrans Encroachment Permit Policies may require an exception from Caltrans. This requirement and process will be outlined by the Caltrans District 5 Permit Engineer in the pre-submittal conference.

**Response B-3:** Comment noted.

**Comment B-4, B-5, and B-6:** The comment letter provides additional specifications for work within the Caltrans' right-of-way. The author outlines the requirements for encroachment permits, regulatory oversight, removal of non-operational pipes, plan review, and other related items.



**Response B-4, B-5, and B-6:** Caltrans standards and permit requirements for projects occurring in the Caltrans' right-of-way are noted.

**Letter C: Julie A. Vance, Regional Manager, California Department of Fish and Wildlife (CDFW)**

**Comment C-1:** CDFW notes recent published findings of its decision to advance the Western Bumble Bee (WBB) to candidacy as an endangered species under the California Endangered Species Act (CESA). Pursuant to Fish and Game Code section 2074.6, CDFW has initiated a status review report to inform the Fish and Game Commission's decision on whether listing of WBB, pursuant to CESA, is warranted. During the candidacy period, the status of the WBB as an endangered candidate species under qualifies it as an endangered, rare, or threatened species under CEQA. CDFW notes that take of WBB during the status review period may be prohibited unless appropriate authorization pursuant to CESA is obtained.

WBB have the potential to occur within and near the Proposed Project site. Suitable WBB habitat includes areas of grasslands and upland scrub that contain requisite habitat elements, such as small mammal burrows. WBB primarily nest in late February through late October underground in abandoned small mammal burrows, but may also nest under perennial bunch grasses or thatched annual grasses, underbrush piles, in old bird nests, and in dead trees or hollow logs (Williams et al. 2014). Overwintering sites utilized by WBB mated queens include soft, disturbed soil (Goulson 2010), or under leaf litter or other debris (Williams et al. 2014). Therefore, ground disturbance and vegetation removal associated with Proposed Project implementation has the potential to significantly impact local WBB populations.

CDFW identifies potential impacts to WBB can occur without appropriate avoidance and minimization measures. Identified impacts associated with Proposed Project ground- and vegetation-disturbing activities include loss of foraging plants, changes in foraging behavior, burrow collapse, nest abandonment, reduced nest success, reduced health and vigor of eggs, young and/or queens, in addition to direct mortality in violation of Fish and Game Code.

CDFW recommends two mitigation measures to reduce potential for significant impacts to WBB which include determining if suitable habitat is present, conducting focused surveys, and potentially avoiding suitable habitat.

**Response C-1:** Potential impacts to WBB were analyzed in the Draft IS/MND; please refer to the Special-Status Species Table included as an appendix to the Biological Resources Report prepared for the project (Appendix B of the Draft IS/MND). The analysis identified that suitable habitat is present within the area surveyed for biological resources; however, the survey area is outside of the currently known range for this species. As identified by CDFW in their comment, WBB populations are now largely restricted to high elevation sites in California. As such, it was determined that WBB was unlikely to occur within the survey area and be impacted by the project. However, the avoidance and minimization measures recommended by CDFW shall be incorporated as conditions of the project as shown in this Final IS/MND. See **Changes to the Draft IS/MND** for full text of these measures (identified as for "CDFW Recommended Mitigation Measures") and a description of how these measures will be incorporated into the project.

**Comment C-2:** CDFW states that Burrowing Owl (BUOW) may occur near the Proposed Project site, due to their species range (CDFW 2020). BUOW inhabit open grassland or adjacent canal banks, ROWs, vacant lots, etc. containing small mammal burrows, a requisite habitat feature used by BUOW for nesting and cover. The Draft IS/MND states that there are mammal burrows present throughout the Project area, however CDFW review of aerial imagery indicates that some of the Proposed Project site is bordered by

potential fallow agricultural fields and burrows may be present within the Proposed Project site. B Ground-disturbing activities associated with the Proposed Project have the potential to significantly impact local BUOW populations due to burrow collapse, inadvertent entrapment, nest abandonment, reduced reproductive success, reduction in health and vigor of eggs and/or young, and direct mortality of individuals. Excluding and/or evicting BUOW from their burrows is considered a potentially significant impact under CEQA.

The letter then goes onto recommend two mitigation measures to reduce impacts to BUOW including conducting a habitat assessment and implementing non-disturbance buffers.

**Response C-2:** Potential impacts to BUOW were analyzed in the Draft IS/MND; please refer to the Special-Status Species Table included as an appendix to the Biological Resources Report prepared for the Proposed Project (Appendix B of the Draft IS/MND). The analysis identified that marginal nesting and wintering habitat is present within and adjacent to the area surveyed for biological resources; however, no burrows of sufficient size to support this species were observed during the biological surveys conducted for the project in 2019 and 2020. As such, it was determined that BUOW had a low potential to occur within the survey area and be impacted by the Proposed Project. However, the avoidance and minimization measures recommended by CDFW shall be incorporated as conditions of the Proposed Project. See **Changes to the Draft IS/MND** for full text of these measures (identified as “CDFW Recommended Mitigation Measures”).

### **CHAPTER 3. CHANGES TO THE DRAFT IS/MND**

This section contains proposed text changes to the Draft IS/MND based on comments received during the public review period. Additions are shown in underline, while deletions are shown in ~~strikethrough~~.

**Section 2.5 Project Description, Page 11:** The second paragraph of the section is amended as follows:

Construction activities along Springfield Road and Struve Road are proposed primarily within roadway and public easement rights of way. The Proposed Project will require excavation within the Monterey County and Caltrans rights-of-way on Springfield and Struve Roads for the distribution pipeline trenching and jack and bore underneath Highway 1. The District PSMCSD will be responsible for obtaining an encroachment permit from the County of Monterey and Caltrans prior to the start of construction. The encroachment permits will require a traffic control plan.

**Section 5.2.4 Biological Resources, Page 46** The following text is added after Mitigation Measure BIO-3G.

#### *Special Status Wildlife Species – Western Bumble Bee*

WBB was once common throughout most of California. Potential impacts to WBB were analyzed in the Draft IS/MND The analysis identified that suitable habitat is present within the area surveyed for biological resources; however, the survey area is outside of the currently known range for this species. Per the Draft IS/MND and the CDFW letter, WBB populations are now largely restricted to high elevation sites in the Sierra Nevada. CDFW also identified scattered observations along the California coast (Xerces Society 2018). Analyses by the Xerces Society (2018) suggest there have been sharp declines in relative abundance by 84%. The Draft IS/MND determined that WBB was unlikely to occur within the survey area and be impacted by the project. However, CDFW commented that subsequent ground-disturbing

activities associated with the Project have the potential to impact WBB and identified specific avoidance and minimization measures. These are listed below.

CDFW Recommended Mitigation Measures, WBB

**BIO-5A** A qualified biologist shall determine if suitable habitat is present within the Project site. If suitable habitat is present, a qualified biologist shall conduct focused surveys for WBB and their requisite habitat features to evaluate potential impacts resulting from ground- and vegetation-disturbance associated with the Project.

**BIO-5B** If surveys cannot be completed, all small mammal burrows and thatched/bunch grasses shall be avoided by a minimum of 50 feet to avoid and minimize take and potentially significant impacts any detection of WBB prior to or during Project implementation warrants consultation with CDFW to discuss how to avoid take, or if take cannot be avoided, what take authorization may be necessary to comply with CESA.

*Special Status Wildlife Species – Burrowing Owl*

BUOW rely on burrow habitat year-round for their survival and reproduction. Habitat loss and degradation are considered the greatest threats to BUOW (Gervais et al. 2008). The Draft IS/MND analysis identified that marginal nesting and wintering habitat is present within and adjacent to the area surveyed for biological resources; however, no burrows of sufficient size to support this species were observed during the biological surveys conducted for the project in 2019 and 2020. As such, the Draft IS/MND concluded that BUOW had a low potential to occur within the survey area and be impacted by the project. However, CDFW commented that subsequent ground-disturbing activities associated with the Project have the potential to significantly impact local BUOW populations. In addition, and as described in CDFW’s “Staff Report on Burrowing Owl Mitigation” (CDFG 2012), excluding and/or evicting BUOW from their burrows is considered a potentially significant impact under CEQA. Therefore, the following avoidance and minimization measures recommended by CDFW shall be incorporated of the project, as additional CDFW recommendations and mitigation measures for BUOW.

CDFW Recommended Mitigation Measures, BUOW

**BIO-6A** A qualified biologist shall assess if suitable BUOW habitat features are present within or adjacent to the Project site (e.g., burrows). If suitable habitat features are present, a qualified biologist shall assess the presence/absence of BUOW by conducting surveys following the California Burrowing Owl Consortium’s “Burrowing Owl Survey Protocol and Mitigation Guidelines” (CBOC 1993) and CDFW’s Staff Report on Burrowing Owl Mitigation” (CDFG 2012). Specifically, three or more surveillance surveys shall be conducted during daylight, with each visit occurring at least three weeks apart during the peak breeding season (April 15 to July 15), when BUOW are most detectable.

**BIO-6B** No-disturbance buffers, as outlined in the “Staff Report on Burrowing Owl Mitigation” (CDFG 2012), shall be implemented prior to and during any ground-disturbing activities. Specifically, that impacts to occupied burrows shall be avoided in accordance with the following table 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) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

\* meters (m)

**BIO-6C** If BUOW are found within these buffers and avoidance is not possible, burrow exclusion shall be conducted by qualified biologists. Burrow exclusion shall only be conducted during the non-breeding season, before breeding behavior is exhibited and after the burrow is confirmed empty through non-invasive methods, such as surveillance. Replacement of occupied burrows with artificial burrows shall occur at a ratio of 1 burrow collapsed to 1 artificial burrow constructed (1:1) as mitigation for the potentially significant impact of evicting BUOW. If exclusion of nests is necessary, ongoing surveillance within 500 feet of the burrow shall be conducted for the duration of construction or until the BUOW has moved to a different breeding site, whichever occurs first.

**Section 5.2.17 Transportation, Page 80:** The second paragraph on this page is amended as follows:

The project will require excavation within the Monterey County right-of-way on Springfield and Struve Roads for the distribution pipeline trenching, and excavation within the Caltrans right-of-way for the ~~and~~ jack and bore underneath Highway 1. The Caltrans encroachment permit will be in accordance with Caltrans engineering and environmental standards. The District PSMCSD will be responsible for obtaining an encroachment permits from the County of Monterey and Caltrans prior to the start of construction. The encroachment permits will require a traffic control plan.

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## **Attachment A**

### **Comment Letters Received on Draft IS/MND**

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# LAFCO *of Monterey County*

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## LOCAL AGENCY FORMATION COMMISSION OF MONTEREY COUNTY

**2020**

**Commissioners**

**Chair**

Ian Oglesby  
*City Member*

September 10, 2020

**Vice Chair**

Christopher Lopez  
*County Member*

Judy Vasquez, Operations Manager  
Pajaro/Sunny Mesa Community Services District  
136 San Juan Road  
Royal Oaks, CA 95076

Luis Alejo  
*County Member*

Christie Cromeenes  
*City Member*

**RE: Springfield Water System Improvements Project Draft Initial Study/  
Mitigated Negative Declaration**

Mary Ann Leffel  
*Special District Member*

Matt Gourley  
*Public Member*

Dear Ms. Vasquez,

Warren Poitras  
*Special District Member*

Thank you for the opportunity to review the Draft Initial Study/Mitigated Negative Declaration (IS/MND) for the Springfield Water System Improvements Project. The proposed project is within the LAFCO-approved District boundary for Pajaro/Sunny Mesa Community Services District and no LAFCO actions are proposed in association with the proposed project.

Maria Orozco  
*City Member, Alternate*

Jane Parker  
*County Member, Alternate*

Although LAFCO is not a Responsible Agency under CEQA for the proposed project, LAFCO's policies encourage the efficient provision of government services within LAFCO-approved and mapped boundaries where sufficient capacity exists to meet service needs. The proposed Springfield Water System Improvements Project is consistent with these policies.

Steve Snodgrass  
*Public Member, Alternate*

Graig R. Stephens  
*Special District Member, Alternate*

Again, thank you for your efforts, and please contact us if you have any questions.

**Counsel**

Kelly L. Donlon  
*General Counsel*

Sincerely,



**Executive Officer**

Kate McKenna, AICP

Kate McKenna, AICP  
Executive Officer

132 W. Gabilan Street, #102  
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**DEPARTMENT OF TRANSPORTATION**

CALTRANS DISTRICT 5  
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SAN LUIS OBISPO, CA 93401-5415  
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Making Conservation  
a California Way of Life.

September 11, 2020

MON/1/96.109  
SCH#2020080200

Judy Vazquez  
Operations Manager  
Pajaro Sunny Mesa Community Services District  
136 San Juan Road  
Royal Oaks, CA 95076

Dear Ms. Vazquez:

COMMENTS FOR THE SPRINGFIELD WATER SYSTEM IMPROVEMENTS MITIGATED NEGATIVE DECLARATION (MND) – MOSS LANDING, CA

The California Department of Transportation (Caltrans) appreciates the opportunity to review the MND for the Springfield Water System Improvements project which includes adding piping crossing underneath State Route 1. Caltrans offers the following comments in response to the MND:

- 1. Please be aware that if any future work is completed in the State's right-of-way it will require an encroachment permit from Caltrans and must be done to our engineering and environmental standards, and at no cost to the State. The conditions of approval and the requirements for the encroachment permit are issued at the sole discretion of the Permits Office, and nothing in this letter shall be implied as limiting those future conditioned and requirements. For more information regarding the encroachment permit process, please visit our Encroachment Permit Website at: <http://www.dot.ca.gov/trafficops/ep/index.html>.
- 2. All future work in, on, under, over, or affecting State highway right-of-way is subject to a Caltrans encroachment permit. Depending on the complexity of the project improvements requiring an encroachment permit, Caltrans oversight may be the more appropriate avenue for project review and approval by Caltrans. The District Permit Engineer has been granted authority by Caltrans to make this decision. Please consult with the District Permit Engineer to determine the most appropriate Caltrans project permitting system.
- 3. All future work will need to conform to the Caltrans Encroachment Permits Manual, Chapter 600. Additional utility installation requirements, which may apply, are found in

B-1

B-2

B-3

- Chapter 17 of the Project Development Procedures Manual. Deviations to Caltrans Encroachment Permit Policies may require an exception. This requirement and process will be outlined by the District Permit Engineer in the pre-submittal conference. | B-3 Cont.
4. All non-operational or vacated pipes shall be removed. The District Permit Engineer may grant waivers to this requirement based on an engineering evaluation. Plans shall conform to the Caltrans Plans Preparation Manual and Encroachment Permit Construction Plan Set outline. | B-4
5. The applicant will need to show all existing facilities and utilities in plan and profile where the scope of work is located. | B-5
6. General Basis of Horizontal and Vertical Control - Caltrans datums shall be used and observed for the construction of the proposed improvements. All plans shall be in US feet and follow the datums as follows: • Vertical Basis: NAVD 88 • Horizontal: NAD83 Zone 3 Santa Cruz County, Zone 4 Monterey and San Benito County, and Zone 5 San Luis Obispo and Santa Barbara County. At least two recorded, Caltrans Monuments must be referenced in the surveying basis. | B-6

Thank you for the opportunity to review and comment on the proposed project. If you have any questions, or need further clarification on items discussed above, please contact me at (805) 835-6543 or [christopher.bjornstad@dot.ca.gov](mailto:christopher.bjornstad@dot.ca.gov).

Sincerely,

*Chris Bjornstad*

Chris Bjornstad  
Associate Transportation Planner  
District 5 Development Review



State of California – Natural Resources Agency  
DEPARTMENT OF FISH AND WILDLIFE  
Central Region  
1234 East Shaw Ave  
Fresno, California 93710  
www.wildlife.ca.gov

**GAVIN NEWSOM, Governor**  
**CHARLTON H. BONHAM, Director**



September 11, 2020

Judy Vazquez  
Operations Manager  
Pajaro/Sunny Mesa Community Services District  
136 San Juan Road  
Royal Oaks, California 95076

**Subject: Springfield Water System Improvements Project  
MITIGATED NEGATIVE DECLARATION (MND)  
SCH No. 2020080200**

Dear Ms. Vazquez:

The California Department of Fish and Wildlife (CDFW) received a Notice of Intent to Adopt an MND from Pajaro/Sunny Mesa Community Services District for the Project pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.<sup>1</sup>

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

## **CDFW ROLE**

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a)). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (*Id.*, § 1802). Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

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<sup>1</sup> CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

Judy Vazquez, Operations Manager  
Pajaro/Sunny Mesa Community Services District  
September 11, 2020  
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CDFW is also submitting comments as a **Responsible Agency** under CEQA (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381). CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority (Fish & G. Code, § 1600 et seq.). Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), related authorization as provided by the Fish and Game Code may be required.

**Nesting Birds:** CDFW has jurisdiction over actions with potential to result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections that protect birds, their eggs and nests include, sections 3503 (regarding unlawful take, possession or needless destruction of the nest or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird).

## **PROJECT DESCRIPTION SUMMARY**

**Proponent:** Pajaro/Sunny Mesa Community Services District

**Objective:** The objective of the Project is to provide potable water from an existing test well at Moss Landing Middle School to Moss Landing Mobile Home Park, and new and existing connections along Springfield Road and Struve Road. The Project work will mainly be within existing road rights-of-ways of dirt roads. Primary Project activities include approximately two miles of new eight-inch water lines, approximately 3,600 feet of replacement line, water storage, treatment, and pumping facilities.

**Location:** Cross Streets: Struve Road, Springfield Road, and State Route 1. The Project starts at Moss Landing Middle School (1815 CA-1, Moss Landing, CA 95039), then West along Springfield Road, then South along Springfield-Struve Intertie on to Struve Road connecting to Moss Landing Mobile Home Park along the way.

**Timeframe:** Anticipated to begin Spring 2022

## **COMMENTS AND RECOMMENDATIONS**

CDFW offers the comments and recommendations below to assist Pajaro/Sunny Mesa Community Services District in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. Editorial comments or other suggestions may also be included to improve the document.

Judy Vazquez, Operations Manager  
 Pajaro/Sunny Mesa Community Services District  
 September 11, 2020  
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Based on the information provided in the MND, CDFW is concerned regarding potential impacts to the State candidate-listed as endangered Western bumble bee (*Bombus occidentalis*), and the State species of special concern burrowing owl (*Athene cunicularia*). In order to adequately assess any potential impacts to biological resources, focused biological surveys should be conducted by a qualified wildlife biologist/botanist during the appropriate survey period(s) in order to determine whether any special-status species and/or suitable habitat features may be present within the Project area. Properly conducted biological surveys, and the information assembled from them, are essential to identify any mitigation, minimization, and avoidance measures and/or the need for additional or protocol-level surveys, especially in the areas not in irrigated agriculture, and to identify any Project-related impacts under CESA and other species of concern.

#### **I. Environmental Setting and Related Impact**

**Would the Project 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 CDFW or The United States Fish and Wildlife Service (USFWS)?**

#### **COMMENT 1: Western Bumble Bee (WBB)**

**Issue:** On June 28, 2019, the Fish and Game Commission published findings of its decision to advance WBB to candidacy as endangered. Pursuant to Fish and Game Code section 2074.6, CDFW has initiated a status review report to inform the Commission's decision on whether listing of WBB, pursuant to CESA, is warranted. During the candidacy period, consistent with CEQA Guidelines section 15380, the status of the WBB as an endangered candidate species under CESA (Fish & G. Code, § 2050 et seq.) qualifies it as an endangered, rare, or threatened species under CEQA. It is unlawful to import into California, export out of California, or take, possess, purchase, or sell within California, WBB and any part or product thereof, or attempt any of those acts, except as authorized pursuant to CESA. Under Fish and Game Code section 86, take means to hunt, pursue, catch, capture, or kill, or to attempt to hunt pursue, catch, capture, or kill. Consequently, take of WBB during the status review period may be prohibited unless appropriate authorization pursuant to CESA is obtained.

WBB have the potential to occur within and near the Project site. Suitable WBB habitat includes areas of grasslands and upland scrub that contain requisite habitat elements, such as small mammal burrows. WBB primarily nest in late February through late October underground in abandoned small mammal burrows, but may also nest under perennial bunch grasses or thatched annual grasses, under brush piles, in old bird nests, and in dead trees or hollow logs (Williams et al. 2014). Overwintering sites utilized by WBB mated queens include soft, disturbed soil

Judy Vazquez, Operations Manager  
Pajaro/Sunny Mesa Community Services District  
September 11, 2020  
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(Goulson 2010), or under leaf litter or other debris (Williams et al. 2014). Therefore, ground disturbance and vegetation removal associated with Project implementation has the potential to significantly impact local WBB populations.

**Specific impact:** Without appropriate avoidance and minimization measures for WBB, potentially significant impacts associated with ground- and vegetation-disturbing activities associated with construction of the Project include loss of foraging plants, changes in foraging behavior, burrow collapse, nest abandonment, reduced nest success, reduced health and vigor of eggs, young and/or queens, in addition to direct mortality in violation of Fish and Game Code.

**Evidence impact is potentially significant:** WBB was once common throughout most of California; WBB populations are now largely restricted to high elevation sites in the Sierra Nevada and scattered observations along the California coast (Xerces Society 2018). Analyses by the Xerces Society (2018) suggest there have been sharp declines in relative abundance by 84%.

**Recommended Potentially Feasible Mitigation Measure(s)**

To evaluate potential impacts to WBB, CDFW recommends conducting the following evaluation of the Project site, incorporating the following mitigation measures into the MND prepared for this Project, and that these measures be made conditions of approval for the Project.

**Recommended Mitigation Measure 1: WBB Surveys**

CDFW recommends that a qualified biologist determine if suitable habitat is present within the Project site. If suitable habitat is present, CDFW recommends that a qualified biologist conduct focused surveys for WBB and their requisite habitat features to evaluate potential impacts resulting from ground- and vegetation-disturbance associated with the Project.

**Recommended Mitigation Measure 2: WBB Take Avoidance**

If surveys cannot be completed, CDFW recommends that all small mammal burrows and thatched/bunch grasses be avoided by a minimum of 50 feet to avoid and minimize take and potentially significant impacts any detection of WBB prior to or during Project implementation warrants consultation with CDFW to discuss how to avoid take, or if take cannot be avoided, what take authorization may be necessary to comply with CESA.

**COMMENT 2: Burrowing Owl (BUOW)**

**Issue:** BUOW may occur near the Project site, due to their species range (CDFW 2020). BUOW inhabit open grassland or adjacent canal banks, ROWs, vacant lots, etc. containing small mammal burrows, a requisite habitat feature used by BUOW for

C-1 Cont.

C-2

Judy Vazquez, Operations Manager  
Pajaro/Sunny Mesa Community Services District  
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nesting and cover. The MND states that there are mammal burrows present throughout the Project area. Review of aerial imagery indicates that some of the Project site is bordered by potential fallow agricultural fields and may be present within the Project site.

**Specific impact:** Potentially significant direct impacts associated with subsequent activities include burrow collapse, inadvertent entrapment, nest abandonment, reduced reproductive success, reduction in health and vigor of eggs and/or young, and direct mortality of individuals.

**Evidence impact is potentially significant:** BUOW rely on burrow habitat year-round for their survival and reproduction. Habitat loss and degradation are considered the greatest threats to BUOW (Gervais et al. 2008). Subsequent ground-disturbing activities associated with the Project have the potential to significantly impact local BUOW populations. In addition, and as described in CDFW's "Staff Report on Burrowing Owl Mitigation" (CDFG 2012), excluding and/or evicting BUOW from their burrows is considered a potentially significant impact under CEQA.

**Recommended Potentially Feasible Mitigation Measure(s)**

To evaluate potential impacts to BUOW, CDFW recommends conducting the following evaluation of the Project site, incorporating the following mitigation measures into the Early Consultation prepared for this Project, and that these measures be made conditions of approval for the Project.

C-2 Cont.

**Recommended Mitigation Measure 3: BUOW Surveys**

CDFW recommends that a qualified biologist assess if suitable BUOW habitat features are present within or adjacent to the Project site (e.g., burrows). If suitable habitat features are present, CDFW recommends assessing presence/absence of BUOW by having a qualified biologist conduct surveys following the California Burrowing Owl Consortium's "Burrowing Owl Survey Protocol and Mitigation Guidelines" (CBOC 1993) and CDFW's Staff Report on Burrowing Owl Mitigation" (CDFG 2012). Specifically, CBOC and CDFW's Staff Report suggest three or more surveillance surveys conducted during daylight with each visit occurring at least three weeks apart during the peak breeding season (April 15 to July 15), when BUOW are most detectable.

**Recommended Mitigation Measure 4: BUOW Avoidance**

CDFW recommends no-disturbance buffers, as outlined in the "Staff Report on Burrowing Owl Mitigation" (CDFG 2012), be implemented prior to and during any ground-disturbing activities. Specifically, CDFW's Staff Report recommends that impacts to occupied burrows be avoided in accordance with the following table unless a qualified biologist approved by CDFW verifies through non-invasive

Judy Vazquez, Operations Manager  
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methods that either: 1) the birds have not begun egg laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

\* meters (m)

#### **Recommended Mitigation Measure 5: BUOW Passive Relocation and Mitigation**

If BUOW are found within these recommended buffers and avoidance is not possible, it is important to note that according to the Staff Report (CDFG 2012), exclusion is not a take avoidance, minimization, or mitigation method and is considered a potentially significant impact under CEQA. However, if necessary, CDFW recommends that burrow exclusion be conducted by qualified biologists and only during the non-breeding season, before breeding behavior is exhibited and after the burrow is confirmed empty through non-invasive methods, such as surveillance. CDFW recommends replacement of occupied burrows with artificial burrows at a ratio of 1 burrow collapsed to 1 artificial burrow constructed (1:1) as mitigation for the potentially significant impact of evicting BUOW. BUOW may attempt to colonize or re-colonize an area that will be impacted; thus, CDFW recommends ongoing surveillance, at a rate that is sufficient to detect BUOW if they return.

C-2 Cont.

#### **ENVIRONMENTAL DATA**

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a data base which may be used to make subsequent or supplemental environmental determinations. (Pub. Resources Code, § 21003, subd. (e).) Accordingly, please report any special-status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDDB). The CNDDDB field survey form can be found at the following link: [http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/CNDDDB\\_FieldSurveyForm.pdf](http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/CNDDDB_FieldSurveyForm.pdf). The completed form can be mailed electronically to CNDDDB at the following email address: [CNDDDB@wildlife.ca.gov](mailto:CNDDDB@wildlife.ca.gov). The types of information reported to CNDDDB can be found at the following link: [http://www.dfg.ca.gov/biogeodata/cnddb/plants\\_and\\_animals.asp](http://www.dfg.ca.gov/biogeodata/cnddb/plants_and_animals.asp).



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## FILING FEES

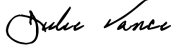
The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089.)

## CONCLUSION

CDFW appreciates the opportunity to comment on the MND to assist Pajaro/Sunny Mesa Community Services District in identifying and mitigating Project impacts on biological resources.

More information on survey and monitoring protocols for sensitive species can be found at CDFW's website (<https://www.wildlife.ca.gov/Conservation/Survey-Protocols>). Please see the enclosed Mitigation Monitoring (MMRP) table which corresponds with recommended mitigation measures in this comment letter. Questions regarding this letter or further coordination should be directed to Aimee Braddock, Environmental Scientist at (559) 243-4014 x243 or [aimee.braddock@wildlife.ca.gov](mailto:aimee.braddock@wildlife.ca.gov).

Sincerely,

DocuSigned by:  
  
FA83F09FE08945A...

Julie A. Vance  
Regional Manager

## Attachments

A. MMRP for CDFW Recommended Mitigation Measures

cc: Office of Planning and Research, State Clearinghouse, Sacramento

Judy Vazquez, Operations Manager  
Pajaro/Sunny Mesa Community Services District  
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## REFERENCES

- California Burrowing Owl Consortium. 1993. Burrowing owl survey protocol and mitigation guidelines. April 1993.
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- CDFW. 2020. Biogeographic Information and Observation System (BIOS). <https://www.wildlife.ca.gov/Data/BIOS>. Accessed August 27, 2020.
- Gervais, J.A., D.D. Rosenberg, and L.A. Comrack. Burrowing Owl (*Athene cunicularia*) in Shuford, W.D. and T. Gardali, editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento, California, USA.
- Goulson, D. 2010. Bumblebees: behaviour, ecology, and conservation. Oxford University Press, New York. 317pp.
- Williams, P. H., R. W. Thorp, L. L. Richardson, and S .R. Colla. 2014. Bumble bees of North America: An Identification guide. Princeton University Press, Princeton, New Jersey. 208pp.
- Xerces Society for Invertebrate Conservation, Defenders of Wildlife, and Center for Food Safety. 2018. A petition to the state of california fish and game commission to list the Crotch bumble bee (*Bombus crotchii*), Franklin's bumble bee (*Bombus franklini*), Suckley cuckoo bumble bee (*Bombus suckleyi*), and western bumble bee (*Bombus occidentalis occidentalis*) as Endangered under the California Endangered Species Act. October 2018.

**Attachment 1**

**CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE  
RECOMMENDED MITIGATION MONITORING AND REPORTING PROGRAM  
(MMRP)**

**PROJECT: Springfield Water System Improvements Project**

**SCH No.: 2020080200**

<b>RECOMMENDED MITIGATION MEASURE</b>	<b>STATUS/DATE/INITIALS</b>
<i>Before Disturbing Soil or Vegetation</i>	
Mitigation Measure 1: WBB Surveys	
Mitigation Measure 3: BUOW Surveys	
Mitigation Measure 5: BUOW Passive Relocation and Mitigation	
<i>During Construction</i>	
Mitigation Measure 2: WBB Take Avoidance	
Mitigation Measure 4: BUOW Avoidance	

**Draft**

**INITIAL STUDY/  
MITIGATED NEGATIVE DECLARATION**

**for**

**SPRINGFIELD WATER SYSTEM  
IMPROVEMENTS PROJECT**

**August 2020**

**Prepared For:**



**Prepared By:**



THIS PROJECT HAS BEEN FUNDED IN PART BY THE DRINKING WATER STATE REVOLVING  
FUND PROPOSITION 1 TECHNICAL ASSISTANCE WORK PLAN NO. 5822-A

SACRAMENTO STATE UNIVERSITY ENTERPRISES, INC. AGREEMENT NO. D16-12806



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- A. Project Specific CalEEMod Results
- B. Biological Resources Report
- C. Geotechnical Report
- D. Tribal Consultation
- E. Excerpts from the Preliminary Engineering Report

# 1. BACKGROUND INFORMATION

**Project Title:** Springfield Water System Improvements Project (project)

**Lead Agency/Project Proponent Name and Address:** Pajaro Sunny Mesa Community Services District, 136 San Juan Road, Royal Oaks, CA 95076.

**Project Location:** The project is located primarily within the existing road rights-of-way of paved and agricultural dirt roads. The Moss Landing Mobile Home Park, Springfield Road, and Struve Road. In addition, a portion of the project is located at the former site of Moss Landing Middle School east of Highway 1. The project area is north of the community of Moss Landing in unincorporated northern Monterey County. The project area is comprised of public right-of-way assessor parcels. The project location is shown on **Figure 1**.

**Project Summary:** The project is the development of a reliable water supply system for the Springfield area, consisting of a improvements to existing test well, new water storage tanks, booster pump station, and other improvements including distribution piping along Springfield Road, Struve Road, easements, and installation of new individual service laterals and meters. Water to serve the proposed project would be provided from the existing test well at the Moss Landing Middle School Site, referred to as SW-2. Water produced at the Moss Landing Middle School test well (SW-2) would feed the distribution system. The distribution system would consist of approximately two linear miles of new eight-inch water lines and approximately 3,600 linear feet of existing distribution system piping to be replaced. The distribution system would also connect to the Moss Landing Mobile Home Park, which includes 105 mobile home sites, as well as new and existing connections along Springfield Road and Struve Road. Current well and system facilities are impacted by nitrate contamination, seawater intrusion, or both. Each of the project components are more fully described in **Chapter 2. Project Description**.

**Surrounding Land Uses:**

North: Agriculture, Rural Residential  
South: Agriculture, Rural Residential

West: Agriculture, McClusky Slough  
East: Agriculture, Rural Residential



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## 2. PROJECT DESCRIPTION

### 2.1 INTRODUCTION

This Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared by Pajaro/Sunny Mesa Community Services District (PSMCSD), as the Lead Agency, pursuant to CEQA (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Section 15000 et seq.). This document describes the proposed development of the Springfield Water System. Improvements Project (project). The State Water Resources Control Board is acting as a responsible agency for the project. PSMCSD is acting as the Lead Agency pursuant to CEQA Guidelines §15050(a) and is responsible for approving the project as described in this document.

As the Lead Agency, PSMCSD prepared this IS/MND in accordance with State CEQA Guidelines §15063, §15070, and §15152. Pursuant to §15070, a “public agency shall prepare...a proposed negative declaration or mitigated negative declaration...when: (a) The Initial Study shows that there is no substantial evidence...that the project may have a significant impact on the environment, or (b) The Initial Study identifies potentially significant effects but revisions to the project plans or proposal are agreed to by the applicant and such revisions would reduce potentially significant effects to a less-than-significant level.”

The purpose of this document is to present to decision-makers and the public information about the environmental consequences of implementing the proposed project. This document will also serve as a basis for soliciting comments and input from members of the public and public agencies regarding the proposed project. **The Draft IS/MND will be available for a 30-day public review period from August 13, 2020 to September 11, 2020, during which period comments concerning the analysis contained in the IS/MND should be sent to: Judith Vazquez, Operations Manager, PSMCSD, 136 San Juan Road, Royal Oaks, CA 95076. E-mail comments may be addressed to: [judyvazquez@pajarosunnymesa.com](mailto:judyvazquez@pajarosunnymesa.com). If you wish to send written comments (including via e-mail), they must be received by 5:00 P.M. on September 11, 2020.** After comments are received from the public and reviewing agencies, PSMCSD may (1) adopt the IS/MND and approve the project; (2) undertake additional environmental studies; or (3) revise or abandon the project.

### 2.2 PROJECT LOCATION

The project is located primarily within the existing road rights-of-way of dirt and paved roads, the Moss Landing Mobile Home Park, Springfield Road, Struve Road, and a small area of agricultural land. In addition, a portion of the project is located at the former site of Moss Landing Middle School east of Highway 1. The project is located north of the community of Moss Landing in unincorporated northern Monterey County, as shown in the location map in **Figure 1**. Due to the linear nature of the pipeline component, many individual parcels are included within the project area. **Table 1** below presents a full list of parcels within the project area.

1. 412-031-002	2. 412-031-003	3. 412-032-009	4. 412-032-011
5. 412-032-012	6. 413-012-008	7. 413-012-014	8. 413-013-001
9. 413-013-002	10. 413-013-003	11. 413-014-001	12. 413-014-002
13. 413-014-003	14. 413-014-017	15. 413-051-001	16. 413-051-002
17. 413-051-003	18. 413-051-004	19. 413-051-006	20. 413-051-010
21. 413-051-011	22. 413-051-012	23. 413-051-015	24. 413-051-017
25. 413-051-019	26. 413-051-020	27. 413-051-021	28. 413-051-022
29. 413-051-023	30. 413-051-024	31. 413-051-025	32. 413-051-026
33. 413-051-029	34. 413-051-030	35. 413-051-031	36. 413-051-035
37. 413-061-002	38. 413-061-003	39. 413-061-004	40. 413-061-005
41. 413-061-006	42. 413-061-007	43. 413-061-008	44. 413-061-009
45. 413-061-010	46. 413-061-011	47. 413-061-012	48. 413-061-013
49. 413-061-014	50. 413-061-015	51. 413-061-016	52. 413-061-017
53. 413-061-018	54. 413-061-019	55. 413-061-020	56. 413-061-021
57. 413-061-022	58. 413-061-023	59. 413-061-025	60. 413-061-026
61. 413-061-027	62. 413-061-028	63. 413-061-029	64. 413-061-030
65. 413-061-031	66. 413-061-032	67. 413-061-033	68. 413-061-034
69. 413-061-036	70. 413-061-037	71. 413-061-038	72. 413-061-039
73. 413-061-041	74. 413-061-042		

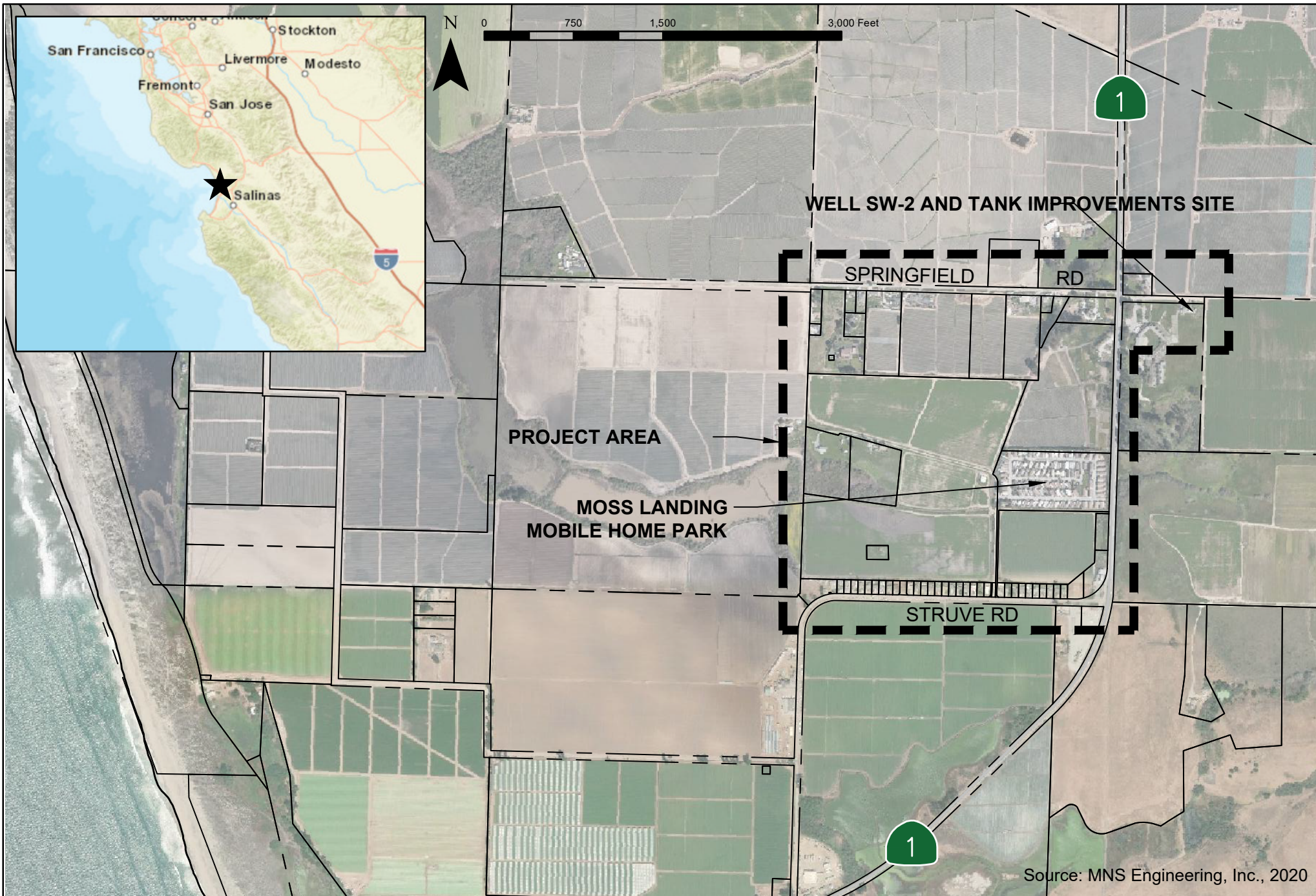
## 2.3 PROJECT COMPONENTS

The project involves the expansion and enhancement of the Springfield Water System and will include development of a new source of potable water supply; storage, treatment, pumping facilities; and distribution system improvements. The overall project and project components are shown on **Figure 2a** and **2b**. The project components include Moss Landing Middle School site improvements, distribution pipeline, and replacement pipeline to connect to the existing residents and mobile home park and other connection improvements. **Figure 3** identifies the study area for the Moss Landing Middle School site improvements and an area for future construction staging.<sup>1</sup>

### 2.3.1 Moss Landing Middle School Site Development

Water for the Springfield Water System would be provided from an existing well drilled in 2018 at the Moss Landing Middle School Site, referred to as SW-2. SW-2 is located within an easement owned by the PSMCSD on the northeast corner of the Moss Landing Middle School property. SW-2 has been tested for capacity and quality and is a suitable source of supply for a public water system.

<sup>1</sup> **Figure 3** includes a potential staging area immediately south of the SW-2 project parcel, within disturbed land (former Middle School area used for school activities). The future temporary staging area will use only a portion of this identified location, although the entire area was studied. Thus, temporary land disturbance from project construction and staging activities will be less than illustrated.



Title:

# Location Map

Date: 07/23/2020

Scale: 1 inch = 1,000 feet

Project: 2016-41



**Denise Duffy and Associates, Inc.**

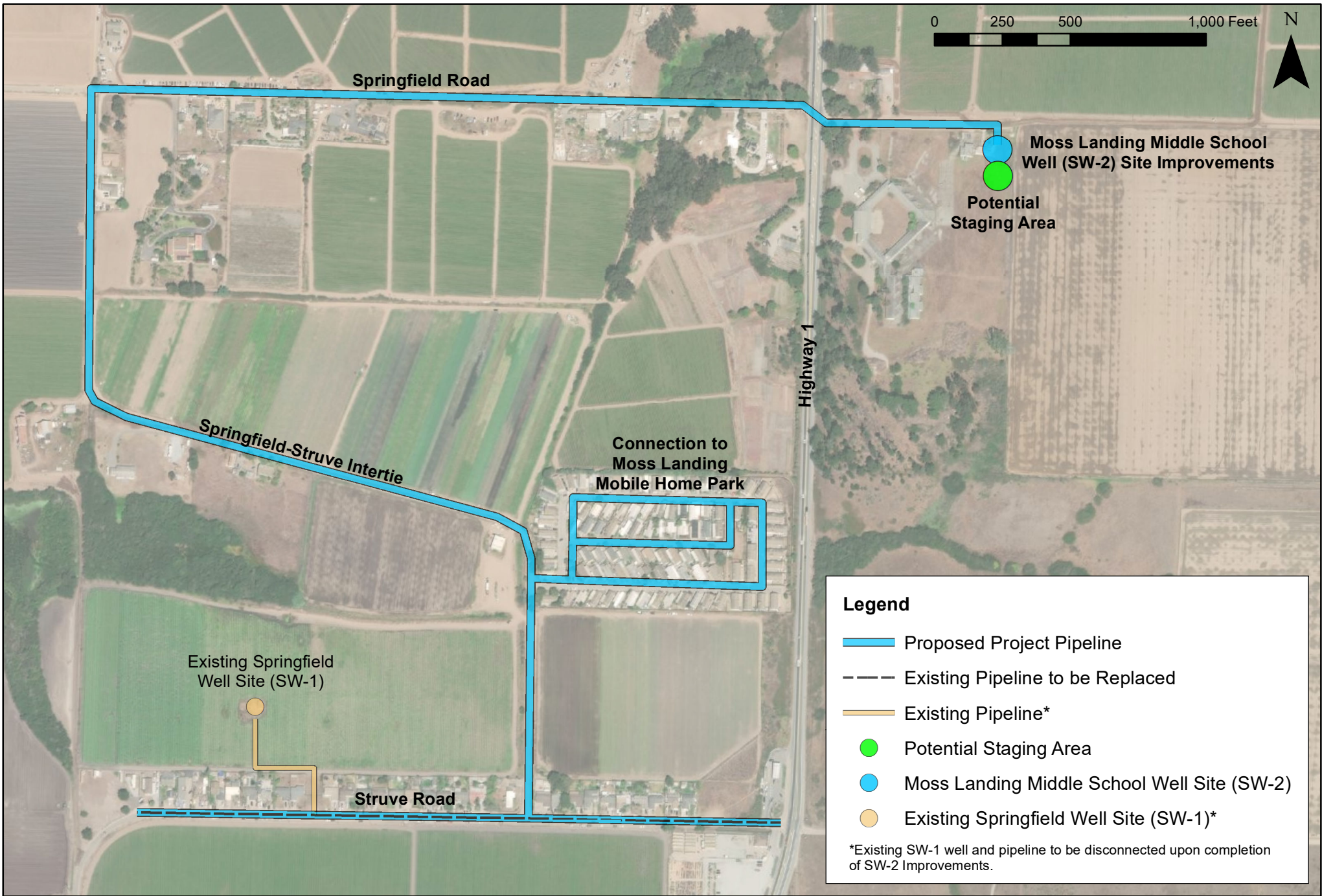
Environmental Consultants Resource Planners

947 Cass Street, Suite 5  
 Monterey, CA 93940  
 (831) 373-4341

Monterey | San Jose

Figure

1



Title:

# Overall Project Plan

Date: 08/05/2020

Scale: 1 inch = 500 feet

Project: 2016-41



**Denise Duffy and Associates, Inc.**

Environmental Consultants Resource Planners

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 Monterey, CA 93940  
 (831) 373-4341

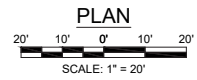
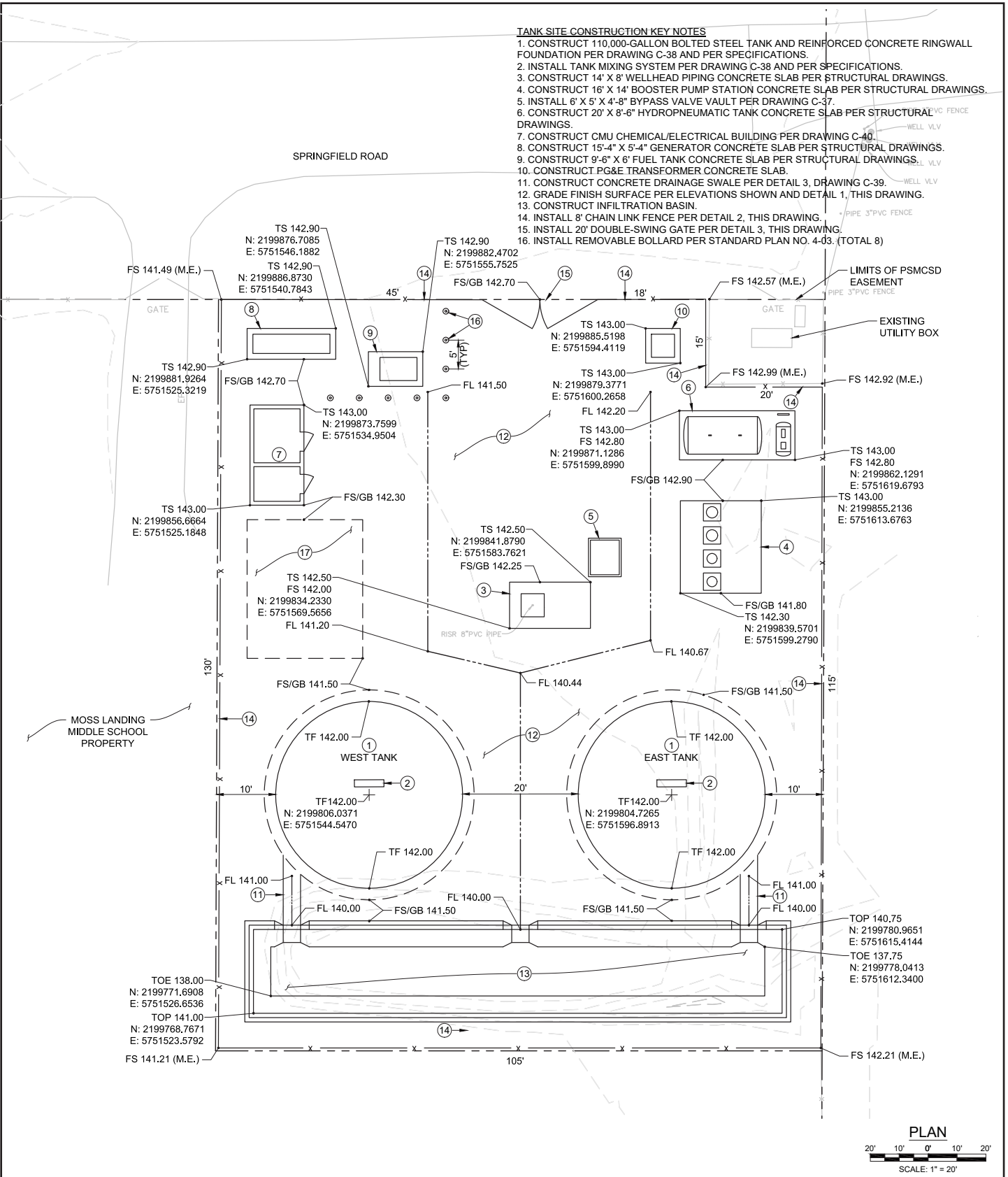
Monterey | San Jose

Figure

2a

**TANK SITE CONSTRUCTION KEY NOTES**

1. CONSTRUCT 110,000-GALLON BOLTED STEEL TANK AND REINFORCED CONCRETE RINGWALL FOUNDATION PER DRAWING C-38 AND PER SPECIFICATIONS.
2. INSTALL TANK MIXING SYSTEM PER DRAWING C-38 AND PER SPECIFICATIONS.
3. CONSTRUCT 14' X 8' WELLHEAD PIPING CONCRETE SLAB PER STRUCTURAL DRAWINGS.
4. CONSTRUCT 16' X 14' BOOSTER PUMP STATION CONCRETE SLAB PER STRUCTURAL DRAWINGS.
5. INSTALL 6' X 5' X 4'-8" BYPASS VALVE VAULT PER DRAWING C-37.
6. CONSTRUCT 20' X 8'-6" HYDROPNEUMATIC TANK CONCRETE SLAB PER STRUCTURAL DRAWINGS.
7. CONSTRUCT CMU CHEMICAL/ELECTRICAL BUILDING PER DRAWING C-40.
8. CONSTRUCT 15'-4" X 5'-4" GENERATOR CONCRETE SLAB PER STRUCTURAL DRAWINGS.
9. CONSTRUCT 9'-6" X 6' FUEL TANK CONCRETE SLAB PER STRUCTURAL DRAWINGS.
10. CONSTRUCT PG&E TRANSFORMER CONCRETE SLAB.
11. CONSTRUCT CONCRETE DRAINAGE SWALE PER DETAIL 3, DRAWING C-39.
12. GRADE FINISH SURFACE PER ELEVATIONS SHOWN AND DETAIL 1, THIS DRAWING.
13. CONSTRUCT INFILTRATION BASIN.
14. INSTALL 8' CHAIN LINK FENCE PER DETAIL 2, THIS DRAWING.
15. INSTALL 20' DOUBLE-SWING GATE PER DETAIL 3, THIS DRAWING.
16. INSTALL REMOVABLE BOLLARD PER STANDARD PLAN NO. 4-03, (TOTAL 8)



Source: MNS Engineers, Inc., February 2020

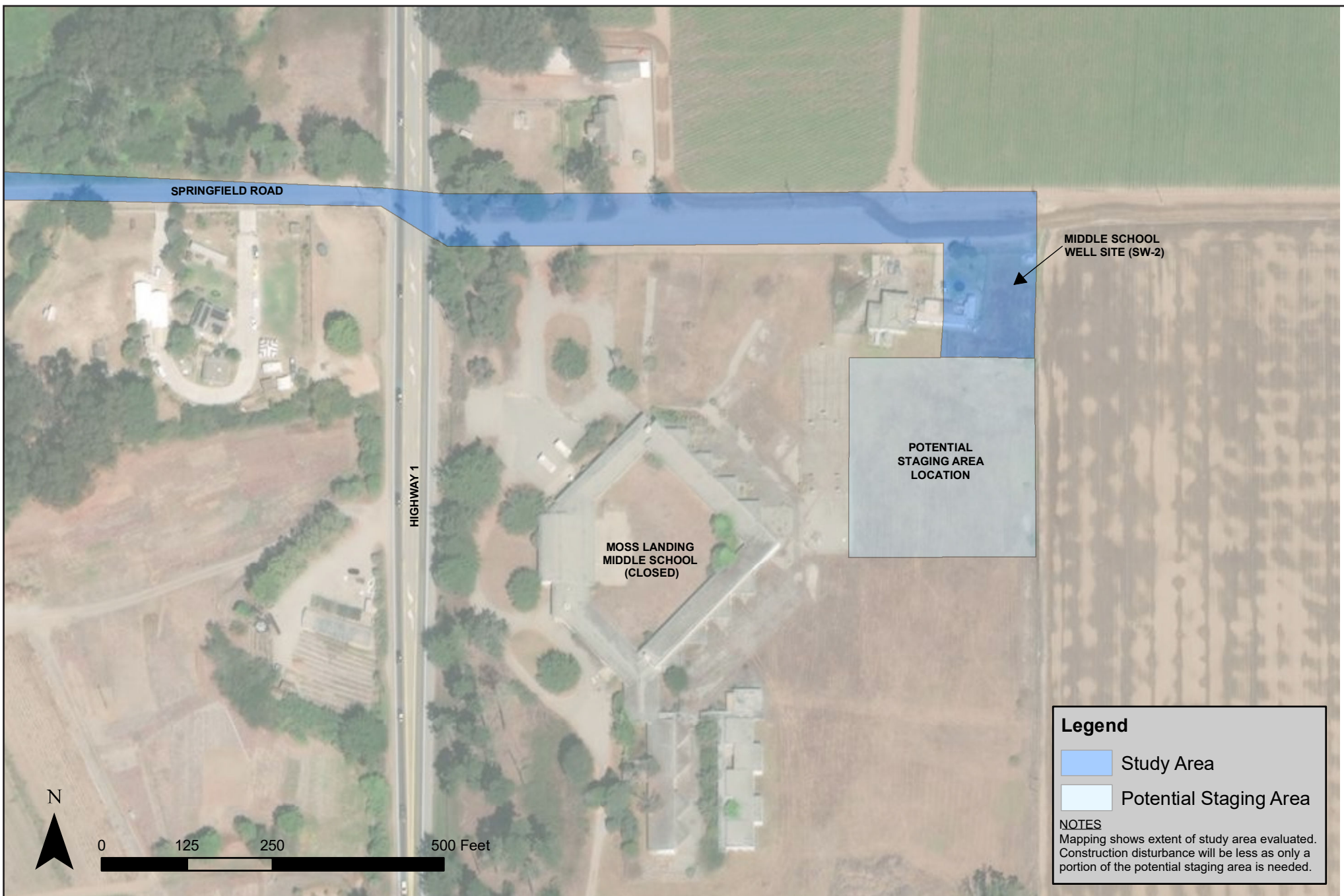
Title:  
**Planned Improvements at  
 Moss Landing School Well Site**

Date 2/20/2020  
 Scale 1"=20'  
 Project 2016-41



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**Denise Duffy and Associates, Inc.**  
 Environmental Consultants Resource Planners  
 947 Cass Street, Suite 5  
 Monterey, CA 93940  
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Figure  
**2b**



Title: **Study Area at Moss Landing Middle School Well Site**

Date: 08/05/2020

Scale: N/A

Project: 2016-41



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 Environmental Consultants Resource Planners  
 947 Cass Street, Suite 5  
 Monterey, CA 93940  
 (831) 373-4341

Figure  
**3**

The Moss Landing Middle School site will be developed as a new municipal site. The recently constructed SW-2's site improvements will include a new submersible well pump, piping, valves, and appurtenances; electrical and communication improvements; chlorination facilities; two new 110,000-gallon bolted steel water storage tanks; a permanent back-up generator; a new booster pump station including a hydropneumatic tank and four pumps to provide fully redundant domestic and fire service; and civil site improvements including fencing and security improvements, hardscape, a new building to house equipment, and miscellaneous other site improvements.

### ***2.3.2 Distribution Pipeline***

The distribution pipeline for the project would serve connections on Struve Road that are part of the existing Springfield Water System, as well as new residences on Springfield Road and Struve Road. Approximately 2.4 linear miles (12,500 linear feet) of new eight-inch water line will be constructed in the Springfield and Struve Roads areas, as shown in the site plan in **Figure 2a**. Photographs of the site are presented in **Figure 4**.

The new distribution system piping would include valves, fire hydrants, air release valves, blow-offs, sampling stations, and other appurtenances as appropriate. The new distribution system piping would be installed primarily by the open trench method; distribution piping crossing Highway 1 would be installed with a steel casing by the jack and bore method.

The distribution pipeline would require the acquisition of temporary construction access easements, as well as acquisition of permanent easements and/or real property acquisition in several areas. To provide for distribution system pipeline construction and ongoing maintenance for the pipe segment between Springfield Road and Struve Road, a permanent easement or right-of-way acquisition would be required. Also, a potentially separate temporary construction access easement will be required on APN 413-012-008 if the construction requires more area than included in the permanent access easement. Assuming the new pipeline will be installed within existing 15-foot and 60-foot wide public rights-of-way on APNs 413-051-029, 413-051-021, and 413-051-020, temporary construction access easements may be required during construction on these properties to accommodate construction activities.

### ***2.3.3 Replacement of Existing Pipelines***

Approximately 3,600 linear feet of existing distribution system piping is currently planned to be replaced along Struve Road (see **Figure 2a**). Water service laterals would be replaced from the existing distribution mains to each residence currently receiving water from the system and individual water meters would be provided for each service connection.

### ***2.3.4 Connection to Moss Landing Mobile Home Park***

This project component consists of a connection to the Moss Landing Mobile Home Park, which includes 105 mobile home sites and would connect to the Moss Landing Middle School well site, as described above in **Section 2.2.2** (see **Figure 2a**).

Construction methods for this project component would be similar to those described above in **Section 2.2.2**. New distribution system piping would include valves, fire hydrants, air release valves, blow-offs,



sampling stations, and other appurtenances as appropriate. New distribution system piping would be installed using the open trench method.

### **2.3.5 Additional Project Information**

The new facilities described above are needed to replace inadequate facilities that now serve residents in the area. The current system has consistently failed to meet water quality standards. Existing well (SW-1) and system facilities are impacted by nitrate contamination, seawater intrusion, sulfate contamination, and 1,2,3, trichloropropane contamination. Additionally, the current well location is surrounded by agricultural operations and access to this location is constrained at certain times by neighboring agricultural operations. The existing Springfield Well (SW-1) site is shown on **Figure 2a**. A physical separation between the existing SW-1 well and the improved water system will be created to prevent future supply of contaminated water to the new system. This well will be mothballed, and only used in emergency situations. No other improvements are proposed as part of this project for this site.

## **2.4 PROJECT BACKGROUND**

PSMCSD (or District) is a public agency that provides potable water, maintenance and other services to communities in Northern Monterey County. The District owns or provides operational management services for approximately 1,550 water connections. The District provides these services from the Pajaro River in the north to Moss Landing in the west and to the Highway 101 corridor in the south. It is the only public agency that provides public potable water services in the Pajaro, Elkhorn, and Prunedale areas. The District is regulated by the State Water Resources Control Board Department of Drinking Water (SWRCB) regulations and the Monterey County Environmental Health Department.

PSMCSD began operating the Springfield Water system, located on Struve Road, in 2005. This system was known as the Springfield Mutual Water System until the County of Monterey approved a transfer of ownership from the defunct Springfield Mutual Water Corporation to the District in 2015. The goal of the project is to construct needed improvements and new facilities to the Springfield Water System to better serve the community. The project is designed to provide a high-quality water source, which will allow the District to increase long-term water supply reliability for the community.

The existing well has tested in exceedance of nitrate MCLs for many years and the Springfield system has been on a bottled water order from Monterey County since approximately 1986. An Emergency Drinking Water grant from the state was funded for PSMCSD to provide bottled water to residents for potable uses. The first grant was approved in 2013 and a second round was funded in 2015. PSMCSD received a State Revolving Fund Drinking Water Planning grant in 2014 to conduct preliminary environmental and engineering work for a new water supply to serve the homes on Struve Road.

As part of this long-term planning effort, the District and engineering team evaluated a series of alternatives and approaches to meet the needs of the community.<sup>2</sup> Technical studies and this IS/MND include environmental analysis and mitigation measures specific to the project described above.

Technical reports included herein thus may include a study area greater than the proposed project (MNS Engineers, 2020). As noted, this IS/MND focuses on the project as shown on **Figures 2a** and **2b**, described above.

## 2.5 PROJECT CONSTRUCTION

Construction will typically occur from 7 A.M. to 5 P.M., Monday through Friday. Construction activities are anticipated to last a maximum of one year. Construction is anticipated to begin in Spring 2022. Access to the project site is provided via Highway 1 to Springfield Road east of Highway 1 to access the Middle School Well Site. West of Highway 1, construction vehicles would use either Springfield Road or Struve Road to access the areas proposed for replacement and new distribution pipeline.

Construction activities along Springfield Road and Struve Road are proposed primarily within roadway and public easement rights of way. The project will require excavation within the Monterey County right-of-way on Springfield and Struve Roads for the distribution pipeline trenching and jack and bore underneath Highway 1. PSMCSD will be responsible for obtaining an encroachment permit from the County of Monterey prior to the start of construction. The encroachment permit will require a traffic control plan. Construction could complete approximately 100 to 200 feet or more of pipeline per day, and may include lane narrowing and/or lane closures in certain areas. No sidewalks or bike lanes exist along the pipeline alignments. PSMCSD will prepare a construction traffic control plan to address the detailed project construction schedule, potential for residential street closures and/or detours on Struve Road or Springfield Road, as well as detailed construction staging areas and parking, and planned truck routes.

A potential staging area for the Middle School Well Site is shown on **Figure 3**. The former Moss Landing Middle School includes a flat, undeveloped lot adjacent to former administrative buildings of the closed school, mobile home(s) and related out-structures. Construction vehicles will use a portion of the staging area for housing construction equipment and vehicles. Springfield Road in this area has limited traffic associated with the few buildings within this area and the neighboring agricultural properties.

## 2.6 PROJECT OBJECTIVE

The primary objective of the project is to provide a high-quality water source, which will provide for long-term water supply reliability for the community.

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<sup>2</sup> Alternatives to the project, including optional well locations and distribution areas, were considered in preliminary engineering reports and grant applications. The Preliminary Engineering Report (PER) prepared by MNS Engineers, Inc. evaluated various alternatives and options for source supply for the community. The Moss Landing School site was recommended as the primary water source for the Springfield system since the well was completed and had a demonstrated ability to provide water to the system. Although the PER also considered a new well at the existing well site, this component was not pursued and is not a part of this project. Distribution pipeline alignment options were also considered in the PER during the preliminary planning phase including use of Highway 1 for distribution from the Middle School to Springfield Road. These alternative alignments were also eliminated.

## 2.7 PROJECT APPROVALS

A listing of the potential permit requirements for the project is shown below:

- Federal
  - U.S. Fish and Wildlife Service – Endangered Species Act Compliance<sup>3</sup>
- State
  - California Department of Fish and Wildlife – California Endangered Species Act Section 2081 Incidental Take Permit
  - Caltrans – Encroachment Permit
  - California Coastal Commission – Coastal Development Permit
  - State Water Resources Control Board Division of Drinking Water – Permit Amendment
- Local
  - Monterey Bay Air Resources District – Authority to Construct
  - Monterey County – Grading Permit
  - Monterey County – Encroachment Permit

PSMCS D has been provided state funding and may be provided future funding for project implementation under a number of programs, including possible source funding under the SWRCB’s State Revolving Fund (SRF), or other Federal funding mechanism. The SRF Loan Program is partially funded by the U.S. Environmental Protection Agency (USEPA) and is subject to federal environmental regulations, including the Endangered Species Act (ESA), the National Historic Preservation Act (NHPA), and the General Conformity Rule for the Clean Air Act (CAA), among others.

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<sup>3</sup> The project will comply with the ESA and conduct consultation with the USFWS to determine whether incidental take authorization for CTS is required prior to issuance of a grading permit. If it is determined that authorization for the incidental take of this species is required from the USFWS, the project will comply with the ESA to obtain Section 7 or Section 10 authorization from USFWS at the project-level prior to the issuance of a grading permit.



**Photo 1:** View of well at Moss Landing Middle School facing southeast.



**Photo 2:** View of Struve Road facing west.



**Photo 3:** View of mobile home park facing east.



**Photo 4:** View of unnamed road next to mobile home park facing northwest.  
Source: Holman & Associates, April 2020

Title: **Site Photos**

Date 5/27/2020  
Scale N/A  
Project 2016.41



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Figure  
**4**

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### 3. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the checklist on the following pages.


- |                                     |                                    |                                     |                                    |
|-------------------------------------|------------------------------------|-------------------------------------|------------------------------------|
| <input type="checkbox"/>            | Aesthetics                         | <input type="checkbox"/>            | Mineral Resources                  |
| <input type="checkbox"/>            | Agriculture and Forestry Resources | <input checked="" type="checkbox"/> | Noise                              |
| <input checked="" type="checkbox"/> | Air Quality                        | <input type="checkbox"/>            | Population and Housing             |
| <input checked="" type="checkbox"/> | Biological Resources               | <input type="checkbox"/>            | Public Services                    |
| <input checked="" type="checkbox"/> | Cultural Resources                 | <input type="checkbox"/>            | Recreation                         |
| <input type="checkbox"/>            | Energy                             | <input checked="" type="checkbox"/> | Transportation                     |
| <input type="checkbox"/>            | Geology and Soils                  | <input checked="" type="checkbox"/> | Tribal Cultural Resources          |
| <input type="checkbox"/>            | Greenhouse Gas Emissions           | <input type="checkbox"/>            | Utilities and Service Systems      |
| <input checked="" type="checkbox"/> | Hazards and Hazardous Materials    | <input type="checkbox"/>            | Wildfire                           |
| <input type="checkbox"/>            | Hydrology and Water Quality        | <input checked="" type="checkbox"/> | Mandatory Findings of Significance |
| <input type="checkbox"/>            | Land Use                           |                                     |                                    |

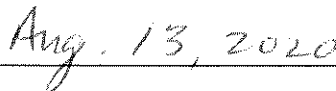
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#### 4. DETERMINATION

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 in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

  
\_\_\_\_\_  
Signature

  
\_\_\_\_\_  
Date



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## 5. ENVIRONMENTAL EVALUATION

This Initial Study evaluates the following resource sections within **Section 5.2. Environmental Setting and Impacts**: aesthetics, agricultural resources, air quality, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use, mineral resources, noise, population/housing, public services, recreation, transportation, tribal resources, and utilities and service systems, and wildfire.

### 5.1 EVALUATION OF ENVIRONMENTAL IMPACTS

The following describes how the proposed project’s impacts to resource areas will be analyzed in this Initial Study in accordance with the California Environmental Quality Act (CEQA). Each resource section includes: 1) existing setting and applicable regulatory background, 2) CEQA impact checklist for the resource area, and 3) impact discussion in response to the questions in the checklist and mitigation where warranted. The impact discussion will identify the level of environmental effect from the proposed project. An explanation or discussion is required for all answers to the resource impact checklist as follows.

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 where 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 off-site as well as on-site, 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, then 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 EIR is required.
4. “Negative Declaration: Less Than Significant With Mitigation Incorporated” applies where the incorporation of mitigation measures has reduced an effect from “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 “Earlier Analyses,” as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the 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 they 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 Measures Incorporated,” describe the mitigation measures which 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, where 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 less than significant.

## **5.2 ENVIRONMENTAL SETTING AND IMPACTS**

The following section describes the environmental setting and identifies the environmental impacts anticipated from implementation of the project. The criteria provided in the CEQA environmental checklist was used to identify potentially significant environmental impacts associated with the project.

### **5.2.1 Aesthetics**

#### **Setting**

The project is located north of the unincorporated community of Moss Landing and is primarily within existing road rights-of-way and previously disturbed sites. Visually sensitive areas are those containing scenic resources visible from existing, potential, and proposed scenic routes. The project site is not designated as a “visually sensitive area” by the Monterey County General Plan. (Monterey County, 2010).

The State Scenic Highways Program is designed to protect and enhance the natural scenic beauty of California’s highways and adjacent corridors through special conservation treatment. The project site is located within the vicinity of Highway 1, which is not designated as a scenic highway by the Monterey County General Plan or the California Scenic Highway Mapping System (Caltrans, 2020) in this vicinity.

The area surrounding the project is characterized primarily by two types of landscape. The first is agricultural landscape, consisting primarily of row crops and associated farm infrastructure and equipment. The second is rural residential landscape, consisting of the Moss Landing Mobile Home Park and residences along Springfield and Struve Road. The majority of the project will be within existing road right of way and previously disturbed sites. Prominent visual resources in the project vicinity include Elkhorn Slough and the surrounding wetland areas, McClusky Slough, Bennett Slough, Zmudowski State Beach Park, Highway 1, Moss Landing Harbor, and the Pacific Ocean.

### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
AESTHETICS. Would the project:				
a) Have a substantial adverse effect on a scenic vista?			X	
b) Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?			X	
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			X	
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?				X

### Explanation

- a) **Less-Than-Significant Impact.** The majority of the project site is located within existing right of ways and disturbed areas. Many of the project components would be underground and would not be visible after construction is complete. The project would not impact scenic vistas and is not located within a scenic corridor. Construction of the project may be temporarily visible from a small amount of private residences. Impacts to private views in a project's immediate vicinity are not considered under CEQA.
- b) **Less-Than-Significant Impact.** There are no scenic resources within the immediate vicinity of the project. A small portion of the distribution pipeline would be directionally drilled under Highway 1. However, Highway 1 is not a designated scenic highway within the vicinity of the project. Construction and operation of the project would result in a less-than-significant impact.
- c) **Less-Than-Significant Impact.** The existing visual character of the project site is comprised of rural land uses including agriculture and residential. The overall visual quality of the site is considered moderate due to the surrounding agricultural open space and relative proximity to nearby sloughs. The residential land within the vicinity of the project site does not enhance the aesthetic value of the area. Construction impacts would include the presence of construction

vehicles, equipment and materials, stockpiles, and exposed soils. These impacts would be temporary in nature. Once the project is completed, the land would be restored to its pre-construction condition. For these reasons, construction and operation of the project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings in this relatively non-urbanized area.

- d) **No Impact.** The project does not propose any new sources of light or glare, as the new distribution system line will be underground, and the facilities at the Moss Landing Middle School site would not include nighttime lighting. Construction will not occur at night; therefore, no safety lighting will be needed.

**Conclusion:** The project would have a less-than-significant impact on aesthetics.

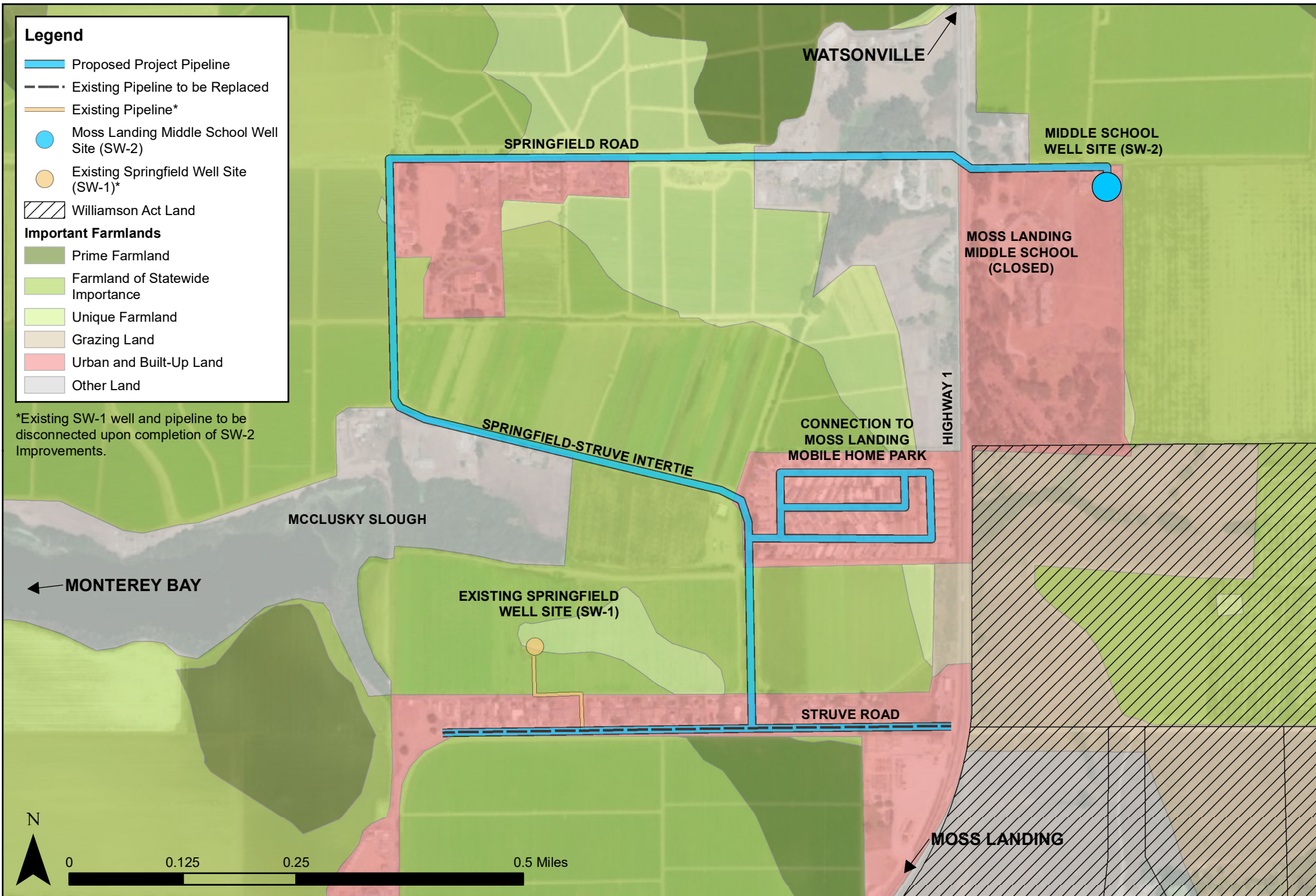
**Sources:** 1, 2, 3

### ***5.2.2 Agricultural and Forestry Resources***

#### **Setting**

In California, agricultural land is given consideration under CEQA. According to Public Resources Code §21060.1, “agricultural land” is identified as prime farmland, farmland of statewide importance, or unique farmland, as defined by the U.S. Department of Agriculture land inventory and monitoring criteria, as modified for California. CEQA also requires consideration of impacts on lands that are under Williamson Act contract. The project is located within areas designated as Farmland of Statewide Importance, Unique Farmland, and Urban and Built-up Land (Department of Conservation, 2018). The project site does not contain lands under Williamson Act contract (Department of Conservation, 2016).

CEQA requires the evaluation of forest and timber resources where they are present. The project is within an existing agriculture and rural residential area. As shown in **Figure 5**, the site does not contain any forest land as defined in Public Resources Code Section 12220(g), timberland as defined by Public Resources Code Section 4526, or property zoned for Timberland Production as defined by Government Code Section 51104(g).



Title:

# Important Farmlands Map

Date: 08/06/2020

Scale: 1 inch = 700 feet

Project: 2016-41



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Figure

5

## CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
<p>AGRICULTURAL AND FOREST RESOURCES. In determining whether impacts to 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 to 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 Forest Protocols adopted by the California Air Resources Board. Would the project:</p>				
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?			X	
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?			X	
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))?			X	
d) Result in the loss of forest land or conversion of forest land to non-forest uses?				X
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?			X	

### Explanation

a, b, c) **Less-than-Significant Impact.** The project site includes lands designated as “Farmland of Statewide Importance,” “Unique Farmland,” “Urban and Built-up Land,” and “Other Land” on the Important Farmlands Map for Monterey County. The distribution pipeline component of the project traverses land designated as Farmland of Statewide Importance by the Farmland Mapping and Monitoring Program of the California Resources Agency. However, pipeline construction would occur entirely within previously disturbed areas including paved and dirt roads within road rights-of-way. Installation of the distribution pipeline would include trenches approximately two feet wide along the length of the pipeline, which is approximately 2.4 linear miles. To facilitate construction, pipeline laydown areas may be established alongside the distribution pipeline alignment as shown on **Figure 2a**. However, these areas would be within the existing disturbed areas and would not encroach into the adjacent farmland. The proposed pipeline alignment is located within existing roadway rights-of-way and the proposed well improvements are located on urbanized land zoned for public-quasi public uses. The project site is not located on or near land enrolled under the Williamson Act (County of Monterey, 2016). The pipelines will be underground and represent a temporary construction impact. Thus, the project would not convert Prime Farmland, Unique

Farmland, or Farmland of Statewide Importance (Farmland) to non-agricultural use and would not conflict with zoning for agricultural use or a Williamson Act contract. This represents a less-than-significant impact.

- d) **No Impact.** The project would not impact forest resources or result in the loss or conversion of forest land since the project site does not contain any forest land as defined in Public Resources Code Section 12220(g), timberland as defined by Public Resources Code Section 4526, or property zoned for Timberland Production as defined by Government Code Section 51104(g).
- e) **Less-Than-Significant Impact.** The project would not involve changes in the existing environment which, due to their location or nature, could result in conversion of farmland or agricultural land. Construction impacts adjacent to agricultural resources would occur within existing disturbed areas and would be temporary in nature. The project is a water system improvement project and would not convert any land for other use.

**Conclusion:** The project would have a less-than-significant impact on agricultural and forest resources.

**Sources:** 1, 2, 3, 4

### 5.2.3 *Air Quality*

#### **Setting**

The project is located within the North Central Coast Air Basin (NCCAB) and within the jurisdiction of the Monterey Bay Air Resources District (MBARD). Air Quality in a region is affected by its topography, meteorology, and climate. These factors are discussed in more detail in the following sections:

#### *Location Climate and Meteorology*

The NCCAB encompasses Santa Cruz, San Benito and Monterey counties. The NCCAB is bordered by the Pacific Ocean to the west, the San Francisco Bay Area Air Basin (SFBAAB) to the north, the San Joaquin Valley Air Valley Air Basin to the east, and the South Central Coast Air Basin to the south.

Onshore sea breezes dominate regional wind patterns, bringing fog and cool air into the coastal valleys during the summer months. In the fall, winds generally slow or reverse direction toward the sea; in the winter, the Pacific high-pressure system moves south and has less influence on the NCCAB. In general, mild annual temperatures dominate in the maritime and coastal areas, and the interior and valley areas experience warmer summers and cooler winters. The NCCAB is situated downwind of the SFBAAB, and transport of ozone precursor emissions from the SFBAAB plays a dominant role in ozone concentrations measures in San Benito and Santa Cruz counties.

#### *Criteria Air Pollutants*

Primary criteria pollutants are emitted directly from a source (e.g., vehicle tailpipe, an exhaust stack of a factory, etc.) into the atmosphere. Primary criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), fine particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), sulfur dioxide (SO<sub>2</sub>) and lead (Pb). Ozone is considered a secondary criteria pollutant because it is created by atmospheric chemical and photochemical



reactions between volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>). The project would generate emissions of CO, PM<sub>10</sub>, PM<sub>2.5</sub>, and SO<sub>2</sub> as well as ozone precursors VOC and NO<sub>x</sub> (including NO<sub>2</sub>) during construction and operation. These pollutants can have adverse impacts on human health at certain levels of exposure. The following subsections describe the characteristics, sources, and health and atmospheric effects of air pollutants.

*Ozone.* Ozone is produced by a photochemical reaction (triggered by sunlight) between NO<sub>x</sub> and VOC. NO<sub>x</sub> is formed during the combustion of fuels, while reactive organic gases are formed during combustion and evaporation of organic solvents. Because O<sub>3</sub> requires sunlight to form, it mostly occurs in substantial concentrations between the months of April and October. Groups most sensitive to O<sub>3</sub> include children, the elderly, people with respiratory disorders, and people who strenuously exercise outdoors.

*Carbon Monoxide.* Carbon monoxide is a local pollutant that is found in high concentrations only near fuel combustion equipment and other sources of CO. The primary source of CO, a colorless, odorless, poisonous gas, is automobile traffic. Elevated concentrations, therefore, are usually only found near areas of high traffic volumes. Carbon monoxide's health effects are related to its affinity for hemoglobin in the blood. At high concentrations, CO reduces the amount of oxygen in the blood, causing heart difficulty in people with chronic diseases, nausea, reduced lung capacity, and impaired mental abilities. CO can also affect the central nervous system, leading to headaches, dizziness, sleepiness, vomiting, confusion, and disorientation (MBARD, 2016).

*Sulfur Dioxide.* SO<sub>2</sub> is a colorless, pungent, irritating gas formed primarily by the combustion of sulfur-containing fossil fuels. When SO<sub>2</sub> oxidizes in the atmosphere, it forms sulfur trioxide (SO<sub>3</sub>). Collectively, these pollutants are referred to as sulfur oxides (SO<sub>x</sub>). In humid atmospheres, SO<sub>2</sub> can also form sulfuric acid mist, which can eventually react to produce sulfate particulates that can inhibit visibility. Combustion of high sulfur-content fuels is the major source of SO<sub>2</sub>, while chemical plants, sulfur recovery plants, and metal processing are minor contributors. At sufficiently high concentrations, SO<sub>2</sub> irritates the upper respiratory tract. At lower concentrations, when in conjunction with particulates, SO<sub>2</sub> appears to do still greater harm by injuring lung tissues. This compound also constricts the breathing passages, especially in people with asthma and people involved in moderate to heavy exercise. Sulfur dioxide causes respiratory irritation, including wheezing, shortness of breath, and coughing. Long-term SO<sub>2</sub> exposure has been associated with increased risk of mortality from respiratory or cardiovascular disease. Sulfur oxides, in combination with moisture and oxygen, can yellow leaves on plants, dissolve marble, and eat away iron and steel.

*Suspended Particulates.* Atmospheric particulate matter is comprised of finely divided solids and liquids such as dust, soot, aerosols, fumes, and mists. The particulates that are of particular concern are PM<sub>10</sub> (small particulate matter measuring no more than 10 microns in diameter) and PM<sub>2.5</sub> (fine particulate measuring no more than 2.5 microns in diameter). The characteristics, sources, and potential health effects associated with the PM<sub>10</sub> and PM<sub>2.5</sub> can be different. Major man-made sources of PM<sub>10</sub> are agricultural operations, industrial processes, combustion of fossil fuels, construction, demolition operations, and entrainment of road dust into the atmosphere. Natural sources include windblown dust, wildfire smoke, and sea spray salt. The finer PM<sub>2.5</sub> particulates are generally associated with combustion processes as well as formation in the atmosphere as a secondary pollutant through chemical reactions. PM<sub>2.5</sub> is more likely to penetrate deeply into the lungs and poses a serious health threat to all groups, but particularly to the elderly, children, and

those with respiratory problems. More than half of the small and fine particulate matter that is inhaled into the lungs remains there, which can cause permanent lung damage. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance. The health effects of suspended particulates include premature mortality, aggravation of respiratory and cardiovascular disease, changes in lung function and increased respiratory symptoms, changes to lung tissues and structure, and altered respiratory defense mechanisms (MBARD, 2016).

### *Toxic Air Contaminants*

Toxic air contaminants (TACs) are a diverse group of air pollutants that may cause or contribute to an increase in deaths or serious illness or that may pose a present or potential hazard to human health. TACs include both organic and inorganic chemical substances that may be emitted from a variety of common sources, including gasoline stations, motor vehicles, dry cleaners, industrial operations, painting operations, and research and teaching facilities. One of the main sources of TACs in California is diesel engines that emit exhaust containing solid material known as diesel particulate matter (DPM; California Air Resources Board [CARB] 2011). TACs are different than the criteria pollutants previously discussed because ambient air quality standards have not been established for TACs. TACs occurring at extremely low levels may still cause health effects, and it is typically difficult to identify levels of exposure that do not produce adverse health effects. TAC impacts are described by carcinogenic risk and by chronic (i.e., of long duration) and acute (i.e., severe but of short duration) adverse effects on human health.

### *Monterey Bay Air Resources District*

MBARD is the agency primarily responsible for ensuring that National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) are not exceeded and that air quality conditions are maintained in the NCCAB, within which the project is located. The NCCAB is in attainment for all NAAQS and for all CAAQS except O<sub>3</sub> and respirable PM<sub>10</sub>. The primary sources of O<sub>3</sub> and PM<sub>10</sub> in the NCCAB are from automobile engine combustion. To address exceedance of these CAAQS, MBARD has developed and implemented several plans including the 2005 Particulate Matter Plan, the 2007 Federal Maintenance Plan, and the 2012-2015 Air Quality Management Plan (AQMP), a revision to the 2012 Triennial Plan.

The following MBARD rules would apply to the proposed project:

- Rule 400 (Visible Emissions). Discharge of visible air pollutant emissions into the atmosphere from any emission source for a period or periods aggregating more than three minutes in any one hour, as observed using an appropriate test method, is prohibited.
- Rule 402 (Nuisances). No person shall discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or which endanger the comfort, repose, health, or safety of any such persons or the public; or which cause, or have a natural tendency to cause, injury or damage to business or property.

- Rule 425 (Use of Cutback Asphalt). The use of cutback asphalt (asphalt cement that has been blended with petroleum solvents) and emulsified asphalt (an emulsion of asphalt cement and water with a small amount of emulsifying agent) is restricted to limit VOC emissions. Rule 425 prohibits the use of rapid cure asphalt, restricts the use of medium cure asphalt to November through March, and limits the content of total distillate in slow cure asphalt and petroleum solvents in emulsified asphalt.
- Rule 426 (Architectural Coatings). This rule limits the emissions of VOCs from the use of architectural coatings and sets VOC content limits for a variety of coating categories, including flat, nonflat, nonflat – high gloss, and specialty coatings. Specifically, Rule 426 limits the VOC content of flat coatings to 50 grams per liter and nonflat coatings to 100 grams per liter. Persons are prohibited from manufacturing, blending, repackaging for use, supplying, selling, soliciting, or applying architectural coatings that exceed these limits.
- Rule 1000 (Permit Guidelines and Requirements for Sources Emitting Toxic Air Contaminants): This rule regulates TACs from new or modified stationary sources that have the potential to emit carcinogenic or noncarcinogenic TACs. Rule 1000 requires sources of carcinogenic TACs to install best control technology and reduce cancer risk to less than one incident per 100,000 persons. Sources of noncarcinogenic TACs must apply reasonable control technology (MBARD, 2016).

Monterey Attainment Status to National and California Ambient Air Quality can be found in **Table 2. North Central Coast Air Basin Attainment Status Designations** below.

<b>Table 2 North Central Coast Air Basin Attainment Status Designations</b>		
<b>Pollutant</b>	<b>State Standards<sup>1</sup></b>	<b>National Standards</b>
Ozone (O <sub>3</sub> )	<b>Nonattainment<sup>1</sup></b>	Attainment / Unclassified <sup>3</sup>
Inhalable Particulates (PM <sub>10</sub> )	<b>Nonattainment</b>	Unclassified
Fine Particulates (PM <sub>2.5</sub> )	Attainment	Attainment / Unclassified <sup>3</sup>
Carbon Monoxide (CO)	Attainment	Attainment / Unclassified
Nitrogen Dioxide (NO <sub>2</sub> )	Attainment	Attainment / Unclassified <sup>4</sup>
Sulfur Dioxide (SO <sub>2</sub> )	Attainment	Attainment <sup>5</sup>
Lead	Attainment	Attainment / Unclassified <sup>6</sup>
Notes:		
1) Effective July 26, 2007, the ARB designated the NCCAB a nonattainment area for the state ozone standard, which was revised in 2006 to include an 8-hour standard of 0.070 ppm.		
2) In 2015, EPA adopted a new 8-hour ozone standard of 0.070 ppm.		
3) This includes the 2006 24-hour standard of 35 µg/m <sup>3</sup> and the 2012 annual standard of 12 µg/m <sup>3</sup> .		
4) In 2012, EPA designated the entire state as attainment/unclassified for the 2010 NO <sub>2</sub> standard.		
5) In June 2011, the ARB recommended to EPA that the entire state be designated as attainment for the 2010 primary SO <sub>2</sub> standard. Final designations to be addressed in future EPA actions.		
6) On October 15, 2008, EPA lowered the NAAQS for lead to 0.15 µg/m <sup>3</sup> . Final designations were made by EPA in November 2011.		
Source: ARB 2018, MBARD 2018a.		

Plans to attain these standards already accommodate the future growth projections available at the time these plans were prepared. Any development project capable of generating air pollutant emissions exceeding regionally-established criteria is considered significant for purposes of CEQA analysis, whether or not such emissions have been accounted for in regional air planning. Furthermore, any project that would directly cause or substantially contribute to a localized violation of an air quality standard would generate substantial air pollution impacts. The same is true for a project that generates a substantial increase in health

risks from toxic air contaminants or introduces future occupants to a site exposed to substantial health risks associated with such contaminants.

### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
AIR QUALITY. Where 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?			X	
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?			X	
c) Expose sensitive receptors to substantial pollutant concentrations?			X	
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

### Explanation

- a) **Less-Than-Significant Impact.** CEQA Guidelines §15125(b) requires that a project be evaluated for consistency with applicable regional plans, including the AQMP. The MBARD is required to update their AQMP once every three years; the most recent update (MBARD, 2017) was adopted in March of 2017. This plan addresses attainment of the State ozone standard and federal air quality standard. The AQMP accommodates growth by projecting growth in emissions based on population forecasts prepared by the Association of Monterey Bay Area Governments (AMBAG) and other indicators. Consistency determinations are issued for commercial, industrial, residential, and infrastructure related projects that have the potential to induce population growth. A project is considered inconsistent with the AQMP if it has not been accommodated in the forecast projections considered in the AQMP. The project does not include new housing or commercial development, and operation and maintenance of the project components would not require new employees. The project would not cause and/or otherwise induce population growth, as the new water system improvements would serve only existing PSMCSD customers. In addition, due to the lack of operational emissions, the project would not cause any long-term adverse air quality affects. As a result, the project would not conflict with and/or otherwise obstruct the implementation of MBARD’s AQMP.
- b) **Less-Than-Significant Impact.** The MBARD 2016 CEQA Air Quality Guidelines (Guidelines) contains standards of significance for evaluating potential air quality effects of projects subject to the requirements of CEQA. According to MBARD, a project will not have a significant air quality effect on the environment, if the following criteria are met:

Construction of the project will:

- Emit (from all sources, including exhaust and fugitive dust) less than;
  - 137 pounds per day of oxides of nitrogen (NO<sub>x</sub>)
  - 137 pounds per day of reactive organic gases (ROG)
  - 82 pounds per day of respirable particulate matter (PM<sub>10</sub>)
  - 55 pounds per day of fine particulate matter (PM<sub>2.5</sub>)
  - 550 pounds per day carbon monoxide (CO)

Operation of the project will:

- Emit (from all project sources, mobile, area, and stationary) less than;
  - 137 pounds per day of oxides of nitrogen (NO<sub>x</sub>)
  - 137 pounds per day of reactive organic gases (ROG)
  - 82 pounds per day of PM<sub>10</sub>
  - 55 pounds per day of PM<sub>2.5</sub>
  - 550 pounds per day carbon monoxide (CO)
- Not cause or contribute to a violation of any California or National Ambient Air Quality Standards;
- Not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment;
- Not exceed the health risk public notification thresholds adopted by the MBARD;
- Not create objectionable odors affecting a substantial number of people; and
- Be consistent with the adopted federal and state Air Quality Plans (MBARD, 2016)

Based on the above thresholds, the proposed project would result in a less-than-significant construction-related air quality effect. See **Table 3** for a summary of air quality calculations during project construction.

<b>Table 3</b>				
<b>Construction Air Pollutant Emissions for the Springfield Water System Improvements</b>				
	<b>Emissions in Pounds/Day</b>			
	<b>NO<sub>x</sub></b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>ROG</b>
Significance Threshold (MBARD)	137*	55	82	137*
Emissions generated by the Water System Improvements	7.3	0.39	0.55	0.94
Exceed Threshold?	No	No	No	No
Emissions Source: Attachment 2, Air Quality and GHG Calculations Spreadsheets Significance Threshold Source: MBARD, 2016 * Applies to non-typical construction equipment (i.e., well drilling) MBARD has identified that construction projects using typical construction equipment such as dump trucks, scrapers, bulldozers, compactors and front-end loaders that temporarily emit precursors of ozone (i.e., VOC or NO <sub>x</sub> ), are accommodated in the emission inventories of State- and federally-required air plans. Temporary emissions associated with the operation of construction equipment have been accommodated in State- and federally-required air plans.				

In addition, the MBARD Guidelines for evaluating impacts during construction state that if a project generates less than 82 lb/day of PM<sub>10</sub> emissions, the project is considered to have less-than-significant impact (see Table 5-1, MBARD, 2016). The Guidelines also state that a project will result in less-than-significant impacts if daily ground-disturbing activities entail less than 8.1 acres of minimal earthmoving, or less than 2.2 acres of grading and excavation. Construction projects

below these acreage thresholds would be below the applicable MBARD 82 lb/day threshold of significance and would constitute a less-than-significant effect for the purposes of CEQA (MBARD, 2016).

The project would result in temporary increases in emissions of inhalable particulates (PM<sub>2.5</sub> and PM<sub>10</sub>), VOC, and NO<sub>x</sub> associated with construction-related activities (see **Table 3. Construction Air Pollutant Emissions for the Springfield Water System Improvements Project**, above, for detailed information on these emissions, and the spreadsheets provided in **Appendix A Project Specific CalEEMod Report**, for more information). Construction-related fugitive dust emissions associated with the project would be generated from project site grading and construction. In addition to construction-related fugitive dust, exhaust emissions associated with construction vehicles and equipment would also be generated. In total, approximately 1.17 acres of land have been designated for the contractor's use in completion of the work, though the area of disturbance at any given time would include only a small portion of the larger 1.17-acre area. Construction of the project will include limited grading and would be well below the threshold of 2.2 acres of daily grading.

The operation of the project would not result in a significant impact due to air pollution emissions, since the only operational effects would be related to intermittent vehicle trips to the site for maintenance activities. In addition, the project would not require any new staff. Operation of the project would include testing the backup generator for 30 minutes a month to ensure its functionality and use of the pumps in the event of a power outage. This limited monthly testing of the generator would not exceed the MBARD thresholds for any criteria pollutant. The project would be required to obtain an Authority to Construct and/or Permit to Operate from the MBARD pursuant to Rule 1000.

Based on the above discussion, the project would not result in emissions that would cause a new or substantially more severe impact based on an exceedance or violation of the applicable air quality standards or result in a cumulatively considerable net increase of any criteria pollutants.

- c) **Less-Than-Significant Impact.** Ambient air quality standards have been established to represent the levels of air quality considered sufficient, with a margin of safety, to protect public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress, such as children under 14; the elderly over 65; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases. CARB identifies sensitive receptors as "land uses where sensitive individuals are most likely to spend time," such as "schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities" (CARB, 2005). Because the project includes the installation of new water connections, construction will occur within immediate vicinity of residences, specifically along Spring Road, Struve Road, and within the Moss Landing Mobile Home Park. The Moss Landing Middle School site is closed and would not include sensitive receptors.

Near the site, there are a few residents along Springfield Road, east of Highway 1. Implementation of the project would result in short-term emissions of fugitive dust associated with construction activities. However, as noted in **Table 3**, above, the project would not result in emissions that would

exceed MBARD's significance thresholds. Applicable MBARD thresholds are designed to be protective of public health. Compliance with applicable MBARD regulations, including, but not limited to, Rule 402 would minimize potential nuisance impacts to occupants of nearby land uses. For these reasons, construction activities would be considered to have a less-than-significant impact to nearby sensitive residential receptors. Although construction-related air quality impacts would be less-than-significant, the MBARD recommends the use of the following best management practices (BMPs) for the control of short-term construction emissions (MBARD, 2016). Adherence to the following BMPs would further reduce air pollutant emissions below the level of significance.

- Water all active construction areas at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.
- Prohibit all grading activities during periods of high wind (over 15 miles per hour).
- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed areas.
- Maintain at least two feet of freeboard on haul trucks.
- Cover all trucks hauling soil, sand, and other loose materials.
- Plant vegetative ground cover in disturbed areas as quickly as possible.
- Cover inactive storage piles.
- Sweep streets, if visible soil material is carried out from the construction site.
- Post a publicly visible sign which specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the MBARD shall be visible to ensure compliance with Rule 402 (Nuisance).
- Limit the area under construction at any one time.

- d) **Less-Than-Significant Impact.** There may be intermittent odors from construction associated with diesel exhaust that could be noticeable at times to residences in close proximity. However, given the limited construction duration, potential intermittent odors are not anticipated to result in odor complaints and would not affect a substantial number of people. The project would not generate odors from operation.

**Conclusion:** The project would have a less-than-significant impact on air quality.

**Sources:** 1, 2, 4, 5

## 5.2.4 Biological Resources

### Setting

DD&A Natural Resources Division prepared a Biological Resources Report for the project, contained in **Appendix B**. This report describes the existing biological resources within and adjacent to the project site, including any special-status species or sensitive habitats known or with the potential to occur within and adjacent to the site. This report also assesses the potential impacts to biological resources that may result from the project, and recommends appropriate avoidance, minimization, and mitigation measures necessary to reduce those impacts to a less-than-significant level in accordance with CEQA.

The project is located primarily within the existing road rights-of-way of agricultural roads, the Moss Landing Mobile Home Park, Springfield Road, and Struve Road. In addition, a portion of the project is located at northeast corner of the former Moss Landing Middle School. The survey area was defined by a 25-foot buffer of the project alignment. The majority of the survey area is developed (paved roads and residential) and active agriculture (including row crops and associated agricultural roads). Three vegetation types were observed within the undeveloped portions of the survey area: ruderal (including dirt roads), Arroyo willow riparian, and non-native grassland.

Sensitive habitats observed within the survey area include a small area of Arroyo willow riparian (*Salix lasiolepis* association), which is identified as a sensitive vegetation type on the California Department of Fish and Wildlife's (CDFW's) *California Natural Communities List* (CDFW, 2019a) and is regulated under Section 1602 of the Fish and Game Code, and other waters potentially under the jurisdiction of the U.S. Army Corps of Engineers (ACOE) and Regional Water Quality Control Board (RWQCB). The project has been designed to avoid impacts to these sensitive habitats, which would be considered significant under CEQA, and mitigation is provided to ensure avoidance, including installation of protective fencing and monitoring. As such, acquisition of regulatory permits from the ACOE, RWQCB, and CDFW for these resources is not required.

The project site is located within the North Monterey County Land Use Plan (LUP). The LUP does not include any mapped Environmentally Sensitive Habitat Area (ESHA) within the survey area, however, the sensitive habitats identified above are considered ESHA under the California Coastal Act (CCA).

### Vegetation Types

The survey results include mapping and quantification of the acreage of two vegetation types within the survey area, as shown in **Figure 6**.<sup>4</sup> Additionally, the majority of the survey area is developed or in active agricultural cultivation. The following is the acreage of each area:

- Developed (8.1 acres);
- Ruderal (4.7 acres);
- Active agriculture (2.5 acres);

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<sup>4</sup> The survey area represents a larger study area and potential impacts are greater than the actual project impact area, as noted earlier.





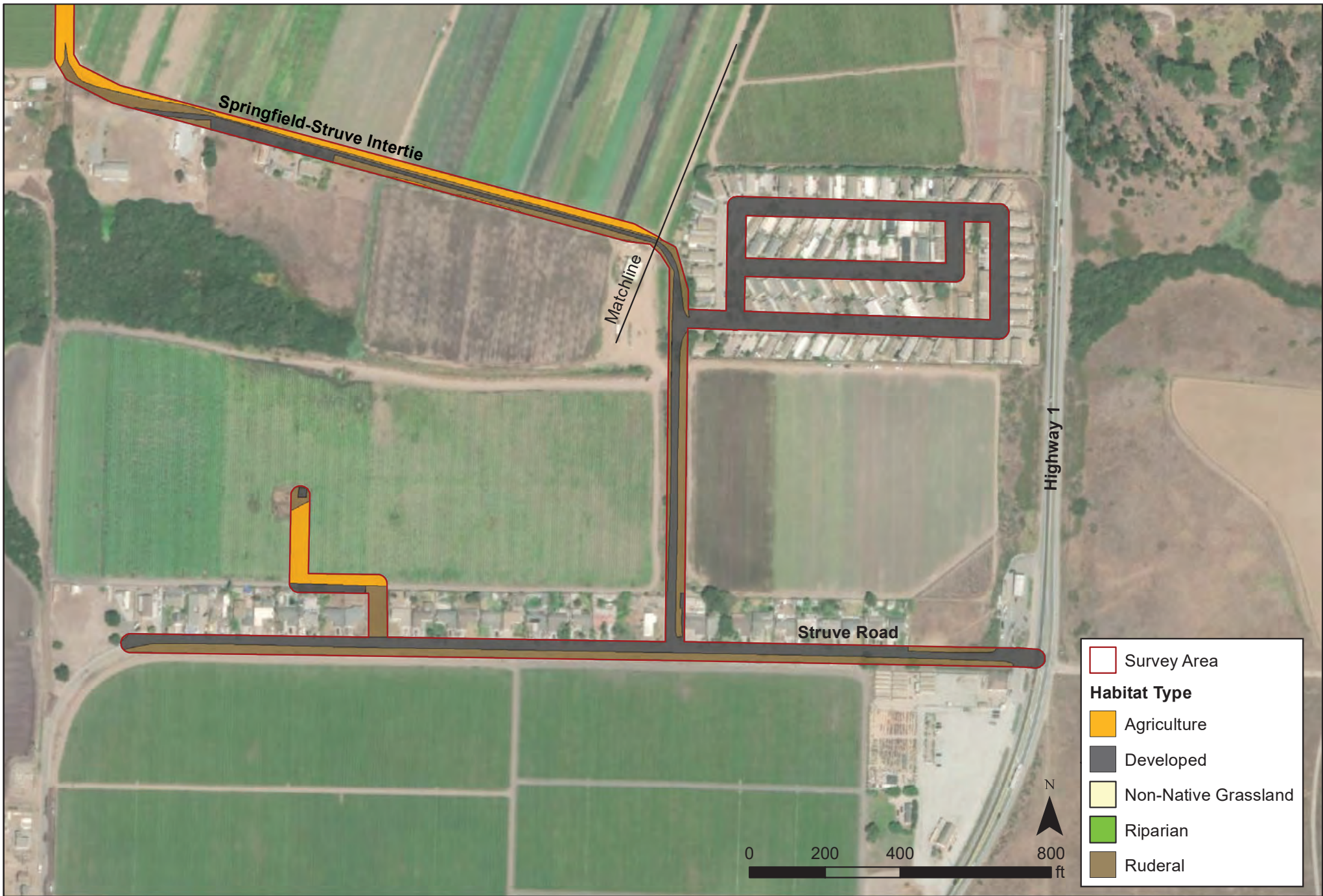
Title:  
**Habitat Map**

Date: 08/10/2020  
 Scale: 1 inch = 0.06 miles  
 Project: 2016-41



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Figure  
**6a**



Title:

# Habitat Map

Date: 08/10/2020

Scale: 1 inch = 0.06 miles

Project: 2016-41



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Figure

6b

- Non-native grassland (0.6 acre);
- Arroyo willow riparian (0.04 acre).

A description of the habitat types on the site are described below.

### *Developed*

Approximately 8.1 acres of the survey area is developed, including paved roads, structures, and residential areas. No special-status wildlife species were observed within the developed areas; however, raptors and other protected avian species may nest within trees present in the developed areas. No special-status plant species were identified within the developed areas during the surveys in 2019.

### *Ruderal*

Ruderal areas are those areas which have been subject to historic and ongoing disturbance by human activities and are devoid of vegetation or dominated by non-native and/or invasive weed species. Ruderal areas within the survey area include dirt roads, road shoulders, landscaped areas, and other disturbed areas (**Figure 7**). These areas are dominated by non-native weedy species, are regularly maintained, or are devoid of vegetation. Dominant species observed include hottentot fig (*Carpobrotus edulis*), slender oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), wild radish (*Raphanus sativus*), black mustard (*Brassica nigra*), kikuyu grass (*Pennisetum clandestinum*), poison hemlock, Monterey cypress (*Cupressus macrocarpa* [planted]), Bermuda buttercup (*Oxalis pes-caprae*), bur clover (*Medicago polymorpha*), and cheeseweed (*Malva parviflora*). Approximately 4.7 acres of ruderal habitat is present within the survey area. Ruderal areas provide only low-quality habitat for plants and wildlife. Common wildlife species which do well in urbanized and disturbed areas that may occur within the ruderal habitat include American crow (*Corvus brachyrhynchos*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), scrub jay (*Aphelocoma californica*), European starling (*Sturnus vulgaris*), western fence lizard (*Sceloporus occidentalis*), and rock dove (*Columba livia*).

California tiger salamander (CTS) may utilize riparian areas as upland habitat where small mammal burrows are present. California red-legged frog (CRLF) have the potential to disperse through riparian areas, and Northern California legless lizards may be found where loose sandy soils occur. Riparian habitat within the survey area may also provide suitable habitat for Santa Cruz long-toed salamander (SCLTS). Additionally, raptors and other protected avian species may forage and nest within this vegetation type. No special-status plant species were observed within the riparian areas during the surveys in 2019.

Riparian areas are subject to the jurisdiction of CDFW under Section 1602 of the Fish and Game Code and are considered ESHA under the CCA. Additionally, the Arroyo willow floristic alliance occurring within riparian areas is identified as sensitive on CDFW's *California Natural Communities List* (CDFW, 2019a) and a portion of this area may support other waters under the jurisdiction of the ACOE and RWQCB.

Protected avian species, including raptors, may nest within trees present throughout this habitat type. CTS may utilize ruderal areas as upland habitat where small mammal burrows are present, CRLF have the potential to disperse through ruderal areas, and Northern California legless lizards may be found where loose sandy soils occur. No special-status plant species were identified within the ruderal areas during the surveys in 2019.

### *Active Agriculture*

Approximately 2.5 acres of the survey area is under active agricultural use, including row crops and dirt access roads (**Figure 7**). These areas are regularly disturbed and maintained and provide only low-quality habitat for wildlife. However, CTS and CRLF have the potential to disperse through active agriculture. No special-status plant species were identified within the active agricultural areas during the surveys in 2019.

### *Non-native Grassland*

Non-native grasslands are those areas which have been disturbed by human activities and by non-native grasses and forbs. Non-native grasslands occurring within the survey area were historically used as the playing fields at Moss Landing Middle School but are not currently maintained and are dominated by non-native annual grass species (**Figure 7**). Dominant species present include ripgut brome, slender oat, and soft chess (*B. hordeaceus*). Additional non-dominant species include Pacific reed grass (*Calamagrostis nutkaensis*), California brome (*B. carinatus*), rattail sixweeks fescue (*Festuca myuros*), hairy cats-ear (*Hypochaeris radicata*), wild radish, black mustard, and bur clover. Approximately 0.6 acre of non-native grassland is present within the survey area.

Common wildlife species which do well in urbanized and disturbed areas that may occur within the non-native grasslands include California ground squirrel, house sparrow (*Passer domesticus*), scrub jay, European starling, western fence lizard, and rock dove.

CTS may utilize non-native grassland habitat as upland habitat where small mammal burrows are present, CRLF have the potential to disperse through non-native grasslands, and Northern California legless lizards may be found where loose sandy soils occur. No special-status plant species were identified within the non-native grasslands during the surveys in 2019.

### *Riparian*

Riparian habitats are those plant communities supporting woody vegetation found along rivers, creeks, streams, canyon bottom drainages, and seeps. They can range from a dense thicket of shrubs to a closed canopy of large mature trees. Within the survey area, riparian vegetation is present associated with a small drainage that crosses Springfield Road (**Figure 7**). Dominant native species present include Arroyo willow (*Salix lasiolepis*) and California blackberry (*Rubus ursinus*); however, the area is highly disturbed and is being invaded by invasive plants, including kikuyu grass, poison hemlock, nasturtium (*Tropaeolum majus*), and (immediately adjacent to the survey area) eucalyptus trees (*Eucalyptus globulus*).

Riparian areas provide habitat for many wildlife species, particularly birds and herpetofauna. Common species that may be found within the riparian habitat in the site includes Sierran treefrog (*Pseudacris sierra*), Monterey ensatina (*Ensatina eschscholtzii eschscholtzii*), and red-winged blackbird (*Agelaius phoeniceus*).

CTS may utilize riparian areas as upland habitat where small mammal burrows are present, CRLF have the potential to disperse through riparian areas, and Northern California legless lizards may be found where loose sandy soils occur. The riparian area may also provide habitat for the Monterey shrew. Riparian habitat within the survey area may also provide suitable habitat for SCLTS. Additionally, raptors and other protected avian species may forage and nest within this vegetation type. No special-status plant species were observed within the riparian areas during the surveys in 2019.



Title: **Sensitive Habitats Map**

Date: 08/10/2020  
 Scale: 1 inch = 0.01 miles  
 Project: 2016-41



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Figure  
**7**

Riparian areas are subject to the jurisdiction of CDFW under Section 1602 of the Fish and Game Code and are considered ESHA under the CCA. Additionally, the Arroyo willow floristic alliance occurring within riparian areas is identified as sensitive on CDFW's *California Natural Communities List* (CDFW, 2019a) and a portion of this area may support other waters under the jurisdiction of the ACOE and RWQCB.

### *Special-Status Species*

The following special-status wildlife species are known or have a moderate or high potential to occur within or immediately adjacent to the survey area:

- California tiger salamander (*Ambystoma californiense*) – FT/ST,<sup>5</sup>
- California red-legged frog (*Rana draytonii*) – FT/CSC,
- Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*) – FT/SE/FP
- Northern California legless lizard (*Anniella pulchra*) – CSC,
- Monterey shrew (*Sorex ornatus salarius*) – CSC, and
- Raptors and other protected avian species.

Focused botanical surveys were conducted within the survey area at the appropriate time of year to determine presence or absence of special-status plant species with the potential to occur. No special-status plant species were observed within the survey area.

### *Special-Status Wildlife Species*

**California Tiger Salamander.** The CTS is a federally and state threatened species. The CTS is a large, stocky salamander most commonly found in annual grassland habitat, but also occurring in the grassy understory of valley-foothill hardwood and chaparral habitats, and uncommonly along stream courses in valley-foothill riparian habitats (USFWS, 2004). Adults spend most of their lives underground, typically in burrows of ground squirrels and other animals (USFWS, 2004). The CTS has been eliminated from an estimated 55 percent of its documented historic breeding sites. Currently, about 150 known populations of CTS remain. The CTS persists in disjunct remnant vernal pool complexes in Sonoma County and Santa Barbara County, in vernal pool complexes and isolated stockponds scattered along a narrow strip of rangeland on the fringes of the Central Valley from southern Colusa County south to northern Kern County, and in sag ponds and human maintained stockponds in the coast ranges from the San Francisco Bay Area south to the Temblor Range.

Above-ground migratory and breeding activity may occur under suitable environmental conditions from mid-October through May. Adults may travel long distances between upland and breeding sites; adults have been found two kilometers (1.24 miles) from breeding sites (USFWS, 2004). Breeding occurs from November to February, following relatively warm rains (Stebbins, 2003). The CTS breeds and lays eggs primarily in vernal pools and other temporary rainwater ponds. Permanent human-made ponds are sometimes utilized if predatory fishes are absent; streams are rarely used for reproduction. Eggs are laid singly or in clumps on both submerged and emergent vegetation and on submerged debris in shallow water (Stebbins, 1972; Jennings and Hayes, 1994). Males typically spend six to eight weeks at breeding ponds,

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<sup>5</sup> Status Definitions – CSC: California Species of Concern; FE: Federally Endangered; FT: Federally Threatened; SE: State Endangered; ST: State Threatened; FP: California Fully Protected Species

while females typically spend only one to two weeks (Loredo et al., 1996). Eggs hatch within 10-14 days (USFWS, 2004) and a minimum of 10 weeks is required to complete development through metamorphosis (Jennings and Hayes, 1994), although the larval stage may last up to six months and some larvae in Contra Costa and Alameda Counties may remain in their breeding sites over the summer (USFWS, 2004).

The CNDDDB reports 36 occurrences of CTS within the seven quadrangles evaluated, including one non-specific occurrence from 1973 that overlaps with a portion of the survey area. The CNDDDB notes that CTS were observed adjacent to Elkhorn Slough, 1.25 miles north of Moss Landing; based on this description, it is possible that the occurrence is within Bennett Slough, which is located north of, but connected to Elkhorn Slough. Bennett Slough, and approximately 0.2 km (0.1 mi) south of the survey area. An additional occurrence is located 1.4 km (0.9 mi) north of the survey area where adult CTS were observed near a pond that may provide suitable breeding habitat; however, no breeding is documented for this occurrence. No suitable breeding habitat is present within the survey area; however, an agricultural pond is present immediately adjacent to the survey area on Springfield Road which may provide breeding habitat. Suitable upland habitat for CTS is present within all undeveloped areas of the survey area, particularly the non-native grassland and ruderal areas where small mammal burrows are present.

California Red-Legged Frog. The CRLF is listed as a federally threatened species and is also a CDFW species of special concern (USFWS, 1996). The CRLF is the largest native frog in California (44-131 mm snout-vent length) and was historically widely distributed in the central and southern portions of the state (Jennings and Hayes, 1994). Adults generally inhabit aquatic habitats with riparian vegetation, overhanging banks, or plunge pools for cover, especially during the breeding season (Jennings and Hayes, 1988). They may take refuge in small mammal burrows, leaf litter, or other moist areas during periods of inactivity or to avoid desiccation (Rathbun et al., 1993; Jennings and Hayes, 1994). Radiotelemetry data indicates that adults engage in straight-line breeding season movements irrespective of riparian corridors or topography and they may move up to two miles between non-breeding and breeding sites (Bulger et al., 2003). During the non-breeding season, a wider variety of aquatic habitats are used including small pools in coastal streams, springs, water traps, and other ephemeral water bodies (USFWS, 1996). CRLF may also move up to 300 feet from aquatic habitats into surrounding uplands, especially following rains, where individuals may spend days or weeks (Bulger et al., 2003).

This species requires still or slow-moving water during the breeding season where it can deposit large egg masses, which are most often attached to submergent or emergent vegetation. Breeding typically occurs between December and April depending on annual environmental conditions and locality. Eggs require six to 12 days to hatch and metamorphosis generally occurs after 3.5 to seven months, although larvae are also capable of over-wintering. Following metamorphosis, generally between July and September, juveniles are 25-35 mm in size. Juvenile CRLF appear to have different habitat needs than adults. Jennings and Hayes (1988) recorded juvenile frogs mostly from sites with shallow water and limited shoreline or emergent vegetation. Additionally, it was important that there be small one-meter breaks in the vegetation or clearings in the dense riparian cover to allow juveniles to sun themselves and forage, but to also have close escape cover from predators. Jennings and Hayes also noted that tadpoles have different habitat needs and that in addition to vegetation cover, tadpoles use mud. It is speculated that CRLF larvae are algae grazers, however, foraging larval ecology remains unknown (Jennings, et al., 1993).

It has been shown that occurrences of CRLF are negatively correlated with presence of non-native bullfrogs (Moyle, 1973; Jennings and Hayes, 1986 and 1988), although both species are able to persist at certain locations, particularly in the coastal zone. It is estimated that CRLF has disappeared from approximately 75% of its former range and has been nearly extirpated from the Sierra Nevada, Central Valley, and much of southern California (USFWS, 1996).

The CNDDDB includes 49 occurrences of CRLF within the seven quadrangles evaluated, including a non-specific occurrence that includes the entire Moss Landing quadrangles (the quadrangle the project is located within). Although non-specific, these occurrences note that the habitat is marsh surrounding McClusky Slough, which is located approximately 340 feet from the survey area. Several additional CNDDDB occurrences are located within one mile of the survey area. No suitable breeding or upland habitat is present within the survey area; however suitable dispersal habitat is present within all undeveloped portions of the survey area. Additionally, an agricultural pond is present immediately adjacent to the survey area on Springfield Road; however, it is unlikely to provide breeding habitat due to a lack of vegetation.

Santa Cruz Long-Toed Salamander. The SCLTS is listed as a federal and state Endangered species and is also a California fully protected species. The SCLTS is a subspecies of long-toed salamander (*Ambystoma macrodactylum*) that occurs in a small number of restricted localities in Santa Cruz and Monterey Counties. This subspecies is known to use several different plant community types for upland habitat, including riparian, willow thickets, coast live oak woodlands, dense coastal scrub, coastal chaparral, and Monterey pine forest (USFWS, 1999). Adults use upland areas immediately adjacent to their breeding site, as well as the surrounding areas up to 0.6 km; however, SCLTS has been recorded as far as 1.6 km (1.0 mi) from the nearest breeding site (Ruth and Tollestrup, 1973). For much of the year SCLTS find refuge in cool, moist places, such as small mammal burrows or under decayed wood piles, logs, or thick leaf litter. The upland habitat must also support an abundance of prey. Adult and sub-adult SCLTS eat a variety of invertebrates, including earthworms, slugs, isopods, beetles, and spiders.

Adult SCLTS migrate to breeding sites at night during rain events between November and March, with peak activity between December and February. During migration, the SCLTS may be found under surface objects such as rocks or logs near the breeding site. Ideal breeding locations appear to be shallow, temporary, freshwater ponds that lack fishes and hold water at least through the spring months; however, they may also breed in permanent waterbodies, such as sloughs. Males often arrive at breeding sites before females and may stay longer. Females lay approximately 300 eggs singly on submergent aquatic vegetation in shallow water, approximately five to eight cm (2-3.2 inches) below the surface. Eggs hatch within 15-30 days and the larvae metamorphose between 90 and 145 days after hatching, depending on water temperature and food availability (Howard, 1997). Terrestrial juveniles may spend the entire first summer of life in mammal burrows or under surface objects in the immediate vicinity of the breeding pond.

The CNDDDB reports 26 occurrences of SCLTS within the seven quadrangles reviewed, the nearest of which are located within McClusky Slough (approximately 340 feet from the survey area) and Bennett Slough (approximately 675 feet from the survey area); however, SCLTS may be extirpated in Bennett Slough (USFWS, 2019) (**Figure 7**). No suitable breeding habitat is present within the survey area. An agricultural pond is present immediately adjacent to the survey area on Springfield Road; however, due to the lack of vegetation within and surrounding the pond, this pond is unlikely to provide breeding habitat for SCLTS. Suitable upland habitat for SCLTS is present within the riparian habitat within the survey area; however,



the agricultural and residential uses present between McClusky Slough and this habitat within the survey area may present a significant barrier to dispersal of this species into the project site.

Northern California Legless Lizard. The Northern California legless lizard is a fossorial (burrowing) species that typically inhabits sandy or loose (friable) soils. Habitats known to support this species include (but are not limited to) coastal dunes, valley and foothill grasslands, chaparral, and coastal scrub at elevations from near sea level to approximately 1,800 meters (6,000 feet). The Northern California legless lizard forages on invertebrates beneath the leaf litter or duff layer at the base of bushes and trees or under wood, rocks, and slash in appropriate habitats. Little is known about the specific habitat requirements for courtship and breeding; however, the mating season for this species is believed to begin late spring or early summer, with one to four live young born between September and November.

The CNDDDB includes 36 occurrences of Northern California legless lizard, the nearest of which is located is approximately 1.2 miles from the survey area. Suitable habitat for this species is present within all undeveloped areas within the site where suitable soils occur.

Monterey Shrew. The Monterey shrew is a CDFW species of special concern. In general, this shrew is common in the southern two-thirds of California west of the Sierra Nevada, from Mendocino to Butte counties, south to the Mexican border. It occupies a variety of mostly moist or riparian woodland habitats and also occurs within chaparral, grassland, and emergent wetland habitats where there is thick duff or downed logs. The breeding season is long; while most pregnancies occur in March and April, they may occur from February through October. The litter size is about six and females may have more than one litter per year. Most individuals do not live to breed a second year. Foraging occurs under logs rocks and leaf litter, and prey items are mostly insects and some other invertebrates.

The CNDDDB reports two occurrences of the Monterey shrew within the quadrangles reviewed, the nearest of which is located approximately 0.5 miles from the survey area. Suitable habitat for this species is present in the riparian area within and adjacent to the survey area.

Raptors and Other Protected Avian Species. Raptors and their nests are protected under California Fish and Game Code. While the life histories of these species vary, overlapping nesting and foraging similarities (approximately February through August) allow for their concurrent discussion. Most raptors are breeding residents throughout most of the wooded portions of the state. Stands of live oak, riparian deciduous, or other forest vegetation types, as well as open grasslands, are used most frequently for nesting. Breeding occurs February through August, with peak activity May through July. Prey for these species includes small birds, small mammals, and some reptiles and amphibians. Many raptor species hunt in open woodland and habitat edges. Various common raptor species (such as red-tailed hawk [*Buteo jamaicensis*], red-shouldered hawk, great horned owl [*Bubo virginianus*], western screech owl [*Megascops kennicottii*], and turkey vulture [*Cathartes aura*]), as well as the special-status white-tailed kite have a potential to nest within any of the trees present within and adjacent to the survey area.

## CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
BIOLOGICAL RESOURCES. 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 Wildlife or U.S. Fish and Wildlife Service?		X		
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 Wildlife or U.S. Fish and Wildlife Service?		X		
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		X		
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?			X	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
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?				X

## Explanation

- a) **Less Than Significant With Mitigation Incorporated.** The potential for the project to cause impacts to sensitive or special-status species is described below.

### *Nesting Birds*

Raptors and other protected avian species have the potential to occur within the survey area. Construction activities, including vegetation removal and trenching, during the breeding and nesting seasons could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment within the survey area. This would be a potentially significant impact that can be reduced to a less-than-significant level with implementation of **Mitigation Measures BIO-1A** and **BIO-1B**.

### **Mitigation Measures**

**BIO-1A** Prior to construction activities, the project proponent shall retain a qualified biologist to conduct an Employee Education Program for the construction crew. The biologist shall meet with the construction crew at the project site at the onset of construction to educate the construction crew on the following: a) a review of the project boundaries; b) all special-status species that may be present, their habitat, and proper identification; c) the specific mitigation measures that will be

incorporated into the construction effort; d) the general provisions and protections afforded by the regulatory agencies; and e) the proper procedures if a special-status animal is encountered within the project site.

**BIO-1B** Construction activities that may directly (e.g., vegetation removal) or indirectly affect (e.g. noise/ground disturbance) nesting raptors and other protected avian species shall be timed to avoid the breeding and nesting seasons (February 1 through September 15).

If construction activities must occur during the breeding and nesting season (February 1 through September 15), a qualified biologist shall conduct pre-construction surveys for nesting raptors and other protected avian species within 300 feet of the proposed construction activities. Pre-construction surveys should be conducted no more than seven (7) days prior to the start of the construction activities during the early part of the breeding season (February through April) and no more than 14 days prior to the initiation of these activities during the late part of the breeding season (May through August).

If raptors or other protected avian nests are identified during the pre-construction surveys, the qualified biologist would notify the project proponent and an appropriate no-disturbance buffer would be imposed within which no construction activities or disturbance would take place (generally 300 feet in all directions for raptors; other avian species may have species-specific requirements) until the young of the year have fledged and are no longer reliant upon the nest or parental care for survival, as determined by a qualified biologist.

*Special Status Wildlife Species – Northern California Legless Lizard and Monterey Shrew*

The Northern California legless lizard and Monterey shrew have the potential to occur within the survey area. Construction activities, including vegetation removal and trenching, could result in mortality or disturbance these species. This is considered a significant impact that will be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-2A**.

The project is located within the known dispersal range of CTS and potential habitat for this species is present within the survey area. Additionally, an agricultural pond located immediately adjacent to the survey area on Springfield Road may provide suitable breeding habitat for CTS. Construction activities, including vegetation removal and trenching, within the project site may result in direct mortality of individuals, if present at the time of construction. This would be considered a significant impact under CEQA that can be reduced to a less-than-significant level with implementation of **Mitigation Measure BIO-2B**.

**Mitigation Measures**

**BIO-2A** The project applicant will comply with the CESA and will coordinate with the CDFW to determine whether incidental take authorization for CTS is required prior to issuance of a grading permit. If it is determined that authorization for the

incidental take of this species is required from the CDFW, the project applicant will comply with the CESA to obtain a 2081 incidental take permit from CDFW prior to the issuance of a grading permit. Permit requirements typically involve the preparation and implementation of a mitigation plan and mitigating impacted habitat at a 3:1 ratio through preservation and/or restoration. The project applicant would be required to retain a qualified biologist to prepare a mitigation plan, which will include, but is not limited to, identifying avoidance and minimization measures, and identifying a mitigation strategy that includes a take assessment, avoidance and minimization measures, compensatory mitigation lands, success criteria, and funding assurances. The project applicant would be required to implement the approved plan and any additional permit requirements.

**BIO-2B** The project will comply with the ESA and conduct consultation with the USFWS to determine whether incidental take authorization for CTS is required prior to issuance of a grading permit. If it is determined that authorization for the incidental take of this species is required from the USFWS, the project will comply with the ESA to obtain Section 7 or Section 10 authorization from USFWS at the project-level prior to the issuance of a grading permit. Permit requirements typically involve the preparation and implementation of a mitigation plan and mitigating impacted habitat at a 3:1 ratio through preservation and/or restoration. The project applicant would be required to retain a qualified biologist to prepare a mitigation plan, which will include, but is not limited to, identifying avoidance and minimization measures, and identifying a mitigation strategy that includes a take assessment, avoidance and minimization measures, compensatory mitigation lands, success criteria, and funding assurances. The project applicant would be required to implement the approved plan and any additional permit requirements.

*Special Status Wildlife Species –California Red-Legged Frog*

The project is located within the known dispersal range of CRLF and potential habitat for this species is present within the survey area. Construction activities, including vegetation removal and trenching, within the project site may result in direct mortality of individuals, if present at the time of construction. This would be considered take of a federally listed species and a significant impact under CEQA. Take of this species can be avoided and impacts reduced to a less-than-significant level with implementation of **Mitigation Measures BIO-3A – 3G**.

**BIO-3A** A qualified biologist will survey the proposed project area and immediately adjacent areas 48 hours before and the morning of the onset of work activities for the presence of CRLF. If any life stage of CRLF is observed, construction activities will not commence until the USFWS is consulted and appropriate actions are taken to allow project activities to continue.

**BIO-3B** During ground disturbing and vegetation removal activities, a qualified biologist shall survey appropriate areas of the construction site daily before the onset of work activities for the presence of CRLF. The qualified biologist shall remain

available to come to the site if a CRLF is identified until all ground disturbing activities are completed. If any life stage of the CRLF is found and these individuals are likely to be killed or injured by work activities, the qualified biologist shall be contacted, and work shall stop in that area until the CRLF has moved on its own out of the work area and the USFWS has been contacted. Construction activities will not resume until the USFWS is consulted and appropriate actions are taken to allow project activities to continue.

**BIO-3C** After ground disturbing and vegetation removal activities are complete, or earlier if determined appropriate by the qualified biologist, the qualified biologist will designate a construction monitor to oversee on-site compliance with all avoidance and minimization measures. The qualified biologist shall ensure that this construction monitor receives the sufficient training in the identification of CRLF. The construction monitor or the qualified biologist is authorized to stop work if the avoidance and/or minimization measures are not being followed. If work is stopped, the USFWS shall be notified. The qualified biologist and the construction monitor shall complete a daily log summarizing activities and environmental compliance throughout the duration of the proposed project.

**BIO-3D** To prevent inadvertent entrapment of CRLF during project construction, all excavated, steep-walled holes or trenches more than two feet deep will be covered at the close of each working day with plywood or similar materials. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals.

**BIO-3E** Only tightly woven fiber netting or similar material may be used for erosion control at the project site. Coconut coir matting is an acceptable erosion control material. No plastic mono-filament matting will be used for erosion control, as this material may ensnare wildlife, including CRLF.

**BIO-3F** Because dusk and dawn are often the times when CRLF are most actively foraging and dispersing, all construction activities should cease one half hour before sunset and should not begin prior to one half hour after sunrise.

**BIO-3G** All trash that may attract predators shall be properly contained, removed from the construction site, and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.

- b) **Less Than Significant With Mitigation Incorporated.** Riparian habitat within the survey area is considered a sensitive habitat under the jurisdiction of CDFW. Other waters identified within the survey area may be jurisdictional under the CWA. Additionally, both of these areas are considered to be ESHA under the CCA. If construction activities occur within these sensitive habitats it would be considered a significant impact under CEQA. However, the project has been designed to avoid these sensitive resources. Implementation of **Mitigation Measure BIO-4** will ensure avoidance of impacts during construction to sensitive habitats located outside of project work areas. Acquisition of regulatory permits from the ACOE, RWQCB, and CDFW for these resources is not required

provided they will be avoided. The following mitigation measures will reduce the impacts to a less-than-significant level.

### **Mitigation Measure**

**BIO-4** Prior to construction activities, exclusionary fencing shall be placed to keep construction vehicles and personnel from impacting potentially jurisdictional waters and riparian habitat outside of work areas. A biological monitor shall supervise the installation of exclusionary fencing and monitor at least once per week until construction is complete to ensure that the protective exclusionary fencing remains intact.

- c) **Less Than Significant With Mitigation Incorporated.** See discussion under b) above. The project would not impact wetlands with implementation of **Mitigation Measure BIO-4**.
- d) **Less-Than-Significant Impact.** The project would permanently impact only a small percentage of potential wildlife habitat where minor permanent structures will be constructed. All other project features would be below ground and would not permanently remove any wildlife habitat. The majority of the project site and the surrounding areas are developed, disturbed, or agricultural and provide little habitat for wildlife species. As a result, the development of the project, would not 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. This represents a less-than-significant impact and no mitigation is required.
- e) **Less-Than-Significant Impact.** The project will not conflict with the 2010 Monterey County General Plan. The proposed project could impact sensitive habitats as described in b) above. However, this impact will be reduced to a less-than-significant level with implementation of **Mitigation Measures BIO-2A – 2B, BIO-3A - 3G, and BIO-4**.
- f) **No Impact.** There are no adopted HCPs, NCCPs, or other approved local, regional or state habitat conservation plans located within the project area.

**Conclusion:** The project would have a less-than-significant impact with mitigation incorporated on biological resources.

**Sources:** 1, 2, 3

### **5.2.5 Cultural Resources**

#### **Setting**

An Archaeological Survey Report was prepared by Holman & Associates (H&A) for the project (April 2020). H&A preliminary cultural resources Phase I report recommended testing of a portion of the project site. Based on the results of the Phase I Archaeological Survey Report, auger testing was conducted by registered archaeologist Susan Morley, M.A, RPA. along a portion of the project alignment to investigate whether or not a cultural resource would be impacted by the proposed project (Phase II Auger Testing, June

2020). *These reports are considered confidential and are not included in this Initial Study. Qualified personnel, however, may request a copy of the report from the lead agency.*

The archaeological investigation was conducted as required under CEQA to investigate the potential for archaeological resources within the project's Area of Potential Effect (APE). The investigation included a thorough records search, field survey, and initial Native American consultation. The records search was conducted through the California Historical Resources Information System at the Northwest Information Center (NWIC), Sonoma State University, to identify previously recorded cultural resources, as well as previously conducted cultural resources studies within the project site and surrounding area. The records search identified one recorded cultural resource within the project APE. A nearby site was identified, which consists of shell fragments with no associated artifacts or other ecofacts, and no midden. Approximately two thirds of the project APE were previously studied for its archaeological potential for either PSMCSD or Caltrans-related projects.

Initial Native American consultation was also initiated by contacting the Native American Heritage Commission. The Commission identified the project APE as located within sacred lands and referred to the Costanoan Rumsen Carmel Tribe and the Ohlone/Costanoan-Esselen Nation. The Ohlone/Costanoan-Esselen Nation requested direct consultation with the lead agency. No response from the Costanoan Rumsen Carmel Tribe has been received. All individuals/groups that provided comments stated the project APE was sensitive for Native American resources. Holman & Associates initiated Native American consultation on behalf of PSMCSD. Four representatives asked for continued consultation on this project. PSMCSD also directly contacted the representatives, as detailed in **Section 5.18. Tribal Cultural Resources**, of this document. The Phase I and Phase II cultural findings and consultation records were also provided to the State Water Board.

In March of 2020, H&A conducted a field survey of the project's APE. Surface soil visibility was adequate to excellent in all areas except the mobile home park. Two fragments of oyster shell were identified within the project's boundary. In June 2020, further investigation was conducted, including excavation of eight (8) auger test units along the south edge of Struve Road in the area identified as having potential for finds in the preliminary H&A report. Field investigation results did not indicate discovery of cultural materials in the soils of the project parcel to depths of six (6) feet. None of the materials expected for a Native American site were encountered. The Phase II report concluded there is no reason to delay the project based upon concern for the protection of cultural resources. (Susan Morley, Phase II Auger Testing, June 2020.)

## CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?		X		
c) Disturb any human remains, including those interred outside of dedicated cemeteries?		X		

### Explanation

- a) **No Impact.** CEQA Guidelines §15064.5 describes a historical resources as: 1) any resource that is listed in, or determine to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources; 2) a resource included in a local register of historical resources; and, 3) any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant based on substantial evidence in light of the whole record. The fact that a resource is not listed in or determined to be eligible for listing does not preclude a lead agency from determining that the resource may be a historical resource (CEQA Guidelines §15064.5(4)). A substantial change includes the physical demolition, destruction, relocation, or alteration of a resource or its immediate surroundings such that the significance would be materially impaired (CEQA Guidelines §15064.5(b)).

The project would not cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5. The APE does not contain any historic resources listed in the California Inventory of Historical Resources, California Historical Landmarks, or the National Register of Historic Places. There are no structures or other items of historic significance within the APE of the project. Therefore, the project will have no impact on historical resources as defined in CEQA Section 15064.5.

- b) **Less Than Significant With Mitigation Incorporated.** Public Resources Code §21083.2 requires that lead agencies evaluate potential impacts to archaeological resources. Specifically, lead agencies must determine whether a project may have a significant effect or cause a substantial adverse change in the significance of an archaeological resource. The field survey of the project APE was completed and found two fragments of oyster shell within the project boundaries. The archaeological investigation recommended hand-augering at this location prior to construction in order to determine whether or not that site would be impacted by the project. Auger testing was conducted by registered archaeologist Susan Morley in the area identified by H&A. Eight auger test units were excavated to depths reaching six feet below grade (Morley, June 2020). None of the materials expected for a Native American site were encountered in the auger tests and auger testing in the subject location found no indication of cultural resources within the area of project disturbance. The findings of the Phase I and Phase II cultural reports did not document any



confirmed evidence of an archaeological resource. Accordingly, the project would not significantly impact a known archaeological resource. Although not anticipated, there is the potential for inadvertent discovery of archaeological resources during construction, which may result in potential inadvertent damage or disturbance to a resource. This impact can be mitigated to a less-than-significant level with the implementation of **Mitigation Measure CR-1**.

### **Mitigation Measure**

**CR-1** If archaeological resources are unexpectedly discovered during construction, work shall be halted within 50 meters ( $\pm 160$  feet) of the find until it can be evaluated by a qualified professional archaeologist. If the find is determined to be significant, appropriate mitigation measures shall be formulated and implemented, with the concurrence of the District.

- c) **Less Than Significant With Mitigation Incorporated.** Human graves are often associated with prehistoric occupation sites. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial and Section 5097.99 of the Public Resources Code defines the obtaining or possession of Native American remains or grave goods to be a felony.

Although not anticipated, the potential inadvertent discovery of human remains and potential inadvertent damage or disturbance during construction is considered a significant impact. This impact can be mitigated to a less-than-significant level with the implementation of **Mitigation Measure CR-2**.

### **Mitigation Measure**

**CR-2** If human remains are unexpectedly discovered during construction, work shall be halted within 50 meters ( $\pm 160$  feet) of the find. The County Coroner shall be notified in accordance with provisions of Public Resources Code 5097.98-99 in the event human remains are found and the Native American Heritage Commission shall be notified in accordance with the provisions of Public Resources Code section 5097 if the remains are determined to be of Native American origin. The Commission will designate a Most Likely Descendant who will be authorized to provide recommendations for management of the Native American human remains. (California Public Resources Code Section 5097.98; and Health and Safety Code Section 7050.5)

**Conclusion:** The project would have a less-than-significant impact on cultural resources after incorporation of mitigation measures.

**Sources:** 1, 2, 9

## 5.2.6 Energy

### Setting

Starting in 2018, all PG&E customers within Monterey, San Benito, and Santa Cruz Counties were automatically enrolled in Monterey Bay Community Power (MBCP). MBCP is a locally-controlled public agency providing carbon-free electricity to residents and businesses. Formed in February 2017, MBCP is a joint powers authority, and is based on a local energy model called community choice energy. MBCP partners with PG&E, which continues to provide billing, power transmission and distribution, customer service, grid maintenance services and natural gas services to Monterey County. MBCP’s standard electricity offering, is carbon free and is classified as 30 percent renewable. Of the electricity provided by MBCP in 2018, 40 percent was hydroelectric, and 30 percent was solar and wind (eligible renewables) (MBCP, 2020).

The State’s 100 Percent Clean Energy Act of 2018 sets a State policy that eligible renewable energy and zero-carbon resources supply 100 percent (%) of all retail sales of electricity in California by 2045. Executive Order (EO) was also issued in September 2018, EO B-55-18, establishing a new statewide goal to achieve “carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter.” In 2018, California used approximately 12,638 million U.S. therms of natural gas and 285,488 gigawatt-hours of electricity, of which 31 percent were from renewable resources (California Energy Commission [CEC] 2020a).

### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
ENERGY. Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			X	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			X	

### Explanation

- a) **Less-than-Significant Impact.** Electricity and natural gas for the project site will be provided by PG&E. The project’s construction and operational energy usage are included in **Appendix A**, based on GHG and modeling using CalEEMod, version 2016.3.2 (see **Appendix A**). Electricity and natural gas consumption are compared to existing consumption in the PG&E service areas. Project modeling provides an estimate of construction and operational emissions and energy consumption. The project will not consume large amounts of energy outside the functions commonly found within water systems. The anticipated construction schedule assumes that the project would be built out over a maximum of one year. The project would require site preparation, grading, site construction, and re-paving in some areas. The construction phase would require energy for the manufacture and transportation of building materials, preparation of the site (e.g., excavation, and

grading), and the actual construction of the facilities. Petroleum based fuels such as diesel fuel and gasoline would be the primary sources of energy for these tasks. The overall construction of the project has been designed to be energy-efficient in order to avoid excess fuel and rental equipment costs. During operation, the project would consume energy in the form of electricity, primarily for pumping and operation of the well site.

Based on the discussion above, the project would result in a less-than-significant impact during the construction and operational phases related to energy use.

- b) **Less-Than-Significant Impact.** The project would comply with existing state energy standards and would not conflict with or obstruct a state or local plan for renewable energy or energy-efficiency. The project would be designed to comply with the California Green Building Code, Title 24 energy efficiency requirements, 2019 California Building Energy Standards requirements, and Assembly Bill (AB) 1881 water-efficient landscape requirements.

**Conclusion:** The project would have a less-than-significant impact on energy resources.

**Sources:** 1, 2

### ***5.2.7 Geology and Soils***

#### **Setting**

A Geotechnical Investigation for the project was prepared by Pacific Crest Engineering. Information in that report was used a primary source of information for this analysis. The Geotechnical Investigation is contained in **Appendix C**.

The surficial geology in the area of the project site is mapped as Quaternary Terrace Deposits & Marine Sand Deposits (Rosenberg, 2001). Terrace deposits locally are described as “Weakly consolidated to semi consolidated, moderately to poorly sorted silt, silty clay, sand, and gravel mostly deposited in a fluvial environment.” Marine Sand deposits locally are described as “Unconsolidated, gray to buff, fine to coarse-grained sand on sea floor.” The soils encountered during the field investigation were generally consistent with these descriptions.

Quaternary Basin deposits, most likely associated with the margins of McClusky Slough, are mapped along portions of the access road to the Moss Landing Mobile Home Park and Struve Road. Basin deposits are described as “unconsolidated, plastic clay and silty clay containing much organic material; locally contains interbedded thin layers of silt and silty sand”.

The general topography of the project area slopes gently downward to the south from Springfield Road and to the west from Highway 1. The former Moss Landing Middle School includes a flat, undeveloped lot adjacent to residential mobile home(s) and related out-structures. The proposed pipeline alignment will traverse primarily agricultural farmland between Springfield and Struve Roads before entering the Moss Landing Mobile Park development. The alignment will follow primarily paved streets and portions of

unpaved farm roads and will connect to the existing Springfield Water System at Struve Road. The roadways show various stages of distress including potholing and cracking.<sup>6</sup>

The subsurface exploration performed by Pacific Crest consisted of two cone penetration tests (CPTs) and eleven small diameter borings, two of which were drilled within the proposed well site and the remainder along the proposed pipeline alignment. The borings and CPTs advanced along the pipeline alignment were generally sited within the road shoulder. The following briefly describes the general subsurface soil conditions encountered within the test borings and CPT soundings.

The materials encountered in the CPT soundings at the Highway 1 crossing were interpreted by the CPT as interbedded clayey sand, sand and silt, underlain by fine grained silt and clay to the depths explored.

Subsurface conditions encountered at the proposed well site, generally consisted of approximately two to four feet of silty sand underlain by interbedded clayey sand and sand to the maximum explored depth of 26½ feet. The surficial silty sand was dry and medium dense. The underlying clayey sand and sand was generally, moist, poorly-graded and dense to very dense. The clay portions of these predominately sand materials exhibit low to intermediate plasticity characteristics.

Subsurface conditions varied for the remainder of the borings drilled along the proposed pipeline, as expected for such a large area and the geologic processes that have formed the landscape in this area of north Monterey County. Pavement sections generally consisted of two to three inches of asphalt overlying four to five inches of aggregate base rock. The underlying soils generally consisted of predominately sandy soils containing varying fractions of clay and silt, with occasional clay interbeds. A notable exception is one boring which revealed a soil profile comprised entirely of fine-grained, high plasticity clay and silt to the maximum depth explored of 11 ½ feet. The sand soils were generally poorly graded with silt or clay contents ranging from 12% to 49%. The density of these materials ranged from medium dense to very dense. Dense to very dense soils were encountered along Springfield Road and the area of the Highway 1 crossing at depths ranging from about five to 10 feet below the ground surface. Elsewhere the soils were typically medium dense with increasing density at depths ranging from eight to 17 feet.

Consistencies of the interbedded clay zones, where encountered, ranged from firm to hard but were generally stiff. The clay soils exhibited low to high plasticity characteristics.

Groundwater was encountered within one boring at an approximate depth of 12½ feet. Groundwater levels along this portion of the proposed pipeline alignment may be influenced by the water level in the nearby McClusky Slough. The phreatic surface within CPT-2 was noted to be about 26 feet below the road surface (approximate elevation 91 feet).<sup>7</sup>

Groundwater was not encountered within the other borings or CPT to the depths explored. It should be noted that the groundwater level was not allowed to stabilize for more than a few hours; therefore, the actual groundwater level may be higher or lower than initially encountered. The groundwater conditions described

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<sup>6</sup> Alligator cracking is a common type of distress in asphalt pavement, which occurs when enough pressure is applied to the asphalt resulting in cracks forming the shape of scales of alligators or crocodiles. Alligator cracking is also commonly referred to as crocodile cracking.

<sup>7</sup> Phreatic surface indicates the location where the pore water pressure is under atmospheric conditions.

in this report reflect the conditions encountered during our subsurface investigation in November of 2019 at the specific locations drilled. It must be anticipated that the perched and regional groundwater tables may vary with location and could fluctuate with variations in rainfall, runoff, irrigation and other changes to the conditions existing at the time our measurements were made.

County policy requires preparation of a soils and geological report in areas of known or suspected geological hazard for the purpose of evaluating potential on-site or off-site impacts.<sup>8</sup> The Pacific Crest Geotechnical Report (**Appendix C**) evaluated the project site’s geological, soils, surface, and subsurface conditions and concluded that the site is geotechnically suitable for construction of the project, with specific recommendations as discussed below.

### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
GEOLOGY AND SOILS. Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?			X	
b) Result in substantial soil erosion or the loss of topsoil?			X	
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
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?			X	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				X

<sup>8</sup> Per Monterey County North County Land Use Plan Policy 2.8.3.A.4 and Coastal Implementation Plan Section 20.144.100.A.1.c.

## Explanation

ai-aiv) **Less-Than-Significant Impact.** Although the project site is in a region with several active faults, it is not mapped within an Alquist-Priolo Earthquake Fault Zone. According to the North County Land Use Plan, the proposed project area lies within Zone IV (moderately high) and Zone VI (very high) for seismic hazard susceptibility.

Mapped faults which have the potential to generate earthquakes that could significantly affect the subject site are listed in **Table 4**. The fault distances are approximate distances based on the U.S. Geological Survey and California Geological Survey, Quaternary fault and fold database, accessed in November 2019 from the USGS website (<http://earthquake.usgs.gov/hazards/qfaults/>) and overlaid onto Google Earth.

<b>Fault Name</b>	<b>Distance (miles)</b>	<b>Direction</b>
Zayante-Vergeles	5	Northeast
San Andreas	8.5	Northeast
Chupines	10.5	West
Monterey Bay-Tularcitos	12	West
Sargent	15.5	East

Due to the proximity of the site to active and potentially active faults, it is reasonable to assume the site will experience high intensity ground shaking during the lifetime of the project. Structures founded on thick soft soil deposits are more likely to experience more destructive shaking, with higher amplitude and lower frequency, than structures founded on bedrock. Generally, shaking will be more intense closer to earthquake epicenters. Thick soft soil deposits large distances from earthquake epicenters, however, may result in seismic accelerations significantly greater than expected in bedrock.

Ground surface fault rupture typically occurs along the surficial traces of active faults during significant seismic events. Since the nearest known active, or potentially active fault trace is mapped approximately 7½ miles from the site, the potential for ground surface fault rupture to occur at the site may be considered low.

Liquefaction tends to occur in loose, saturated and fine grained cohesionless sands, coarse silts or clays with a low plasticity. These conditions were generally not present within the test borings to the maximum depths explored, however given the variable soil conditions and wide spacing between test borings they could be present elsewhere along the pipeline alignment. In order for liquefaction to occur there must be the proper soil type, soil saturation, and cyclic accelerations of sufficient magnitude to progressively increase the water pressures within the soil mass. Non-cohesive soil shear strength is developed by the point to point contact of the soil grains. As the water pressures increase in the void spaces surrounding the soil grains the soil particles become supported more by the water than the point to point contact. When the water pressures increase sufficiently, the soil grains begin to lose contact with each other resulting in the loss of shear strength and continuous deformation of the soil where the soil appears to liquefy.

Based upon our review of the Monterey County GIS Hazard Maps, the liquefaction hazard is mapped as “low” at the proposed tank site and along the Springfield Road alignment. The majority of the proposed pipeline alignment south of Springfield Road is mapped in a “high” liquefaction hazard zone (Rosenberg, 2001). Conversely, as mapped by Dupre and Tinsley, 1980, the entire project area lies within an area of “low” liquefaction potential. According to Pacific Crest, there is no documented evidence of liquefaction or lateral spreading within the project area due to the 1989 Loma Prieta or the 1906 San Francisco events (Rosenberg 2001, Tinsley et. al, 1998).

Based on the results of the geotechnical investigation, liquefaction should be considered feasible within portions of the proposed pipeline alignment south of Springfield Road. Liquefaction induced lateral spreading occurs when a liquefied soil mass fails toward an open slope face or fails on an inclined topographic slope. Based on the results of the geotechnical investigation, the potential exists for lateral spreading to affect the portion of pipeline alignment that lies within 300 feet north of McClusky Slough. The potential for lateral spreading within remainder of the project area is considered to be low.

The subject site and immediate vicinity are relatively flat to gently sloping. The potential for landsliding to occur and adversely affect the proposed development is considered negligible.

The project would have a less-than-significant impact on people or structures resulting from rupture of faults, seismic ground-shaking, ground failure including liquefaction, and landslides. The project contractor would fully comply with all state, federal, and other laws, rules, regulations to ensure worker safety during construction. In addition, all recommendations contained in the Geotechnical investigation prepared by Pacific Crest would be incorporated into the project. In order to ensure that potential impacts are less than significant, the final design and construction of the project would be required to comply with the requirements of a design-level geotechnical analysis as well as all applicable building requirements related to seismic safety, including applicable provisions of the California Building Code and Title 24 of the California Administrative Code.

- b) **Less-Than-Significant Impact.** The majority of the site is gently sloping. The former Moss Landing Middle School site is flat. According to the Monterey County Soil Survey, susceptibility to erosion in a portion of the project area is high. Grading, cutting, and filling during construction could result in erosion impacts, especially if construction takes place during the wet weather season. The contractor is required to prepare a Stormwater Pollution Prevention Plan (SWPPP). The BMPs included in the SWPPP will ensure compliance with applicable regulations and reduce potential soil erosion to a less-than-significant level. Any temporary erosion related to construction would be minimized through the implementation of standard construction phase BMPs related to erosion. Erosion control measures and associated BMPs will be consistent with the recommended measures contained in the California Stormwater Best Management Practices Handbooks. Applicable measures may include the following:

- Stockpiling and disposing of demolition debris, concrete, and soil.
- Protecting existing storm drain inlets and stabilizing disturbed areas.

- Hydroseeding/re-vegetating disturbed areas.
- Minimizing areas of impervious surfaces.
- Implementing runoff controls (e.g., percolation basins and drainage facilities).
- Properly managing construction materials.
- Managing waste, aggressively controlling litter, and implementing sediment controls.
- Limiting grading to the minimum area necessary for construction and operation of the project.

The project will also be required to submit an erosion control plan consistent with regulations contained in Monterey County Code Chapter 16.12. Compliance with these requirements and incorporation of above BMPs would ensure that potential erosion related impacts are less than significant.

- c) **Less-Than-Significant Impact.** See discussion for ai-aiv above. Soils in project area could be potentially unstable. Without appropriate design specifications, project construction could result in, lateral spreading subsidence, liquefaction, or collapse. This impact would be temporary, as construction is anticipated to last less than one year. Risks to life and property would not occur during operation of the project, because the majority of the project will be entirely underground (distribution pipeline) and the well site would not be occupied by any residences. The project contractor would fully comply with all state, federal, and other laws, rules, regulations to ensure worker safety during construction. This represents a less-than-significant impact.
- d) **Less-Than-Significant Impact.** The subject site is underlain by highly variable and interbedded clayey sand and clay soils of low to high expansion potential. Expansive soils were noted at various depths within the borings, and it is possible that other expansive soils exist that our subsurface investigation did not detect. Expansive soils tend to heave during the rainy season and contract during the summer and this shrink/swell action extends down to the depth of seasonal moisture change. When this cyclical volume change occurs on sloping ground it results in “soil creep” due to the downward vector of the shrink/swell action. Seasonal moisture fluctuation and subsequent expansion and contraction of these types of soils typically occurs more near the ground surface where the seasonal moisture fluctuation is the greatest and decreases with depth below ground surface. The project contract specifications will include recommendations and requirements contained in the Geotechnical Investigation prepared by Pacific Crest Engineering to avoid impacts related to erosion, as presented in **Appendix C**.
- e) **No Impact.** The project is a water distribution system improvements project and does not propose any septic tanks or alternative wastewater disposal systems.
- f) **No Impact.** The project would not be located in proximity of general areas of significant paleontological resources as mapped by Monterey County (Monterey County, 2006). Therefore,



the potential impact to known paleontological resources are considered less than significant and no mitigation is necessary.

**Conclusion:** The project would have a less-than-significant impact on geology and soils.

**Sources:** 1, 2, 3

### 5.2.8 Greenhouse Gas Emissions

#### Setting

GHGs are gases that absorb and re-emit infrared radiation in the atmosphere. The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO<sub>2</sub> and CH<sub>4</sub> are emitted in the greatest quantities from human activities. Emissions of CO<sub>2</sub> are largely by-products of fossil fuel combustion, whereas CH<sub>4</sub> results from off-gassing associated with agricultural practices and landfills. Observations of CO<sub>2</sub> concentrations, globally-averaged temperature, and sea level rise are generally well within the range of the extent of the earlier IPCC projections. The recently observed increases in CH<sub>4</sub> and N<sub>2</sub>O concentrations are smaller than those assumed in the scenarios in the previous assessments. Each IPCC assessment has used new projections of future climate change that have become more detailed as the models have become more advanced.

As shown in **Table 5**, project construction would generate an estimated 239.59 MT of CO<sub>2</sub>e. Amortized over a 50-year period, project construction would generate an estimated 4.79 MT of CO<sub>2</sub>e per year.

<b>Table 5</b>	
<b>Estimated Construction Emissions of Greenhouse Gases</b>	
<b>Year</b>	<b>Annual Emissions (MT of CO<sub>2</sub>e/year)</b>
2022	222.86
2023	16.73
Total Construction Emissions	239.59
Amortized over 50 years	4.79
See <b>Appendix A</b> for CalEEMod results	
Source: CalEEMod v. 2016.3.2	

Efficiency thresholds are quantitative thresholds based on a measurement of GHG efficiency for a given project, regardless of the amount of mass emissions. Efficiency thresholds identify the emission level below which new development would not interfere with attainment of statewide GHG reduction targets. A project that attains such an efficiency target, with or without mitigation, would result in less-than-significant GHG emissions. A locally-appropriate 2030 project-specific threshold is derived from CARB’s recommendation in the 2017 Climate Change Scoping Plan Update.

With the release of the 2017 Climate Change Scoping Plan Update, CARB recognized the need to balance population growth with emissions reductions and in doing so, provided a new local plan level methodology for target setting that provides consistency with state GHG reduction goals using per capita efficiency thresholds. A project-specific efficiency threshold can be calculated by dividing statewide GHG emissions by the sum of statewide jobs and residents. However, not all statewide emission sources would be impacted by the proposed project (Residential and Commercial, Recycling and Waste, Transportation, Agricultural, Cap and Trade Reductions). Accordingly, the 2030 statewide inventory target has been modified for this analysis to establish a locally-appropriate, project-specific threshold consistent with the SB 32 target.

Residential and Commercial, Recycling and Waste, Transportation, Agricultural, and Cap and Trade Reductions have been removed from the State 2030 emissions forecast to create a more conservative, project-specific target. The project consists of improvements to a water system and does not include residential or commercial uses. During operation, the project would not generate solid waste or recyclable materials. The project would generate very limited vehicle trips during operation; PSMCSD staff would make trips to the site for ongoing maintenance. The water generated by the project would not serve agricultural uses. Lastly, Cap and Trade emissions reductions occur independent of any local jurisdictional land use decisions and were, therefore, excluded from the locally-appropriate target.

After removing Residential and Commercial, Recycling and Waste, Transportation, Agricultural, and Cap and Trade Reductions, the remaining emissions sectors with sources within the Monterey County planning area were then summed to create a locally-appropriate emissions total for a water system improvements project in unincorporated Monterey County. The locally-appropriate emissions total was divided by the statewide 2030 service person population to determine a 2030 service population target of 2.19 MT of CO<sub>2</sub>e per service person, which is consistent with SB 32 targets, as shown in **Tables 6** and **7**.

<b>Table 6</b>				
<b>SB 32 Scoping Plan Emissions Sector Targets</b>				
<b>GHG Emissions Sector<sup>1</sup></b>	<b>2030 State Emissions Target (MMT)<sup>1</sup></b>	<b>Locally Appropriate<sup>2</sup></b>	<b>Project Specific</b>	<b>Major Sources<sup>3</sup></b>
<b>2017 Scoping Plan Sectors</b>				
Residential and Commercial	38	Yes	No	Natural gas end uses, including space and water heating buildings
Electric Power	53	Yes	Yes	Electricity uses, including lighting, appliances, machinery and heating
High Global Warming Potential	11	Yes	Yes	SF <sub>6</sub> from power stations, HFCs from refrigerants, and air conditioning <sup>4</sup>
Recycling and Waste	8	Yes	No	Waste generated by residential, commercial, and other facilities
Transportation	103	Yes		Passenger, heavy duty, and other vehicle emissions
Industrial	83	Yes		Oil, gas, and hydrogen production, refineries, general fuel use, and mining operations

<b>Table 6 SB 32 Scoping Plan Emissions Sector Targets</b>				
<b>GHG Emissions Sector<sup>1</sup></b>	<b>2030 State Emissions Target (MMT)<sup>1</sup></b>	<b>Locally Appropriate<sup>2</sup></b>	<b>Project Specific</b>	<b>Major Sources<sup>3</sup></b>
Agricultural	24	Yes	No	Enteric fermentation, crop residue burning, and manure management
Cap and Trade Reductions	-60	No	No	Reductions for facilities emitting more than 10,000 MT CO <sub>2</sub> e per year <sup>6</sup>
Scoping Plan Target (All Sectors)	260	No	No	All emissions sectors
<b>Inapplicable Sectors</b>				
Residential and Commercial	38	No	No	Natural gas end uses, including space and water heating buildings
Recycling and Waste	8	No	No	Waste generated by residential, commercial, and other facilities
Transportation	103	No	No	Passenger, heavy duty, and other vehicle emissions
Agricultural	24	No	No	Enteric fermentation, crop residue burning, and manure management
Cap and Trade Reductions	-60	No	No	Reductions for facilities emitting more than 10,000 MT CO <sub>2</sub> e per year <sup>6</sup>
<b>2030 Locally Applicable Emissions Sectors</b>				
Total	147	Yes	Yes	Emissions applicable to the proposed project and local planning area.
<p>MMT = million metric tons</p> <p><sup>1</sup> All State targets in MMT of CO<sub>2</sub>e. See the 2017 Climate Change Scoping Plan, page 31 for sector details (CARB 2017).</p> <p><sup>2</sup> Locally-appropriate is defined as having significant emissions in Scoping Plan Categorization categories within the Monterey County General Plan area or within local jurisdictional control.</p> <p><sup>3</sup> See CARB GHG Emissions Inventory Scoping Plan Categorization for details, available at: <a href="https://www.arb.ca.gov/cc/inventory/data/data.htm">https://www.arb.ca.gov/cc/inventory/data/data.htm</a></p> <p><sup>4</sup> SF<sub>6</sub> is used primarily as an insulator in electrical substations while HFCs can be found in many residential and commercial refrigeration and air conditioning units. HFCs are in the process of being phased out through 2036 in most developed countries.</p> <p><sup>5</sup> The proposed project would not include these land uses and would not directly increase the intensity of these uses.</p> <p><sup>6</sup> Cap and Trade is excluded as reductions will occur independent of local project land use decisions and are therefore not locally appropriate.</p>				

Table 7 SB 32 Locally Appropriate Project-Specific Thresholds		
California 2017 Climate Change Scoping Plan	California 2030 Population (persons) <sup>1</sup>	43,631,295
	California 2030 Employment Projection (persons) <sup>2</sup>	23,459,500
	Service Population (persons)	67,090,795
Locally-Appropriate Project-Specific Threshold	2030 Locally-Appropriate Emissions Sectors (MT of CO <sub>2</sub> e)	147,000,000 <sup>3</sup>
	2030 California Service Population (persons)	67,090,795
	Locally-Appropriate, Project Specific Threshold (MT of CO <sub>2</sub> e per Service Person)	2.19
<sup>1</sup> California Department of Finance 2019 <sup>2</sup> Average of employment range projections under implementation scenario. See CARB 2017 Climate Change Scoping Plan Update, page 55 (CARB 2017). <sup>3</sup> See Table 6 above. <sup>4</sup> Total of 3.17 has been rounded up per Scoping Plan general methodology. Lead agencies may determine this threshold in consistence with Scoping Plan and State GHG reduction goals as they deem appropriate, as noted in the Climate Change Scoping Plan (page 102, CARB 2017). <sup>5</sup> The project would primarily be occupied for only 8.5 months (approximately 71 percent) of the year. As a result, the 2030 service population target was conservatively reduced by 29 percent to account for the seasonal occupancy rate.		

Climate change is a cumulative impact; a project contributes to this impact through its incremental contribution of GHG emissions combined with the cumulative increase of all other sources of GHGs. The MBARD’s GHG threshold is defined in terms of carbon dioxide equivalent (CO<sub>2</sub>e), a metric that accounts for the emissions from various GHGs based on their global warming potential. If annual emissions of GHGs exceed these threshold levels, the proposed project would result in a cumulatively considerable contribution of GHG emissions and must implement mitigation measures.

### CEQA Thresholds

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

### Explanation

a, b) **Less-Than-Significant Impact.** As discussed in above, implementation, construction, and operation of the project will not exceed established thresholds for air quality emissions. The project will not conflict with any of the applicable plans, policies, or regulations adopted for the purpose of reducing greenhouse gas emissions. Based on the project emissions generated during construction, the project is anticipated to generate minor emissions of greenhouse gases and will have a less-than-significant impact related to such emissions.

All GHG emissions impacts related to project construction and operation would be less than significant. Operation of the project would not generate emissions since the project consists primarily of linear pipelines with no increase in staff. Limited vehicular trips to the site will be required intermittently for maintenance. As shown in **Table 5**, project construction would generate

an estimated 239.59 MT of CO<sub>2</sub>e. When amortized over a 50-year period, project construction would generate an estimated 4.79 MT of CO<sub>2</sub>e per year.

The project would be consistent with the Monterey County General Plan, the AMBAG 2040 MTP/SCS, the 2017 Scoping Plan, and EO B-55-18, which are regulations adopted to implement a statewide, regional, or local plan to reduce or mitigate greenhouse gas emissions. Based on the modeling results, project related GHG emissions would not exceed defined significance threshold established. Furthermore, the operational component of the project would not result in an increase in existing operation and maintenance related emissions. This represents a less-than-significant impact.

**Conclusion:** The project would have a less-than-significant impact related to GHG emissions and would not conflict with the Monterey County General Plan or any other applicable plan, policy, or regulation.

**Sources:** 1, 2, 5, 6

### 5.2.9 Hazards and Hazardous Materials

#### Setting

The project site is located primarily within existing road right of ways and previously disturbed areas and it is not within the vicinity of hazardous waste facilities. According to the California Department of Toxic Substances Control EnviroStor database, there are no contaminated cleanup sites in proximity of the project site. No hazardous materials are anticipated to be stored on site during construction other than typical construction equipment fluids, including gasoline, diesel, and lubricants for maintaining equipment.

#### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
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?			X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?			X	

### Explanation

- a) **Less-Than-Significant Impact.** No hazardous materials are anticipated to be stored on site during construction other than typical construction equipment fluids, including gasoline, diesel, and lubricants for maintaining equipment. These materials would be handled and stored in compliance with all local, State, and Federal regulations pertaining to hazardous materials.
- b) **Less-Than-Significant Impact.** The project consists of improvements to a water system and would not require the routine storage, transport or disposal of hazardous materials; however, the construction of the project would require the use and transport of materials commonly used in construction processes.

Construction activities would require the temporary use of hazardous substances such as fuel and other petroleum-based products for operation of construction equipment, as well as oil and solvents. As a result, the project could result in the exposure of persons and/or the environment to an adverse environmental impact due to the accidental release of a hazardous material. However, the transportation use and handling of hazardous materials would be temporary and would coincide with the short-term project construction activities. Further, these materials would be handled and stored in compliance with all applicable federal, state, and local requirements, any handling of hazardous materials would be limited to the quantities and concentrations set forth by the manufacturer and/or applicable regulations, and all hazardous materials would be securely stored in a construction staging area or similar designated location within the project site. In addition, the handling transport, use, and disposal of hazardous materials must comply with all applicable federal, state, and local agencies and regulations, including the Department of Toxic Substances Control; Occupational Health and Safety Administration (OSHA); California Department of Transportation (Caltrans); and the Monterey County Health Department - Hazardous Materials Management Services.

Adherence to federal and state requirements relative to the transport and handling of hazardous materials would not create a significant hazard to the public or the environment through accidental conditions and would reduce any potential impacts associated with transporting, handling, and disposing these materials. This results in a less-than-significant impact.

- c) **No Impact.** The project site is not located within ¼ mile of any proposed or existing schools. One of the project components is on the former Moss Landing Middle School site, however, this school has been closed since 2005 and there are currently no plans to re-open it. Furthermore, the contractor would not handle hazardous or acutely hazardous materials as part of the project.
- d) **No Impact.** The project site is not on or within the vicinity of a hazardous site as designated by Government Code Section 65962.5 (i.e., Cortese List), including the California Department of Toxic Substances Control (DTSC) online EnviroStor database (DTSC, 2018); State Water Resources Control Board (SWRCB) online Geotracker database (SWRCB, 2018); Superfund Sites list; and internet searches of federal, state, and local hazardous materials databases.
- e) **No Impact.** The project site is not located within the vicinity of a public airport, or a private airstrip. The Watsonville Municipal Airport is located more than eight miles north of the project site. The Marina Municipal Airport, a general aviation facility, is located approximately 10 miles south of the project site. Thus, project is not located within an airport land use plan or within two miles of a public airport or public use airport and there would be no impact resulting in a safety hazard to excessive noise would occur.
- f) **Less-Than-Significant Impact.** Monterey County has a Multi-Jurisdictional Hazard Mitigation Plan that includes designated emergency evacuation routes with emergency response activities coordinated by the Monterey County Office of Emergency Services (OES). Designated evacuation routes include Highway 1, U.S. Highway 101, and various other county roads. Highway 1 is located west of, and adjacent to, the project site and is a designated evacuation route. No other designated emergency evacuation routes are in the immediate project vicinity. Project construction and maintenance of the pipeline and water system improvements at the school site and within the Springfield and Struve Road areas would not conflict with the plan. Construction activities would be outside Highway 1 and major public roadways thus preventing any impact to emergency services. The project is not likely to impede emergency response or evacuation plans, as the only portion of the project to run across Highway 1 is a short segment of pipeline which would run underneath the highway. While construction activities may require construction equipment and workers to be stationed along Highway 1, this will be temporary in nature and would not be expected to impeded evacuations in an emergency. Therefore, project implementation would not interfere with an emergency evacuation plan resulting in a less-than-significant impact.
- g) **Less-Than-Significant Impact.** The project site is located within an area that is primarily used for agriculture and rural residential. While there is potential for wildland fires in such a land use type, the project would not increase the risk of wildfires to residents because construction of the project would not involve any equipment or activities that present a severe fire risk. Furthermore, the project consists of water supply improvements which would increase municipal water availability in the area. Implementation of the proposed project would not further expose people or structures to wildland fires. See also **Section 5.2.20 Wildfire.**

**Conclusion:** The project would have a less-than-significant impact related to hazards and hazardous materials.

**Sources:** 1, 2, 7, 8

### ***5.2.10 Hydrology and Water Quality***

#### **Setting**

The project area is located within the southern portion of the Springfield subarea of the Pajaro Valley Groundwater Basin. The primary aquifers within the basin are found in the Aromas Sands and overlying alluvial deposits. The Springfield subarea is geographically situated between the Monterey Bay on the west and the Elkhorn Slough on the east. The Springfield existing test well (SW-2) is situated at an elevation of approximately 143 feet above mean sea level and is completed in unconsolidated alluvial deposits.

The project area is within close proximity of Elkhorn Slough. Elkhorn Slough is a tidal marsh and runs south of the site, however no development is proposed in the riverbed or near the river. Elkhorn Slough meanders seven miles southward, then westward, and then joins the Monterey Bay. In 2019, the area near Elkhorn Slough received a total of 19.5 inches of rain, which is considered above average. Most of Elkhorn Slough received a letter grade of “C” for water quality according to its Water Quality Report Card. The most inland section of the slough received a letter grade of “F” due to low tidal exchange caused by water control structures that artificially limit tidal exchange.

Groundwater is the major source of water supply in the County. Within Monterey County, the Monterey County Water Resources Agency (MCWRA) is responsible for the management and planning of water resources, except for the northernmost portion of the County that is managed by the Pajaro Valley Water Management Agency (PVWMA). The PVWMA is charged with the management of existing and supplemental water supplies in the Pajaro Valley Groundwater Basin, which is in an overdrafted condition. The PVWMA is responsible for developing and using supplemental water and available underground storage to manage the groundwater supplies. The Agency is authorized to construct, maintain, improve, operate, and repair necessary works for the protection of groundwater and for any reclamation and replenishment of such water within its statutory boundaries. The primary sources of recharge to the Pajaro Valley groundwater basin are infiltration of rainfall, seepage of streamflow from the Pajaro River and its tributaries, and percolation of irrigation water.

The project area is located in the Pajaro Valley Groundwater Basin, which is critically overdrafted as defined by the California Sustainable Groundwater Management Act (SGMA). Because the Pajaro Valley Groundwater Basin is in severe overdraft, groundwater elevations have dropped below sea level leading to seawater intrusion. Between the years 1964 and 1997, an estimated 300,000 acre-feet of freshwater storage was lost due to seawater intrusion and chronic overdraft. The Groundwater Sustainability Agency (GSA) for this basin is the PVWMA. The GSA is responsible for creating a Groundwater Sustainability Plan (GSP), which identifies how a groundwater basin will reach long term sustainability. On December 31, 2016, the PVWMA submitted the Basin Management Plan for the Pajaro Valley Groundwater Basin (2014), in addition to other supporting material, as an alternative to a full GSP. SGMA allowed for an alternative submittal provided that it would demonstrate how decision-makers at local water agencies will or have



achieved sustainable groundwater management, provided that the alternative was submitted prior to January 1, 2017.

The PVWMA adopted a revised Basin Management Plan (BMP) on February 6, 2002, which currently is being updated. The revised BMP evaluates basin management strategies to balance water demand within the PVWMA service area with sustainable water supplies, prevent seawater intrusion in the service area; and initiate long-range programs to protect water supply and quality within the basin. The Revised BMP includes a range of projects dealing with development of local surface water supplies, recycling of treated wastewater, groundwater storage, and importation of water from the Central Valley Project. The final strategy adopted by the Board, the “Modified BMP 2000 Alternative,” includes five major projects and programs, as well as, watershed management programs that would include water resources monitoring, water metering, nitrate management, wells management, and recharge area protection. The Basin Management Plan’s policies for water conservation and reducing seawater intrusion are primarily focused on agricultural water use, with projects and programs for rural residential areas identified as an area for future study once maximum conservation is achieved from large acreages. The Basin Management Plan was approved as a valid alternative to a GSP by the Department of Water Resources (DWR) on July 17, 2019.

Per the Federal Emergency Management (FEMA) Flood Insurance Rate Maps, a small section located on the western border of the site is located in Flood Zone A, or an area with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. No structures are proposed to be built within the portion of the project site within Flood Zone A. The rest of the project site is located outside of the flood zone (see **Appendix E** for flood maps).

The existing Springfield Well (SW-1) is located a little over a mile from the coast and from the Elkhorn Slough, at an elevation of 19 feet above sea level (ft asl). It draws groundwater from a depth of 122 to 172 feet below ground surface (ft bgs), from a zone demonstrated to be intruded with seawater across the area. The well is surrounded with agricultural fields in sandy soils, within a gently sloping shallow swale draining to McClusky Slough, and subject flooding and recharge from agricultural drainage. Both seawater and agricultural drainage are likely sources of contamination to the existing well. A hydrogeologic report entitled *Drilling, Water Quality, and Yield Results, Springfield Well No. 2, Pajaro / Sunny Mesa Community Services District, Monterey California*, dated May 2018, was prepared by Balance Hydrologics, Inc (BHI). This study found that the existing well (SW-1) draws groundwater from a depth of 122 to 172 feet from a zone demonstrated to be intruded with seawater across the area. The SW-1 site is surrounded by agricultural fields in sandy soils within a gently sloping shallow swale draining to McClusky Slough, subject to flooding from agricultural drainage. The BHI study found both seawater and agricultural drainage are likely sources of contamination to the existing well. Refer to **Appendix E** for excerpts from the BHI report.

Water quality test results for the Springfield Water System have exceeded acceptable nitrate levels since 1986, according to the Monterey County Health Department, Environmental Health Bureau. A Notice of Violation for failure to comply with Section 116450 of the California Health Safety Code was issued and a bottled water order remains in place for the community due to high nitrate levels. Nitrate levels (as NO<sup>3</sup>) are extremely high and Total Dissolved Solids (TDS) are also above acceptable standards. The well serving the Moss Landing Manor mobile home park has tested above maximum levels for hexavalent chromium and needs to bring the water supply in conformance with state drinking water standards.

Existing water quality was evaluated by Weber, Hayes and Associates (WHA) who conducted a pumping test and water quality sampling from the new Springfield test well (SW-2) at the Middle School site in January 2020. WHA completed this pumping test primarily to acquire representative samples of the formation groundwater for water quality analyses, especially 1,2,3-Trichloropropane (1,2,3-TCP) and to confirm results of the analysis<sup>9</sup> by BHI.

Representative water quality sampling and analyses indicate the water in the aquifer supplying the new Springfield test well (SW-2)<sup>10</sup> is within safe drinking water limits consistent with Title 22 requirements. The well's yield and water quality analysis results also concluded that the Springfield test well is suitable for use as a source water supply well. The DWR Well Completion Report for the well documents that the well is sited primarily in Red Sand with a separating layer of blue clay from approximately 295-360 feet below the ground surface (bgs). The well was constructed in November 2017, to a depth of 600 feet bgs into the underlying Lower Aromas Sands formation (WHA Pumping Test and Water Quality Sampling Springfield Test Well, April 2020, including Appendix A, DWR Well Completion Report).

The existing Springfield well (SW-1) does not produce water consistent with water quality regulations for Title 22 maximum contaminant levels (MCLs). The existing water supply system does not disinfect water prior to distribution. Due to the low-quality water produced by the existing SW-1 well, bottled water must be provided to residents for drinking water. Representative water quality sampling and analyses indicate the water in the aquifer supplying the new Springfield test well (SW-2) is within safe drinking water limits for all Title 22 analytes and will provide increased water quality for the community.

### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			X	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:			X	
i) Result in substantial erosion or siltation on- or off-site;			X	
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;			X	

<sup>9</sup> BHI completed a 9-hour constant rate pumping test in the Springfield Test Well in February of 2018.

<sup>10</sup> The Springfield test well (SW-2) is located at the Moss Landing School site.

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or			X	
iv) Impede or redirect flood flows?			X	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?			X	
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			X	

**Explanation**

- a) **Less-Than-Significant Impact.** The project will not substantially degrade surface or ground water quality from the proposed water system improvements. The project involves the construction of water system and collection infrastructure to convey water to existing District users. Current groundwater supplies are being used for extraction from the SW-1 well, which is severely impacted by saltwater intrusion. The location of SW-2 and water withdrawal would reduce impacts to groundwater by reducing pumping in the impacted area. Groundwater recharge would not be reduced due to increased impervious surfaces due to the pipe installation being located within the existing paved right-of-way, dirt roads, and urban areas. The construction of the well improvements would increase impervious surfaces within an already urbanized area. This would minimally reduce groundwater recharge and would not, therefore, substantially interfere with groundwater recharge. Construction activities would result in minimal construction debris and would comply with standard construction regulations. The project would incorporate BMPs, visual monitoring, and construction site monitoring program during construction. The project, therefore, would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.
  
- b) **Less-Than-Significant Impact.** The site is located in the Springfield subarea of the Pajaro Valley Groundwater Basin. The Springfield subarea is geographically situated between the Monterey Bay on the west and the Elkhorn Slough on the east. The District is within the Pajaro Groundwater Basin. Groundwater management and planning is governed by the PVWMA, which has adopted a groundwater management plan for the Pajaro basin. Water for the proposed water system would be provided from the existing well drilled in 2018 at the Moss Landing Middle School Site (SW-2). SW-2 is located within an easement owned by the District and has been tested for capacity and quality and is a suitable source of supply for a public water system, per the BHI Report, Weber Hayes and PSMCSD. The project will be meeting existing demand with a new well location and serving an existing community; this will not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. (Refer to **Section 5.2.19 Utilities**, for discussion of post-project water use). The project would involve replacement of a well system that is contaminated (SW-1). The project engineer estimates that post-project water demand would be similar to pre-

project demand so groundwater use would be limited to essentially pre-existing conditions. Any minor additional withdrawals would not substantially increase groundwater pumping, and the revised well location for well SW-2 was found to be a beneficial location compared to SW-1 for seawater intrusion. Additionally, the majority of the area is currently developed and utilizing water from the same groundwater basin. Since most of the water demand associated with the proposed area currently exists and is in the same subwatershed, the project would not substantially impact groundwater resources.

- ci-civ) **Less-Than-Significant Impact.** The project includes extension of water lines and construction of water system improvements in order to serve the existing area. Construction activities consist of open trench methods to install the distribution system pipeline and replace the existing pipeline, and the installation of a new well and associated facilities at the Moss Landing Middle School Site. Construction activities for pipeline installation would involve trenching and other pipeline installation methods that would disturb both paved roadways and unpaved land within the project site, this disturbance would be temporary. Construction would be required to comply with BMPs and Monterey County Erosion Control requirements which would reduce impacts related to erosion and surface runoff. After construction, the project area would be restored to its original condition, and any drainage pattern within the right-of-way would be returned to existing conditions following project construction activities. Construction and operation of the site improvements at the Moss Landing School Site SW-2 would increase impervious surfaces at the site but would not generate substantial additional runoff compared to existing conditions or substantially alter the existing drainage pattern of the site, or otherwise substantially degrade water quality. In addition, the proposed water system improvements would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite or 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. The development of the pump station would incrementally increase impervious surface in the immediate vicinity. However, development and operation of the well site improvements would be required to comply with all applicable local regulations which would include implementation of BMPs and design features to control stormwater runoff quality. BMPs would be implemented during construction activities to minimize runoff and erosion. Finally, the project would not impede or redirect flood flows, since the majority of the improvements consist of underground pipelines.
- d) **Less-Than-Significant Impact.** Tsunamis or “tidal waves” are seismic waves created when displacement of a large volume of seawater occurs as a result of movement on seafloor faults. The project site elevation ranges between 20 to 140 feet above mean sea level (msl) and is located outside a tsunami hazard zone. Only a small portion of the site located on the western border is in Flood Zone A, or an area with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. However, the rest of the project site proposed for development is not located within any flood zones. Therefore, the project would not have impacts related to the risk release of pollutants due to project inundation due to these areas.
- e) **Less-Than-Significant Impact.** As described above and in the “Setting,” the project will not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

**Conclusion:** The project would have a less-than-significant impact on hydrology and water quality.

**Sources:** 1, 2, 7, 8

### ***5.2.11 Land Use***

#### **Setting**

The project is located north of the community of Moss Landing. See **Table 1** for a list of parcel numbers within the project area. The project is located within the coastal zone. The project is designated as Public/Quasi-Public, Residential (rural and medium density), and Agricultural Preservation.

The 2010 Monterey County General Plan is applicable to the project. As identified in the Monterey County General Plan, it is the intent of Monterey County to maintain and enhance the County's rural character, natural resources, and economic base by providing for adequate residential and industrial growth in areas best suited for development while restricting urban sprawl and indiscriminate development. The project is located within the North County Land Use Plan Area, which includes the unincorporated area of the Coastal Zone from the City of Marina's city limits to the Santa Cruz County boundary at the Pajaro River, and inland nearly to Highway 101 to include as much as possible of the Elkhorn Slough watershed. The project is within the coastal zone as designated by California Coastal Commission. See **Figure 8** for a map of land use designations in the vicinity of the project area. Land use planning in North County is directed by two separate documents, the North County Area Plan and the North County Land Use Plan (LUP) segment of the Local Coastal Program (LCP). Land use activities within the coastal zone, which encompasses about half of the North County Planning Area, are covered by the North County LUP/LCP, while the North County Area Plan has jurisdiction over the rest of the planning area. The North County LUP/LCP was adopted by the Board of Supervisors and certified by the California Coastal Commission in 1982 as part of the Local Coastal Program for Monterey County. The plan identifies policies regarding natural resources management, the public service system, land use and development, and public access to the shoreline. A primary objective of the North County Land Use Plan is to plan for appropriate levels of land use and development in the coastal zone while protecting coastal resources and providing or maintaining coastal access and recreation opportunities.

The North County LUP vision statement identifies the quality of water as the most crucial issue facing North County. Water issues such as lack of developed infrastructure, significant groundwater overdraft, nitrate contamination and saltwater intrusion into the groundwater aquifer are serious problems faced by all of the communities of North County. Some individual water/sewer systems and failing municipal systems are increasingly unable to meet the current and rising demand for development and services. The project is designed to provide a reliable water supply to the North County community of Springfield and replace a well that has seawater intrusion, nitrate and other contamination currently serving the community. The following addresses key policies in the North County LUP and the project's consistency with these policies:

**Public Viewsheds.** North County LUP (Policy 17) states that beaches, dunes, and coastal wetlands of North County are key scenic resources to be protected from visual disturbance to the fullest extent possible. Shoreline views of the Monterey Bay, Elkhorn Slough, and other coastal wetlands can be seen from public

vantage points including Highway 1, Highway 156, Elkhorn Road, and Hall Road; these locations are identified as public viewing areas according to Open Space Element (Policy 6).

**Consistent:** There are no coastal wetland habitats on the site. The project area is near McCluskey Slough, but the project design and BMPs will ensure soil erosion, siltation, and/or stormwater runoff during construction of the project would not have the potential to impact wetland features.

Coastal Wetland Habitats. North County LUP (Policy 9) identifies coastal wetland habitats and the wetlands of Elkhorn Slough, McCluskey Slough, Bennett Slough, Struve Slough, Moro Cojo Slough, Tembladero Slough, and the Old Salinas River Channel and Lagoon as Significant Ecological Areas (SEAs). Alteration of these wetlands, including diking, filling, dredging, or the installation of tide gates, shall maintain or enhance the biological productivity of the wetland or estuary. Any alteration of the coastal estuaries and wetlands in North County shall be limited to restorative measures and appropriate facilities associated with access, research, and education according to specific criteria designated in a wetland management plan. In the absence of a wetland management plan, “appropriate facilities” means only those facilities that are identified as consistent with Section 30233(a) of the Coastal Act.

**Consistent:** There are no coastal wetland habitats on the site. The project area is near McCluskey Slough but the project design and BMPs will ensure soil erosion, siltation, and/or stormwater runoff during construction of the project would not have the potential to impact wetland features.

Aquifer Recharge. North County LUP (Policy 8) states that impervious surface coverage in this area shall be discouraged or reduced to the maximum extent feasible due to the regional aquifer recharge characteristics in the North County Coastal Area. Policy 5.1 requires new development to maximize groundwater recharge capabilities. Policy NC-5.2 (surface and groundwater water supply) states that water development projects that can offer a viable water supply to water-deficient areas in North County shall be a high priority.

**Consistent:** This is a water supply project to provide the community of Springfield a replacement and reliable water distribution system with all piping underground; this will not impact impervious surface coverage. The Moss Landing Middle School well site improvements will be located on previously disturbed property designated for public/quasi-public use. The parcel includes impervious surface coverage as needed for this critical use and would not reduce aquifer recharge.

Intensification of Water Use. North County LUP (Policy 13) states the County will the intensification of water use on existing lots of record to the construction of the first single family home on an existing lot of record, or to some other land use that has a water usage equal to or less than the water use of a single family home until the construction of projects included in the North Monterey County Water Management Plan.

**Consistent:** This is a water supply project to provide the community of Springfield a replacement and reliable water supply to address the long-term water quality impacts from the existing well source.

Archaeological Resources. North County LUP (Policy 12) under Archaeological Resources requires a determination whether an archaeological survey has been carried out for a property on which the development would take place, including any proposed grading or excavation activity, or removal of vegetation for agricultural use.

**Consistent:** The project has conducted two archaeological studies for the area confirming no finds within the disturbance area.

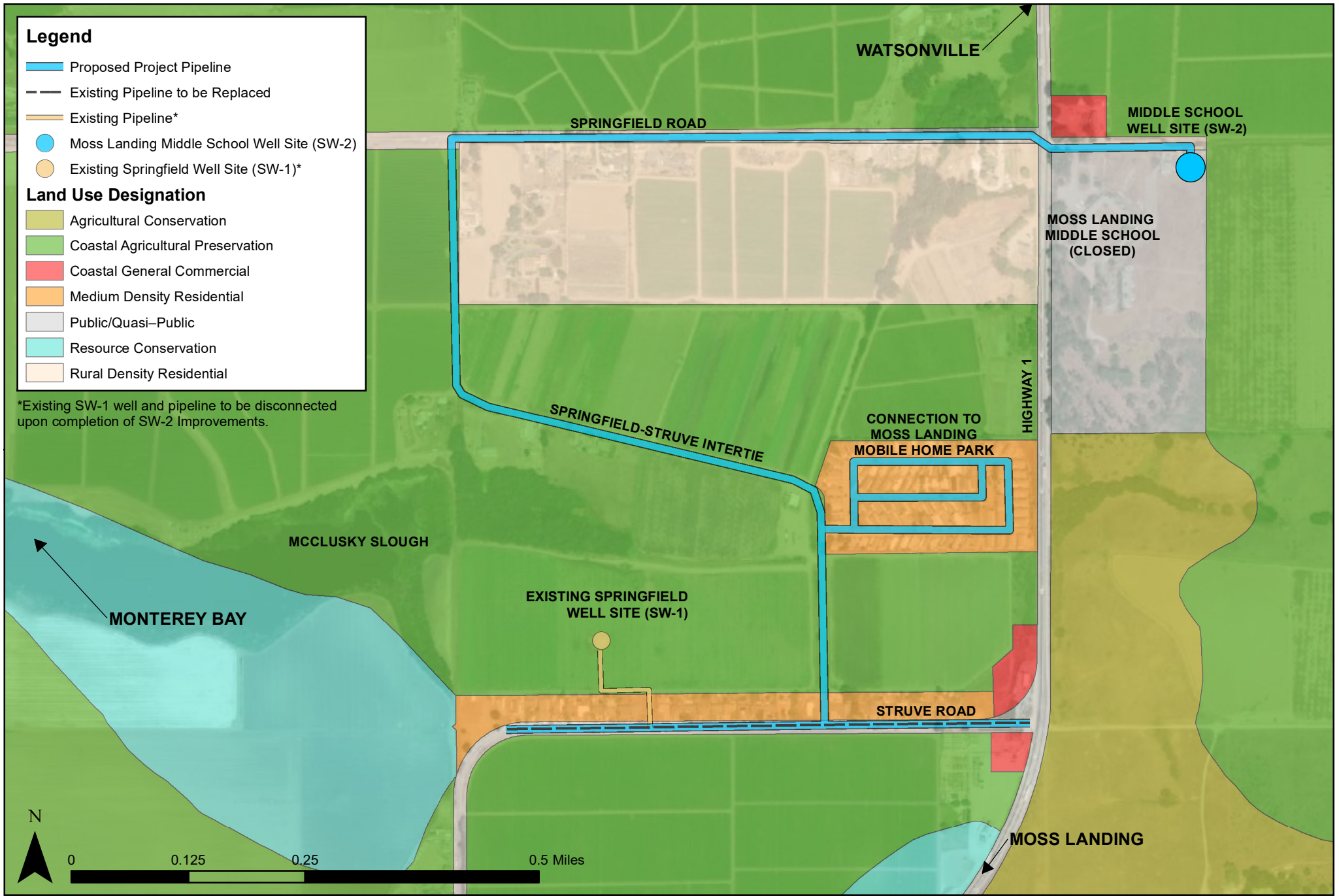
**Habitat.** North County LUP Section 2.3 considers the potential factors that would affect environmentally sensitive habitats such as alterations in drainage systems, sedimentation, and obstacles to water circulation and General Policy 2.3.2 prohibits vegetation removal, excavation, grading, filling and construction of roads and structures, with the exception of resource dependent uses. Where development is allowed, land disturbance is limited to the minimum amount necessary for structural improvements.

**Consistent:** The project involves minimum grading and trenching for pipeline construction and development on a previously disturbed site for construction of well improvements and storage facilities. Application of biological mitigation measures, BMPs and Monterey County Grading requirements and standards including requirements for erosion control plan, grading plan, and stormwater control plan and implementation of mitigation measures for avoidance will ensure protection of nearby wetland features during construction activities.

Monterey County Health Department, Environmental Bureau and Monterey County Local Agency Formation Commission (LAFCO) policies consider existing water service area boundaries and County ordinances applicable to the approval of new water services. State of California SWRCB Division of Drinking Water, LAFCO and Monterey County's policy encourage consolidation of water systems the highest priority over approval of new mutual water systems or individual local small systems. LAFCO policy similarly encourages consolidated services within LAFCO approved and mapped boundaries where sufficient agency or provider capacity exists to meet new service needs. PSMCSD is the only public agency water service provider in project and the project area is within LAFCO approved service boundary (<https://www.co.monterey.ca.us/home/showdocument?id=72766>).

**CEQA Thresholds**

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?				X
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?			X	



Title:  
**Land Use Designation**

Date: 08/06/2020  
 Scale: 1 inch = 700 feet  
 Project: 2016-41



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## Explanation

- a) **No Impact.** The project is the improvement of a water distribution system. The project includes extension of water lines and construction of water system improvements in order to serve the project area. All pipeline will be installed underground and will not physically divide the community in any way. No changes in land use are planned and the community would not be divided by the actions of the proposed project. Therefore, it would not physically divide an established community.
- b) **Less-Than-Significant Impact.** The project would not conflict with any policy adopted for the purposes of avoiding and/or mitigating an adverse environmental effect. Construction of the project is limited to improvements to the existing well system in an area that has been previously disturbed. As a result, potential impacts would be minimized. Where appropriate, this IS/MND has identified a number of mitigation measures to further ensure that impacts would be less-than-significant. The improvement of a municipal water system is consistent with the land use designations on the site and within the project area.

**Conclusion:** The project would have a less-than-significant impact on land use and planning.

**Sources:** 1, 2, 3

### 5.2.12 Mineral Resources

#### Setting

In accordance with the Surface Mining and Reclamation Act of 1975 (SMARA), the California Geological Survey (CGS) maps the regional significance of mineral resources throughout the state, with priority given to areas where future mineral resource extraction could be precluded by incompatible land use or to mineral resources likely to be mined during the 50-year period following their classification. The CGS delineates Mineral Resource Zones (MRZs) based on their mineral resource potential. The project site is outside of a classified MRZ.

#### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
MINERAL RESOURCES. 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?				X
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?				X

## Explanation

- a, b) **No Impact.** The CGS does not consider the project site a mineral resource delineation priority; as the site is located outside of a classified MRZ. Because no known mineral resources exist on the project site, implementation of the project would not have an impact on mineral resources.

**Conclusion:** The project would have no impact on mineral resources.

**Sources:** 1, 2, 3

### 5.2.13 Noise

#### Setting

In the context of this document, “noise” is defined as unwanted sound. The primary source of existing noise in the proposed project area is traffic on adjacent roadways, primarily Highway 1.

The Monterey County General Plan includes guidance for noise and provides land use compatibility guidelines for exterior community noise levels. Based on these guidelines, sensitive noise receptors near the project site are private residences, schools, childcare centers, and open spaces. The normally acceptable noise range for low density residential areas is 50 to 60 decibels (dB) and the normally acceptable noise range for agricultural areas is 50 to 75 dB. The conditionally acceptable noise range for low density residential areas is 55 to 70 dB and the conditionally acceptable noise range for agricultural areas is 70 to 80 dB. Development in areas where noise levels are considered “conditionally acceptable” may be undertaken only after additional noise analysis is provided and appropriate mitigation features are included in the project design.

The project is not located within an airport land use plan, public airport, or private airstrip.

#### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
NOISE. Would the project result in				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b) Generation of excessive groundborne vibration or groundborne noise levels?			X	
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X

## Explanation

- a) **Less-Than-Significant Impact.** Sensitive receptors in the area include nearby residences within the immediate vicinity of the distribution pipeline and well improvement site at Moss Landing Middle School. Project construction would generate a temporary increase in noise associated with the use of construction equipment. Noise generated by pipeline installation can vary greatly depending on the specific equipment selected by the construction contractor. The contractor will be using standard equipment associated with pipeline construction including excavators, loaders, dump trucks, and hauling vehicles. Using guidance provided by the Federal Highway Administration, it is estimated that noise will reach a maximum of 85 decibels at a distance of 50 feet from construction, which is above the conditional acceptable noise range of 70 decibels for residential uses.

Noise impacts to nearby sensitive receptors during construction would be temporary. Assuming installation of the distribution pipeline at a rate of approximately 200 feet per day, pipeline trenching activities would proceed along the project alignment at a rate of approximately 1,000 feet per five working days; approaching and departing any one receptor location over a fairly short duration. Construction phases include site preparation, grading, trenching, and paving that will take place over a maximum of one-year construction period. General work hours would be between 7 A.M. to 5 P.M., Monday through Friday.

Construction noise levels exceeding 70 decibels for more than two weeks would represent a substantial temporary noise increase to nearby residences. The proposed pipeline trenching activities at any one location along the alignment would be limited to approximately four days. Although, construction noise would exceed the conditionally acceptable significance criteria at most locations along the alignment, the duration would be less than two weeks at any one location, and construction would be limited to daytime hours. Therefore, temporary noise increases due to construction would not be substantial, and noise impacts at this for the project would be less than significant.

The distribution pipeline would not generate any permanent noise during project operation, as it will be entirely underground. Equipment at the well site would generate noise during operation, in particular, the pump station at the well site would generate noise. However, the nearest sensitive receptor to the Middle School well site is approximately 500 feet to the northwest, on the corner of Springfield Road and Highway 1. At this distance, noise generated at the well site would be negligible. The project would result in a less-than-significant impact due to a permanent increase in ambient noise levels.

- b) **Less-Than-Significant Impact.** The project is not subject to substantial groundborne vibration, nor would it generate any permanent source of groundborne vibration at nearby sensitive receptors. Construction activities may generate groundborne vibration, however, these activities would be temporary, and the vibration effects of typical construction equipment is not expected to affect nearby sensitive residential receptors.

- c) **No Impact** The project is not located within an airport land use plan or near a public airport or private airstrip. The Watsonville Municipal Airport is located more than eight miles north of the project site.

**Conclusion:** The project would have a less-than-significant noise impact.

**Sources:** 1, 2

### 5.2.14 Population and Housing

#### Setting

The project is comprised of a new well, distribution pipelines, and the replacement of existing well and pipelines. Upon completion, the project would serve 139 new connections and 34 existing connections, or a total of 163 connections. The project would not displace any existing housing.

#### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
POPULATION AND HOUSING. Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			X	
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?			X	

#### Explanation

- a) **Less-Than-Significant Impact.** Although the project would include new water distribution pipelines, these connections would only serve existing residences that currently use well water from another source (SW-1). SW-1 does not have adequate quality for potable water and the development of SW-2 as a new sources supply would provide potable water to the existing Springfield Community as described in this ISMND.<sup>11</sup> SW-1 would be disconnected from the new distribution system and only be used in the case of an emergency. The project will construct needed improvements to the existing system to deliver a reliable and potable water supply to the community. The project under this IS/MND will serve the residences on Struve Road, currently served by the Springfield Water System, the Moss Landing Mobile Home Park, and a number of individual residents along the proposed pipeline alignments as shown on **Figure 2**. The project will include new individual meters for all homes served by the new system. The project will also include complete replacement of distribution lines on both Springfield and Struve Roads and for

<sup>11</sup> The existing well (SW-1) has tested in exceedance of nitrate MCLs for many years and the Springfield system has been on a bottled water order from Monterey County since approximately 1986.

the Moss Landing Mobile Park. Therefore, the project would serve an existing community and would not induce substantial population growth in the area.

- b) **Less-Than-Significant Impact.** The project involves the improvement to the Springfield Water System serving an existing area. The project would not displace substantial numbers of existing people, housing, or necessitate the construction of replacement housing elsewhere.

**Conclusion:** The project would have a less-than-significant impact on population and housing.

**Sources:** 1, 2, 3

### 5.2.15 Public Services

#### Setting

The project is a water system improvements project north of Moss Landing in unincorporated Monterey County. The project site is serviced by the North County Fire Protection District (CFPD), the nearest fire station (Station #3) is located about 2.5 miles to the northeast on the corner of Elkhorn and Hall roads. The project area is patrolled by the Monterey County Sheriff’s Department (MCSO). There are not any operating schools within the vicinity of the project site.

#### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
a) Fire protection?			X	
b) Police protection?			X	
c) Schools?				X
d) Parks?				X
e) Other public facilities?				X

#### Explanation

- a, b) **Less-Than-Significant Impact.** Because the project is a water system improvements project, it will have no post-construction impact on CFPD or MCSO. Although unlikely, CFPD and MCSO could be required to respond to potential construction-related emergencies. Construction is expected to be completed within one year and will not significantly impact fire protection or police protection services or require the construction of new or remodeled facilities.
- c, d, e) **No Impact.** The water supply project would have no physical impact on schools, parks, or other public facilities and would not require the construction of new or remodeled facilities.

**Conclusion:** The project would have a less-than-significant impact on public services.

**Sources:** 1, 2

### 5.2.16 Recreation

#### Setting

There are not any parks within the vicinity of the project site. Zmudowski State Beach is located about 1.3 miles to the west of the site. The Elkhorn Slough National Estuarine Research Reserve is located about 1.2 miles south of the project site. Highway 1 is not a designated bike route within the vicinity of the project area, as the shoulders are not intended for bicyclists. However, it is still frequently utilized by cyclists.

#### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
RECREATION. Would the project:				
a) Would the project 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?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

#### Explanation

a, b) **No Impact.** The project is a water systems improvement project and would not increase the use of surrounding recreational facilities and would therefore not contribute to the physical deterioration of park facilities or necessitate the construction of new recreational facilities.

**Conclusion:** The project would have no impact on recreational facilities.

**Sources:** 1, 2

### 5.2.17 Transportation

#### Setting

The project is located north of the town of Moss Landing. Regional access to the project site is provided via Highway 1. The Middle School Well Site can be accessed via Springfield Road. The Distribution Pipeline can be accessed via Springfield and Struve Roads.

This section of Highway 1 can sometimes become congested during high commute times; however, it is free flowing the majority of the time. The annual average daily traffic (AADT)<sup>12</sup> along Highway 1 between Dolan and Jensen Roads in the project vicinity is approximately 47,000 vehicles.

The project will require excavation within the Monterey County right-of-way on Springfield and Struve Roads for the distribution pipeline trenching and jack and bore underneath Highway 1. PSMCSD will be responsible for obtaining an encroachment permit from the County of Monterey prior to the start of construction. The encroachment permit will require a traffic control plan.

### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
TRANSPORTATION/TRAFFIC. Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?			X	
b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?			X	
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			X	
d) Result in inadequate emergency access?			X	

### Explanation

- a) **Less-Than-Significant Impact.** The proposed water system improvements project would have minimal operational impacts, as there are no full-time workers planned for the facility. The amount of traffic generated by maintenance activities associated with the operational component of the project would be infrequent and result in a negligible increase compared to the existing site traffic. The project would result in a temporary increase in traffic during construction.

Construction-related vehicle trips would include workers traveling to and from the project construction sites and staging area(s) and other trucks associated with equipment and material deliveries. Construction worker trips are assumed to be 16 daily trips, with two four-person crews per working day for 12-month project duration. Truck trips for materials and hauling for the distribution system pipeline and well site construction will vary depending on delivery of materials and construction vehicles. Compared to the approximately 47,000 vehicles traveling Highway 1 daily in the project vicinity, the temporary construction related traffic would be minimal. The construction routes have not been determined, but most vehicles will access the project site(s) via Highway 1. Construction activities along Springfield and Struve could include lane narrowing and/or lane closures. No sidewalks or bike lanes exist along the pipeline alignments. Lane closures

<sup>12</sup> ADDT is the total volume for the year divided by 365 days.

during pipeline construction activities may be necessary, though are not anticipated. In the event of any type of closure, clear signage (e.g., closure and detour signs) must be provided to ensure vehicles, pedestrians and bicyclists are able to adequately reach their intended destinations safely. PSMCSD would prepare a construction Traffic Control Plan as part of the encroachment permit from the County. This plan should address the construction schedule, street closures and/or detours, construction staging areas and parking, and planned truck routes. Construction is a short-term, temporary activity and construction trips would account for a relatively small portion of existing traffic on area roadways. Construction-related traffic impacts would be reduced through implementation of the required Traffic Control Plan. Therefore, traffic flow impacts during construction would be less than significant.

- b) **Less-Than-Significant Impact.** CEQA Guidelines Sec. 15064.3(b)(1) identifies that VMT exceeding an applicable threshold of significance may indicate that a project has a significant transportation related effect. Currently, the County of Monterey does not have adopted VMT thresholds. In the absence of an adopted threshold of significance, CEQA Guidelines Sec. 15064.3(b)(3) identifies that a lead agency may qualitatively evaluate potential traffic-related effects by considering such factors as availability of transit, proximity to other destinations, and similar factors.
- c) **Less-Than-Significant Impact.** The project would not substantially increase hazards due to a design feature (for example, sharp curves or dangerous intersections) or incompatible uses. The amount of traffic generated by maintenance activities associated with the operational component of the project would be infrequent and result in a negligible increase compared to the existing site traffic. The project does not include the construction of hazardous design features and would not result in incompatible uses with the surrounding developed area. Implementation of a Traffic Control Plan would minimize potential traffic hazards during construction.
- d) **Less-Than-Significant Impact.** The Traffic Control Plan would include traffic control measures in the event of a lane closure and would give priority access to emergency vehicles. The proposed water system improvements consist primarily of new pipelines and would not impact emergency access.

**Conclusion:** The project would have a less-than-significant impact on transportation.

**Sources:** 1, 2, 3

### ***5.2.18 Tribal Cultural Resources***

#### **Setting**

To recognize California Native American tribal sovereignty and the unique relationship of California local governments and public agencies with California Native American tribal governments, and to respect the interests and roles of project proponents, the State Legislature enacted AB 52 (Gatto, 2014) Native Americans: California Environmental Quality Act. California AB 52, in effect since July 2015, provides CEQA protections for tribal cultural resources. All lead agencies approving projects under CEQA are required, if formally requested by a culturally affiliated California Native American Tribe, to consult with



such tribe regarding the potential impact of a project on tribal cultural resources before releasing an environmental document. Prior to the enactment of AB 52, the State of California found that current laws provided limited protection for sites, features, places, objects, and landscapes with cultural value to California Native American Tribes. Under California Public Resources Code §21074, tribal cultural resources include site features, places, cultural landscapes, sacred places, or objects that are of cultural value to a tribe and that are eligible for or listed on the California Register of Historical Resources (CRHR) or a local historic register, or that the lead agency has determined to be of significant tribal cultural value.

Holman & Associates assisted the lead agency by conducting initial Native American consultation that began by contacting the Native American Heritage Commission. The Commission identified the project area as located with sacred lands and referred the project to the Costanoan Rumsen Carmel Tribe and the Ohlone/Costanoan-Esselen Nation, as shown in **Appendix D**. All individuals/groups who provided comments stated the project area was sensitive for Native American resources. A full listing of contacts and the continued contacts on this project are included in **Appendix D**. The PSMCSD continued consultation with the Native American tribes. (See below for summary results of consultation; see also **Appendix D** for contact list and full consultation record as of the date of this IS/MND publication).

### **Results of Tribal Consultation**

Holman & Associates initiated Native American consultation of behalf of PSMCSD. A letter was written to the Native American Heritage Commission asking for a review of their Sacred Lands File. The Commission responded that their search for sacred lands was positive. PSMCSD and Holman & Associates were referred to the Costanoan Rumsen Carmel Tribe and the Ohlone/Costanoan-Esselen Nation for additional consultation. All those individuals and groups provided on the contact list were contacted with a letter sent by email when possible or by mail by Holman & Associates. All who directly responded stated the project area is highly sensitive for Native American resources. Holman spoke with Irene Zwierlein, Louise Miranda-Ramirez, and Valentin Lopez. An archaeological consultant for the Esselen Tribe of Monterey County responded by letter requesting to be informed and further consulted prior to approval of any plans, construction or proposed construction. Ms. Zwierlein recommended cultural sensitivity training to all those associated with the construction phase. Ms. Miranda-Ramirez requested direct consultation with the lead agency and sent a private letter for PSMCSD. The Esselen Tribe of Monterey County would like interaction with PSMCSD in the preapproval stage of planning. Mr. Lopez recommended a Native American monitor during project construction. The entirety of Holman & Associates' consultation is recorded through April 2020. As of this date, Mr. Cerda, Chairperson of the Costanoan Rumsen Carmel Tribe could not be reached by phone and had not responded to two emails from Holman & Associates.

In addition to the initial consultation by Holman & Associates, detailed above, continued tribal consultation with the four groups that requested additional consultation on the project was conducted by the Lead Agency for the project. PSMCSD completed the following contacts, to continue consultation and provide the negative results of the project Phase II auguring conducted for the project. The following summarizes the communications conducted by Judy Vasquez, PSMCSD, Operations Manager.

- Called **Valentin Lopez**, of the Amah Mutsun Tribal Band initially on July 22, 2020 but was unable to leave a message due to full mailbox. PSMCSD called again on July 24, 2020 and spoke to him. Mr. Lopez commented that, if ground is disturbed and cultural remains or materials are discovered,

that PSMCSD notify the Tribe immediately, and requested a Tribal representative be present in the event cultural remains or materials are discovered.

- Called **Irenne Zwierlein**, of the Amah Mutsun Tribal Band of Mission San Juan Bautista on July 22, 2020 and notified her of the phase II auger testing results, which confirmed there was no cultural resource that would be impacted.
- Called **Tom Little Bear Nason**, of the Esselen Tribe of Monterey County on July 22, 2020 and left a message. A return phone call was received from Cara at 2:16 P.M. the same day. The negative results from the Phase II auger testing program were reported; Cara stated that she will forward this information to Mr. Nason.
- Called **Louise Miranda-Ramirez**, of the Ohlone/Costanoan-Esselen Nation on July 22, 2020 and left a message. Ms. Vasquez of PSMCSD reached out again on July 24, 2020. Ms. Miranda-Ramirez asked for the archaeological reports and that she also be included in mitigation and recovery programs. Ms. Miranda-Ramirez also requested that human remains be reburied and not placed in museums and that cultural items be provided to the Tribe. Ms. Miranda-Ramirez also requested that a Native American monitor approved by Tribal Council be present during construction.

### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
TRIBAL CULTURAL RESOURCES. Would the project:				
Cause a substantial adverse change in the significance of a tribal cultural resources, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historic Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or			X	
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.			X	

### Explanation

- a, b) **Less-Than-Significant Impact.** There are no historical structures on the site. Monterey County records indicate that the project site, which contains one caretaker mobile home and ancillary structures, is not listed on the California Register of Historic Places or on Monterey County’s local

list. Professional archaeologists studied a project boundary larger than the proposed project site disturbance. After initial consultation, a field survey of the project area was completed. Two fragments of oyster shell were identified within the project study area boundaries. Additional testing (auger testing) was conducted at this location and results did not find any indication of Native American materials or other archaeological cultural resources. The studies and subsurface testing indicate the area of proposed development is not within an archaeological site eligible to be designated as a historical resource applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. Should archaeological resources be unexpectedly discovered during construction, work shall be halted until it can be evaluated by a qualified professional archaeologist and determined to be significant, and appropriate mitigation measures formulated and implemented, as identified in **Mitigation Measures CR-1** and **CR-2**. The project would have a less-than-significant impact on tribal cultural resources.

Please see **Section 5.2.5 Cultural Resources** of this Initial Study and **Appendix D** for additional discussion.

**Conclusion:** The project would have a less-than-significant impact on cultural tribal resources.

**Sources:** 1, 2, 9

### ***5.2.19 Utilities and Service Systems***

#### **Setting**

PSMCSD is the water service purveyor to the project area; the project service area's population does not have any water use or connections. The Monterey Regional Waste Management District (Waste Management) is currently responsible for the collection of solid waste at the project site. Waste is transported to the Waste Management facility north of the City of Marina. Pacific Gas & Electric Co. provides electric service to the proposed project site.

Monterey One Water (M1W) provides wastewater collection, treatment and disposal services to the proposed project site. M1W is also responsible for the maintenance and operation of the sewer system within its wastewater management district borders.

The existing Springfield Water System is currently supplying only non-potable water and lacks the capacity for system storage. Raw water storage is available solely in the aquifer, as there is no substantive treated water storage. The Springfield community water system (CA2700771) serves 34 connections along Struve Road. Separate and individual systems serve the individual residents in the area. The Moss Landing Mobile Home Park, a low-income community, is proposed to be incorporated into the project due to insufficient supplies from their on-site well to serve their customers. The entire Springfield area, occupied by low income farmworker families, is currently experiencing severe groundwater contamination due to leaking septic tanks (biological contamination) and the leaching of commercial fertilizers from agricultural enterprises, into groundwater supplies. This constitutes an existing threat to the public health and safety of the area's residents. Residents of the area, including the Moss Landing Mobile Home Park, are considered to comprise a disadvantaged community (DAC) of about 200 residents, many of them farmworkers.

The project will construct improvements to the existing system to deliver a reliable and potable water supply to the community. There are no individual water meters on the existing distribution system currently serving the area. The only water meter on the system is a total production meter at SW-1. The project under this IS/MND will serve the residences on Struve Road, currently served by the Springfield Water System, the Mobile Home Park, and a number of individual residents along the proposed pipeline alignments as shown on **Figure 2**. The project will include new individual meters for all homes served by the new system. The project will also include complete replacement of distribution lines on both Springfield and Struve Roads and for the Moss Landing Mobile Park.

Historic system demands, including average daily demand (ADD) and max daily demand (MDD), are presented below, in **Table 8**:

<b>Table 8</b>				
<b>Existing Water System Demand</b>				
<b>Community</b>	<b>Unit Type</b>	<b>Units</b>	<b>ADD (GPM)</b>	<b>MDD (GPM)</b>
Springfield Water System	SFR	34	13	31
Moss Landing Mobile Home Park	MH	105	15	35
Existing Homes Springfield Project Area*	SFR	24	9	22
<b>Total</b>			<b>37</b>	<b>87</b>
*Note: Water demand shown from single-family homes in both Springfield and Giberson Road areas Source: PER, MNS Engineers, February 14, 2020. See also additional information located in <b>Appendix E</b> .				

During project development, MNS Engineers prepared a Preliminary Engineering Report (PER) which explored several alternative methods of supplying potable water to the area. The project evaluated in the IS/MND would serve less homes in the area, as estimated below in **Table 9**. This table estimates system demands including ADD and MDD are presented below:

<b>Table 9</b>				
<b>Post-Project Water System Demand Estimates</b>				
<b>Community</b>	<b>Unit Type</b>	<b>Units</b>	<b>ADD (GPM)</b>	<b>MDD (GPM)</b>
Springfield Water System	SFR	34	13	31
Moss Landing Mobile Home Park	MH	105	15	35
Existing Homes Springfield Project Area	SFR	16**	6	15
<b>Total</b>			<b>34</b>	<b>71</b>
**Note: Includes reduction in the single-family homes to be served in this area by this project compared to the PER. An updated demand estimate was prepared using the PER, working with MNS Engineers for this IS/MND.				

Due to replacement of existing deteriorated system pipelines, and additional conservation anticipated due to individual meters placed on each home, the pre- and post-project water demands are estimated to be relatively stable, with approximate annual project demand after completion of 55 acre-feet per year (AFY).<sup>13</sup>

### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
UTILITIES AND SERVICE SYSTEMS. Would the project:				
a) Require or result in the relocation or construction of new or expanded water, or wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			X	
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			X	
c) Result in a determination by the wastewater treatment provider which 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?			X	
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			X	
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			X	

### Explanation

- a) **Less-Than-Significant Impact.** The project proposes to replace a well (SW-1) that is not able to provide potable drinking water to an existing community. The project will develop a new source of water supply from existing well SW-2, storage, treatment and pumping facilities, and distribution system improvements. The project would not generate any additional wastewater or exceed or impact wastewater treatment requirements of the applicable Regional Water Quality Control Board. The project would not increase wastewater generation. The project would not require additional construction or relocation of utility facilities which would cause significant environmental effects. The potential adverse environmental effects associated with the water expansion project are fully evaluated in this IS/MND. With implementation of recommended mitigation measures, construction of new water service facilities would result in a less-than-significant impact. No additional impacts would occur beyond those described in this document.

<sup>13</sup> Source: PER, February 14, 2020 and updated July 24, 2020 through personal communication (Nick Panofsky, PE., Lead Engineer, MNS Engineers, Inc., July 24, 2020).

- b) **Less-Than-Significant Impact.** Water quality test results for the Springfield Water System have exceeded acceptable nitrate levels since 1986, according to the Monterey County Health Department, Environmental Health Bureau. The well serving the Moss Landing Manor mobile home park has tested above maximum levels for hexavalent chromium. Water quality tests have indicated areas currently do not have a potable water supply in conformance with state drinking water standards. The project proposed water for a new water system will be provided from a new source; this source is SW-2, a well drilled in 2018 at the Moss Landing Middle School site. The Moss Landing Middle School site will be developed as a new municipal site. SW-2 is located within an easement owned by the District on the northeast corner of the Moss Landing Middle School property. Representative water quality sampling and analyses document the water in the aquifer supplying the new Springfield test well (SW-2) is within safe drinking water limits for all Title 22 analytes. The well's yield and water quality analysis results also demonstrate that the well is suitable for use as a source water supply well. The existing Springfield Water System is currently supplying only non-potable water and lacks the capacity for system storage. Raw water storage is available solely in the aquifer, as there is no substantive treated water storage. The new system will include new distribution and storage tanks to serve the community with a reliable, replacement system. The system has adequate capacity to serve the project's projected demand; the well and storage tank municipal system will replace the current system of wells and serve the same area. Thus, the SW-2 well at the Moss Landing Middle School Site has been tested for production capacity and reliability, as well as water quality, and is suitable source of supply for this replacement public water system.
- c) **Less-Than-Significant Impact.** The primary objective of the project is to provide a high-quality water source, which will provide for long-term water supply reliability for the community. The project does not require wastewater service or expansion. There would be no impact in connection with the project.
- d) **Less-Than-Significant Impact.** The proposed project would not generate significant solid waste. Waste Management serves the western coastal areas of Monterey County. Waste Management's jurisdictional boundaries includes the unincorporated areas of Moss Landing. The landfill has adequate capacity to serve the existing and future planned development in the region. Therefore, there would be no impact in connection with the project.
- e) **Less-Than-Significant Impact.** Waste disposal to landfills would be minimized, and all waste would be properly disposed of in a safe, appropriate, and lawful manner in compliance with all applicable regulations of local (Monterey County's Integrated Waste Management Plan), state (California Integrated Waste Management Act of 1989 & California Green Building Standards), and federal regulations related to solid waste. Since the project will require compliance with all county, state, and federal regulations and conditions, there will be no violation of the regulations concerning solid waste disposal as conditions for approval, resulting in a less-than-significant impact.

**Conclusion:** The project would have a less-than-significant impact on utilities and service systems.

**Sources:** 1, 2, 7, 8

## 5.2.20 Wildfire

### Setting

The project site is not located within High and Very-High Fire Hazard Severity Zones for wildland fires, as designated by the California Department of Forestry and Fire Protection (Cal Fire, Fire Hazard Severity Maps, 2007, 2008).

### CEQA Thresholds

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?			X	
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?				X
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?				X
d) Expose people or structure to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				X

### Explanation

- a) **Less-Than-Significant Impact.** The project site is located within close proximity of Highway 1, which could potentially be designated as part of an evacuation route plan in the case of an emergency. The County currently does not have a dedicated evacuation route plan and would notify the public of a designated evacuation plan in the case of a major emergency. The proposed water improvement project would not significantly affect emergency access.
- b) **No Impact.** The project is not located within a State Responsibility Area (SRA) Fire Hazard Zone, therefore, would not exacerbate wildfire risks.
- c) **No Impact.** The proposed installation or maintenance of water infrastructure for the project would not exacerbate fire risk or result in temporary or ongoing impacts to the environment.
- d) **No Impact.** As mentioned in the previous discussions above, the project is not located within an SRA Fire Hazard Zone, therefore, is not at risk of downslope or downstream flooding or landslides resulting in no impact.

**Conclusion:** The project would result in a less-than-significant impact related to wildfire.

**Sources:** 1, 2, 7, 8

**5.2.21 Mandatory Findings of Significance**

ENVIRONMENTAL IMPACTS	Potentially Significant Issues	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		X		
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 the past projects, the effects of other current projects, and the effects of probable future projects)?			X	
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?			X	

**Explanation**

a) **Less Than Significant With Mitigation Incorporated.** The new and replacement pipeline would be constructed within existing roadways right-of-way that does not contain suitable habitat for fish and wildlife species. The improvements to the SW-2 site would be on land formerly disturbed and used for a middle school. Additionally, mitigation measures are recommended to address potential direct and indirect impacts to special-status species that may be present on the project site. Based on this analysis, the project would not substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community or substantially reduce the number or restrict the range of a rare or endangered plant or animal. The new and replacement pipeline alignment and the improvements to the SW-2 site would be constructed within existing roadways right-of-way and on a former school site that do not contain important examples of the major periods of California history or prehistory. Additionally, mitigation measures to protect cultural resources require work to stop and finds evaluated should unanticipated archaeological resources be discovered during construction. Therefore, the project would not eliminate important examples of the major periods of California history or prehistory with implementation of mitigation measures identified in this document. See **Table 10** for a listing of these mitigation measures.



- b) **Less-Than-Significant Impact.** Section 15355 of the CEQA Guidelines defines “cumulative impacts” as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental effects. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. It is important to address whether the proposed project would result in an impact that would be found to be cumulatively considerable. Cumulative impacts could occur due to indirect growth-inducing impacts, which includes consideration of whether the project would remove an obstacle to additional growth and development. The project area and community to be served by this project is already receiving waters and developed. The project would not include housing or development in areas that could induce growth and would also not remove any barriers that could result in population growth. The water system improvements will provide potable drinking water to an existing community that is currently relying on delivery of bottled water. The project will replace pipeline from the existing system and construct new pipeline to distribute water from a new municipal supply to be developed at a former school site. As described in the previous analysis, the proposed project would result in less-than-significant impacts to aesthetics, air quality, biological resources, energy, geology/soils, greenhouse gas emissions, hazards and hazardous materials, hydrology/water quality, noise, recreation, utilities/service systems, and wildfire. The majority of project impacts are temporary and localized along the project distribution pipeline and well site during the construction period. Upon operation, the project would not have significant adverse environmental impacts or induce new development in the area that could combine with other projects’ effects to create cumulatively significant impacts. Project operational activities would not significantly alter the existing environment, particularly in the distribution pipelines which will be underground. Well site improvements are to be developed on properties currently or previously developed and used for urban uses. There are no known projects in the immediate project vicinity of a similar nature proposed or reasonably foreseeable for development. When considered cumulatively along with past, current, and probable future projects that may occur in the area, the project’s contribution is considered negligible and would not be cumulatively considerable.
- c) **Less-Than-Significant Impact.** The project would not result in environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly. The project involves site improvements and construction of the proposed components over already developed areas within an established community. Project operational activities would not significantly alter the environmental baseline condition. Construction of the proposed project would result in temporary minor incremental reductions in air quality and traffic in the project vicinity, however, these were found to be minor, temporary and localized. The project would result in less-than-significant impacts to air quality, greenhouse gas emissions, and hazards and hazardous materials. The primary source of criteria air pollutant and GHG emissions would stem from the use of equipment during construction activities. Additionally, the project would not create any significant air emissions or impacts from construction-related noise due to the short-term and localized nature of the project.

**Conclusion:** The project will have a less-than-significant impact related to the CEQA mandatory findings of significance with implementation of mitigation measures identified in this document. Pursuant to Section 21083 of the Public Resources Code and Section 15065 of the CEQA Guidelines, a project would be considered to have a significant effect on the environment, and an Environmental Impact Report shall be

prepared, if impacts identified cannot be avoided or mitigated to a point where no significant effect on the environment would occur. Analysis provided in this document found that there is no substantial evidence, in light of the whole record, that the proposed project may have a significant effect on the environment.

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Table 10, below, summarizes the mitigation measures that will be adopted as part of the project.

<b>Table 10</b>	
<b>Mitigation Measure Summary Table</b>	
<b>MITIGATION MEASURES</b>	
<b>Biological Resources</b>	
<b>BIO-1A</b>	Prior to construction activities, the project proponent shall retain a qualified biologist to conduct an Employee Education Program for the construction crew. The biologist shall meet with the construction crew at the project site at the onset of construction to educate the construction crew on the following: a) a review of the project boundaries; b) all special-status species that may be present, their habitat, and proper identification; c) the specific mitigation measures that will be incorporated into the construction effort; d) the general provisions and protections afforded by the regulatory agencies; and e) the proper procedures if a special-status animal is encountered within the project site.
<b>BIO-1B</b>	<p>Construction activities that may directly (e.g., vegetation removal) or indirectly affect (e.g. noise/ground disturbance) nesting raptors and other protected avian species shall be timed to avoid the breeding and nesting seasons (February 1 through September 15).</p> <p>If construction activities must occur during the breeding and nesting season (February 1 through September 15), a qualified biologist shall conduct pre-construction surveys for nesting raptors and other protected avian species within 300 feet of the proposed construction activities. Pre-construction surveys should be conducted no more than seven (7) days prior to the start of the construction activities during the early part of the breeding season (February through April) and no more than 14 days prior to the initiation of these activities during the late part of the breeding season (May through August).</p> <p>If raptors or other protected avian nests are identified during the pre-construction surveys, the qualified biologist would notify the project proponent and an appropriate no-disturbance buffer would be imposed within which no construction activities or disturbance would take place (generally 300 feet in all directions for raptors; other avian species may have species-specific requirements) until the young of the year have fledged and are no longer reliant upon the nest or parental care for survival, as determined by a qualified biologist.</p>
<b>BIO-2A</b>	The project applicant will comply with the CESA and will coordinate with the CDFW to determine whether incidental take authorization for CTS is required prior to issuance of a grading permit. If it is determined that authorization for the incidental take of this species is required from the CDFW, the project applicant will comply with the CESA to obtain a 2081 incidental take permit from CDFW prior to the issuance of a grading permit. Permit requirements typically involve the preparation and implementation of a mitigation plan and mitigating impacted habitat at a 3:1 ratio through preservation and/or restoration. The project applicant would be required to retain a qualified biologist to prepare a mitigation plan, which will include, but is not limited to, identifying avoidance and minimization measures, and identifying a mitigation strategy that includes a take assessment, avoidance and minimization measures, compensatory mitigation lands, success criteria, and funding assurances. The project applicant would be required to implement the approved plan and any additional permit requirements.
<b>BIO-2B</b>	The project will comply with the ESA and conduct consultation with the USFWS to determine whether incidental take authorization for CTS is required prior to issuance of a grading permit. If it is determined that authorization for the incidental take of this species is required from the USFWS, the project will comply with the ESA to obtain Section 7 or Section 10 authorization from USFWS at the project-level prior to the issuance of a grading permit. Permit requirements typically involve the preparation and implementation of a mitigation plan and mitigating impacted habitat at a 3:1 ratio through preservation and/or restoration. The project applicant would be required to retain a qualified biologist to prepare a mitigation plan, which will include, but is not limited to, identifying avoidance and minimization measures, and identifying a mitigation strategy that includes a take assessment, avoidance and minimization measures, compensatory mitigation lands, success criteria, and funding assurances. The project applicant would be required to implement the approved plan and any additional permit requirements.
<b>BIO-3A</b>	A qualified biologist will survey the proposed project area and immediately adjacent areas 48 hours before and the morning of the onset of work activities for the presence of CRLF. If any life stage of CRLF is observed, construction activities will not commence until the USFWS is consulted and appropriate actions are taken to allow project activities to continue.
<b>BIO-3B</b>	During ground disturbing and vegetation removal activities, a qualified biologist shall survey appropriate areas of the construction site daily before the onset of work activities for the presence of CRLF. The qualified biologist shall remain available to come to the site if a CRLF is identified until all ground disturbing activities are completed. If any life stage of the CRLF is found and these individuals are likely to be killed or injured by work activities, the qualified biologist shall be contacted, and work shall stop in that area until the CRLF has moved on its own out of the work area and the USFWS has been contacted. Construction activities will not resume until the USFWS is consulted and appropriate actions are taken to allow project activities to continue.

**Table 10**  
**Mitigation Measure Summary Table**

<b>MITIGATION MEASURES</b>	
<b>BIO-3C</b>	After ground disturbing and vegetation removal activities are complete, or earlier if determined appropriate by the qualified biologist, the qualified biologist will designate a construction monitor to oversee on-site compliance with all avoidance and minimization measures. The qualified biologist shall ensure that this construction monitor receives the sufficient training in the identification of CRLF. The construction monitor or the qualified biologist is authorized to stop work if the avoidance and/or minimization measures are not being followed. If work is stopped, the USFWS shall be notified. The qualified biologist and the construction monitor shall complete a daily log summarizing activities and environmental compliance throughout the duration of the proposed project.
<b>BIO-3D</b>	To prevent inadvertent entrapment of CRLF during project construction, all excavated, steep-walled holes or trenches more than two feet deep will be covered at the close of each working day with plywood or similar materials. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals.
<b>BIO-3E</b>	Only tightly woven fiber netting or similar material may be used for erosion control at the project site. Coconut coir matting is an acceptable erosion control material. No plastic mono-filament matting will be used for erosion control, as this material may ensnare wildlife, including CRLF.
<b>BIO-3F</b>	Because dusk and dawn are often the times when CRLF are most actively foraging and dispersing, all construction activities should cease one half hour before sunset and should not begin prior to one half hour after sunrise.
<b>BIO-3G</b>	All trash that may attract predators shall be properly contained, removed from the construction site, and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.
<b>BIO-4</b>	Prior to construction activities, exclusionary fencing shall be placed to keep construction vehicles and personnel from impacting potentially jurisdictional waters and riparian habitat outside of work areas. A biological monitor shall supervise the installation of exclusionary fencing and monitor at least once per week until construction is complete to ensure that the protective exclusionary fencing remains intact.
<b>Cultural Resources</b>	
<b>CR-1</b>	If archaeological resources are unexpectedly discovered during construction, work shall be halted within 50 meters ( $\pm 160$ feet) of the find until it can be evaluated by a qualified professional archaeologist. If the find is determined to be significant, appropriate mitigation measures shall be formulated and implemented, with the concurrence of the District.
<b>CR-2</b>	If human remains are unexpectedly discovered during construction, work shall be halted within 50 meters ( $\pm 160$ feet) of the find. The County Coroner shall be notified in accordance with provisions of Public Resources Code 5097.98-99 in the event human remains are found and the Native American Heritage Commission shall be notified in accordance with the provisions of Public Resources Code section 5097 if the remains are determined to be of Native American origin. The Commission will designate a Most Likely Descendant who will be authorized to provide recommendations for management of the Native American human remains. (California Public Resources Code Section 5097.98; and Health and Safety Code Section 7050.5)

## **6. REFERENCES**

### **6.1 LEAD AGENCY**

Pajaro Sunny Mesa Community Services District

### **6.2 REPORT PREPARATION**

#### **Denise Duffy & Associates, Inc.**

#### **Environmental Consultant**

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Conor O'Toole, Assistant Planner

### **6.3 PERSONS CONTACTED**

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Gabriel Edwards, Environmental Scientist, Division of Financial Assistance, State Water Board

Nicole Fowler, Supervisor for Environmental Health Review Services, Monterey County

Paul Greenway, MNS Engineers, Inc.

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Nick Panofsky, PE, MNS Engineers, Inc.

Don Rosa, District Manager, Pajaro/Sunny Mesa Community Services District

Tom Yeager, PE, District Engineer, Pajaro/Sunny Mesa Community Services District

Judith Vazquez-Varela, Operations Manager, Pajaro/Sunny Mesa Community Services District

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**Appendix A**  
**Project Specific CalEEMod Results Report**

Springfield Water System Improvements Project - Monterey County, Annual

**Springfield Water System Improvements Project  
Monterey County, Annual**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	0.90	Acre	0.90	39,204.00	0
General Light Industry	13.65	1000sqft	0.31	13,650.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	3.6	<b>Precipitation Freq (Days)</b>	55
<b>Climate Zone</b>	4			<b>Operational Year</b>	2023
<b>Utility Company</b>	Pacific Gas & Electric Company				
<b>CO2 Intensity (lb/MW hr)</b>	290	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

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**Project Characteristics** - The model's default CO2 intensity factor of 641 pounds/megawatt hour is adjusted to 290 pounds/megawatt hour to reflect Pacific Gas & Electric projections for the carbon intensity of electricity production in 2020, the last year which such projections have been made.

**Land Use** - The actual Land Use Type is Water Infrastructure within existing residential and agricultural uses, this is not an option in CalEEMod. The City Park land use was used for the pipeline component of this model and the Light Industrial land use was used for the Middle School component of the project. Areas are based on email from N. Panofsky dated 2-12-20.

**Construction Phase** - Construction will be occurring at two sites at once: the Middle School Site and the Pipeline alignment. This schedule assumes the worst case scenario for each of the construction phases including overlapping work completed at each site.

**Off-road Equipment** -

**Grading** - Total acres graded changed to 1.2 acres, grading information based on email received from N. Panofsky dated 2-12-20.

**Trips and VMT** - Trips based on email from N. Panofsky dated 2-12-20.

**Vehicle Trips** - Model assumes that one staff member will be needed at the Middle School Site for ongoing operations and maintenance. No staff needed for pipeline. No other trips would be generated during operation of the project.

**Consumer Products** - No consumer products would be used during operation of the project.

**Area Coating** - No architectural coatings are proposed as part of the project.

**Energy Use** - No natural gas is proposed at the middle school site. Energy use assumptions are based on email received from N. Panofsky dated 2-12-20.

**Water And Wastewater** - Water produced by well assumed to be 51.6 acre feet per year, which is equivalent to 16,814,000 gallons per year. Information from email from N. Panofsky dated 2-12.

**Stationary Sources - Emergency Generators and Fire Pumps** - Assume that one emergency generator would be at the Middle School Site. Assume the generator would be 500 HP. Assume that it would be in use for 20 hours a year.

Table Name	Column Name	Default Value	New Value
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tblAreaCoating	Area_EF_Nonresidential_Interior	150	0
tblAreaCoating	Area_EF_Parking	150	0
tblAreaCoating	Area_EF_Residential_Exterior	100	0
tblAreaCoating	Area_EF_Residential_Interior	100	0
tblAreaCoating	Area_Nonresidential_Exterior	6825	0
tblAreaCoating	Area_Nonresidential_Interior	20475	0
tblAreaCoating	ReapplicationRatePercent	10	0

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tblEnergyUse	LightingElect	3.08	0.00
tblEnergyUse	NT24E	3.70	30.55
tblEnergyUse	NT24NG	6.67	0.00
tblEnergyUse	T24E	1.48	0.00
tblEnergyUse	T24NG	19.71	0.00
tblGrading	AcresOfGrading	1.50	1.20
tblGrading	MaterialImported	0.00	12,000.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
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tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	20.00
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tblTripsAndVMT	VendorTripNumber	9.00	0.00
tblTripsAndVMT	WorkerTripNumber	8.00	16.00
tblTripsAndVMT	WorkerTripNumber	8.00	16.00
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tblVehicleTrips	CW_TL	14.70	0.00

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tblVehicleTrips	PR_TP	92.00	0.00
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tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	6.97	1.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	IndoorWaterUseRate	3,156,562.50	16,814,000.00
tblWater	OutdoorWaterUseRate	1,072,333.21	0.00

**2.0 Emissions Summary**

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Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	4-1-2022	6-30-2022	0.5342	0.5342
2	7-1-2022	9-30-2022	0.4699	0.4699
3	10-1-2022	12-31-2022	0.4709	0.4709
4	1-1-2023	3-31-2023	0.0974	0.0974
		Highest	0.5342	0.5342

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0537	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	54.8539	54.8539	5.4900e-003	1.1300e-003	55.3293
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	3.4529	0.0000	3.4529	0.2041	0.0000	8.5544
Water						0.0000	0.0000		0.0000	0.0000	5.3343	7.7411	13.0754	0.5487	0.0131	30.6948
<b>Total</b>	<b>0.0537</b>	<b>0.0000</b>	<b>1.9000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>8.7872</b>	<b>62.5954</b>	<b>71.3826</b>	<b>0.7582</b>	<b>0.0142</b>	<b>94.5787</b>

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**2.2 Overall Operational**

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0537	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	54.8539	54.8539	5.4900e-003	1.1300e-003	55.3293
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	3.4529	0.0000	3.4529	0.2041	0.0000	8.5544
Water						0.0000	0.0000		0.0000	0.0000	5.3343	7.7411	13.0754	0.5487	0.0131	30.6948
<b>Total</b>	<b>0.0537</b>	<b>0.0000</b>	<b>1.9000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>8.7872</b>	<b>62.5954</b>	<b>71.3826</b>	<b>0.7582</b>	<b>0.0142</b>	<b>94.5787</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**3.0 Construction Detail**

**Construction Phase**

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Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2022	4/4/2022	5	2	
2	Grading	Grading	4/5/2022	4/8/2022	5	4	
3	Building Construction	Building Construction	4/9/2022	1/13/2023	5	200	
4	Paving	Paving	1/14/2023	1/27/2023	5	10	

**Acres of Grading (Site Preparation Phase): 1**

**Acres of Grading (Grading Phase): 1.2**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)**

**OffRoad Equipment**

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Site Preparation	Graders	1	8.00	187	0.41
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	1	6.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Paving Equipment	1	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Building Construction	Welders	3	8.00	46	0.45

**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
Site Preparation	3	16.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	16.00	0.00	750.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	16.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	16.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

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**3.2 Site Preparation - 2022**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3100e-003	0.0146	7.0900e-003	2.0000e-005		6.2000e-004	6.2000e-004		5.7000e-004	5.7000e-004	0.0000	1.5115	1.5115	4.9000e-004	0.0000	1.5238
<b>Total</b>	<b>1.3100e-003</b>	<b>0.0146</b>	<b>7.0900e-003</b>	<b>2.0000e-005</b>	<b>5.8000e-003</b>	<b>6.2000e-004</b>	<b>6.4200e-003</b>	<b>2.9500e-003</b>	<b>5.7000e-004</b>	<b>3.5200e-003</b>	<b>0.0000</b>	<b>1.5115</b>	<b>1.5115</b>	<b>4.9000e-004</b>	<b>0.0000</b>	<b>1.5238</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	8.0000e-005	7.0000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1737	0.1737	1.0000e-005	0.0000	0.1738
<b>Total</b>	<b>8.0000e-005</b>	<b>8.0000e-005</b>	<b>7.0000e-004</b>	<b>0.0000</b>	<b>2.0000e-004</b>	<b>0.0000</b>	<b>2.0000e-004</b>	<b>5.0000e-005</b>	<b>0.0000</b>	<b>5.0000e-005</b>	<b>0.0000</b>	<b>0.1737</b>	<b>0.1737</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.1738</b>

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**3.2 Site Preparation - 2022**

**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					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3100e-003	0.0146	7.0900e-003	2.0000e-005		6.2000e-004	6.2000e-004		5.7000e-004	5.7000e-004	0.0000	1.5115	1.5115	4.9000e-004	0.0000	1.5238
<b>Total</b>	<b>1.3100e-003</b>	<b>0.0146</b>	<b>7.0900e-003</b>	<b>2.0000e-005</b>	<b>5.8000e-003</b>	<b>6.2000e-004</b>	<b>6.4200e-003</b>	<b>2.9500e-003</b>	<b>5.7000e-004</b>	<b>3.5200e-003</b>	<b>0.0000</b>	<b>1.5115</b>	<b>1.5115</b>	<b>4.9000e-004</b>	<b>0.0000</b>	<b>1.5238</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	8.0000e-005	7.0000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1737	0.1737	1.0000e-005	0.0000	0.1738
<b>Total</b>	<b>8.0000e-005</b>	<b>8.0000e-005</b>	<b>7.0000e-004</b>	<b>0.0000</b>	<b>2.0000e-004</b>	<b>0.0000</b>	<b>2.0000e-004</b>	<b>5.0000e-005</b>	<b>0.0000</b>	<b>5.0000e-005</b>	<b>0.0000</b>	<b>0.1737</b>	<b>0.1737</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.1738</b>

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**3.3 Grading - 2022**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0110	0.0000	0.0110	5.2300e-003	0.0000	5.2300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1700e-003	0.0240	0.0119	3.0000e-005		1.0300e-003	1.0300e-003		9.5000e-004	9.5000e-004	0.0000	2.4763	2.4763	8.0000e-004	0.0000	2.4963
<b>Total</b>	<b>2.1700e-003</b>	<b>0.0240</b>	<b>0.0119</b>	<b>3.0000e-005</b>	<b>0.0110</b>	<b>1.0300e-003</b>	<b>0.0120</b>	<b>5.2300e-003</b>	<b>9.5000e-004</b>	<b>6.1800e-003</b>	<b>0.0000</b>	<b>2.4763</b>	<b>2.4763</b>	<b>8.0000e-004</b>	<b>0.0000</b>	<b>2.4963</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7800e-003	0.0947	0.0209	3.0000e-004	6.3600e-003	3.3000e-004	6.6900e-003	1.7500e-003	3.2000e-004	2.0600e-003	0.0000	28.5327	28.5327	1.0700e-003	0.0000	28.5594
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	1.5000e-004	1.4000e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3473	0.3473	1.0000e-005	0.0000	0.3476
<b>Total</b>	<b>2.9500e-003</b>	<b>0.0949</b>	<b>0.0223</b>	<b>3.0000e-004</b>	<b>6.7600e-003</b>	<b>3.3000e-004</b>	<b>7.0900e-003</b>	<b>1.8600e-003</b>	<b>3.2000e-004</b>	<b>2.1700e-003</b>	<b>0.0000</b>	<b>28.8800</b>	<b>28.8800</b>	<b>1.0800e-003</b>	<b>0.0000</b>	<b>28.9070</b>



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**3.3 Grading - 2022**

**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					0.0110	0.0000	0.0110	5.2300e-003	0.0000	5.2300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1700e-003	0.0240	0.0119	3.0000e-005		1.0300e-003	1.0300e-003		9.5000e-004	9.5000e-004	0.0000	2.4763	2.4763	8.0000e-004	0.0000	2.4963
<b>Total</b>	<b>2.1700e-003</b>	<b>0.0240</b>	<b>0.0119</b>	<b>3.0000e-005</b>	<b>0.0110</b>	<b>1.0300e-003</b>	<b>0.0120</b>	<b>5.2300e-003</b>	<b>9.5000e-004</b>	<b>6.1800e-003</b>	<b>0.0000</b>	<b>2.4763</b>	<b>2.4763</b>	<b>8.0000e-004</b>	<b>0.0000</b>	<b>2.4963</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7800e-003	0.0947	0.0209	3.0000e-004	6.3600e-003	3.3000e-004	6.6900e-003	1.7500e-003	3.2000e-004	2.0600e-003	0.0000	28.5327	28.5327	1.0700e-003	0.0000	28.5594
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	1.5000e-004	1.4000e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3473	0.3473	1.0000e-005	0.0000	0.3476
<b>Total</b>	<b>2.9500e-003</b>	<b>0.0949</b>	<b>0.0223</b>	<b>3.0000e-004</b>	<b>6.7600e-003</b>	<b>3.3000e-004</b>	<b>7.0900e-003</b>	<b>1.8600e-003</b>	<b>3.2000e-004</b>	<b>2.1700e-003</b>	<b>0.0000</b>	<b>28.8800</b>	<b>28.8800</b>	<b>1.0800e-003</b>	<b>0.0000</b>	<b>28.9070</b>

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**3.4 Building Construction - 2022**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1566	1.1878	1.2090	2.0900e-003		0.0559	0.0559		0.0540	0.0540	0.0000	172.4981	172.4981	0.0300	0.0000	173.2492
<b>Total</b>	<b>0.1566</b>	<b>1.1878</b>	<b>1.2090</b>	<b>2.0900e-003</b>		<b>0.0559</b>	<b>0.0559</b>		<b>0.0540</b>	<b>0.0540</b>	<b>0.0000</b>	<b>172.4981</b>	<b>172.4981</b>	<b>0.0300</b>	<b>0.0000</b>	<b>173.2492</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9900e-003	7.3300e-003	0.0665	1.8000e-004	0.0188	1.5000e-004	0.0189	4.9900e-003	1.4000e-004	5.1300e-003	0.0000	16.4969	16.4969	5.9000e-004	0.0000	16.5116
<b>Total</b>	<b>7.9900e-003</b>	<b>7.3300e-003</b>	<b>0.0665</b>	<b>1.8000e-004</b>	<b>0.0188</b>	<b>1.5000e-004</b>	<b>0.0189</b>	<b>4.9900e-003</b>	<b>1.4000e-004</b>	<b>5.1300e-003</b>	<b>0.0000</b>	<b>16.4969</b>	<b>16.4969</b>	<b>5.9000e-004</b>	<b>0.0000</b>	<b>16.5116</b>

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**3.4 Building Construction - 2022**

**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	0.1566	1.1878	1.2090	2.0900e-003		0.0559	0.0559		0.0540	0.0540	0.0000	172.4979	172.4979	0.0300	0.0000	173.2490
<b>Total</b>	<b>0.1566</b>	<b>1.1878</b>	<b>1.2090</b>	<b>2.0900e-003</b>		<b>0.0559</b>	<b>0.0559</b>		<b>0.0540</b>	<b>0.0540</b>	<b>0.0000</b>	<b>172.4979</b>	<b>172.4979</b>	<b>0.0300</b>	<b>0.0000</b>	<b>173.2490</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9900e-003	7.3300e-003	0.0665	1.8000e-004	0.0188	1.5000e-004	0.0189	4.9900e-003	1.4000e-004	5.1300e-003	0.0000	16.4969	16.4969	5.9000e-004	0.0000	16.5116
<b>Total</b>	<b>7.9900e-003</b>	<b>7.3300e-003</b>	<b>0.0665</b>	<b>1.8000e-004</b>	<b>0.0188</b>	<b>1.5000e-004</b>	<b>0.0189</b>	<b>4.9900e-003</b>	<b>1.4000e-004</b>	<b>5.1300e-003</b>	<b>0.0000</b>	<b>16.4969</b>	<b>16.4969</b>	<b>5.9000e-004</b>	<b>0.0000</b>	<b>16.5116</b>

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**3.4 Building Construction - 2023**

**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	7.6200e-003	0.0586	0.0631	1.1000e-004		2.5700e-003	2.5700e-003		2.4800e-003	2.4800e-003	0.0000	9.0800	9.0800	1.5400e-003	0.0000	9.1185
<b>Total</b>	<b>7.6200e-003</b>	<b>0.0586</b>	<b>0.0631</b>	<b>1.1000e-004</b>		<b>2.5700e-003</b>	<b>2.5700e-003</b>		<b>2.4800e-003</b>	<b>2.4800e-003</b>	<b>0.0000</b>	<b>9.0800</b>	<b>9.0800</b>	<b>1.5400e-003</b>	<b>0.0000</b>	<b>9.1185</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	3.5000e-004	3.1900e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8361	0.8361	3.0000e-005	0.0000	0.8368
<b>Total</b>	<b>3.9000e-004</b>	<b>3.5000e-004</b>	<b>3.1900e-003</b>	<b>1.0000e-005</b>	<b>9.9000e-004</b>	<b>1.0000e-005</b>	<b>1.0000e-003</b>	<b>2.6000e-004</b>	<b>1.0000e-005</b>	<b>2.7000e-004</b>	<b>0.0000</b>	<b>0.8361</b>	<b>0.8361</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>0.8368</b>

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**3.4 Building Construction - 2023**

**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	7.6200e-003	0.0586	0.0631	1.1000e-004		2.5700e-003	2.5700e-003		2.4800e-003	2.4800e-003	0.0000	9.0800	9.0800	1.5400e-003	0.0000	9.1185
<b>Total</b>	<b>7.6200e-003</b>	<b>0.0586</b>	<b>0.0631</b>	<b>1.1000e-004</b>		<b>2.5700e-003</b>	<b>2.5700e-003</b>		<b>2.4800e-003</b>	<b>2.4800e-003</b>	<b>0.0000</b>	<b>9.0800</b>	<b>9.0800</b>	<b>1.5400e-003</b>	<b>0.0000</b>	<b>9.1185</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	3.5000e-004	3.1900e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8361	0.8361	3.0000e-005	0.0000	0.8368
<b>Total</b>	<b>3.9000e-004</b>	<b>3.5000e-004</b>	<b>3.1900e-003</b>	<b>1.0000e-005</b>	<b>9.9000e-004</b>	<b>1.0000e-005</b>	<b>1.0000e-003</b>	<b>2.6000e-004</b>	<b>1.0000e-005</b>	<b>2.7000e-004</b>	<b>0.0000</b>	<b>0.8361</b>	<b>0.8361</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>0.8368</b>

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**3.5 Paving - 2023**

**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	3.2200e-003	0.0312	0.0440	7.0000e-005		1.5400e-003	1.5400e-003		1.4200e-003	1.4200e-003	0.0000	5.8862	5.8862	1.8700e-003	0.0000	5.9329
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>3.2200e-003</b>	<b>0.0312</b>	<b>0.0440</b>	<b>7.0000e-005</b>		<b>1.5400e-003</b>	<b>1.5400e-003</b>		<b>1.4200e-003</b>	<b>1.4200e-003</b>	<b>0.0000</b>	<b>5.8862</b>	<b>5.8862</b>	<b>1.8700e-003</b>	<b>0.0000</b>	<b>5.9329</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	3.5000e-004	3.1900e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8361	0.8361	3.0000e-005	0.0000	0.8368
<b>Total</b>	<b>3.9000e-004</b>	<b>3.5000e-004</b>	<b>3.1900e-003</b>	<b>1.0000e-005</b>	<b>9.9000e-004</b>	<b>1.0000e-005</b>	<b>1.0000e-003</b>	<b>2.6000e-004</b>	<b>1.0000e-005</b>	<b>2.7000e-004</b>	<b>0.0000</b>	<b>0.8361</b>	<b>0.8361</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>0.8368</b>

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**3.5 Paving - 2023**

**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	3.2200e-003	0.0312	0.0440	7.0000e-005		1.5400e-003	1.5400e-003		1.4200e-003	1.4200e-003	0.0000	5.8862	5.8862	1.8700e-003	0.0000	5.9329
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>3.2200e-003</b>	<b>0.0312</b>	<b>0.0440</b>	<b>7.0000e-005</b>		<b>1.5400e-003</b>	<b>1.5400e-003</b>		<b>1.4200e-003</b>	<b>1.4200e-003</b>	<b>0.0000</b>	<b>5.8862</b>	<b>5.8862</b>	<b>1.8700e-003</b>	<b>0.0000</b>	<b>5.9329</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	3.5000e-004	3.1900e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8361	0.8361	3.0000e-005	0.0000	0.8368
<b>Total</b>	<b>3.9000e-004</b>	<b>3.5000e-004</b>	<b>3.1900e-003</b>	<b>1.0000e-005</b>	<b>9.9000e-004</b>	<b>1.0000e-005</b>	<b>1.0000e-003</b>	<b>2.6000e-004</b>	<b>1.0000e-005</b>	<b>2.7000e-004</b>	<b>0.0000</b>	<b>0.8361</b>	<b>0.8361</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>0.8368</b>

**4.0 Operational Detail - Mobile**

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**4.1 Mitigation Measures Mobile**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

**4.4 Fleet Mix**







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**5.3 Energy by Land Use - Electricity**

**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
General Light Industry	417008	54.8539	5.4900e-003	1.1300e-003	55.3293
<b>Total</b>		<b>54.8539</b>	<b>5.4900e-003</b>	<b>1.1300e-003</b>	<b>55.3293</b>

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
General Light Industry	417008	54.8539	5.4900e-003	1.1300e-003	55.3293
<b>Total</b>		<b>54.8539</b>	<b>5.4900e-003</b>	<b>1.1300e-003</b>	<b>55.3293</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0537	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
Unmitigated	0.0537	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0537					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
<b>Total</b>	<b>0.0537</b>	<b>0.0000</b>	<b>1.9000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.6000e-004</b>	<b>3.6000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.8000e-004</b>

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**6.2 Area by SubCategory**

**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0537					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
<b>Total</b>	<b>0.0537</b>	<b>0.0000</b>	<b>1.9000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.6000e-004</b>	<b>3.6000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.8000e-004</b>

**7.0 Water Detail**

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**7.1 Mitigation Measures Water**

Springfield Water System Improvements Project - Monterey County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	13.0754	0.5487	0.0131	30.6948
Unmitigated	13.0754	0.5487	0.0131	30.6948

**7.2 Water by Land Use**

**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0	0.0000	0.0000	0.0000	0.0000
General Light Industry	16.814 / 0	13.0754	0.5487	0.0131	30.6948
<b>Total</b>		<b>13.0754</b>	<b>0.5487</b>	<b>0.0131</b>	<b>30.6948</b>

Springfield Water System Improvements Project - Monterey County, Annual

**7.2 Water by Land Use**

**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0	0.0000	0.0000	0.0000	0.0000
General Light Industry	16.814 / 0	13.0754	0.5487	0.0131	30.6948
<b>Total</b>		<b>13.0754</b>	<b>0.5487</b>	<b>0.0131</b>	<b>30.6948</b>

**8.0 Waste Detail**

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**8.1 Mitigation Measures Waste**

**Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	3.4529	0.2041	0.0000	8.5544
Unmitigated	3.4529	0.2041	0.0000	8.5544

Springfield Water System Improvements Project - Monterey County, Annual

**8.2 Waste by Land Use**

**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.08	0.0162	9.6000e-004	0.0000	0.0402
General Light Industry	16.93	3.4366	0.2031	0.0000	8.5141
<b>Total</b>		<b>3.4529</b>	<b>0.2041</b>	<b>0.0000</b>	<b>8.5544</b>

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.08	0.0162	9.6000e-004	0.0000	0.0402
General Light Industry	16.93	3.4366	0.2031	0.0000	8.5141
<b>Total</b>		<b>3.4529</b>	<b>0.2041</b>	<b>0.0000</b>	<b>8.5544</b>

**9.0 Operational Offroad**

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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## Springfield Water System Improvements Project - Monterey County, Annual

**10.0 Stationary Equipment**

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**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0	20	500	0.73	

**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

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Springfield Water System Improvements Project - Monterey County, Summer

**Springfield Water System Improvements Project**  
**Monterey County, Summer**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	0.90	Acre	0.90	39,204.00	0
General Light Industry	13.65	1000sqft	0.31	13,650.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	3.6	<b>Precipitation Freq (Days)</b>	55
<b>Climate Zone</b>	4			<b>Operational Year</b>	2023
<b>Utility Company</b>	Pacific Gas & Electric Company				
<b>CO2 Intensity (lb/MWhr)</b>	290	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

## Springfield Water System Improvements Project - Monterey County, Summer

**Project Characteristics** - The model's default CO2 intensity factor of 641 pounds/megawatt hour is adjusted to 290 pounds/megawatt hour to reflect Pacific Gas & Electric projections for the carbon intensity of electricity production in 2020, the last year which such projections have been made.

**Land Use** - The actual Land Use Type is Water Infrastructure within existing residential and agricultural uses, this is not an option in CalEEMod. The City Park land use was used for the pipeline component of this model and the Light Industrial land use was used for the Middle School component of the project. Areas are based on email from N. Panofsky dated 2-12-20.

**Construction Phase** - Construction will be occurring at two sites at once: the Middle School Site and the Pipeline alignment. This schedule assumes the worst case scenario for each of the construction phases including overlapping work completed at each site.

**Off-road Equipment** -

**Grading** - Total acres graded changed to 1.2 acres, grading information based on email received from N. Panofsky dated 2-12-20.

**Trips and VMT** - Trips based on email from N. Panofsky dated 2-12-20.

**Vehicle Trips** - Model assumes that one staff member will be needed at the Middle School Site for ongoing operations and maintenance. No staff needed for pipeline. No other trips would be generated during operation of the project.

**Consumer Products** - No consumer products would be used during operation of the project.

**Area Coating** - No architectural coatings are proposed as part of the project.

**Energy Use** - No natural gas is proposed at the middle school site. Energy use assumptions are based on email received from N. Panofsky dated 2-12-20.

**Water And Wastewater** - Water produced by well assumed to be 51.6 acre feet per year, which is equivalent to 16,814,000 gallons per year. Information from email from N. Panofsky dated 2-12.

**Stationary Sources - Emergency Generators and Fire Pumps** - Assume that one emergency generator would be at the Middle School Site. Assume the generator would be 500 HP. Assume that it would be in use for 20 hours a year.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	0
tblAreaCoating	Area_EF_Nonresidential_Interior	150	0
tblAreaCoating	Area_EF_Parking	150	0
tblAreaCoating	Area_EF_Residential_Exterior	100	0
tblAreaCoating	Area_EF_Residential_Interior	100	0
tblAreaCoating	Area_Nonresidential_Exterior	6825	0
tblAreaCoating	Area_Nonresidential_Interior	20475	0
tblAreaCoating	ReapplicationRatePercent	10	0

Springfield Water System Improvements Project - Monterey County, Summer

tblEnergyUse	LightingElect	3.08	0.00
tblEnergyUse	NT24E	3.70	30.55
tblEnergyUse	NT24NG	6.67	0.00
tblEnergyUse	T24E	1.48	0.00
tblEnergyUse	T24NG	19.71	0.00
tblGrading	AcresOfGrading	1.50	1.20
tblGrading	MaterialImported	0.00	12,000.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	500.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	20.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	1,500.00	750.00
tblTripsAndVMT	VendorTripNumber	9.00	0.00
tblTripsAndVMT	WorkerTripNumber	8.00	16.00
tblTripsAndVMT	WorkerTripNumber	8.00	16.00
tblTripsAndVMT	WorkerTripNumber	22.00	16.00
tblTripsAndVMT	WorkerTripNumber	13.00	16.00
tblVehicleTrips	CC_TL	6.60	0.00
tblVehicleTrips	CC_TL	6.60	0.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	6.60	0.00
tblVehicleTrips	CNW_TL	6.60	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TL	14.70	0.00

Springfield Water System Improvements Project - Monterey County, Summer

tblVehicleTrips	CW_TL	14.70	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	CW_TTP	59.00	0.00
tblVehicleTrips	DV_TP	28.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	6.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	66.00	0.00
tblVehicleTrips	PR_TP	92.00	0.00
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	6.97	1.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	IndoorWaterUseRate	3,156,562.50	16,814,000.00
tblWater	OutdoorWaterUseRate	1,072,333.21	0.00

**2.0 Emissions Summary**

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Springfield Water System Improvements Project - Monterey County, Summer

**2.2 Overall Operational**

**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2943	1.0000e-005	1.4900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1800e-003	3.1800e-003	1.0000e-005		3.3900e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
<b>Total</b>	<b>0.2943</b>	<b>1.0000e-005</b>	<b>1.4900e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>3.1800e-003</b>	<b>3.1800e-003</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>3.3900e-003</b>

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2943	1.0000e-005	1.4900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1800e-003	3.1800e-003	1.0000e-005		3.3900e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
<b>Total</b>	<b>0.2943</b>	<b>1.0000e-005</b>	<b>1.4900e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>3.1800e-003</b>	<b>3.1800e-003</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>3.3900e-003</b>

Springfield Water System Improvements Project - Monterey County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2022	4/4/2022	5	2	
2	Grading	Grading	4/5/2022	4/8/2022	5	4	
3	Building Construction	Building Construction	4/9/2022	1/13/2023	5	200	
4	Paving	Paving	1/14/2023	1/27/2023	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.2

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

#### OffRoad Equipment



Springfield Water System Improvements Project - Monterey County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Site Preparation	Graders	1	8.00	187	0.41
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	1	6.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Paving Equipment	1	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Building Construction	Welders	3	8.00	46	0.45

**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
Site Preparation	3	16.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	16.00	0.00	750.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	16.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	16.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Springfield Water System Improvements Project - Monterey County, Summer

**3.2 Site Preparation - 2022**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	1.3122	14.6277	7.0939	0.0172		0.6225	0.6225		0.5727	0.5727		1,666.1738	1,666.1738	0.5389		1,679.6457
<b>Total</b>	<b>1.3122</b>	<b>14.6277</b>	<b>7.0939</b>	<b>0.0172</b>	<b>5.7996</b>	<b>0.6225</b>	<b>6.4221</b>	<b>2.9537</b>	<b>0.5727</b>	<b>3.5264</b>		<b>1,666.1738</b>	<b>1,666.1738</b>	<b>0.5389</b>		<b>1,679.6457</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0833	0.0675	0.7555	2.0400e-003	0.2044	1.5900e-003	0.2060	0.0542	1.4600e-003	0.0557		203.3289	203.3289	7.2700e-003		203.5108
<b>Total</b>	<b>0.0833</b>	<b>0.0675</b>	<b>0.7555</b>	<b>2.0400e-003</b>	<b>0.2044</b>	<b>1.5900e-003</b>	<b>0.2060</b>	<b>0.0542</b>	<b>1.4600e-003</b>	<b>0.0557</b>		<b>203.3289</b>	<b>203.3289</b>	<b>7.2700e-003</b>		<b>203.5108</b>

Springfield Water System Improvements Project - Monterey County, Summer

**3.2 Site Preparation - 2022**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	1.3122	14.6277	7.0939	0.0172		0.6225	0.6225		0.5727	0.5727	0.0000	1,666.1738	1,666.1738	0.5389		1,679.6457
<b>Total</b>	<b>1.3122</b>	<b>14.6277</b>	<b>7.0939</b>	<b>0.0172</b>	<b>5.7996</b>	<b>0.6225</b>	<b>6.4221</b>	<b>2.9537</b>	<b>0.5727</b>	<b>3.5264</b>	<b>0.0000</b>	<b>1,666.1738</b>	<b>1,666.1738</b>	<b>0.5389</b>		<b>1,679.6457</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0833	0.0675	0.7555	2.0400e-003	0.2044	1.5900e-003	0.2060	0.0542	1.4600e-003	0.0557		203.3289	203.3289	7.2700e-003		203.5108
<b>Total</b>	<b>0.0833</b>	<b>0.0675</b>	<b>0.7555</b>	<b>2.0400e-003</b>	<b>0.2044</b>	<b>1.5900e-003</b>	<b>0.2060</b>	<b>0.0542</b>	<b>1.4600e-003</b>	<b>0.0557</b>		<b>203.3289</b>	<b>203.3289</b>	<b>7.2700e-003</b>		<b>203.5108</b>

Springfield Water System Improvements Project - Monterey County, Summer

**3.3 Grading - 2022**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.4783	0.0000	5.4783	2.6145	0.0000	2.6145			0.0000			0.0000
Off-Road	1.0832	12.0046	5.9360	0.0141		0.5173	0.5173		0.4759	0.4759		1,364.8198	1,364.8198	0.4414		1,375.8551
<b>Total</b>	<b>1.0832</b>	<b>12.0046</b>	<b>5.9360</b>	<b>0.0141</b>	<b>5.4783</b>	<b>0.5173</b>	<b>5.9956</b>	<b>2.6145</b>	<b>0.4759</b>	<b>3.0904</b>		<b>1,364.8198</b>	<b>1,364.8198</b>	<b>0.4414</b>		<b>1,375.8551</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3713	46.4681	10.1151	0.1496	3.2719	0.1630	3.4349	0.8963	0.1560	1.0523		15,860.6009	15,860.6009	0.5697		15,874.8425
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0833	0.0675	0.7555	2.0400e-003	0.2044	1.5900e-003	0.2060	0.0542	1.4600e-003	0.0557		203.3289	203.3289	7.2700e-003		203.5108
<b>Total</b>	<b>1.4546</b>	<b>46.5356</b>	<b>10.8706</b>	<b>0.1517</b>	<b>3.4762</b>	<b>0.1646</b>	<b>3.6408</b>	<b>0.9505</b>	<b>0.1574</b>	<b>1.1079</b>		<b>16,063.9299</b>	<b>16,063.9299</b>	<b>0.5769</b>		<b>16,078.3533</b>

Springfield Water System Improvements Project - Monterey County, Summer

**3.3 Grading - 2022**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.4783	0.0000	5.4783	2.6145	0.0000	2.6145			0.0000			0.0000
Off-Road	1.0832	12.0046	5.9360	0.0141		0.5173	0.5173		0.4759	0.4759	0.0000	1,364.8198	1,364.8198	0.4414		1,375.8551
<b>Total</b>	<b>1.0832</b>	<b>12.0046</b>	<b>5.9360</b>	<b>0.0141</b>	<b>5.4783</b>	<b>0.5173</b>	<b>5.9956</b>	<b>2.6145</b>	<b>0.4759</b>	<b>3.0904</b>	<b>0.0000</b>	<b>1,364.8198</b>	<b>1,364.8198</b>	<b>0.4414</b>		<b>1,375.8551</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3713	46.4681	10.1151	0.1496	3.2719	0.1630	3.4349	0.8963	0.1560	1.0523		15,860.6009	15,860.6009	0.5697		15,874.8425
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0833	0.0675	0.7555	2.0400e-003	0.2044	1.5900e-003	0.2060	0.0542	1.4600e-003	0.0557		203.3289	203.3289	7.2700e-003		203.5108
<b>Total</b>	<b>1.4546</b>	<b>46.5356</b>	<b>10.8706</b>	<b>0.1517</b>	<b>3.4762</b>	<b>0.1646</b>	<b>3.6408</b>	<b>0.9505</b>	<b>0.1574</b>	<b>1.1079</b>		<b>16,063.9299</b>	<b>16,063.9299</b>	<b>0.5769</b>		<b>16,078.3533</b>

Springfield Water System Improvements Project - Monterey County, Summer

**3.4 Building Construction - 2022**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6487	12.5031	12.7264	0.0221		0.5889	0.5889		0.5689	0.5689		2,001.5429	2,001.5429	0.3486		2,010.2581
<b>Total</b>	<b>1.6487</b>	<b>12.5031</b>	<b>12.7264</b>	<b>0.0221</b>		<b>0.5889</b>	<b>0.5889</b>		<b>0.5689</b>	<b>0.5689</b>		<b>2,001.5429</b>	<b>2,001.5429</b>	<b>0.3486</b>		<b>2,010.2581</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0833	0.0675	0.7555	2.0400e-003	0.2044	1.5900e-003	0.2060	0.0542	1.4600e-003	0.0557		203.3289	203.3289	7.2700e-003		203.5108
<b>Total</b>	<b>0.0833</b>	<b>0.0675</b>	<b>0.7555</b>	<b>2.0400e-003</b>	<b>0.2044</b>	<b>1.5900e-003</b>	<b>0.2060</b>	<b>0.0542</b>	<b>1.4600e-003</b>	<b>0.0557</b>		<b>203.3289</b>	<b>203.3289</b>	<b>7.2700e-003</b>		<b>203.5108</b>

Springfield Water System Improvements Project - Monterey County, Summer

**3.4 Building Construction - 2022**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6487	12.5031	12.7264	0.0221		0.5889	0.5889		0.5689	0.5689	0.0000	2,001.5429	2,001.5429	0.3486		2,010.2581
<b>Total</b>	<b>1.6487</b>	<b>12.5031</b>	<b>12.7264</b>	<b>0.0221</b>		<b>0.5889</b>	<b>0.5889</b>		<b>0.5689</b>	<b>0.5689</b>	<b>0.0000</b>	<b>2,001.5429</b>	<b>2,001.5429</b>	<b>0.3486</b>		<b>2,010.2581</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0833	0.0675	0.7555	2.0400e-003	0.2044	1.5900e-003	0.2060	0.0542	1.4600e-003	0.0557		203.3289	203.3289	7.2700e-003		203.5108
<b>Total</b>	<b>0.0833</b>	<b>0.0675</b>	<b>0.7555</b>	<b>2.0400e-003</b>	<b>0.2044</b>	<b>1.5900e-003</b>	<b>0.2060</b>	<b>0.0542</b>	<b>1.4600e-003</b>	<b>0.0557</b>		<b>203.3289</b>	<b>203.3289</b>	<b>7.2700e-003</b>		<b>203.5108</b>

Springfield Water System Improvements Project - Monterey County, Summer

**3.4 Building Construction - 2023**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5233	11.7104	12.6111	0.0221		0.5145	0.5145		0.4968	0.4968		2,001.7877	2,001.7877	0.3399		2,010.2858
<b>Total</b>	<b>1.5233</b>	<b>11.7104</b>	<b>12.6111</b>	<b>0.0221</b>		<b>0.5145</b>	<b>0.5145</b>		<b>0.4968</b>	<b>0.4968</b>		<b>2,001.7877</b>	<b>2,001.7877</b>	<b>0.3399</b>		<b>2,010.2858</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0773	0.0605	0.6896	1.9700e-003	0.2044	1.5400e-003	0.2059	0.0542	1.4200e-003	0.0556		195.7871	195.7871	6.5000e-003		195.9495
<b>Total</b>	<b>0.0773</b>	<b>0.0605</b>	<b>0.6896</b>	<b>1.9700e-003</b>	<b>0.2044</b>	<b>1.5400e-003</b>	<b>0.2059</b>	<b>0.0542</b>	<b>1.4200e-003</b>	<b>0.0556</b>		<b>195.7871</b>	<b>195.7871</b>	<b>6.5000e-003</b>		<b>195.9495</b>



Springfield Water System Improvements Project - Monterey County, Summer

**3.4 Building Construction - 2023**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5233	11.7104	12.6111	0.0221		0.5145	0.5145		0.4968	0.4968	0.0000	2,001.7877	2,001.7877	0.3399		2,010.2858
<b>Total</b>	<b>1.5233</b>	<b>11.7104</b>	<b>12.6111</b>	<b>0.0221</b>		<b>0.5145</b>	<b>0.5145</b>		<b>0.4968</b>	<b>0.4968</b>	<b>0.0000</b>	<b>2,001.7877</b>	<b>2,001.7877</b>	<b>0.3399</b>		<b>2,010.2858</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0773	0.0605	0.6896	1.9700e-003	0.2044	1.5400e-003	0.2059	0.0542	1.4200e-003	0.0556		195.7871	195.7871	6.5000e-003		195.9495
<b>Total</b>	<b>0.0773</b>	<b>0.0605</b>	<b>0.6896</b>	<b>1.9700e-003</b>	<b>0.2044</b>	<b>1.5400e-003</b>	<b>0.2059</b>	<b>0.0542</b>	<b>1.4200e-003</b>	<b>0.0556</b>		<b>195.7871</b>	<b>195.7871</b>	<b>6.5000e-003</b>		<b>195.9495</b>

Springfield Water System Improvements Project - Monterey County, Summer

**3.5 Paving - 2023**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6446	6.2357	8.8024	0.0136		0.3084	0.3084		0.2846	0.2846		1,297.6880	1,297.6880	0.4114		1,307.9725
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.6446</b>	<b>6.2357</b>	<b>8.8024</b>	<b>0.0136</b>		<b>0.3084</b>	<b>0.3084</b>		<b>0.2846</b>	<b>0.2846</b>		<b>1,297.6880</b>	<b>1,297.6880</b>	<b>0.4114</b>		<b>1,307.9725</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0773	0.0605	0.6896	1.9700e-003	0.2044	1.5400e-003	0.2059	0.0542	1.4200e-003	0.0556		195.7871	195.7871	6.5000e-003		195.9495
<b>Total</b>	<b>0.0773</b>	<b>0.0605</b>	<b>0.6896</b>	<b>1.9700e-003</b>	<b>0.2044</b>	<b>1.5400e-003</b>	<b>0.2059</b>	<b>0.0542</b>	<b>1.4200e-003</b>	<b>0.0556</b>		<b>195.7871</b>	<b>195.7871</b>	<b>6.5000e-003</b>		<b>195.9495</b>

Springfield Water System Improvements Project - Monterey County, Summer

**3.5 Paving - 2023**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6446	6.2357	8.8024	0.0136		0.3084	0.3084		0.2846	0.2846	0.0000	1,297.6880	1,297.6880	0.4114		1,307.9725
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.6446</b>	<b>6.2357</b>	<b>8.8024</b>	<b>0.0136</b>		<b>0.3084</b>	<b>0.3084</b>		<b>0.2846</b>	<b>0.2846</b>	<b>0.0000</b>	<b>1,297.6880</b>	<b>1,297.6880</b>	<b>0.4114</b>		<b>1,307.9725</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0773	0.0605	0.6896	1.9700e-003	0.2044	1.5400e-003	0.2059	0.0542	1.4200e-003	0.0556		195.7871	195.7871	6.5000e-003		195.9495
<b>Total</b>	<b>0.0773</b>	<b>0.0605</b>	<b>0.6896</b>	<b>1.9700e-003</b>	<b>0.2044</b>	<b>1.5400e-003</b>	<b>0.2059</b>	<b>0.0542</b>	<b>1.4200e-003</b>	<b>0.0556</b>		<b>195.7871</b>	<b>195.7871</b>	<b>6.5000e-003</b>		<b>195.9495</b>

**4.0 Operational Detail - Mobile**

---

Springfield Water System Improvements Project - Monterey County, Summer

**4.1 Mitigation Measures Mobile**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

**4.4 Fleet Mix**

Springfield Water System Improvements Project - Monterey County, Summer

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.548528	0.027912	0.206330	0.127577	0.020437	0.005268	0.019586	0.027922	0.004162	0.002641	0.007642	0.001233	0.000761
General Light Industry	0.548528	0.027912	0.206330	0.127577	0.020437	0.005268	0.019586	0.027922	0.004162	0.002641	0.007642	0.001233	0.000761

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Springfield Water System Improvements Project - Monterey County, Summer

**5.2 Energy by Land Use - NaturalGas**

**Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

Springfield Water System Improvements Project - Monterey County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2943	1.0000e-005	1.4900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1800e-003	3.1800e-003	1.0000e-005		3.3900e-003
Unmitigated	0.2943	1.0000e-005	1.4900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1800e-003	3.1800e-003	1.0000e-005		3.3900e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2941					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4000e-004	1.0000e-005	1.4900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1800e-003	3.1800e-003	1.0000e-005		3.3900e-003
<b>Total</b>	<b>0.2943</b>	<b>1.0000e-005</b>	<b>1.4900e-003</b>	<b>0.0000</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>3.1800e-003</b>	<b>3.1800e-003</b>	<b>1.0000e-005</b>		<b>3.3900e-003</b>

Springfield Water System Improvements Project - Monterey County, Summer

**6.2 Area by SubCategory**

**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2941					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4000e-004	1.0000e-005	1.4900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1800e-003	3.1800e-003	1.0000e-005		3.3900e-003
<b>Total</b>	<b>0.2943</b>	<b>1.0000e-005</b>	<b>1.4900e-003</b>	<b>0.0000</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>3.1800e-003</b>	<b>3.1800e-003</b>	<b>1.0000e-005</b>		<b>3.3900e-003</b>

**7.0 Water Detail**

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**7.1 Mitigation Measures Water**

**8.0 Waste Detail**

---

**8.1 Mitigation Measures Waste**

**9.0 Operational Offroad**

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

**10.0 Stationary Equipment**

---

**Fire Pumps and Emergency Generators**



Springfield Water System Improvements Project - Monterey County, Summer

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0	20	500	0.73	

**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

**User Defined Equipment**

Equipment Type	Number
----------------	--------

**11.0 Vegetation**

---

**Appendix B**  
**Biological Resources Report**

# **Springfield Water System Improvements Project**

## **Biological Resources Report**



**PAJARO / SUNNY MESA**  
COMMUNITY SERVICES DISTRICT

### **Prepared For:**

**Pajaro Sunny Mesa  
Community Services District**  
136 San Juan Rd,  
Royal Oaks, Ca 95076

### **Prepared By:**



**Denise Duffy & Associates, Inc.**  
Contact: Jami Davis  
947 Cass St. Suite 5  
Monterey, California 93940

**AUGUST 2020**

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**APPENDIX A: CALIFORNIA NATURAL DIVERSITY DATABASE REPORT**

**APPENDIX B: INFORMATION FOR PLANNING AND CONSULTING (IPaC) RESOURCE LIST**

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## **INTRODUCTION**

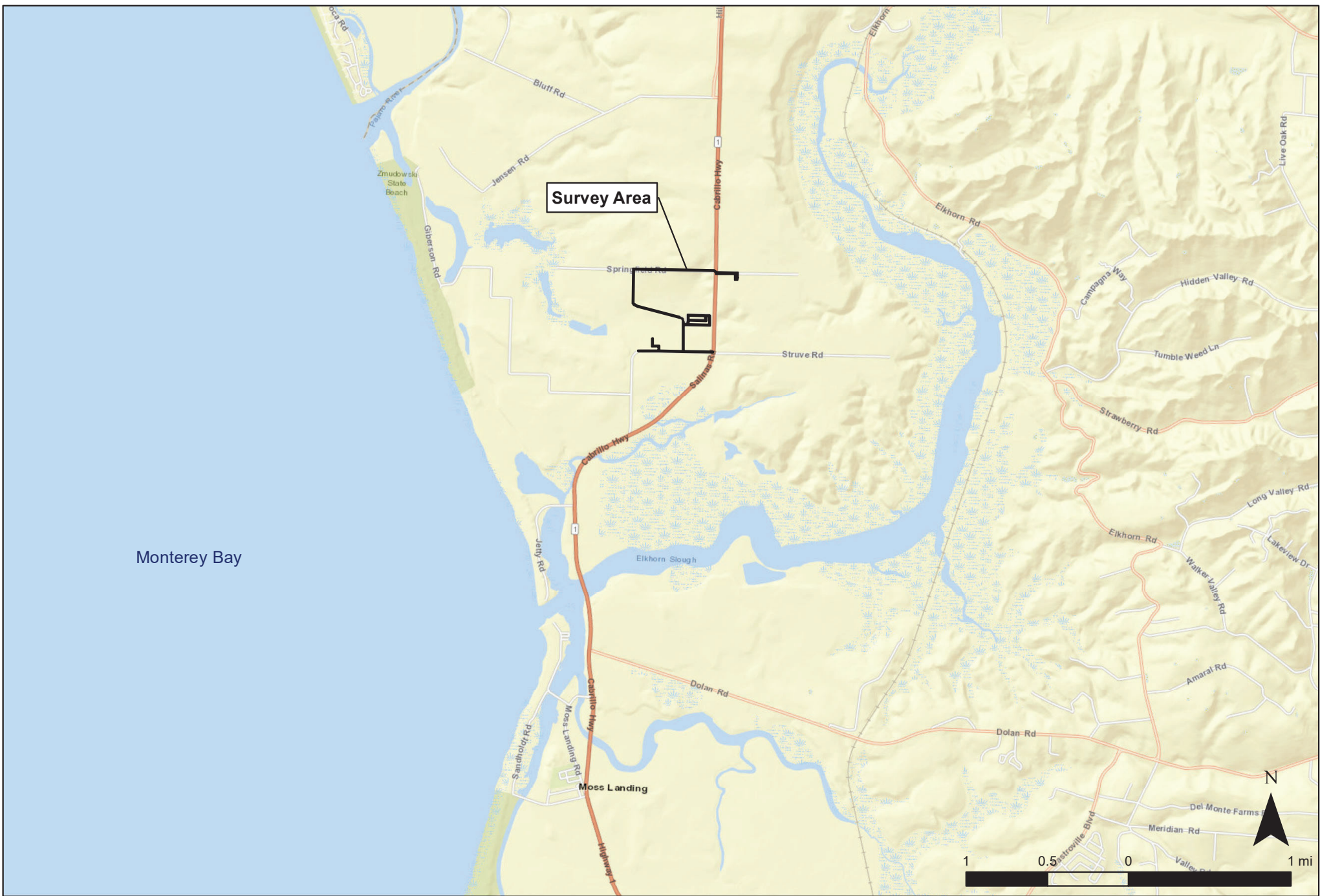
Denise Duffy & Associates, Inc. (DD&A) was contracted by the Pajaro Sunny Mesa Community Services District (PSM/CSD) to prepare a Biological Resources Report for the Springfield Water System Improvements Project (project), located north of the community of Moss Landing in unincorporated Monterey County (**Figure 1**). This report describes the existing biological resources within and adjacent to the project site, including any special-status species or sensitive habitats known or with the potential to occur within and adjacent to the site. This report also assesses the potential impacts to biological resources that may result from the project, and recommends appropriate avoidance, minimization, and mitigation measures necessary to reduce those impacts to a less-than-significant level in accordance with the California Environmental Quality Act (CEQA).

### **Summary of Results**

The project is located primarily within the existing road right of ways of agricultural roads, the Moss Landing Mobile Home Park, Springfield Road, and Struve Road; in addition, a portion of the project is located at the former site of Moss Landing Middle School (**Figure 2**). The survey area was defined by a 25-foot buffer of the proposed project alignment (**Figure 2**). The majority of the survey area is developed (paved roads and residential) and active agriculture (including row crops and associated agricultural roads). Three vegetation types were observed within the undeveloped portions of the survey area: ruderal (including dirt roads), Arroyo willow riparian, and non-native grassland.

Sensitive habitats observed within the survey area include Arroyo willow riparian (*Salix lasiolepis* association), which is identified as a sensitive vegetation type on the California Department of Fish and Wildlife's (CDFW's) *California Natural Communities List* (CDFW, 2019a) and is regulated under Section 1602 of the Fish and Game Code, and other waters potentially under the jurisdiction of the U.S. Army Corps of Engineers (ACOE) and Regional Water Quality Control Board (RWQCB). The project has been designed to avoid impacts to these sensitive habitats, which would be considered significant under CEQA, and mitigation is provided to ensure avoidance, including installation of protective fencing and monitoring. As such, acquisition of regulatory permits from the ACOE, RWQCB, and CDFW for these resources is not required.

The project site is located within the North Monterey County Land Use Plan (LUP). The LUP does not include any mapped Environmentally Sensitive Habitat Area (ESHA) within the survey area, however, the sensitive habitats identified above are considered ESHA under the California Coastal Act (CCA). Impacts to ESHA would be considered significant under CEQA; however, the project has been designed to avoid impacts to ESHA and mitigation is provided to ensure avoidance, as described above.



Title:

## Project Vicinity

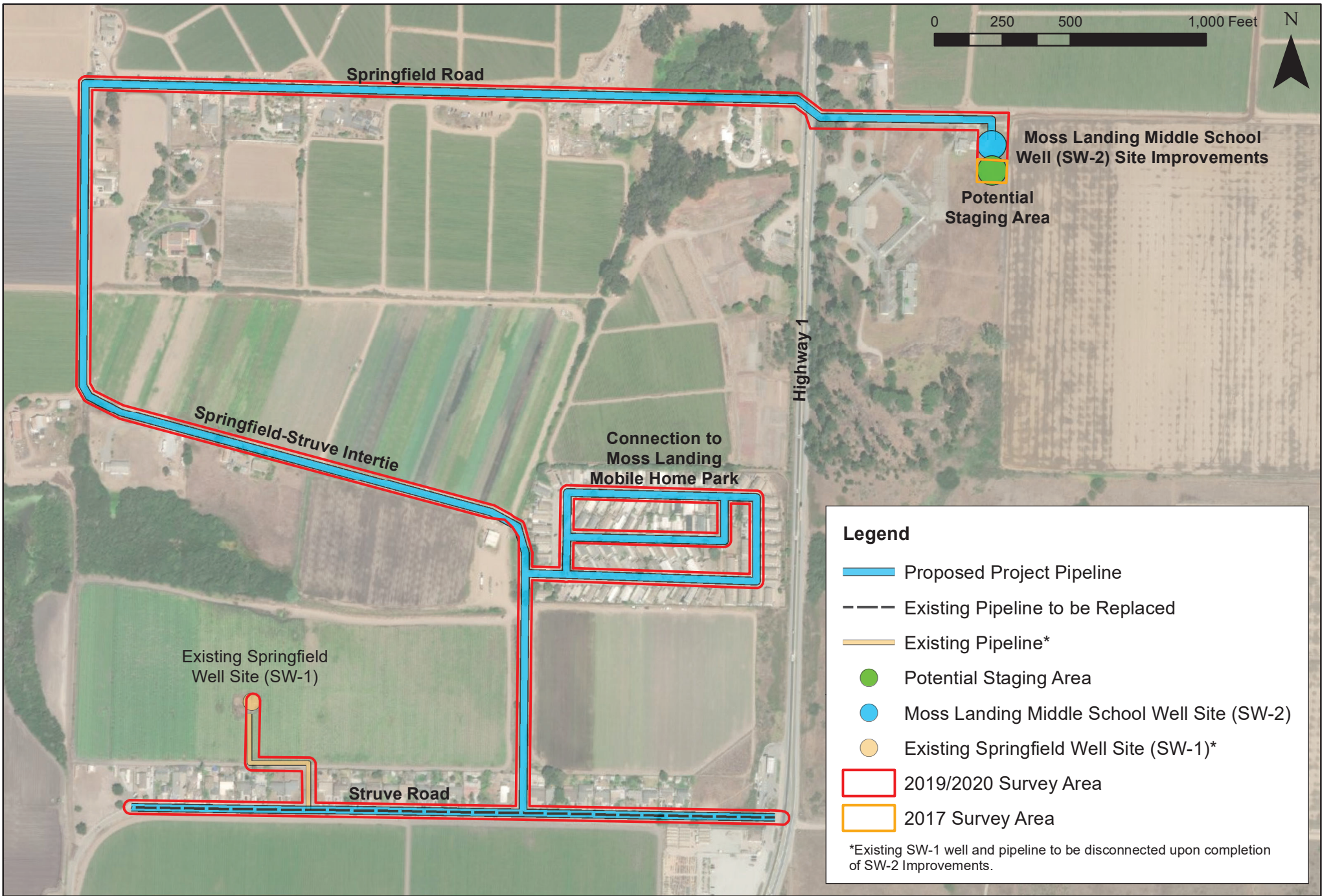
Date: 08-05-2020  
 Scale: 1 inch = 0.76 miles  
 Project: 2016-41



Monterey | San Jose  
**Denise Duffy and Associates, Inc.**  
 Environmental Consultants Resource Planners  
 947 Cass Street, Suite 5  
 Monterey, CA 93940  
 (831) 373-4341

Figure  
 1





Title:  
**Project Overview and Survey area Map**

Date: 08/06/2020  
 Scale: 1 inch = 0.1 miles  
 Project: 2016-41



Monterey | San Jose  
**Denise Duffy and Associates, Inc.**  
 Environmental Consultants Resource Planners  
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Figure  
**2**

The following special-status wildlife species are known or have a moderate or high potential to occur within or immediately adjacent to the survey area:

- California tiger salamander (*Ambystoma californiense*) – FT/ST<sup>1</sup>,
- California red-legged frog (*Rana draytonii*) – FT/CSC,
- Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*) – FT/SE/FP
- Northern California legless lizard (*Anniella pulchra*) - CSC,
- Monterey shrew (*Sorex ornatus salarius*) – CSC, and
- Raptors and other protected avian species.

Impacts to these special-status wildlife species and their habitats would be considered significant under CEQA; however, mitigation is provided to reduce potential impacts to a less-than-significant level, including avoidance of nesting season, pre-construction surveys, a worker education program, coordination and consultation with regulatory agencies, and acquisition of regulatory permits.

Focused botanical surveys were conducted within the survey area at the appropriate time of year to determine presence or absence of special-status plant species with the potential to occur. No special-status plant species were observed within the survey area and no mitigation is necessary.

## Project Description

The goal of the project is to replace inadequate facilities that now serve residents in the area. The current system has consistently failed to meet water quality standards. Existing well (SW-1) and system facilities are impacted by nitrate contamination, seawater intrusion, sulfate contamination, and 1,2,3, trichloropropane contamination. Additionally, the current well location is surrounded by agricultural operations and access to this location is constrained at certain times by neighboring agricultural operations. A physical separation between the existing SW-1 well and the improved water system will be created to prevent future supply of contaminated water to the new system. The project will include development of new a source of supply; storage, treatment, and pumping facilities; and distribution system improvements, as described in more detail below. The existing SW-1 well will be disconnected from the system, and only used in emergency situations.

### ***Moss Landing Middle School Site Development***

Water for the Springfield Water System would be provided from a well drilled in 2018 at the Moss Landing Middle School Site referred to as SW-2. SW-2 is located within an easement owned by the PSM/CSD on the northeast corner of the Moss Landing Middle School property. SW-2 has been tested for capacity and quality and is a suitable source of supply for a public water system.

The Moss Landing Middle School site will be developed as a new municipal site. The recently constructed SW-2 well site improvements will include a new submersible well pump, piping, valves, and appurtenances; electrical and communication improvements; chlorination facilities; two new 110,000-gallon bolted steel water storage tanks; a permanent back-up generator; a new booster pump station including a hydropneumatic tank and four pumps to provide fully redundant domestic and fire service; and civil site

<sup>1</sup> Status Definitions – CSC: California Species of Concern; FE: Federally Endangered; FT: Federally Threatened; SE: State Endangered; ST: State Threatened; FP: California Fully Protected Species

improvements including fencing and security improvements, hardscape, a new building to house equipment, and miscellaneous other site improvements.

### ***Distribution Pipeline***

The distribution pipeline for the Proposed Project would serve connections on Struve Road that are part of the existing Springfield Water System, as well as new residences on Springfield Road and Struve Road. Approximately 2.4 linear miles (12,500 linear feet) of new eight-inch water line will be constructed in the Springfield and Struve Roads areas (**Figure 2**).

The new distribution system piping would include valves, fire hydrants, air release valves, blow-offs, sampling stations, and other appurtenances as appropriate. The new distribution system piping will be installed primarily by the open trench method; distribution piping crossing Highway 1 will be installed with a steel casing by the jack and bore method.

The distribution pipeline would require the acquisition of temporary construction access easements, as well as acquisition of permanent easements and/or real property acquisition in several areas. To provide for distribution system pipeline construction and ongoing maintenance for the pipe segment between Springfield Road and Struve Road, a permanent easement or right-of-way acquisition would be required. Also, a potentially separate temporary construction access easement will be required on APN 413-012-008 if the construction requires more area than included in the permanent access easement. Assuming the new pipeline will be installed within existing 15-foot and 60-foot wide existing public rights-of-way on APNs 413-051-029, 413-051-021, and 413-051-020, temporary construction access easements may be required during construction on these properties to accommodate construction activities.

### ***Replacement of Existing Pipelines***

Approximately 3,600 linear feet of existing distribution system piping is currently planned to be replaced along Struve Road (**Figure 2**). Water service laterals would be replaced from the existing distribution mains to each residence currently receiving water from the system and individual water meters will be provided for each service connection.

### ***Connection to Moss Mobile Home Park***

This project component consists of a connection to the Moss Landing Mobile Home Park, which includes 105 mobile home sites and would connect to the Moss Landing Middle School well site, as described above for the distribution pipeline (**Figure 2**).

Construction methods for this project component would be similar to those described above for the distribution pipeline. New distribution system piping would include valves, fire hydrants, air release valves, blow-offs, sampling stations, and other appurtenances as appropriate. New distribution system piping would be installed using the open trench method.

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## **METHODS**

### **Personnel and Survey Dates**

DD&A Assistant Environmental Scientists Patric Krabacher and Max Hofmarcher conducted focused botanical surveys of the survey area on May 23 and July 26, 2019. On January 30, 2020 Patric Krabacher and DD&A Senior Environmental Scientist Jami Davis conducted an additional survey to identify any special-status wildlife species or suitable habitat for these species, characterize vegetation types, and identify any sensitive habitats present within the site. The potential staging area within the Moss Landing Middle School property was not surveyed in 2019 and 2020; however, this area was surveyed in 2017 by Jami Davis and DD&A Senior Project Manager/Environmental Scientist Josh Harwayne for a separate project. The results of that survey are incorporated into this report, as appropriate. Survey methods included walking the survey area using aerial maps and GPS to map biological resources. Available reference materials were reviewed prior to conducting the field survey (see “Data Sources” below). Data collected during the survey were used to assess the environmental conditions of the survey area and its surroundings, evaluate environmental constraints at the site and within the local vicinity, and provide a basis for recommendations to minimize and avoid impacts.

The survey area was surveyed for botanical resources following the applicable guidelines outlined in the U.S. Fish and Wildlife Service (USFWS) *Guidelines for Conducting and Reporting Botanical Inventories for Federally listed, Proposed and Candidate Plants* (USFWS, 2000), the CDFW *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW, 2018), and the California Native Plant Society (CNPS) *Botanical Survey Guidelines* (CNPS, 2001).

The survey on January 30, 2020 also included an assessment of potentially jurisdictional wetlands and waters within the project sites in accordance with the requirements set forth in *The Field Guide for Wetland Delineation: 1987 Corps of Engineers Manual* (Wetland Training Institute, 1995) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (ACOE, 2008).

### **Data Sources**

The primary literature and data sources reviewed to determine the occurrence or potential for occurrence of special-status species within and adjacent to the survey area include:

- Current agency status information from the USFWS and CDFW for species listed, proposed for listing, or candidates for listing as Threatened or Endangered under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA), and those considered CDFW “species of special concern” (CDFW, 2019b);
- CDFW’s California Natural Diversity Database (CNDDB) occurrence reports for the Moss Landing quadrangle and the six surrounding quadrangles (Marina, Salinas, Prunedale, Watsonville East, Watsonville West, and Soquel) (CDFW, 2020; **Appendix A**);
- The USFWS’s Information for Planning and Consulting (IPaC) Resource List (USFWS, 2020a: **Appendix B**); and
- The CNPS *Inventory of Rare and Endangered Vascular Plants of California* (CNPS, 2020).

From these resources, a list of special-status plant and wildlife species known or with the potential to occur within and adjacent to the survey area was created (**Appendix C**). The list presents these species along with their legal status, habitat requirements, and a brief statement of the likelihood to occur.

### **Botany**

Vegetation types identified in *A Manual of California Vegetation* (Sawyer et al., 2009) were utilized to determine if vegetation types identified as sensitive on CDFW's *California Natural Communities List* (CDFW, 2019a) are present within the survey area. Scientific nomenclature for plant species identified within this document follows *The Jepson Manual: Vascular Plants of California, Edition 2* (Baldwin et al., 2012); common names follow *The Plants of Monterey County: An Illustrated Field Key* (Matthews and Mitchell, 2015). The California Invasive Plant Council (Cal-IPC) Inventory (Cal-IPC, 2020) was reviewed to determine if any invasive plant species are present within the survey area.

### **Wildlife**

The wildlife literature and data sources were reviewed include CDFW reports on special-status wildlife (Remsen, 1978; Williams, 1986; Jennings and Hayes, 1994; Thelander, 1994), California Wildlife Habitat Relationships Program species-habitat models (Zeiner et al., 1988; and Zeiner et al., 1990), and general wildlife references (Stebbins, 1972, 1985, and 2003).

## **Special-Status Species**

Special-status species are those plants and animals that have been formally listed or proposed for listing as Endangered or Threatened or are Candidates for such listing under ESA or CESA. Listed species are afforded legal protection under the ESA and CESA. Species that meet the definition of rare or endangered under the CEQA Section 15380 are also considered special-status species. Animals identified as “species of special concern” (most of which are species whose breeding populations in California may face extirpation if current population trends continue) on the CDFW’s “Special Animals” list (CDFW, 2019b) meet this definition and are typically provided management consideration through the CEQA process, although they are not legally protected under the ESA or CESA.

Plants listed as rare under the California Native Plant Protection Act (CNPPA) or included in CNPS California Rare Plant Ranks (CRPR; formerly known as CNPS Lists) 1A, 1B, 2A, and 2B are also treated as special-status species as they meet the definitions of Sections 2062 and 2067 of the CESA and in accordance with CEQA Guidelines Section 15380.<sup>2</sup> In general, CDFW requires that plant species on CRPR 1A (Plants presumed extirpated in California and Either Rare or Extinct Elsewhere), CRPR 1B (Plants rare, threatened, or endangered in California and elsewhere), CRPR 2A (Plants presumed extirpated in California, but more common elsewhere), and CRPR 2B (Plants rare, threatened, or endangered in California, but more common elsewhere) of the CNPS *Inventory of Rare and Endangered Vascular Plants of California* (CNPS, 2020) be fully considered during the preparation of environmental documents relating

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<sup>2</sup> CNPS initially created five CRPR to categorize degrees of concern; however, to better define and categorize rarity in California’s flora, the CNPS Rare Plant Program and Rare Plant Program Committee have developed the new CRPR 2A and CRPR 2B.

to CEQA.<sup>3</sup> In addition, species of vascular plants, bryophytes, and lichens listed as having special-status by the CDFW are considered special-status plant species (CDFW, 2020).

Raptors (e.g., eagles, hawks, and owls) and their nests are protected in California under Fish and Game Code Section 3503.5. Section 3503.5 states that it is “unlawful to take, possess, or destroy the nest or eggs of any such bird except otherwise provided by this code or any regulation adopted pursuant thereto.” In addition, fully protected species under the Fish and Game Code Section 3511 (birds), Section 4700 (mammals), Section 5515 (fish), and Section 5050 (reptiles and amphibians) are also considered special-status animal species. Species with no formal special-status designation but thought by experts to be rare or in serious decline may also be considered special-status animal species in some cases, depending on project-specific analysis and relevant, localized conservation needs or precedence.

## **Sensitive Habitats**

Sensitive habitats include riparian corridors, wetlands, habitats for legally protected species, areas of high biological diversity, areas supporting rare or special-status wildlife habitat, and unusual or regionally restricted habitat types. Vegetation types considered sensitive include those identified as sensitive on the CDFW’s *California Natural Communities List* (i.e., those habitats that are rare or endangered within the borders of California) (CDFW, 2019a) and those that are occupied by species listed under ESA or are critical habitat in accordance with ESA, and those that are defined as ESHA under the CCA. Specific habitats may also be identified as sensitive in city or county general plans or ordinances. Sensitive habitats are regulated under federal regulations (such as the Clean Water Act [CWA] and Executive Order 11990 – Protection of Wetlands), state regulations (such as CEQA and the CDFW Streambed Alteration Program), or local ordinances or policies (such as city or county tree ordinances and general plan policies).

## **Regulatory Setting**

The following regulatory discussion describes the laws that may be applicable to the project.

### ***Federal Regulations***

#### ***Federal Endangered Species Act***

Provisions of the ESA of 1973 (16 USC 1532 et seq., as amended) protect federally Listed Threatened or Endangered species and their habitats from unlawful take. Listed species include those for which proposed and final rules have been published in the Federal Register. The ESA is administered by the USFWS or National Marine Fisheries Service (NMFS). In general, NMFS is responsible for the protection of ESA-Listed marine species and anadromous fish, whereas other listed species are under USFWS jurisdiction.

Section 9 of ESA prohibits the take of any fish or wildlife species listed under ESA as endangered or threatened. Take, as defined by ESA, is “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” Harm is defined as “any act that kills or injures the fish or wildlife...including significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife.” In addition, Section 9 prohibits removing, digging up, and

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<sup>3</sup> Species on CRPR 3 (Plants about which we need more information - a review list) and CRPR 4 (Plants of limited distribution - a watch list) may, but generally do not, meet the definitions of Sections 2062 and 2067 of CESA, and are not typically considered in environmental documents relating to CEQA.

maliciously damaging or destroying federally listed plants on sites under federal jurisdiction. Section 9 does not prohibit take of federally listed plants on sites not under federal jurisdiction. If there is the potential for incidental take of a federally listed fish or wildlife species, take of listed species can be authorized through either the Section 7 consultation process for federal actions or a Section 10 incidental take permit process for non-federal actions. Federal agency actions include activities that are on federal land, conducted by a federal agency, funded by a federal agency, or authorized by a federal agency (including issuance of federal permits).

### *The Clean Water Act*

The ACOE and Environmental Protection Agency (EPA) regulate discharge of dredged and fill material into “Waters of the United States” (waters of the U.S.) under Section 404 of the CWA. Waters of the U.S. are defined broadly as waters susceptible to use in commerce (including waters subject to tides, interstate waters, and interstate wetlands) and other waters (such as interstate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds) (33 CFR 328.3). Potential wetland areas are identified as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils conditions.”

Under Section 401 of the CWA, any applicant receiving a Section 404 permit from the ACOE must also obtain a Section 401 Water Quality Certification from the RWQCB. A Section 401 Water Quality Certification is issued when a project is demonstrated to comply with state water quality standards and other aquatic resource protection requirements.

### ***State Regulations***

#### *California Endangered Species Act*

CESA was enacted in 1984. The California Code of Regulations (Title 14, §670.5) lists animal species considered Endangered or Threatened by the State. Section 2090 of CESA requires State agencies to comply with endangered species protection and recovery and to promote conservation of these species. Section 2080 of the Fish and Game Code prohibits "take" of any species that the commission determines to be an Endangered species or a Threatened species. “Take” is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” A Section 2081 Incidental Take Permit from the CDFW may be obtained to authorize “take” of any State Listed species.

#### *California Native Plant Protection Act*

The CNPPA of 1977 directed the CDFW to carry out the legislature’s intent to “preserve, protect and enhance rare and Endangered plants in the State.” The CNPPA prohibits importing rare and Endangered plants into California, taking rare and Endangered plants, and selling rare and Endangered plants. The CESA and CNPPA authorized the Fish and Game Commission to designate endangered, threatened, and rare species and to regulate the taking of these species (§2050-2098, Fish and Game Code). Plants listed as rare under the CNPPA are not protected under CESA; however, these plants may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research.



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*California Fish and Game Code*

**Birds:** Section 3503 of the Fish and Game Code states that it is “unlawful to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.” Section 3503.5 prohibits the killing, possession, or destruction of any birds in the orders Falconiformes or Strigiformes (birds-of-prey). Section 3511 prohibits take or possession of fully protected birds. Section 3513 prohibits the take or possession of any migratory nongame birds designated under the federal MBTA. Section 3800 prohibits take of nongame birds.

**Fully Protected Species:** The classification of fully protected was the state's initial effort in the 1960's to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish (§5515), mammals (§4700), amphibians and reptiles (§5050), and birds (§3511). Most fully protected species have also been listed as threatened or endangered species under the more recent endangered species laws and regulations. Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

**Species of Special Concern:** As noted above, the CDFW also maintains a list of wildlife “species of special concern.” Although these species have no legal status, the CDFW recommends considering these species during analysis of project impacts to protect declining populations and avoid the need to list them as Endangered in the future.

**Lake or Streambed Alteration:** Sections 1600-1607 of the Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFW’s jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider.

*Porter-Cologne Water Quality Control Act*

The Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne) is California’s statutory authority for the protection of water quality and applies to surface waters, wetlands, and groundwater, and to both point and nonpoint sources. Under the Porter-Cologne, the State Water Resources Control Board (State Board) has the ultimate authority over State water rights and water quality policy. However, Porter-Cologne also establishes nine RWQCBs to oversee water quality on a day-to-day basis at the local/regional level. The Project Study Area is located within Region 3 – Central Coast RWQCB. Porter-Cologne incorporates many provisions of the federal CWA, such as delegation to the State Board and RWQCBs of the National Pollutant Discharge Elimination System (NPDES) permitting program.

Under Porter-Cologne, the state must adopt water quality policies, plans, and objectives that protect the state’s waters for the use and enjoyment of the people. Regional authority for planning, permitting, and enforcement is delegate to the nine RWQCBs. The regional boards are required to formulate and adopt water quality control plans for all areas in the region and establish water quality objectives in the plans. The Porter-Cologne sets forth the obligations of the State Board and RWQCBs to adopt and periodically update water quality control plans (basin plans). The act also requires waste dischargers to notify the RWQCBs of

such activities through filing of Reports of Waste Discharge (RWD) and authorizes the State Board and RWQCBs to issue and enforce waste discharge requirements (WDRs), NPDES permits, Section 401 water quality certifications, or other approvals. The RWQCBs also have authority to issue waivers to RWD requirements and WDRs for broad categories of “low threat” discharge activities that have minimal potential for adverse water quality effects, when implemented according to prescribed terms and conditions.

The term “Waters of the State” is defined by Porter-Cologne as “any surface water or groundwater, including saline waters, within the boundaries of the state.” The RWQCB protects all waters in its regulatory scope but has special responsibility for wetlands, riparian areas, and headwaters, including isolated wetlands, and waters that many not be regulated by the ACOE under Section 404 of the CWA. Waters of the State are regulated by RWQCB under the State Water Quality Certification Program, which regulates discharges of fill and dredged material under Section 401 of the CWA and the Porter-Cologne.

#### *California Coastal Act*

The California Coastal Commission (CCC) was established by voter initiative in 1972 (Proposition 20) and later made permanent by the California State Legislature through adoption of the California Coastal Act of 1976 (CCA). The CCC, in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone. California’s coastal zone generally extends 1,000 yards inland from the mean high tide line. In significant coastal estuarine habitat and recreational areas, it extends inland to the first major ridgeline or five miles from the mean high tide line, whichever is less. In developed urban areas, the boundary is generally less than 1,000 yards. Development activities, which are broadly defined by the CCA to include (among others) construction of buildings, divisions of land, and activities that change the intensity of use of land or public access to coastal waters, generally require a Coastal Development Permit (CDP) from either the CCC or the local government if a Local Coastal Program (LCP) has been certified. After certification of an LCP, coastal development permit authority is delegated to the appropriate local government, but the CCC retains original permit jurisdiction over certain specified lands (such as tidelands and public trust lands). The Commission also has appellate authority over development approved by local governments in specified geographic areas as well as certain other developments. A CDP is required in addition to any other permit required from resource agencies.

The CCC or the local government may designate areas of rare or unique biological value, such as wetland and riparian habitat and habitats for special-status species, as ESHA. Section 30107.5 of the CCA defines an “environmentally sensitive area” as any area in which plant or animal life or their habitat are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments. Development is restricted within the coastal zone and prohibited within designated ESHA, unless the development is coastal dependent and does not have a significant effect on the resources. Section 30240 of the CCA states that “environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.” This section also states that “development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.”

The survey area is located within the North Monterey County Land Use Plan (LUP).

***Local Regulations***

*Habitat Conservation Plans or NCCP*

There are no adopted Habitat Conservation Plans (HCP) or Natural Community Conservation Plans (NCCP) associated with the survey area.

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## **RESULTS**

### **Vegetation Types**

The survey results include mapping and quantification of the acreage of two vegetation types within the survey area (**Figure 3**). Additionally, the majority of the survey area is developed or active agriculture. The following is the acreage of each area:

- Developed (8.1 acres);
- Ruderal (4.7 acres);
- Active Agriculture (2.5 acres);
- Non-native grassland (0.6 acre);
- Arroyo willow riparian (0.04 acre).

A description of these habitat types can be found below along with the identification of the presence or potential presence of special-status species within each type.

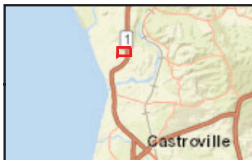
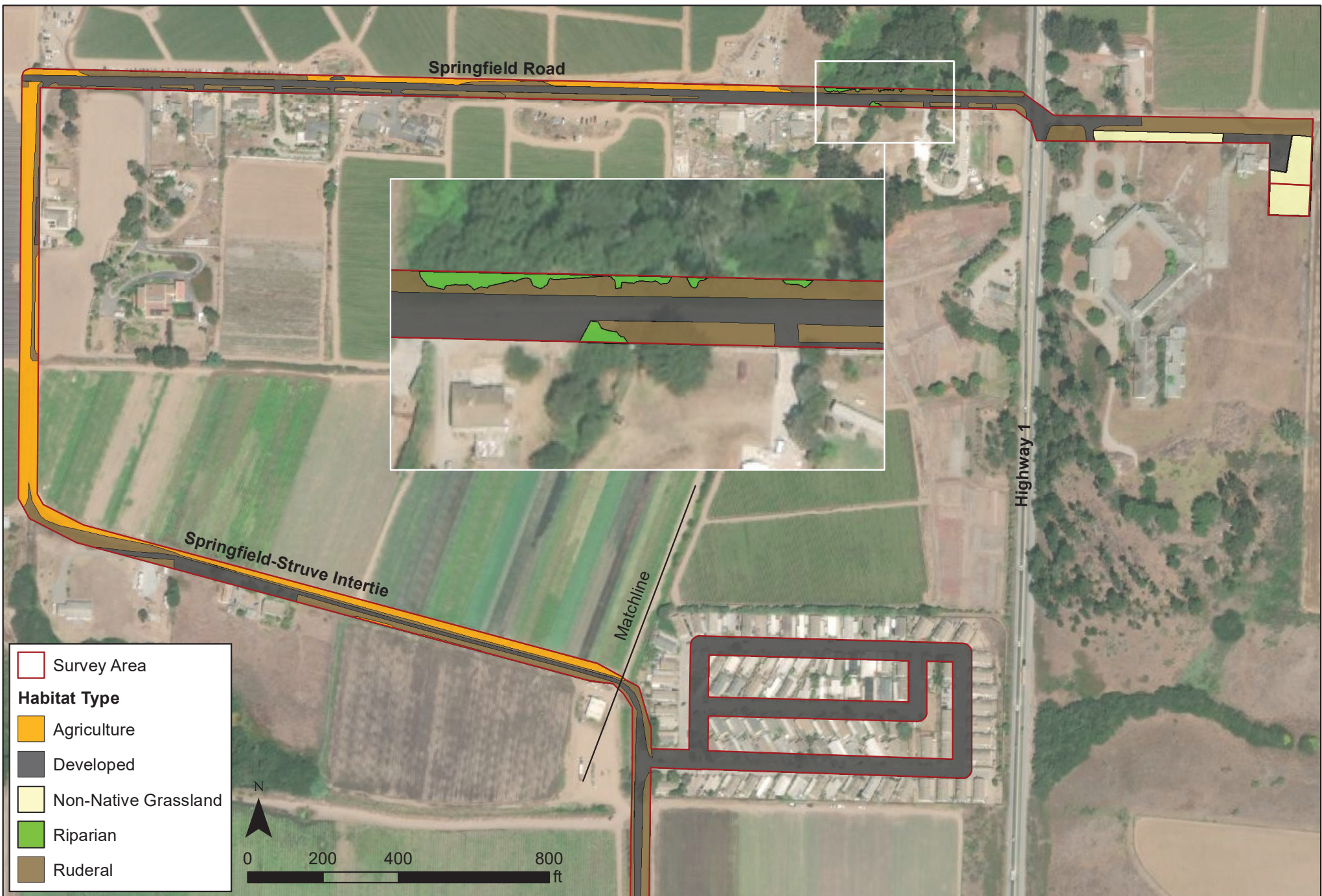
#### ***Developed***

Approximately 8.1 acres of the survey area is developed, including paved roads, structures, and residential areas (**Figure 3**). No special-status wildlife were observed within the developed areas; however, raptors and other protected avian species may nest within trees present in the developed areas. No special-status plant species were identified within the developed areas during the surveys in 2019.

#### ***Ruderal***

Ruderal areas are those areas which have been subject to historic and ongoing disturbance by human activities and are devoid of vegetation or dominated by non-native and/or invasive weed species. Ruderal areas within the survey area include dirt roads, road shoulders, landscaped areas, and other disturbed areas (**Figure 3**). These areas are dominated by non-native weedy species, are regularly maintained, or are devoid of vegetation. Dominant species observed include hottentot fig (*Carpobrotus edulis*), slender oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), wild radish (*Raphanus sativus*), black mustard (*Brassica nigra*), kikuyu grass (*Pennisetum clandestinum*), poison hemlock, Monterey cypress (*Cupressus macrocarpa* [planted]), Bermuda buttercup (*Oxalis pes-caprae*), bur clover (*Medicago polymorpha*), and cheeseweed (*Malva parviflora*). Approximately 4.7 acres of ruderal habitat is present within the survey area.

Ruderal areas provide only low-quality habitat for plants and wildlife. Common wildlife species which do well in urbanized and disturbed areas that may occur within the ruderal habitat include American crow (*Corvus brachyrhynchos*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), scrub jay (*Aphelocoma californica*), European starling (*Sturnus vulgaris*), western fence lizard (*Sceloporus occidentalis*), and rock dove (*Columba livia*).



Title:

# Habitat Map

Date: 08-05-2020

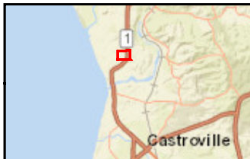
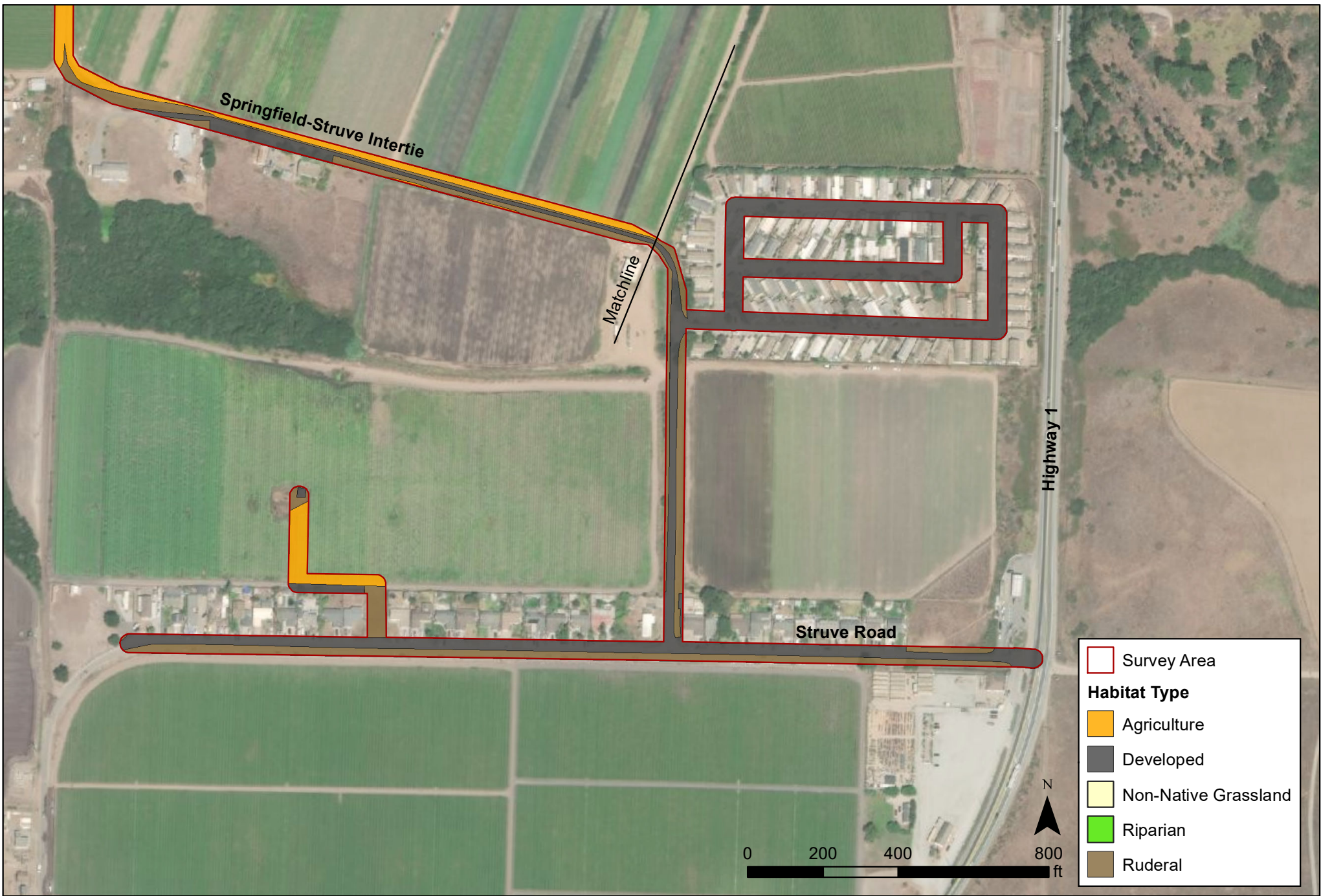
Scale: 1 inch = 0.06 miles

Project: 2016-41



Monterey | Truckee | San Jose  
**Denise Duffy and Associates, Inc.**  
 Environmental Consultants Resource Planners  
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 (831) 373-4341

Figure  
**3a**



Title:

# Habitat Map

Date: 08-05-2020

Scale: 1 inch = 0.06 miles

Project: 2016-41



Monterey | Truckee | San Jose  
**Denise Duffy and Associates, Inc.**

Environmental Consultants Resource Planners

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Figure

**3b**

Protected avian species, including raptors, may nest within trees present throughout this habitat type. CTS may utilize ruderal areas as upland habitat where small mammal burrows are present, CRLF have the potential to disperse through ruderal areas, and Northern California legless lizards may be found where loose sandy soils occur. No special-status plant species were identified within the ruderal areas during the surveys in 2019.

### ***Active Agriculture***

Approximately 2.5 acres of the survey area is under active agricultural use, including row crops and dirt access roads (**Figure 3**). These areas are regularly disturbed and maintained, and provide only low quality habitat for wildlife. However, CTS and CRLF have the potential to disperse through active agriculture. No special-status plant species were identified within the active agricultural areas during the surveys in 2019.

### ***Non-native Grassland***

Non-native grasslands are those areas which have been disturbed by human activities and by non-native grasses and forbs. Non-native grasslands occurring within the survey area were historically used as the playing fields at Moss Landing Middle School, but are not currently maintained and are dominated by non-native annual grass species (**Figure 3**). Dominant species present include ripgut brome, slender oat, and soft chess (*B. hordeaceus*). Additional non-dominant species include Pacific reed grass (*Calamagrostis nutkaensis*), California brome (*B. carinatus*), rattail sixweeks fescue (*Festuca myuros*), hairy cats-ear (*Hypochaeris radicata*), wild radish, black mustard, and bur clover. Approximately 0.6 acre of non-native grassland is present within the survey area.

Common wildlife species which do well in urbanized and disturbed areas that may occur within the non-native grasslands include California ground squirrel, house sparrow (*Passer domesticus*), scrub jay, European starling, western fence lizard, and rock dove.

CTS may utilize non-native grassland habitat as upland habitat where small mammal burrows are present, CRLF have the potential to disperse through non-native grasslands, and Northern California legless lizards may be found where loose sandy soils occur. No special-status plant species were identified within the non-native grasslands during the surveys in 2019.

### ***Riparian***

Riparian habitats are those plant communities supporting woody vegetation found along rivers, creeks, streams, canyon bottom drainages, and seeps. They can range from a dense thicket of shrubs to a closed canopy of large mature trees. Within the survey area, riparian vegetation is present associated with a small drainage that crosses Springfield Road (**Figure 3**). Dominant native species present include Arroyo willow (*Salix lasiolepis*) and California blackberry (*Rubus ursinus*); however, the area is highly disturbed and is being invaded by invasive plants, including kikuyu grass, poison hemlock, nasturtium (*Tropaeolum majus*), and (immediately adjacent to the survey area) eucalyptus trees (*Eucalyptus globulus*).

Riparian areas provide habitat for many wildlife species, particularly birds and herpetofauna. Common species that may be found within the riparian habitat in the site includes Sierran treefrog (*Pseudacris sierra*), Monterey ensatina (*Ensatina eschscholtzii eschscholtzii*), and red-winged blackbird (*Agelaius phoeniceus*).



CTS may utilize riparian areas as upland habitat where small mammal burrows are present, CRLF have the potential to disperse through riparian areas, and Northern California legless lizards may be found where loose sandy soils occur. The riparian area may also provide habitat for the Monterey shrew. Riparian habitat within the survey area may also provide suitable habitat for SCLTS. Additionally, raptors and other protected avian species may forage and nest within this vegetation type. No special-status plant species were observed within the riparian areas during the surveys in 2019.

Riparian areas are subject to the jurisdiction of CDFW under Section 1602 of the Fish and Game Code and are considered ESHA under the CCA. Additionally, the Arroyo willow floristic alliance occurring within riparian areas is identified as sensitive on CDFW's *California Natural Communities List* (CDFW, 2019a) and a portion of this area may support other waters under the jurisdiction of the ACOE and RWQCB.

## Sensitive Habitats

### *Riparian*





Riparian areas are subject to the jurisdiction of CDFW under Section 1602 of the Fish and Game Code and are considered ESHA under the CCA. Additionally, the Arroyo willow floristic alliance occurring within riparian areas is identified as sensitive on CDFW's *California Natural Communities List* (CDFW, 2019a). Approximately 0.04 acre of riparian habitat is present within the survey area (**Figure 3**).

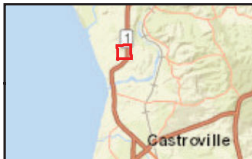
### *Wetlands and Other Waters*

No wetlands potentially under the jurisdiction of the ACOE were identified within the survey area. Data collected within the survey area did not meet the wetland parameters set forth in *The Field Guide for Wetland Delineation: 1987 Corps of Engineers Manual* (Wetland Training Institute, 1995) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (ACOE, 2008) (**Appendix D**). However, potentially jurisdictional other waters of the U.S. and State were identified adjacent to Springfield Road in the northern portion of the survey area (**Figure 4**). This area would be considered ESHA under the CCA. Additionally, a roadside ditch on the south side of Struve Road and a ditch adjacent to an agricultural road in the southwestern corner of the survey area were evaluated; however, these areas do not meet the definition of waters of the U.S. as identified in CFR 328.3(a)(8) and would not be considered ESHA.

The mapping of potential other waters of the U.S. and State adjacent to Springfield Road is based on the observation of surface water that runs through a disturbed channel north of Springfield road, through a culvert under the road, and into an approximately six foot wide pool south of Springfield Road (**Figure 4**). The headwaters of the stream are located approximately 600 feet north of the survey area. This channel is identified as a stream on The National Map (U.S. Geological Survey [USGS], 2018) and as Freshwater Emergent and Freshwater Forested/Shrub Wetland on the National Wetlands Mapper (USFWS, 2020b); however, no emergent vegetation was observed within the channel. Within the survey area, the channel and banks north of Springfield Road were significantly disturbed and dominated by weedy plant species. South of Springfield Road, the culvert empties into a pool approximately 12 feet below the road level. Approximately 50 linear feet (including the culvert under Springfield Road), totaling approximately 0.002 acre (96 ft<sup>2</sup>), of potentially jurisdictional other waters are present within this area (**Figure 4**).



	Survey Area
	Potential Jurisdictional Other Waters
	ESHA (Riparian Habitat)
	Culverts



Title:  
**Sensitive Habitats**

Date: 08-05-2020  
 Scale: 1 inch = 0.01 miles  
 Project: 2016-41



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Figure  
**4**

A ditch is present on the south side of Struve Road that conveys water during storm events, collecting water from the road and directing in towards a culvert that runs under Highway 1. A second ditch is present within the southwest corner of the survey area that conveys water during storm events or from irrigation from an agricultural field towards McClusky Slough. These ditches are ephemeral, were dug in uplands and do not meet the definition of waters of the U.S. as identified in CFR 328.3(a)(8) and are therefore not under the regulation of the ACOE and would not be considered ESHA under the CCA.

## Special-Status Species

Published occurrence data within the proposed project areas and surrounding USGS quadrangles were evaluated to compile a table of special-status species known to occur in the vicinity of the survey area (**Appendix C**).<sup>4</sup> Each of these species was evaluated for their likelihood to occur within and immediately adjacent to the survey area. The special-status species that are known to or have been determined to have a moderate to high potential to occur within or immediately adjacent the survey area are discussed below. All other species within the table are assumed “unlikely to occur” or have a low potential to occur for the species-specific reason presented in **Appendix C**.

### *Special-Status Wildlife Species*

#### *California Tiger Salamander*

The CTS is a federal and state threatened species. The CTS is a large, stocky salamander most commonly found in annual grassland habitat, but also occurring in the grassy understory of valley-foothill hardwood and chaparral habitats, and uncommonly along stream courses in valley-foothill riparian habitats (USFWS, 2004). Adults spend most of their lives underground, typically in burrows of ground squirrels and other animals (USFWS, 2004). The California tiger salamander has been eliminated from an estimated 55 percent of its documented historic breeding sites. Currently, about 150 known populations of California tiger salamanders remain. The CTS persists in disjunct remnant vernal pool complexes in Sonoma County and Santa Barbara County, in vernal pool complexes and isolated stockponds scattered along a narrow strip of rangeland on the fringes of the Central Valley from southern Colusa County south to northern Kern County, and in sag ponds and human maintained stockponds in the coast ranges from the San Francisco Bay Area south to the Temblor Range.

Above-ground migratory and breeding activity may occur under suitable environmental conditions from mid-October through May. Adults may travel long distances between upland and breeding sites; adults have been found two kilometers (1.24 miles) from breeding sites (USFWS, 2004). Breeding occurs from November to February, following relatively warm rains (Stebbins, 2003). The CTS breeds and lays eggs primarily in vernal pools and other temporary rainwater ponds. Permanent human-made ponds are sometimes utilized if predatory fishes are absent; streams are rarely used for reproduction. Eggs are laid singly or in clumps on both submerged and emergent vegetation and on submerged debris in shallow water (Stebbins, 1972; Jennings and Hayes, 1994). Males typically spend 6-8 weeks at breeding ponds, while females typically spend only 1-2 weeks (Loredo et al., 1996). Eggs hatch within 10-14 days (USFWS, 2004) and a minimum of 10 weeks is required to complete development through metamorphosis (Jennings

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<sup>4</sup> The USGS quadrangles in which published CNDDDB data was searched included, Moss Landing, Marina, Prunedale, Salinas, Soquel, Watsonville East, Watsonville West.

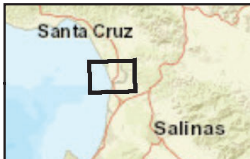
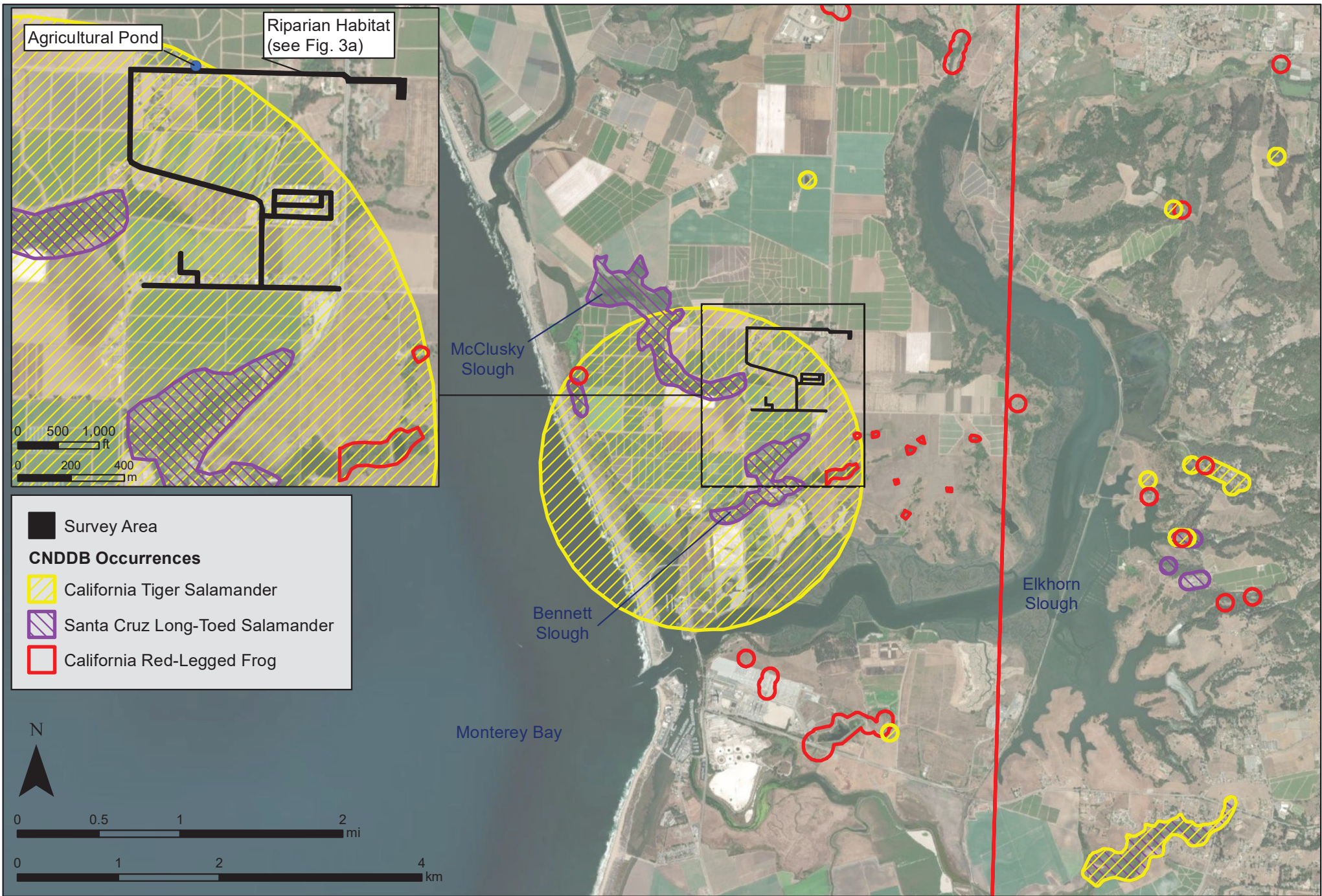
and Hayes, 1994), although the larval stage may last up to six months and some larvae in Contra Costa and Alameda Counties may remain in their breeding sites over the summer (USFWS, 2004).

The CNDDDB reports 36 occurrences of CTS within the seven quadrangles evaluated, including one non-specific occurrence from 1973 that overlaps with a portion of the survey area (**Figure 5**). The CNDDDB notes that CTS were observed adjacent to Elkhorn Slough, 1.25 miles north of Moss Landing; based on this description, it is possible that the occurrence is within Bennett Slough, which is located north of, but connected to Elkhorn Slough. Bennett Slough, and approximately 0.2 km (0.1 mi) south of the survey area. An additional occurrence is located 1.4 km (0.9 mi) north of the survey area where adult CTS were observed near a pond that may provide suitable breeding habitat; however, no breeding is documented for this occurrence. No suitable breeding habitat is present within the survey area; however, an agricultural pond is present immediately adjacent to the survey area on Springfield Road which may provide breeding habitat. Suitable upland habitat for CTS is present within all undeveloped areas of the survey area, particularly the non-native grassland and ruderal areas where small mammal burrows are present.

### *California Red-Legged Frog*

The CRLF is listed as a federally Threatened and is also a CDFW species of special concern (USFWS, 1996). The CRLF is the largest native frog in California (44-131 mm snout-vent length) and was historically widely distributed in the central and southern portions of the state (Jennings and Hayes, 1994). Adults generally inhabit aquatic habitats with riparian vegetation, overhanging banks, or plunge pools for cover, especially during the breeding season (Jennings and Hayes, 1988). They may take refuge in small mammal burrows, leaf litter, or other moist areas during periods of inactivity or to avoid desiccation (Rathbun et al., 1993; Jennings and Hayes, 1994). Radiotelemetry data indicates that adults engage in straight-line breeding season movements irrespective of riparian corridors or topography and they may move up to two miles between non-breeding and breeding sites (Bulger et al., 2003). During the non-breeding season, a wider variety of aquatic habitats are used including small pools in coastal streams, springs, water traps, and other ephemeral water bodies (USFWS, 1996). CRLF may also move up to 300 feet from aquatic habitats into surrounding uplands, especially following rains, where individuals may spend days or weeks (Bulger et al., 2003).

This species requires still or slow-moving water during the breeding season where it can deposit large egg masses, which are most often attached to submergent or emergent vegetation. Breeding typically occurs between December and April depending on annual environmental conditions and locality. Eggs require 6 to 12 days to hatch and metamorphosis generally occurs after 3.5 to 7 months, although larvae are also capable of over-wintering. Following metamorphosis, generally between July and September, juveniles are 25-35 mm in size. Juvenile CRLF appear to have different habitat needs than adults. Jennings and Hayes (1988) recorded juvenile frogs mostly from sites with shallow water and limited shoreline or emergent vegetation. Additionally, it was important that there be small one-meter breaks in the vegetation or clearings in the dense riparian cover to allow juveniles to sun themselves and forage, but to also have close escape cover from predators. Jennings and Hayes also noted that tadpoles have different habitat needs and that in addition to vegetation cover, tadpoles use mud. It is speculated that CRLF larvae are algae grazers, however, foraging larval ecology remains unknown (Jennings, et al., 1993).



Title:  
**Special-Status Amphibian Occurrence Map**

Date: 08-05-2020  
Scale: 1 inch = 0.76 miles  
Project: 2016-41



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Figure  
**5**

It has been shown that occurrences of CRLF are negatively correlated with presence of non-native bullfrogs (Moyle, 1973; Jennings and Hayes, 1986 and 1988), although both species are able to persist at certain locations, particularly in the coastal zone. It is estimated that CRLF has disappeared from approximately 75% of its former range and has been nearly extirpated from the Sierra Nevada, Central Valley, and much of southern California (USFWS, 1996).

The CNDDDB includes 49 occurrences of CRLF within the seven quadrangles evaluated, including a non-specific occurrence that includes the entire Moss Landing quadrangles (the quadrangle the project is located within) (**Figure 5**). Although non-specific, this occurrence notes that the habitat is marsh surrounding McClusky Slough, which is located approximately 340 feet from the survey area. Several additional CNDDDB occurrences are located within one mile of the survey area. No suitable breeding or upland habitat is present within the survey area; however suitable dispersal habitat is present within all undeveloped portions of the survey area. Additionally, an agricultural pond is present immediately adjacent to the survey area on Springfield Road; however, it is unlikely to provide breeding habitat due to a lack of vegetation.

#### *Santa Cruz Long-Toed Salamander*

The SCLTS is listed as a federal and state Endangered species and is also a California fully protected species. The SCLTS is a subspecies of long-toed salamander (*Ambystoma macrodactylum*) that occurs in a small number of restricted localities in Santa Cruz and Monterey Counties. This subspecies is known to use several different plant community types for upland habitat, including riparian, willow thickets, coast live oak woodlands, dense coastal scrub, coastal chaparral, and Monterey pine forest (USFWS, 1999). Adults use upland areas immediately adjacent to their breeding site, as well as the surrounding areas up to 0.6 km; however, SCLTS has been recorded as far as 1.6 km (1.0 mi) from the nearest breeding site (Ruth and Tollestrup, 1973). For much of the year SCLTS find refuge in cool, moist places, such as small mammal burrows or under decayed wood piles, logs, or thick leaf litter. The upland habitat must also support an abundance of prey. Adult and sub-adult SCLTS eat a variety of invertebrates, including earthworms, slugs, isopods, beetles, and spiders.

Adult SCLTS migrate to breeding sites at night during rain events between November and March, with peak activity between December and February. During migration, the SCLTS may be found under surface objects such as rocks or logs near the breeding site. Ideal breeding locations appear to be shallow, temporary, freshwater ponds that lack fishes and hold water at least through the spring months; however, they may also breed in permanent waterbodies, such as sloughs. Males often arrive at breeding sites before females and may stay longer. Females lay approximately 300 eggs singly on submergent aquatic vegetation in shallow water, approximately five to eight cm (2-3.2 inches) below the surface. Eggs hatch within 15-30 days and the larvae metamorphose between 90 and 145 days after hatching, depending on water temperature and food availability (Howard, 1997). Terrestrial juveniles may spend the entire first summer of life in mammal burrows or under surface objects in the immediate vicinity of the breeding pond.

The CNDDDB reports 26 occurrences of SCLTS within the seven quadrangles reviewed, the nearest of which are located within McClusky Slough (approximately 340 feet from the survey area) and Bennett Slough (approximately 675 feet from the survey area); however, SCLTS may be extirpated in Bennett Slough (USFWS, 2019) (**Figure 5**). No suitable breeding habitat is present within the survey area. An agricultural pond is present immediately adjacent to the survey area on Springfield Road; however, due to the lack of vegetation within and surrounding the pond, this pond is unlikely to provide breeding habitat for SCLTS.

Suitable upland habitat for SCLTS is present within the riparian habitat within the survey area; however, the agricultural and residential uses present between McClusky Slough and this habitat within the survey area may present a significant barrier to dispersal of this species into the project site.

#### *Northern California Legless Lizard*

The Northern California legless lizard is a fossorial (burrowing) species that typically inhabits sandy or loose (friable) soils. Habitats known to support this species include (but are not limited to) coastal dunes, valley and foothill grasslands, chaparral, and coastal scrub at elevations from near sea level to approximately 1800 meters (6000 feet). The Northern California legless lizard forages on invertebrates beneath the leaf litter or duff layer at the base of bushes and trees or under wood, rocks, and slash in appropriate habitats. Little is known about the specific habitat requirements for courtship and breeding; however, the mating season for this species is believed to begin late spring or early summer, with one to four live young born between September and November.

The CNDDDB includes 36 occurrences of Northern California legless lizard, the nearest of which is located is approximately 1.2 miles from the survey area. Suitable habitat for this species is present within all undeveloped areas within the site where suitable soils occur.

#### *Monterey Shrew*

The Monterey shrew is a CDFW species of special concern. In general, this shrew is common in the southern two-thirds of California west of the Sierra Nevada, from Mendocino to Butte counties, south to the Mexican border. It occupies a variety of mostly moist or riparian woodland habitats and also occurs within chaparral, grassland, and emergent wetland habitats where there is thick duff or downed logs. The breeding season is long; while most pregnancies occur in March and April, they may occur from February through October. The litter size is about six and females may have more than one litter per year. Most individuals do not live to breed a second year. Foraging occurs under logs rocks and leaf litter, and prey items are mostly insects and some other invertebrates.

The CNDDDB reports two occurrences of the Monterey shrew within the quadrangles reviewed, the nearest of which is located approximately 0.5 miles from the survey area. Suitable habitat for this species is present in the riparian area within and adjacent to the survey area.

#### *Raptors and Other Protected Avian Species*

Raptors and their nests are protected under California Fish and Game Code. While the life histories of these species vary, overlapping nesting and foraging similarities (approximately February through August) allow for their concurrent discussion. Most raptors are breeding residents throughout most of the wooded portions of the state. Stands of live oak, riparian deciduous, or other forest vegetation types, as well as open grasslands, are used most frequently for nesting. Breeding occurs February through August, with peak activity May through July. Prey for these species includes small birds, small mammals, and some reptiles and amphibians. Many raptor species hunt in open woodland and habitat edges. Various common raptor species (such as red-tailed hawk [*Buteo jamaicensis*], red-shouldered hawk, great horned owl [*Bubo virginianus*], western screech owl [*Megascops kennicottii*], and turkey vulture [*Cathartes aura*]), as well as the special-status white-tailed kite have a potential to nest within any of the trees present within and adjacent to the survey area.

### *Special-Status Plant Species*

Focused rare plant surveys were conducted in May and July 2019 during the appropriate blooming period to identify species with the potential to occur (**Appendix C**). No special status plant species were identified within the survey area.



## **IMPACTS AND MITIGATION**

Construction activities associated with the proposed project could result in impacts to sensitive habitats and special-status wildlife species. Mitigation measures have been provided below to reduce these potential impacts to a less-than-significant level in accordance with CEQA.

### **Sensitive Habitats**

**Potential Impact 1:** Riparian habitat within the survey area (0.04 acre) is considered a sensitive habitat under the jurisdiction of CDFW. Other waters identified within the survey area may be jurisdictional under the CWA. Additionally, both of these areas are considered ESHA under the CCA. If construction activities occur within these sensitive habitats it would be considered a significant impact under CEQA. However, the project has been designed to avoid these sensitive resources. Implementation of Measure 1 will ensure avoidance of impacts during construction to sensitive habitats located outside of project work areas. Acquisition of regulatory permits from the ACOE, RWQCB, and CDFW for these resources is not required as they will be avoided.

**Mitigation Measure 1:** Prior to construction exclusionary fencing shall be placed to keep construction vehicles and personnel from impacting potentially jurisdictional waters and riparian habitat outside of work areas. A biological monitor shall supervise the installation of exclusionary fencing and monitor at least once per week until construction is complete to ensure that the protective exclusionary fencing remains intact.

### **Special-Status Wildlife Species**

**Potential Impact 2:** Raptors and other protected avian species have the potential to occur within the survey area. Construction activities, including vegetation removal and trenching, during the breeding and nesting seasons could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment within the survey area. This would be a potentially significant impact that can be reduced to a less-than-significant level with implementation of Mitigation Measures 2A and 2B.

**Mitigation Measure 2A:** Prior to construction activities, the project proponent shall retain a qualified biologist to conduct an Employee Education Program for the construction crew. The biologist shall meet with the construction crew at the project site at the onset of construction to educate the construction crew on the following: a) a review of the project boundaries; b) all special-status species that may be present, their habitat, and proper identification; c) the specific mitigation measures that will be incorporated into the construction effort; d) the general provisions and protections afforded by the regulatory agencies; and e) the proper procedures if a special-status animal is encountered within the project site.

**Mitigation Measure 2B:** Construction activities that may directly (e.g., vegetation removal) or indirectly affect (e.g. noise/ground disturbance) nesting raptors and other protected avian species shall be timed to avoid the breeding and nesting seasons (February 1 through September 15).

If construction activities must occur during the breeding and nesting season (February 1 through September 15), a qualified biologist shall conduct pre-construction surveys for nesting raptors and other protected avian species within 300 feet of the proposed construction activities. Pre-construction surveys should be conducted no more than 7 days prior to the start of the construction activities during the early

part of the breeding season (February through April) and no more than 14 days prior to the initiation of these activities during the late part of the breeding season (May through August).

If raptors or other protected avian nests are identified during the pre-construction surveys, the qualified biologist would notify the project proponent and an appropriate no-disturbance buffer would be imposed within which no construction activities or disturbance would take place (generally 300 feet in all directions for raptors; other avian species may have species-specific requirements) until the young of the year have fledged and are no longer reliant upon the nest or parental care for survival, as determined by a qualified biologist.

**Potential Impact 3:** The Northern California legless lizard and Monterey shrew have the potential to occur within the survey area. Construction activities, including vegetation removal and trenching, could result in mortality or disturbance these species. This is considered a significant impact that will be reduced to a less-than-significant level with implementation of Mitigation Measures 1 and 2A.

**Potential Impact 4:** The project is located within the known dispersal range of CTS and potential habitat for this species is present within the survey area. Additionally, an agricultural pond located immediately adjacent to the survey area on Springfield Road may provide suitable breeding habitat for CTS. Construction activities, including vegetation removal and trenching, within the project site may result in direct mortality of individuals, if present at the time of construction. This would be considered a significant impact under CEQA that can be reduced to a less-than-significant level with implementation of Mitigation Measures 1, 2A, 4A, and 4B.

**Mitigation Measure 4A:** The project applicant will comply with the CESA and will coordinate with the CDFW to determine whether incidental take authorization for CTS is required prior to issuance of a grading permit. If it is determined that authorization for the incidental take of this species is required from the CDFW, the project applicant will comply with the CESA to obtain a 2081 incidental take permit from CDFW prior to the issuance of a grading permit. Permit requirements typically involve the preparation and implementation of a mitigation plan and mitigating impacted habitat at a 3:1 ratio through preservation and/or restoration. The project applicant would be required to retain a qualified biologist to prepare a mitigation plan, which will include, but is not limited to, identifying avoidance and minimization measures, and identifying a mitigation strategy that includes a take assessment, avoidance and minimization measures, compensatory mitigation lands, success criteria, and funding assurances. The project applicant would be required to implement the approved plan and any additional permit requirements.

**Mitigation Measure 4B:** The project will comply with the ESA and conduct consultation with the USFWS to determine whether incidental take authorization for CTS is required prior to issuance of a grading permit. If it is determined that authorization for the incidental take of this species is required from the USFWS, the project will comply with the ESA to obtain Section 7 or Section 10 authorization from USFWS at the project-level prior to the issuance of a grading permit. Permit requirements typically involve the preparation and implementation of a mitigation plan and mitigating impacted habitat at a 3:1 ratio through preservation and/or restoration. The project applicant would be required to retain a qualified biologist to prepare a mitigation plan, which will include, but is not limited to, identifying avoidance and minimization measures, and identifying a mitigation strategy that includes a take assessment, avoidance and minimization measures,

compensatory mitigation lands, success criteria, and funding assurances. The project applicant would be required to implement the approved plan and any additional permit requirements.

**Potential Impact 5:** The project is located within the known dispersal range of CRLF and potential habitat for this species is present within the survey area. Construction activities, including vegetation removal and trenching, within the project site may result in direct mortality of individuals, if present at the time of construction. This would be considered take of a federally listed species and a significant impact under CEQA. Take of this species can be avoided and impacts reduced to a less-than-significant level with implementation of Mitigation Measures 1, 2A, and 5A through 5G.

**Mitigation Measure 5A:** A qualified biologist will survey the proposed project area and immediately adjacent areas 48 hours before and the morning of the onset of work activities for the presence of CRLF. If any life stage of CRLF is observed, construction activities will not commence until the USFWS is consulted and appropriate actions are taken to allow project activities to continue.

**Mitigation Measure 5B:** During ground disturbing and vegetation removal activities, a qualified biologist shall survey appropriate areas of the construction site daily before the onset of work activities for the presence of CRLF. The qualified biologist shall remain available to come to the site if a CRLF is identified until all ground disturbing activities are completed. If any life stage of the CRLF is found and these individuals are likely to be killed or injured by work activities, the qualified biologist shall be contacted, and work shall stop in that area until the CRLF has moved on its own out of the work area and the USFWS has been contacted. Construction activities will not resume until the USFWS is consulted and appropriate actions are taken to allow project activities to continue.

**Mitigation Measure 5C:** After ground disturbing and vegetation removal activities are complete, or earlier if determined appropriate by the qualified biologist, the qualified biologist will designate a construction monitor to oversee on-site compliance with all avoidance and minimization measures. The qualified biologist shall ensure that this construction monitor receives the sufficient training in the identification of CRLF. The construction monitor or the qualified biologist is authorized to stop work if the avoidance and/or minimization measures are not being followed. If work is stopped, the USFWS shall be notified. The qualified biologist and the construction monitor shall complete a daily log summarizing activities and environmental compliance throughout the duration of the proposed project.

**Mitigation Measure 5D:** To prevent inadvertent entrapment of CRLF during project construction, all excavated, steep-walled holes or trenches more than two feet deep will be covered at the close of each working day with plywood or similar materials. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals.

**Mitigation Measure 5E:** Only tightly woven fiber netting or similar material may be used for erosion control at the project site. Coconut coir matting is an acceptable erosion control material. No plastic mono-filament matting will be used for erosion control, as this material may ensnare wildlife, including CRLF.

**Mitigation Measure 5F:** Because dusk and dawn are often the times when CRLF are most actively foraging and dispersing, all construction activities should cease one half hour before sunset and should not begin prior to one half hour after sunrise.

***Mitigation Measure 5G:*** All trash that may attract predators shall be properly contained, removed from the construction site, and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.

***Potential Impact 6:*** The project is located within the known dispersal range of SCLTS and the riparian habitat within the survey area may provide habitat for this species. Take of this species could occur if construction activities occur within the riparian habitat, which would be considered a significant impact under CEQA. However, the project has been designed to avoid SCLTS habitat. Implementation of Measures 1 and 2A will ensure avoidance of take of SCLTS that may be present outside of project work areas during construction. Acquisition of regulatory permits from the USFWS and CDFW for this species is not required as potential impacts will be avoided with implementation of the mitigation. This is a less than significant impact.

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**APPENDIX A**

CALIFORNIA NATURAL DIVERSITY DATABASE  
REPORT

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# Selected Elements by Scientific Name

## California Department of Fish and Wildlife

### California Natural Diversity Database



**Query Criteria:** Quad

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Accipiter cooperii</i> Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
<i>Agelaius tricolor</i> tricolored blackbird	ABPBXB0020	None	Threatened	G2G3	S1S2	SSC
<i>Agrostis lacuna-vernalis</i> vernal pool bent grass	PMPOA041N0	None	None	G1	S1	1B.1
<i>Allium hickmanii</i> Hickman's onion	PMLIL02140	None	None	G2	S2	1B.2
<i>Ambystoma californiense</i> California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
<i>Ambystoma macrodactylum croceum</i> Santa Cruz long-toed salamander	AAAAA01082	Endangered	Endangered	G5T1T2	S1S2	FP
<i>Aneides niger</i> Santa Cruz black salamander	AAAAD01070	None	None	G3	S3	SSC
<i>Anniella pulchra</i> northern California legless lizard	ARACC01020	None	None	G3	S3	SSC
<i>Antrozous pallidus</i> pallid bat	AMACC10010	None	None	G5	S3	SSC
<i>Arctostaphylos andersonii</i> Anderson's manzanita	PDERI04030	None	None	G2	S2	1B.2
<i>Arctostaphylos hookeri ssp. hookeri</i> Hooker's manzanita	PDERI040J1	None	None	G3T2	S2	1B.2
<i>Arctostaphylos montereyensis</i> Toro manzanita	PDERI040R0	None	None	G2?	S2?	1B.2
<i>Arctostaphylos pajaroensis</i> Pajaro manzanita	PDERI04100	None	None	G1	S1	1B.1
<i>Arctostaphylos pumila</i> sandmat manzanita	PDERI04180	None	None	G1	S1	1B.2
<i>Asio flammeus</i> short-eared owl	ABNSB13040	None	None	G5	S3	SSC
<i>Astragalus tener var. tener</i> alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
<i>Athene cunicularia</i> burrowing owl	ABNSB10010	None	None	G4	S3	SSC



Selected Elements by Scientific Name  
 California Department of Fish and Wildlife  
 California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<b><i>Bombus caliginosus</i></b> obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
<b><i>Bombus occidentalis</i></b> western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
<b><i>Buteo regalis</i></b> ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
<b><i>Castilleja ambigua var. insalutata</i></b> pink Johnny-nip	PDSCR0D403	None	None	G4T2	S2	1B.1
<b><i>Centromadia parryi ssp. congdonii</i></b> Congdon's tarplant	PDAST4R0P1	None	None	G3T1T2	S1S2	1B.1
<b><i>Charadrius alexandrinus nivosus</i></b> western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
<b><i>Chorizanthe minutiflora</i></b> Fort Ord spineflower	PDPGN04100	None	None	G1	S1	1B.2
<b><i>Chorizanthe pungens var. pungens</i></b> Monterey spineflower	PDPGN040M2	Threatened	None	G2T2	S2	1B.2
<b><i>Chorizanthe robusta var. robusta</i></b> robust spineflower	PDPGN040Q2	Endangered	None	G2T1	S1	1B.1
<b><i>Cicindela ohlone</i></b> Ohlone tiger beetle	IICOL026L0	Endangered	None	G1	S1	
<b><i>Coelus globosus</i></b> globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
<b><i>Cordylanthus rigidus ssp. littoralis</i></b> seaside bird's-beak	PDSCR0J0P2	None	Endangered	G5T2	S2	1B.1
<b><i>Corynorhinus townsendii</i></b> Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
<b><i>Coturnicops noveboracensis</i></b> yellow rail	ABNME01010	None	None	G4	S1S2	SSC
<b><i>Danaus plexippus pop. 1</i></b> monarch - California overwintering population	IILEPP2012	None	None	G4T2T3	S2S3	
<b><i>Dicamptodon ensatus</i></b> California giant salamander	AAAAH01020	None	None	G3	S2S3	SSC
<b><i>Dipodomys venustus venustus</i></b> Santa Cruz kangaroo rat	AMAFD03042	None	None	G4T1	S1	
<b><i>Elanus leucurus</i></b> white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
<b><i>Emys marmorata</i></b> western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
<b><i>Eremophila alpestris actia</i></b> California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
<b><i>Ericameria fasciculata</i></b> Eastwood's goldenbush	PDAST3L080	None	None	G2	S2	1B.1



Selected Elements by Scientific Name  
California Department of Fish and Wildlife  
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<b><i>Erysimum ammophilum</i></b> sand-loving wallflower	PDBRA16010	None	None	G2	S2	1B.2
<b><i>Erysimum menziesii</i></b> Menzies' wallflower	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
<b><i>Eucyclogobius newberryi</i></b> tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
<b><i>Euphilotes enoptes smithi</i></b> Smith's blue butterfly	IILEPG2026	Endangered	None	G5T1T2	S1S2	
<b><i>Falco peregrinus anatum</i></b> American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
<b><i>Fritillaria liliacea</i></b> fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
<b><i>Gilia tenuiflora ssp. arenaria</i></b> Monterey gilia	PDPLM041P2	Endangered	Threatened	G3G4T2	S2	1B.2
<b><i>Holocarpha macradenia</i></b> Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1	S1	1B.1
<b><i>Horkelia cuneata var. sericea</i></b> Kellogg's horkelia	PDR0S0W043	None	None	G4T1?	S1?	1B.1
<b><i>Horkelia marinensis</i></b> Point Reyes horkelia	PDR0S0W0B0	None	None	G2	S2	1B.2
<b><i>Lasthenia californica ssp. macrantha</i></b> perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
<b><i>Lasthenia conjugens</i></b> Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
<b><i>Legenere limosa</i></b> legenere	PDCAM0C010	None	None	G2	S2	1B.1
<b><i>Linderiella occidentalis</i></b> California linderiella	ICBRA06010	None	None	G2G3	S2S3	
<b><i>Microseris paludosa</i></b> marsh microseris	PDAST6E0D0	None	None	G2	S2	1B.2
<b><i>Monardella sinuata ssp. nigrescens</i></b> northern curly-leaved monardella	PDLAM18162	None	None	G3T2	S2	1B.2
<b><i>Monolopia gracilens</i></b> woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2
<b><i>Neotoma macrotis luciana</i></b> Monterey dusky-footed woodrat	AMAFF08083	None	None	G5T3	S3	SSC
<b><i>Oncorhynchus mykiss irideus pop. 8</i></b> steelhead - central California coast DPS	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
<b><i>Oncorhynchus mykiss irideus pop. 9</i></b> steelhead - south-central California coast DPS	AFCHA0209H	Threatened	None	G5T2Q	S2	
<b><i>Pedicularis dudleyi</i></b> Dudley's lousewort	PDSCR1K0D0	None	Rare	G2	S2	1B.2



Selected Elements by Scientific Name  
California Department of Fish and Wildlife  
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Pentachaeta bellidiflora</i> white-rayed pentachaeta	PDAST6X030	Endangered	Endangered	G1	S1	1B.1
<i>Phrynosoma blainvillii</i> coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
<i>Piperia yadonii</i> Yadon's rein orchid	PMORC1X070	Endangered	None	G1	S1	1B.1
<i>Plagiobothrys chorisianus var. chorisianus</i> Choris' popcornflower	PDBOR0V061	None	None	G3T1Q	S1	1B.2
<i>Plagiobothrys diffusus</i> San Francisco popcornflower	PDBOR0V080	None	Endangered	G1Q	S1	1B.1
<i>Rallus obsoletus obsoletus</i> California Ridgway's rail	ABNME05011	Endangered	Endangered	G5T1	S1	FP
<i>Rana boylei</i> foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
<i>Rana draytonii</i> California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
<i>Reithrodontomys megalotis distichlis</i> Salinas harvest mouse	AMAFF02032	None	None	G5T1	S1	
<i>Riparia riparia</i> bank swallow	ABPAU08010	None	Threatened	G5	S2	
<i>Rosa pinetorum</i> pine rose	PDROS1J0W0	None	None	G2	S2	1B.2
<i>Sorex ornatus salarius</i> Monterey shrew	AMABA01105	None	None	G5T1T2	S1S2	SSC
<i>Spea hammondi</i> western spadefoot	AAABF02020	None	None	G3	S3	SSC
<i>Spirinchus thaleichthys</i> longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
<i>Taricha torosa</i> Coast Range newt	AAAAF02032	None	None	G4	S4	SSC
<i>Taxidea taxus</i> American badger	AMAJF04010	None	None	G5	S3	SSC
<i>Thaleichthys pacificus</i> eulachon	AFCHB04010	Threatened	None	G5	S3	
<i>Trifolium buckwestiorum</i> Santa Cruz clover	PDFAB402W0	None	None	G2	S2	1B.1
<i>Trifolium hydrophilum</i> saline clover	PDFAB400R5	None	None	G2	S2	1B.2
<i>Trimerotropis infantilis</i> Zayante band-winged grasshopper	IIORT36030	Endangered	None	G1	S1	
<i>Tryonia imitator</i> mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	

Record Count: 80

## **APPENDIX B**

### INFORMATION FOR PLANNING AND CONSULTING (IPaC) RESOURCE LIST

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# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Ventura Fish And Wildlife Office  
2493 Portola Road, Suite B  
Ventura, CA 93003-7726  
Phone: (805) 644-1766 Fax: (805) 644-3958

In Reply Refer To:  
Consultation Code: 08EVEN00-2020-SLI-0246  
Event Code: 08EVEN00-2020-E-00479  
Project Name: Springfield

February 06, 2020

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

## To Whom It May Concern:

The enclosed list identifies species listed as threatened and endangered, species proposed for listing as threatened or endangered, designated and proposed critical habitat, and species that are candidates for listing that may occur within the boundary of the area you have indicated using the U.S. Fish and Wildlife Service's (Service) Information Planning and Conservation System (IPaC). The species list fulfills the requirements under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the species list should be verified after 90 days. We recommend that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists following the same process you used to receive the enclosed list. Please include the Consultation Tracking Number in the header of this letter with any correspondence about the species list.

Due to staff shortages and excessive workload, we are unable to provide an official list more specific to your area. Numerous other sources of information are available for you to narrow the list to the habitats and conditions of the site in which you are interested. For example, we recommend conducting a biological site assessment or surveys for plants and animals that could help refine the list.

If a Federal agency is involved in the project, that agency has the responsibility to review its proposed activities and determine whether any listed species may be affected. If the project is a major construction project\*, the Federal agency has the responsibility to prepare a biological assessment to make a determination of the effects of the action on the listed species or critical habitat. If the Federal agency determines that a listed species or critical habitat is likely to be adversely affected, it should request, in writing through our office, formal consultation pursuant to section 7 of the Act. Informal consultation may be used to exchange information and resolve conflicts with respect to threatened or endangered species or their critical habitat prior to a

written request for formal consultation. During this review process, the Federal agency may engage in planning efforts but may not make any irreversible commitment of resources. Such a commitment could constitute a violation of section 7(d) of the Act.

Federal agencies are required to confer with the Service, pursuant to section 7(a)(4) of the Act, when an agency action is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat (50 CFR 402.10(a)). A request for formal conference must be in writing and should include the same information that would be provided for a request for formal consultation. Conferences can also include discussions between the Service and the Federal agency to identify and resolve potential conflicts between an action and proposed species or proposed critical habitat early in the decision-making process. The Service recommends ways to minimize or avoid adverse effects of the action. These recommendations are advisory because the jeopardy prohibition of section 7(a)(2) of the Act does not apply until the species is listed or the proposed critical habitat is designated. The conference process fulfills the need to inform Federal agencies of possible steps that an agency might take at an early stage to adjust its actions to avoid jeopardizing a proposed species.

When a proposed species or proposed critical habitat may be affected by an action, the lead Federal agency may elect to enter into formal conference with the Service even if the action is not likely to jeopardize or result in the destruction or adverse modification of proposed critical habitat. If the proposed species is listed or the proposed critical habitat is designated after completion of the conference, the Federal agency may ask the Service, in writing, to confirm the conference as a formal consultation. If the Service reviews the proposed action and finds that no significant changes in the action as planned or in the information used during the conference have occurred, the Service will confirm the conference as a formal consultation on the project and no further section 7 consultation will be necessary. Use of the formal conference process in this manner can prevent delays in the event the proposed species is listed or the proposed critical habitat is designated during project development or implementation.

Candidate species are those species presently under review by the Service for consideration for Federal listing. Candidate species should be considered in the planning process because they may become listed or proposed for listing prior to project completion. Preparation of a biological assessment, as described in section 7(c) of the Act, is not required for candidate species. If early evaluation of your project indicates that it is likely to affect a candidate species, you may wish to request technical assistance from this office.

Only listed species receive protection under the Act. However, sensitive species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and Wildlife's Natural Diversity Data Base. You can contact the California Department of Fish and Wildlife at (916) 324-3812 for information on other sensitive species that may occur in this area.

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[\*A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.]

Attachment(s):

- Official Species List
-

## Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Ventura Fish And Wildlife Office**

2493 Portola Road, Suite B

Ventura, CA 93003-7726

(805) 644-1766

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## Project Summary

Consultation Code: 08EVEN00-2020-SLI-0246

Event Code: 08EVEN00-2020-E-00479

Project Name: Springfield

Project Type: WATER SUPPLY / DELIVERY

Project Description: Water Supply project in Moss Landing

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/36.833485792457296N121.77105551722875W>



Counties: Monterey, CA

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## Endangered Species Act Species

There is a total of 16 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.
-

## Birds

NAME	STATUS
California Clapper Rail <i>Rallus longirostris obsoletus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/4240">https://ecos.fws.gov/ecp/species/4240</a>	Endangered
California Least Tern <i>Sterna antillarum browni</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8104">https://ecos.fws.gov/ecp/species/8104</a>	Endangered
Least Bell's Vireo <i>Vireo bellii pusillus</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/5945">https://ecos.fws.gov/ecp/species/5945</a>	Endangered
Marbled Murrelet <i>Brachyramphus marmoratus</i> Population: U.S.A. (CA, OR, WA) There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/4467">https://ecos.fws.gov/ecp/species/4467</a>	Threatened
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6749">https://ecos.fws.gov/ecp/species/6749</a>	Endangered
Western Snowy Plover <i>Charadrius nivosus nivosus</i> Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/8035">https://ecos.fws.gov/ecp/species/8035</a>	Threatened

## Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2891">https://ecos.fws.gov/ecp/species/2891</a>	Threatened
California Tiger Salamander <i>Ambystoma californiense</i> Population: U.S.A. (Central CA DPS) There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2076">https://ecos.fws.gov/ecp/species/2076</a>	Threatened
Santa Cruz Long-toed Salamander <i>Ambystoma macrodactylum croceum</i> There is <b>proposed</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/7405">https://ecos.fws.gov/ecp/species/7405</a>	Endangered

## Fishes

NAME	STATUS
Tidewater Goby <i>Eucyclogobius newberryi</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/57">https://ecos.fws.gov/ecp/species/57</a>	Endangered

## Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/498">https://ecos.fws.gov/ecp/species/498</a>	Threatened

## Flowering Plants

NAME	STATUS
Marsh Sandwort <i>Arenaria paludicola</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/2229">https://ecos.fws.gov/ecp/species/2229</a>	Endangered
Menzies' Wallflower <i>Erysimum menziesii</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/2935">https://ecos.fws.gov/ecp/species/2935</a>	Endangered
Monterey Gilia <i>Gilia tenuiflora ssp. arenaria</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/856">https://ecos.fws.gov/ecp/species/856</a>	Endangered
Monterey Spineflower <i>Chorizanthe pungens var. pungens</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/396">https://ecos.fws.gov/ecp/species/396</a>	Threatened
Santa Cruz Tarplant <i>Holocarpha macradenia</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6832">https://ecos.fws.gov/ecp/species/6832</a>	Threatened

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.



**APPENDIX C**

**SPECIAL-STATUS SPECIES TABLE**

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## Special-Status Species Table

*Marina, Moss Landing, Prunedale, Salinas, Soquel, Watsonville East, and Watsonville West Quadrangles*

Species	Status (Service/CDFW/CNPS)	General Habitat	Potential Occurrence within Project Site
<b>MAMMALS</b>			
<i>Antrozous pallidus</i> Pallid bat	-- / CSC / --	Occurs in a wide variety of habitats including grasslands, shrublands, arid desert areas, oak savanna, coastal forested areas, and coniferous forests of the mountain regions of California. Most common in open, dry habitats with rocky areas for roosting. Day roosts include caves, crevices, mines, and occasionally hollow trees and buildings. Seems to prefer rocky outcrops, cliffs, and crevices with access to open habitats for foraging. Similar structures are used for night roosting and will also use more open sites such as eaves, awnings, and open areas under bridges for feeding roosts.	<b>Unlikely</b> No suitable habitat is present within the survey area.
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	-- / CSC / --	Found primarily in rural settings from inland deserts to coastal redwoods, oak woodland of the inner Coast Ranges and Sierra foothills, and low to mid-elevation mixed coniferous-deciduous forests. Typically roost during the day in limestone caves, lava tubes, and mines, but can roost in buildings that offer suitable conditions. Night roosts are in more open settings and include bridges, rock crevices, and trees.	<b>Unlikely</b> No suitable habitat is present within the survey area.
<i>Neotoma macrotis luciana</i> Monterey dusky-footed woodrat	-- / CSC / --	Forest and oak woodland habitats of moderate canopy with moderate to dense understory. Also occurs in chaparral habitats.	<b>Unlikely</b> No suitable habitat is present within the survey area.
<i>Taxidea taxus</i> American badger	-- / CSC / --	Dry, open grasslands, fields, pastures savannas, and mountain meadows near timberline are preferred. The principal requirements seem to be sufficient food, friable soils, and relatively open, uncultivated grounds.	<b>Unlikely</b> No suitable habitat is present within the survey area.
<i>Sorex ornatus salarius</i> Monterey shrew	-- / CSC / --	Mostly moist or riparian woodland habitats, and within chaparral, grassland, and emergent wetland habitats where there is a thick duff or downed logs.	<b>Moderate</b> Suitable habitat is present within the riparian area in and adjacent to the survey area. The nearest CNDDDB occurrence is approximately 0.5 mile from the survey area.
<b>BIRDS</b>			
<i>Agelaius tricolor</i> Tricolored blackbird (nesting colony)	-- / SC&CSC / --	Nest in colonies in dense riparian vegetation, along rivers, lagoons, lakes, and ponds. Forages over grassland or aquatic habitats.	<b>Unlikely</b> No suitable habitat is present within the survey area.

Species	Status (Service/CDFW/CNPS)	General Habitat	Potential Occurrence within Project Site
<i>Asio flammeus</i> Short-eared owl (nesting)	-- / CSC / --	Usually found in open areas with few trees, such as annual and perennial grasslands, prairies, meadows, dunes, irrigated lands, and saline and freshwater emergent marshes. Dense vegetation is required for roosting and nesting cover. This includes tall grasses, brush, ditches, and wetlands. Open, treeless areas containing elevated sites for perching, such as fence posts or small mounds, are also needed. Some individuals breed in northern California.	<b>Unlikely</b> No suitable habitat is present within the survey area.
<i>Athene cunicularia</i> Burrowing owl (burrow sites & some wintering sites)	-- / CSC / --	Year round resident of open, dry grassland and desert habitats, and in grass, forb and open shrub stages of pinyon-juniper and ponderosa pine habitats. Frequent open grasslands and shrublands with perches and burrows. Use rodent burrows (often California ground squirrel) for roosting and nesting cover. Pipes, culverts, and nest boxes may be substituted for burrows in areas where burrows are not available.	<b>Low</b> Marginal nesting and wintering habitat is present within and adjacent to the survey area. No burrows of sufficient size to support this species were observed during the 2019 or 2020 surveys. The nearest CNDDDB occurrence is approximately 0.3 mile from the survey area.
<i>Brachyramphus marmoratus</i> Marbled Murrelet	FT / SE / --	Occur year-round in marine subtidal and pelagic habitats from the Oregon border to Point Sal. Partial to coastlines with stands of mature redwood and Douglas-fir. Requires dense mature forests of redwood and/or Douglas-fir for breeding and nesting.	<b>Not Present</b> No suitable habitat within the survey area.
<i>Charadrius alexandrinus nivosus</i> Western snowy plover (nesting)	FT / CSC / --	Sandy beaches on marine and estuarine shores, also salt pond levees and the shores of large alkali lakes. Requires sandy, gravelly or friable soil substrate for nesting.	<b>Not Present</b> No suitable habitat within the survey area.
<i>Coturnicops noveboracensis</i> Yellow rail	-- / CSC / --	Wet meadows and coastal tidal marshes. Occurs year round in California, but in two primary seasonal roles: as a very local breeder in the northeastern interior and as a winter visitor (early Oct to mid-Apr) on the coast and in the Suisun Marsh region	<b>Not Present</b> No suitable habitat within the survey area.
<i>Elanus leucurus</i> White-tailed kite (nesting)	-- / CFP / --	Open groves, river valleys, marshes, and grasslands. Prefer such area with low roosts (fences etc.). Nest in shrubs and trees adjacent to grasslands.	<b>Moderate</b> Trees within the survey area may provide suitable nesting habitat and open areas may provide suitable foraging habitat. The nearest CNDDDB occurrence is approximately two miles from the survey area.

Species	Status (Service/CDFW/CNPS)	General Habitat	Potential Occurrence within Project Site
<i>Empidonax trailii extimus</i> Southwestern willow flycatcher	FE / SE / --	Breeds in riparian habitat in areas ranging in elevation from sea level to over 2,600 meters. Builds nest in trees in densely vegetated areas. This species establishes nesting territories and builds, and forages in mosaics of relatively dense and expansive areas of trees and shrubs, near or adjacent to surface water or underlain by saturated soils. Not typically found nesting in areas without willows ( <i>Salix sp.</i> ), tamarisk ( <i>Tamarix ramosissima</i> ), or both.	<b>Low</b> Marginal habitat is present within the riparian area in and adjacent to the survey area; however, the CNDDDB does not report any occurrences of this species within the quadrangles evaluated, and the survey area is very likely outside of the current range of this species.
<i>Falco peregrinus anatum</i> American peregrine falcon (nesting)	-- / CFP / --	Forages for other birds over a variety of habitats. Breeds primarily on rocky cliffs.	<b>Unlikely</b> No suitable nesting habitat is present within the Survey area.
<i>Rallus obsoletus obsoletus</i> California Ridgeway's rail	FE / SE&CFP / --	Salt and brackish marshes.	<b>Unlikely</b> No suitable habitat is present within the survey area.
<i>Riparia riparia</i> Bank swallow (nesting)	-- / ST / --	Nest colonially in sand banks. Found near water; fields, marshes, streams, and lakes.	<b>Unlikely</b> No suitable habitat is present within the survey area.
<i>Sterna antillarum browni</i> California least tern	FE / SE / --	Prefers undisturbed nest sites on open, sandy/gravelly shores near shallow-water feeding areas in estuaries. Sea beaches, bays, large rivers, bars.	<b>Not Present</b> No suitable habitat is present within the survey area.
<i>Vireo bellii pusillus</i> Least Bell's vireo	FE / SE / --	Riparian areas and drainages. Breed in willow riparian forest supporting a dense, shrubby understory. Oak woodland with a willow riparian understory is also used in some areas, and individuals sometimes enter adjacent chaparral, coastal sage scrub, or desert scrub habitats to forage.	<b>Low</b> Marginal habitat is present within the riparian area in and adjacent to the survey area; however, the CNDDDB does not report any occurrences of this species within the quadrangles evaluated, and the survey area is very likely outside of the current range of this species.
<b>REPTILES AND AMPHIBIANS</b>			
<i>Ambystoma californiense</i> California tiger salamander	FT / ST / --	Annual grassland and grassy understory of valley-foothill hardwood habitats in central and northern California. Need underground refuges and vernal pools or other seasonal water sources.	<b>High</b> No suitable breeding habitat is present within the survey area; however, suitable upland habitat is present and the survey area is within the dispersal range of several potential breeding resources. The CNDDDB reports an occurrence from 1973 that overlaps with a portion of the survey area; however, this this is a non-specific area and the CNDDDB notes that CTS were observed adjacent to Elkhorn Slough. The CNDDDB also reports an occurrence approximately 0.9 mile north of the survey area where suitable breeding habitat may be present.

Species	Status (Service/CDFW/CNPS)	General Habitat	Potential Occurrence within Project Site
<i>Ambystoma macrodactylum croceum</i> Santa Cruz long-toed salamander	FE / SE&CFP / --	Preferred habitats include ponderosa pine, montane hardwood-conifer, mixed conifer, montane riparian, red fir and wet meadows. Occurs in a small number of localities in Santa Cruz and Monterey Counties. Adults spend the majority of the time in underground burrows and beneath objects. Larvae prefer shallow water with clumps of vegetation.	<b>Moderate</b> Marginal upland habitat present within the riparian area within and adjacent to the survey area. No suitable breeding habitat is present. The nearest CNDDDB occurrences are located approximately 340 and 675 feet from the survey area within McClusky Slough and Bennett Slough, respectively.
<i>Aneides flavipunctatus niger</i> Santa Cruz black salamander	-- / CSC / --	Occurs in the fog belt of the outer Coastal Range in mesic forests. This species occurs in moist streamside microhabitats. This species is often found in shallow standing water or seeps. Small geographical range consisting of woodland habitat within the Santa Cruz Mountains in western Santa Clara, northern Santa Cruz, and southernmost San Mateo Counties.	<b>Unlikely</b> No suitable habitat is present within the survey area. The survey area is outside of the currently known range for this species.
<i>Anniella pulchra</i> Northern California legless lizard	-- / CSC / --	Requires moist, warm habitats with loose soil for burrowing and prostrate plant cover, often forages in leaf litter at plant bases; may be found on beaches, sandy washes, and in woodland, chaparral, and riparian areas.	<b>Moderate</b> Marginal habitat is present within the survey area where suitable soils conditions occur. The nearest CNDDDB occurrence is located approximately 1.2 miles from the survey area.
<i>Dicamptodon ensatus</i> California giant salamander	-- / CSC / --	Occurs within the Coast Range from just north of the southern border of Mendocino County to southern Santa Cruz County. Found in wet coastal forests in or around clear, cold permanent and semi-permanent streams and seepages. Typically within elevations ranging from sea level to approximately 3000 feet.	<b>Not Present</b> No suitable habitat is present within the survey area. The survey area is outside of the currently known range for this species.
<i>Emys marmorata</i> Western pond turtle	-- / CSC / --	Associated with permanent or nearly permanent water in a wide variety of habitats including streams, lakes, ponds, irrigation ditches, etc. Require basking sites such as partially submerged logs, rocks, mats of vegetation, or open banks.	<b>Unlikely</b> No suitable habitat is present within the survey area.
<i>Phrynosoma blainvillii</i> Coast horned lizard	-- / CSC / --	Associated with open patches of sandy soils in washes, chaparral, scrub, and grasslands.	<b>Unlikely</b> No suitable habitat is present within the survey area.
<i>Rana boylei</i> Foothill yellow-legged frog	-- / SC&CSC / --	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats, including hardwood, pine, and riparian forests, scrub, chaparral, and wet meadows. Rarely encountered far from permanent water.	<b>Unlikely</b> No suitable habitat is present within the survey area.

Species	Status (Service/CDFW/CNPS)	General Habitat	Potential Occurrence within Project Site
<i>Rana draytonii</i> California red-legged frog	FT / CSC / --	Lowlands and foothills in or near permanent or late-season sources of deep water with dense, shrubby, or emergent riparian vegetation. During late summer or fall adults are known to utilize a variety of upland habitats with leaf litter or mammal burrows.	<b>High</b> No suitable breeding or upland habitat is present within the survey area; however, dispersal habitat present within all undeveloped portions of the survey area. The CNDDDB includes a non-specific occurrence that includes the entire Moss Landing quad; however, it is noted that the habitat is marsh surrounding McClusky Slough, which is located approximately 340 feet from the survey area. Several additional CNDDDB occurrence are located within one mile of the survey area.
<i>Taricha torosa</i> Coast range newt	-- / CSC / --	Occurs mainly in valley-foothill hardwood, valley-foothill hardwood-conifer, coastal scrub, and mixed chaparral but is known to occur in grasslands and mixed conifer types. Seek cover under rocks and logs, in mammal burrows, rock fissures, or man-made structures such as wells. Breed in intermittent ponds, streams, lakes, and reservoirs.	<b>Unlikely</b> No suitable habitat is present within the survey area.
FISH			
<i>Eucyclogobius newberryi</i> Tidewater goby	FE / CSC / --	Brackish water habitats, found in shallow lagoons and lower stream reaches. Tidewater gobies appear to be naturally absent (now and historically) from three large stretches of coastline where lagoons or estuaries are absent and steep topography or swift currents may prevent tidewater gobies from dispersing between adjacent localities. The southernmost large, natural gap occurs between the Salinas River in Monterey County and Arroyo del Oso in San Luis Obispo County.	<b>Not Present</b> No suitable habitat is present within the survey area.
<i>Oncorhynchus mykiss irideus</i> Steelhead (central California coast DPS)	FT / -- / --	Coastal perennial and near perennial streams, with suitable spawning and rearing habitat and no major barriers.	<b>Not Present</b> No suitable habitat is present within the survey area.
<i>Oncorhynchus mykiss irideus</i> Steelhead (south-central California coast DPS)	FT / -- / --	Cold headwaters, creeks, and small to large rivers and lakes; anadromous in coastal streams.	<b>Not Present</b> No suitable habitat is present within the survey area.
<i>Spirinchus thaleichthys</i> Longfin smelt	FC / ST / --	Euryhaline, nektonic & anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefers salinities of 15-30 PPT, but can be found in completely freshwater to almost pure seawater.	<b>Not Present</b> No suitable habitat is present within the survey area.

Species	Status (Service/CDFW/CNPS)	General Habitat	Potential Occurrence within Project Site
<i>Thaleichthys pacificus</i> Eulachon	FT / -- / --	Small, anadromous fish from the eastern Pacific Ocean, commonly called smelt, candlefish, or hooligan. Typically spend 3 to 5 years in saltwater before returning to freshwater to spawn from late-winter through mid-spring. Occur in nearshore ocean waters and to 1,000 feet (300 m) in depth, except for the brief spawning runs into their natal (birth) streams. Spawning grounds are typically in the lower reaches of larger snowmelt-fed rivers with water temperatures ranging from 39 to 50°F. Spawning occurs over sand or coarse gravel substrates.	<b>Not Present</b> No suitable habitat is present within the survey area.
<b>INVERTEBRATES</b>			
<i>Bombus occidentalis</i> Western bumble bee	-- / SC / --	Occurs in open grassy areas, urban parks, urban gardens, chaparral, and meadows. This species generally nest underground. Western bumble bee populations are currently largely restricted to high elevation sites in the Sierra Nevada.	<b>Unlikely</b> Suitable habitat is present within the survey area however, the survey area is outside of the currently known range for this species.
<i>Branchinecta lynchi</i> Vernal pool fairy shrimp	FT / -- / --	Require ephemeral pools with no flow. Associated with vernal pool/grasslands from near Red Bluff (Shasta County), through the central valley, and into the South Coast Mountains Region. Require ephemeral pools with no flow.	<b>Not Present</b> No suitable habitat is present within the survey area.
<i>Cicindela ohlone</i> Ohlone tiger beetle	FE / -- / --	Coastal terraces with remnant stands of open native grassland with clay or sandy soils. Hunt, breed, and dig small vertical burrows along sunny single-track trails and dirt roads (maintained by cattle, hikers, etc.) in coast terrace meadows that still support native grasses. Current range from the City of Scotts Valley to the eastern edge of the City of Santa Cruz.	<b>Not Present</b> No suitable habitat is present within the survey area. The survey area is outside of the currently known range for this species.
<i>Euphilotes enoptes smithi</i> Smith's blue butterfly	FE / -- / --	Most commonly associated with coastal dunes and coastal sage scrub plant communities in Monterey and Santa Cruz Counties. Plant hosts are <i>Eriogonum latifolium</i> and <i>E. parvifolium</i> .	<b>Not Present</b> No suitable habitat is present within the survey area. The plant host species were not identified during surveys in 2019 or 2020.
<i>Trimerotropis infantilis</i> Zayante band-winged grasshopper	FE / -- / --	Open sandy areas with sparse, low annual and perennial herbs on high ridges with sparse ponderosa pine. Often occurs with Ben Lomond wallflower. Restricted to sand parkland habitat found on ridges and hills within the Zayante sandhills habitat in Santa Cruz County. Flight season extends from late May through August.	<b>Not Present</b> No suitable habitat is present within the survey area. The survey area is outside of the currently known range for this species.



Species	Status (Service/CDFW/CNPS)	General Habitat	Potential Occurrence within Project Site
<b>PLANTS</b>			
<i>Agrostis lacuna-vernalis</i> Vernal pool bent grass	-- / -- / 1B	Vernal pool mima mounds at elevations of 115-145 meters. Annual herb in the Poaceae family; blooms April-May. Known only from Butterfly Valley and Machine Gun Flats of Ft. Ord National Monument.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Allium hickmanii</i> Hickman's onion	-- / -- / 1B	Closed-cone coniferous forests, maritime chaparral, coastal prairie, coastal scrub, and valley and foothill grasslands at elevations of 5-200 meters. Bulbiferous perennial herb in the Alliaceae family; blooms March-May.	<b>Not Present</b> Not identified during focused rare plant surveys conducted in 2019.
<i>Arctostaphylos andersonii</i> Anderson's manzanita	-- / -- / 1B	Openings and edges of broadleaved upland forest, chaparral, and north coast coniferous forest at elevations of 60-760 meters. Evergreen shrub in the Ericaceae family; blooms November-May.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Arctostaphylos hookeri</i> ssp. <i>hookeri</i> Hooker's manzanita	-- / -- / 1B	Closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub on sandy soils at elevations of 85-536 meters. Evergreen shrub in the Ericaceae family; blooms January-June.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Arctostaphylos montereyensis</i> Toro manzanita	-- / -- / 1B	Maritime chaparral, cismontane woodland, and coastal scrub on sandy soils at elevations of 30-730 meters. Evergreen shrub in the Ericaceae family; blooms February-March.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Arctostaphylos pajaroensis</i> Pajaro manzanita	-- / -- / 1B	Chaparral on sandy soils at elevations of 30-760 meters. Evergreen shrub in the Ericaceae family; blooms December-March.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Arctostaphylos pumila</i> Sandmat manzanita	-- / -- / 1B	Openings of closed-cone coniferous forests, maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub on sandy soils at elevations of 3-205 meters. Evergreen shrub in the Ericaceae family; blooms February-May.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Arenaria paludicola</i> Marsh sandwort	FE / SE / 1B	Known from only two natural occurrences in Black Lake Canyon and at Oso Flaco Lake. Sandy openings of freshwater of brackish marshes and swamps at elevations of 3-170 meters. Stoloniferous perennial herb in the Caryophyllaceae family; blooms May-August.	<b>Not Present</b> No suitable habitat is present within the survey area. The survey area is outside of the currently known range for this species. Not identified during focused rare plant surveys conducted in 2019.
<i>Astragalus tener</i> var. <i>tener</i> Alkali milk-vetch	-- / -- / 1B	Playas, valley and foothill grassland on adobe clay, and vernal pools on alkaline soils at elevations of 1-60 meters. Annual herb in the Fabaceae family; blooms March-June.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.

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<i>Castilleja ambigua</i> var. <i>insalutata</i> Pink Johnny-nip	-- / -- / 1B	Coastal prairie and coastal scrub at elevations of 0-100 meters. Annual herb in the Orobanchaceae family; blooms May-August.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Centromadia parryi</i> ssp. <i>congdonii</i> Congdon's tarplant	-- / -- / 1B	Valley and foothill grassland on heavy clay, saline, or alkaline soils at elevations of 0-230 meters. Annual herb in the Asteraceae family; blooms May-November.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Chorizanthe minutiflora</i> Fort Ord spineflower	-- / -- / 1B	Sandy openings of maritime chaparral and coastal scrub at elevations of 55-150 meters. Only known occurrences on Fort Ord National Monument. Annual herb in the Polygonaceae family; blooms April-July.	<b>Not Present</b> No suitable habitat within the survey area. The survey area is outside of the currently known range for this species. Not identified during focused rare plant surveys conducted in 2019.
<i>Chorizanthe pungens</i> var. <i>pungens</i> Monterey spineflower	FT / -- / 1B	Maritime chaparral, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland on sandy soils at elevations of 3-450 meters. Annual herb in the Polygonaceae family; blooms April-July.	<b>Not Present</b> Not identified during focused rare plant surveys conducted in 2019.
<i>Chorizanthe robusta</i> var. <i>robusta</i> Robust spineflower	FE / -- / 1B	Openings in cismontane woodland, coastal dunes, maritime chaparral, and coastal scrub on sandy or gravelly soils at elevations of 3-300 meters. Annual herb in the Polygonaceae family; blooms April-September.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Cordylanthus rigidus</i> ssp. <i>littoralis</i> Seaside bird's-beak	-- / SE / 1B	Closed-cone coniferous forests, maritime chaparral, cismontane woodlands, coastal dunes, and coastal scrub on sandy soils, often on disturbed sites, at elevations of 0-425 meters. Annual hemi-parasitic herb in the Orobanchaceae family; blooms April-October.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Ericameria fasciculata</i> Eastwood's goldenbush	-- / -- / 1B	Openings in closed-cone coniferous forest, maritime chaparral, coastal dunes, and coastal scrub on sandy soils at elevations of 30-275 meters. Evergreen shrub in the Asteraceae family; blooms July-October.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Erysimum ammophilum</i> Sand-loving wallflower	-- / -- / 1B	Openings in maritime chaparral, coastal dunes, and coastal scrub on sandy soils at elevations of 0-60 meters. Perennial herb in the Brassicaceae family; blooms February-June.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Erysimum menziesii</i> Menzies' wallflower	FE / SE / 1B	Coastal dunes at elevations of 0-35 meters. Perennial herb in the Brassicaceae family; blooms March-September.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.

Species	Status (Service/CDFW/CNPS)	General Habitat	Potential Occurrence within Project Site
<i>Fritillaria liliacea</i> Fragrant fritillary	-- / -- / 1B	Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland, often serpentinite, at elevations of 3-410 meters. Bulbiferous perennial herb in the Liliaceae family; blooms February-April.	<b>Not Present</b> Not identified during focused rare plant surveys conducted in 2019.
<i>Gilia tenuiflora</i> ssp. <i>arenaria</i> Monterey gilia	FE / ST / 1B	Openings in maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub on sandy soils at elevations of 0-45 meters. Annual herb in the Polemoniaceae family; blooms April-June.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Holocarpha macradenia</i> Santa Cruz tarplant	FT / SE / 1B	Coastal prairies and valley foothill grasslands, often clay or sandy soils, at elevations of 10-220 meters. Annual herb in the Asteraceae family; blooms June-October.	<b>Not Present</b> Not identified during focused rare plant surveys conducted in 2019.
<i>Horkelia cuneata</i> var. <i>sericea</i> Kellogg's horkelia	-- / -- / 1B	Openings of closed-cone coniferous forests, maritime chaparral, coastal dunes, and coastal scrub on sandy or gravelly soils at elevations of 10-200 meters. Perennial herb in the Rosaceae family; blooms April-September.	<b>Not Present</b> Not identified during focused rare plant surveys conducted in 2019.
<i>Horkelia marinensis</i> Point Reyes horkelia	-- / -- / 1B	Coastal dunes, coastal prairie, and coastal scrub on sandy soils at elevations of 5-350 meters. Perennial herb in the Rosaceae family; blooms May-September.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Lasthenia californica</i> ssp. <i>macrantha</i> Perennial goldfields	-- / -- / 1B	Coastal bluff scrub, coastal dunes, and coastal scrub at an elevation of 5-520 meters. Perennial herb in the Asteraceae family. Blooms January – November.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Lasthenia conjugens</i> Contra Costa goldfields	FE / -- / 1B	Mesic areas of valley and foothill grassland, alkaline playas, cismontane woodland, and vernal pools at elevations of 0-470 meters. Annual herb in the Asteraceae family; blooms March-June.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Legenere limosa</i> Legenere	-- / -- / 1B	Vernal pools and wetlands at elevations of 1-880 meters. Annual herb in the Campanulaceae family; blooms April-June.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Microseris paludosa</i> Marsh microseris	-- / -- / 1B	Closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grassland at elevations of 5-300 meters. Perennial herb in the Asteraceae family; blooms April-July.	<b>Not Present</b> Not identified during focused rare plant surveys conducted in 2019.
<i>Monardella sinuata</i> ssp. <i>nigrescens</i> Northern curly-leaved monardella	-- / -- / 1B	Chaparral, coastal dunes, coastal scrub, and lower montane coniferous forest (ponderosa pine sandhills) on sandy soils at elevations of 0-300 meters. Annual herb in the Lamiaceae family; blooms April-September.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.

Species	Status (Service/CDFW/CNPS)	General Habitat	Potential Occurrence within Project Site
<i>Monolopia gracilis</i> Woodland woollythreads	-- / -- / 1B	Openings of broadleaved upland forest, chaparral, cismontane woodland, North Coast coniferous forest, and valley and foothill grassland on serpentinite soils at elevations of 100-1200 meters. Annual herb in the Asteraceae family; blooms February-July.	<b>Not Present</b> The survey area is below the elevation range for this species. Not identified during focused rare plant surveys conducted in 2019.
<i>Pedicularis dudleyi</i> Dudley's lousewort	-- / SR / 1B	Maritime chaparral, cismontane woodland, North Coast coniferous forest, and valley and foothill grassland at elevations of 60-900 meters. Perennial herb in the Orbanchaceae family; blooms April-June.	<b>Not Present</b> Not identified during focused rare plant surveys conducted in 2019.
<i>Penstemon rattanii</i> var. <i>kleei</i> Santa Cruz Mountains beardtongue	-- / -- / 1B	Chaparral and lower montane and North Coast coniferous forests at elevations of 400-1100 meters. Perennial herb in the Plantaginaceae family; blooms May-June.	<b>Not Present</b> No suitable habitat within the survey area; the survey area is below the elevation range for this species. Not identified during focused rare plant surveys conducted in 2019.
<i>Pentachaeta bellidiflora</i> White-rayed pentachaeta	FE / SE / 1B	Cismontane woodland and valley and foothill grasslands, often on serpentinite soils, at elevations of 35-620 meters. Annual herb in the Asteraceae family; blooms March-May.	<b>Not Present</b> Not identified during focused rare plant surveys conducted in 2019.
<i>Piperia yadonii</i> Yadon's rein orchid	FE / -- / 1B	Sandy soils in coastal bluff scrub, closed-cone coniferous forest, and maritime chaparral at elevations of 10-510 meters. Annual herb in the Orchidaceae family; blooms February-August.	<b>Not Present</b> Not identified during focused rare plant surveys conducted in 2019.
<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i> Choris' popcorn-flower	-- / -- / 1B	Mesic areas of chaparral, coastal prairie, and coastal scrub at elevations of 15-160 meters. Annual herb in the Boraginaceae family; blooms March-June.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Plagiobothrys diffusus</i> San Francisco popcorn-flower	-- / SE / 1B	Coastal prairie and valley and foothill grassland at elevations of 60-360 meters. Annual herb in the Boraginaceae family; blooms March-June.	<b>Not Present</b> Not identified during focused rare plant surveys conducted in 2019.
<i>Rosa pinetorum</i> Pine rose	-- / -- / 1B	Closed-cone coniferous forest at elevations of 2-300 meters. Perennial shrub in the Rosaceae family; blooms May-July. Possible hybrid of <i>R. spithamea</i> , <i>R. gymnocarpa</i> , or others; further study needed.	<b>Not Present</b> Not identified during focused rare plant surveys conducted in 2019.
<i>Trifolium buckwestiorum</i> Santa Cruz clover	-- / -- / 1B	Gravelly margins of broadleaved upland forest, cismontane woodland, and coastal prairie at elevations of 105-610 meters. Annual herb in the Fabaceae family; blooms April-October.	<b>Not Present</b> No suitable habitat within the survey area. Not identified during focused rare plant surveys conducted in 2019.
<i>Trifolium hydrophilum</i> Saline clover	-- / -- / 1B	Marshes and swamps, mesic and alkaline valley and foothill grassland, and vernal pools at elevations of 0-300 meters. Annual herb in the Fabaceae family; blooms April-June.	<b>Not Present</b> Not identified during focused rare plant surveys conducted in 2019.

## **STATUS DEFINITIONS**

### **Federal**

- FE = listed as Endangered under the federal Endangered Species Act
- FT = listed as Threatened under the federal Endangered Species Act
- FC = Candidate for listing under the federal Endangered Species Act
- UR = Species that have been petitioned for listing under the ESA and for which a 90 day and/or 12 Month finding has not been published in the Federal Register, as well as species being reviewed through the candidate process but the CNOR has not yet been signed
- = no listing

### **State**

- SE = listed as Endangered under the California Endangered Species Act
- ST = listed as Threatened under the California Endangered Species Act
- SC = Candidate for listing under California Endangered Species Act
- SR = listed as Rare under the California Endangered Species Act
- CFP = California Fully Protected Species
- CSC = CDFW Species of Concern
- = no listing

### **California Native Plant Society**

- 1B = California Rare Plant Rank 1B species; plants rare, threatened, or endangered in California and elsewhere
- 2B = California Rare Plant Rank 2B species; plants rare, threatened, or endangered in California, but more common elsewhere
- = no listing

## **POTENTIAL TO OCCUR**

- Present = known occurrence of species within the site; presence of suitable habitat conditions; or observed during field surveys
- High = known occurrence of species in the vicinity from the CNDDDB or other documentation; presence of suitable habitat conditions
- Moderate = known occurrence of species in the vicinity from the CNDDDB or other documentation; presence of marginal habitat conditions within the site
- Low = species known to occur in the vicinity from the CNDDDB or other documentation; lack of suitable habitat or poor quality
- Unlikely = species not known to occur in the vicinity from the CNDDDB or other documentation, no suitable habitat is present within the site
- Not Present = species was not observed during surveys

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**APPENDIX D**  
WETLAND DELINEATION FORMS

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## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Springfield Water System City/County: Monterey County Sampling Date: 1-30-2020  
 Applicant/Owner: PSM/CSD State: CA Sampling Point: 1  
 Investigator(s): Jami Davis & Patric Krabacher Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc.): bottom of channel Local relief (concave, convex, none): Concave Slope (%): \_\_\_\_\_  
 Subregion (LRR): C Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Santa Ynez Fine Sandy Loam 2-9% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <input checked="" type="checkbox"/>
Remarks: Does not meet the definition of waters of the U.S. as identified in CFR 328.3(a)(8) - ditch dug in an upland to drain rainwater and irrigation from agricultural field to McClusky Slough - some water appears to pool on agricultural road before draining - steep sites, no vegetation	

### VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>None</u>	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>None</u>	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				
1. <u>None</u>	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. <u>None</u>	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>100%</u> % Cover of Biotic Crust _____				

Remarks:  
 Unvegetated channel

**SOIL**

Sampling Point: 1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-12	10YR3/3		None				Loamy sand	
12-15	5Y3/1		None				Silt	
15-18	5Y3/2		None				Sandy clay	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (**LRR C**)
- 1 cm Muck (A9) (**LRR D**)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (**LRR C**)
- 2 cm Muck (A10) (**LRR B**)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes \_\_\_\_\_ No X

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )
	<input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )
	<input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No X Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes \_\_\_\_\_ No X Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes X No \_\_\_\_\_ Depth (inches): 12  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes X No \_\_\_\_\_

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Ditch conveys water during storm events, but does not meet the definition of waters of the U.S. as identified in CFR 328.3(a)(8)

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Springfield Water System City/County: Monterey County Sampling Date: 1-30-2020  
 Applicant/Owner: PSM/CSD State: CA Sampling Point: 2  
 Investigator(s): Jami Davis & Patric Krabacher Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc.): top of bank of channel Local relief (concave, convex, none): Convex Slope (%): \_\_\_\_\_  
 Subregion (LRR): C Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Santa Ynez Fine Sandy Loam 2-9% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <input checked="" type="checkbox"/>
Remarks: Top of bank above steep-sided channel that drains agricultural field to McClusky slough - likely regularly maintained associated with the adjacent agricultural activities	

### VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>None</u>				<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
2. _____				
3. _____				
4. _____				
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
<b>Sapling/Shrub Stratum (Plot size: _____)</b>				
1. <u>Malva parviflora</u>	<u>5%</u>	<u>Y</u>	<u>N/L</u>	
2. _____	<u>1%</u>	<u>N</u>	<u>FAC</u>	
3. _____				
4. _____				
5. _____				
<u>6%</u> = Total Cover				
<b>Herb Stratum (Plot size: _____)</b>				
1. <u>Conium maculatum</u>	<u>75%</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Raphanus sativus</u>	<u>10%</u>	<u>N</u>	<u>N/L</u>	
3. <u>Malva parviflora</u>	<u>2%</u>	<u>N</u>	<u>N/L</u>	
4. <u>Geranium molle</u>	<u>1%</u>	<u>N</u>	<u>N/L</u>	
5. _____				
6. _____				
7. _____				
8. _____				
<u>88%</u> = Total Cover				
<b>Woody Vine Stratum (Plot size: _____)</b>				
1. <u>None</u>				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>2%</u>		% Cover of Biotic Crust _____		
<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>				

Remarks:  
 Although vegetation was not disturbed at the time of the survey, the vegetation is likely regularly disturbed associated with the adjacent agricultural activities as evidenced by the dominance of non-native species

**SOIL**

Sampling Point: 2

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-18	10YR3/3		None				Loamy sand	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (**LRR C**)
- 1 cm Muck (A9) (**LRR D**)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (**LRR C**)
- 2 cm Muck (A10) (**LRR B**)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes _____ No <input checked="" type="checkbox"/>
--	--

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )
<input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

<b>Field Observations:</b> Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes _____ No <input checked="" type="checkbox"/>
--	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Soil moist but not saturated

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Springfield Water System City/County: Monterey County Sampling Date: 1-30-2020  
 Applicant/Owner: PSM/CSD State: CA Sampling Point: 3  
 Investigator(s): Jami Davis & Patric Krabacher Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc.): bottom of channel Local relief (concave, convex, none): Concave Slope (%): \_\_\_\_\_  
 Subregion (LRR): C Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Santa Ynez Fine Sandy Loam 2-9% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <input checked="" type="checkbox"/>
Remarks: Shallow, narrow roadside ditch - no hole dug based on lack of wetland vegetation: partially vegetated with iceplant closer to Hwy 1, but unvegetated where directly adjacent to agricultural field - no defined channel adjacent to agricultural field, but a berm precludes water from running into the field - becomes channelized after passing through a culvert under an agricultural road and then through a culvert under Hwy 1 - regularly disturbed associated with agricultural activities except between the two culverts - does not meet the definition of waters of the U.S. as identified in CFR 328.3(a)(8)	

### VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>
1. <u>None</u>	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: _____ (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
4. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum	(Plot size: _____)			
1. <u>None</u>	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum	(Plot size: _____)			
1. <u>*Carpobrotus edulis</u>	_____	_____	<u>N/L</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum	(Plot size: _____)			
1. <u>None</u>	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____		<b>Hydrophytic Vegetation Indicators:</b> ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 <sup>1</sup> ___ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)		
Remarks: *Channel sides are dominated by ice plant between culverts, which appears to be cut back at base of channel - no wetland plant species observed "upstream" of culvert is unvegetated and regularly disturbed associated with adjacent agricultural activities and parking adjacent to Struve Road		<b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>		

Remarks:  
 \*Channel sides are dominated by ice plant between culverts, which appears to be cut back at base of channel - no wetland plant species observed "upstream" of culvert is unvegetated and regularly disturbed associated with adjacent agricultural activities and parking adjacent to Struve Road

**SOIL**

Sampling Point: 3

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<p><b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b></p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5) (<b>LRR C</b>)</p> <p><input type="checkbox"/> 1 cm Muck (A9) (<b>LRR D</b>)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p>	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> Vernal Pools (F9)</p>	<p><input type="checkbox"/> 1 cm Muck (A9) (<b>LRR C</b>)</p> <p><input type="checkbox"/> 2 cm Muck (A10) (<b>LRR B</b>)</p> <p><input type="checkbox"/> Reduced Vertic (F18)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
---	---	--

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p><b>Restrictive Layer (if present):</b></p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p><b>Hydric Soil Present? Yes _____ No <u>X</u>*</b></p>
---	---

Remarks:

\*No hole dug based on lack of wetland vegetation - soils "upstream" of culverts regularly disturbed associated with adjacent agricultural activities and regular parking of vehicles adjacent to Struve Road

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
<p>Primary Indicators (minimum of one required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1) (<b>Nonriverine</b>)</p> <p><input type="checkbox"/> Sediment Deposits (B2) (<b>Nonriverine</b>)</p> <p><input type="checkbox"/> Drift Deposits (B3) (<b>Nonriverine</b>)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p>	<p>Secondary Indicators (2 or more required)</p> <p><input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> Biotic Crust (B12)</p> <p><input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>

<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes _____ No _____ Depth (inches): _____</p> <p>Water Table Present? Yes _____ No _____ Depth (inches): _____</p> <p>Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____</p>	<p><b>Wetland Hydrology Present? Yes _____ No <u>X</u>*</b></p>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

\*Shallow, narrow roadside ditch - no defined channel adjacent to agricultural field, but a berm precludes water from running into the field - becomes channelized after passing through a culvert under an agricultural road and ends at a culvert under Hwy 1 - unable to determine where outlet is on opposite side of Hwy 1 - no waters of U.S. shown on The National Map - ditch conveys water during storm events, but does not meet the definition of waters of the U.S. as identified in CFR 328.3(a)(8)

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Springfield Water System City/County: Monterey County Sampling Date: 1-30-2020  
 Applicant/Owner: PSM/CSD State: CA Sampling Point: 4  
 Investigator(s): Jami Davis & Patric Krabacher Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): C Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Santa Ynez Fine Sandy Loam 2-9% Slopes NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No   
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> * Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> * Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <input checked="" type="checkbox"/> *
Remarks: *No hole dug due to disturbance and lack of wetland vegetation - channel significantly disturbed and sediment appears to have been recently dug out and deposited on opposite side of road - surface water present - identified on the National Map as a stream with headwaters beginning approx. 600 ft. upstream of survey area that drains to McClusky Slough - no real defined bed and bank due to disturbance, flows into a small culvert under Springfield Rd - vegetation significantly disturbed - shown on NWI as freshwater emergent wetland, but no emergent wetland observed within survey area - likely waters of the U.S. & State	

### VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix lasiolepis*</u>	?		FACW	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____				
3. _____				
4. _____				
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Rubus ursinus</u>			FAC	
2. <u>Conium maculatum</u>			FACW	
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Pennisetum clandestinum</u>			N/L	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Tropaeolum majus</u>			UPL	
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Remarks: *Stumps of cut arroyo willows observed near channel - intact willows present further away from road - other vegetation may have been cleared recently - mostly dominated by kikuyu grass - CA blackberry present in understory of intact riparian - wetland vegetation may be present adjacent, but outside of survey area				

**SOIL**

Sampling Point: 4

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (**LRR C**)
- 1 cm Muck (A9) (**LRR D**)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (**LRR C**)
- 2 cm Muck (A10) (**LRR B**)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

**Hydric Soil Present? Yes \_\_\_\_\_ No X\***

**Remarks:**

\*No hole dug due to lack of wetland vegetation - large amount of sediment present in and surrounding channel: source unknown, may have come from up the road, sediment also piled up across the street - channel seems to have been dug out recently

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) ( <b>Riverine</b> )
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) ( <b>Riverine</b> )
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) ( <b>Riverine</b> )
<input type="checkbox"/> Water Marks (B1) ( <b>Nonriverine</b> )	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) ( <b>Nonriverine</b> )	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) ( <b>Nonriverine</b> )	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	

**Field Observations:**

Surface Water Present? Yes X No \_\_\_\_\_ Depth (inches): 1 in  
 Water Table Present? Yes X No \_\_\_\_\_ Depth (inches): 0 in  
 Saturation Present? (includes capillary fringe) Yes X No \_\_\_\_\_ Depth (inches): 0 in

**Wetland Hydrology Present? Yes X No \_\_\_\_\_**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

**Remarks:**

Approximately 1inch of water present within channel - channel significantly disturbed and sediment appears to have been recently dug out - an additional ditch was dug to direct water off of Springfield Road into the channel - identified on the National Map as a stream with headwaters beginning approx. 600 feet upstream of survey area that drains to McClusky Slough - no real defined bed and bank due to disturbance, flows into a small culvert under Springfield Road



## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Springfield Water System City/County: Monterey County Sampling Date: 1-30-2020  
 Applicant/Owner: PSM/CSD State: CA Sampling Point: 5  
 Investigator(s): Jami Davis & Patric Krabacher Section, Township, Range: \_\_\_\_\_  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): C Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Santa Ynez Fine Sandy Loam 2-9% Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> * Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> * Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <input checked="" type="checkbox"/> *
Remarks: *No hole dug due to inaccessibility viewed from Springfield road above culvert - channel is approx. 12 feet below road level - culvert empties into an approx. 6ft wide pool before narrowing into a channel outside of survey area - surface water present - identified on the National Map as a stream that drains to McClusky Slough - shown on NWI as freshwater forested/shrub wetland, but no emergent wetland observed within survey area	

### VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix lasiolepis*</u>	?		FACW	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____				
3. _____				
4. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Rubus ursinus</u>			FAC	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
2. <u>Conium maculatum</u>			FACW	
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
Herb Stratum (Plot size: _____)				
1. _____				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____				<b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Remarks: *No emergent vegetation observed within channel from viewpoint - Arroyo willow and CA blackberry present along western bank - weedy vegetation present along eastern bank				

**SOIL**

Sampling Point: 5

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes \_\_\_\_\_ No X\*

Remarks:

\*No hole dug due to inaccessibility

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- |  |  |  |
|--|--|--|
| <input checked="" type="checkbox"/> Surface Water (A1)               | <input type="checkbox"/> Salt Crust (B11)                              | <input type="checkbox"/> Water Marks (B1) <b>(Riverine)</b>        |
| <input type="checkbox"/> High Water Table (A2)                       | <input type="checkbox"/> Biotic Crust (B12)                            | <input type="checkbox"/> Sediment Deposits (B2) <b>(Riverine)</b>  |
| <input type="checkbox"/> Saturation (A3)                             | <input type="checkbox"/> Aquatic Invertebrates (B13)                   | <input type="checkbox"/> Drift Deposits (B3) <b>(Riverine)</b>     |
| <input type="checkbox"/> Water Marks (B1) <b>(Nonriverine)</b>       | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                    | <input type="checkbox"/> Drainage Patterns (B10)                   |
| <input type="checkbox"/> Sediment Deposits (B2) <b>(Nonriverine)</b> | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2)               |
| <input type="checkbox"/> Drift Deposits (B3) <b>(Nonriverine)</b>    | <input type="checkbox"/> Presence of Reduced Iron (C4)                 | <input type="checkbox"/> Crayfish Burrows (C8)                     |
| <input type="checkbox"/> Surface Soil Cracks (B6)                    | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)    | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)   | <input type="checkbox"/> Thin Muck Surface (C7)                        | <input type="checkbox"/> Shallow Aquitard (D3)                     |
| <input type="checkbox"/> Water-Stained Leaves (B9)                   | <input type="checkbox"/> Other (Explain in Remarks)                    | <input type="checkbox"/> FAC-Neutral Test (D5)                     |

**Field Observations:**

Surface Water Present? Yes X No \_\_\_\_\_ Depth (inches): N/A  
 Water Table Present? Yes X No \_\_\_\_\_ Depth (inches): 0 in  
 Saturation Present? Yes X No \_\_\_\_\_ Depth (inches): 0 in  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes X No \_\_\_\_\_

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

South of Springfield Road - culvert empties into an approximately 6ft wide pool before narrowing into a channel outside of survey area - culvert is approximately 1ft above surface water, but approximately 10 feet below road level

**Appendix C**  
**Geotechnical Report**



# GEOTECHNICAL INVESTIGATION



**SPRINGFIELD WATER SYSTEM IMPROVEMENTS  
PAJARO SUNNY MESA COMMUNITY SERVICES  
DISTRICT  
MOSS LANDING, CALIFORNIA**

FOR  
**MNS ENGINEERS**  
SANTA BARBARA, CALIFORNIA



CONSULTING GEOTECHNICAL ENGINEERS

19114-M203-C11  
FEBRUARY 2020  
[www.4pacific-crest.com](http://www.4pacific-crest.com)

January 10, 2020  
***Revised February 3, 2020***

Project No. 19114-M203-C11

Mr. Nicholas Panofsky  
MNS Engineers  
201 N. Calle Cesar Chavez, Suite 300  
Santa Barbara, CA 93103

Subject: **Geotechnical Investigation – Design Phase**  
Springfield Water System Improvements  
Pajaro Sunny Mesa Community Services District  
Moss Landing, California

Dear Mr. Panofsky,

In accordance with your authorization, we have performed a geotechnical investigation for proposed water system improvements, in Moss Landing, California.

The accompanying report presents our conclusions and recommendations as well as the results of the geotechnical investigation on which they are based. At your request, we have revised our January 10, 2020 report to provide 2019 CBC seismic design criteria for the tank site buildings, include ring foundations in spread footing design criteria, and report corrosion test results. Figure No. 2 in Appendix A has also been modified to provide additional clarity in identifying boring numbers. This revised report replaces our January 10, 2020 report in its entirety.

The conclusions and recommendations presented in this report are contingent upon our review of the plans during the design phase of the project, and our observation and testing during the construction phase of the project.

Very truly yours,

**PACIFIC CREST ENGINEERING INC.**



Elizabeth M. Mitchell, GE  
President/Principal Geotechnical Engineer  
GE 2718, Expires 12/31/20

Copies: 3 to Client

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**GEOTECHNICAL INVESTIGATION REPORT**  
**Springfield Water System Improvements**  
**Moss Landing, California**

**I. INTRODUCTION**

**PURPOSE AND SCOPE**

This report describes the geotechnical investigation and presents our conclusions and recommendations for the proposed water system improvements located in Moss Landing, California. For purposes of this report, "site" refers to the area of the proposed improvements.

Our scope of services for this project has consisted of:

1. Site reconnaissance to observe the existing conditions.
2. Review of the following published maps:
  - Digital Geologic Map of Monterey County, California, 1934-2001. Monterey County (Calif.). Planning Department, Rosenberg, 2001
  - Map Showing Liquefaction Susceptibility of Monterey County, California, Rosenberg, 2001.
  - Map Showing Relative Fault Hazards of Monterey County, California, Rosenberg, 2001.
  - Map Showing Locations of Liquefaction Associated Ground Failure Effects Related to the Loma Prieta Earthquake, California, of October 17, 1989 – Southern Part, Tinsley et. al, 1998.
  - Map Showing Geology and Liquefaction Potential of Northern Monterey and Southern Santa Cruz Counties, California, Dupre' & Tinsley, 1980
  - U.S. Geological Survey (and the California Geologic Survey), 2018, Quaternary fault and fold database for the United States, accessed December 2019, from the USGS web site: <http://earthquake.usgs.gov/hazards/qfaults/>.
3. The advancement of two (2) cone penetration test soundings (CPT).
4. The drilling and logging of eleven (11) test borings.
5. Laboratory analysis of retrieved soil samples.
6. Engineering analysis of the field and laboratory test results.
7. Review of preliminary plans showing the proposed tank locations and new pipeline alignment, prepared by MNS Engineers, Inc. dated October 2019.



8. Preparation of this report documenting our investigation and presenting geotechnical recommendations for the design and construction of the project.

### PROJECT LOCATION

The project site is located in the Moss Landing area of Monterey County, California. The proposed site improvements encompass the area between Springfield and Struve Roads west of State Highway One, and Springfield Road north of the Moss Landing Middle School on the east side of Highway One. Please refer to the Regional Site Map, Figure No. 1, in Appendix A for the general vicinity of the project site. The project site is approximately located by the following coordinates:

Latitude = 36.837841 degrees  
Longitude = -121.768655 degrees

### PROPOSED IMPROVEMENTS

Based on our review of preliminary plans and discussions with MNS Engineers, it is our understanding that the planned improvements will include the following: installation of two 110,000-gallon bolted steel water storage tanks and associated pumps and mechanical buildings at the existing well site north of Moss Landing Middle School, and approximately 10,700 linear feet of new pipeline network connecting the well site to the existing Springfield Water System at Struve Road. The new pipeline alignment will include Springfield Road, Moss Landing Mobile Home Park, Struve Road and various unimproved access roads on the west side of State Highway One. Pipeline depths are expected to range from approximately 5 to 10 feet below existing grades. It is our understanding that the crossing at State Highway One at Springfield Road will be constructed using trenchless (jack and bore) undercrossing methods. If the proposed development differs significantly from that described above, our office should be contacted for additional recommendations.

## **II. INVESTIGATION METHODS**

### FIELD INVESTIGATION

Eleven, 6-inch diameter test borings were drilled at the site on November 15, 2019 and November 25, 2019. Boring depths ranged from 5 to 26½ feet. The approximate locations of the test borings are shown on Figures No. 2 and 2A, in Appendix A. The drilling method used was hydraulically operated continuous flight augers on a truck mounted drill rig. A geologist from Pacific Crest Engineering Inc. was present during the drilling operations to log the soil encountered and to choose sampler type and locations.

Relatively undisturbed soil samples were obtained at various depths by driving a split spoon sampler 18 inches into the ground. This was achieved by dropping a 140-pound hammer a vertical height of 30 inches. The hammer was actuated with a wire winch. The number of blows required to drive the sampler each 6-inch increment and the total number of blows required to drive the last 12 inches was recorded by the field engineer. The outside diameter of the samplers used was 3-inch or 2-inch and is designated on the Boring Logs as "L" or "T", respectively.





The field blow counts in 6-inch increments are reported on the Boring Logs adjacent to each sample as well as the Standard Penetration Test data (SPT). All SPT data has been normalized to a 2-inch O.D. sampler and is reported on the Boring Logs as SPT "N" values. The normalization method used was derived from the second edition of the Foundation Engineering Handbook (H.Y. Fang, 1991). The method utilizes a Sampler Hammer Ratio which is dependent on the weight of the hammer, height of hammer drop, outside diameter of sampler, and inside diameter of sample.

The soils encountered in the borings were continuously logged in the field and visually described in accordance with the Unified Soil Classification System (ASTM D2488) as described in the Boring Log Explanation, Figures No. 3 and 4, in Appendix A. The soil classification was verified upon completion of laboratory testing in accordance with ASTM D2487.

Appendix A contains the site plan showing the locations of the test borings, our borings logs and an explanation of the soil classification system used. Stratification lines on the boring logs are approximate as the actual transition between soil types may be gradual.

#### CONE PENETROMETER TESTING

Two (2) cone penetrometer soundings were advanced on November 12, 2019. The CPT's were located along Springfield Road in the area where the proposed alignment will cross State Highway One. A staff geologist from Pacific Crest Engineering Inc. was present to supervise the field operations. The sounding was performed in accordance with the ASTM D5778 test method. The locations of the CPT soundings are shown on Figure No. 2 of Appendix A.

The CPT soundings were advanced using a 15 cm<sup>2</sup> piezocone penetrometer with a friction sleeve. A saturated piezo element is placed between the cone and the friction sleeve to obtain dynamic pore pressure parameters. Continuous measurements were made of the tip resistance, the friction sleeve resistance, and the dynamic pore pressure as the cone was pushed into the ground. Please refer to the CPT Report in Appendix B for a more comprehensive discussion of the Cone Penetration Test and associated references regarding CPT interpretations and calculated geotechnical parameters.

Real time data along with correlations between these measurements and soil properties were observed as the probe was advanced so that our engineer and/or geologist could determine the depth of soundings required. CPT-1 was advanced on Springfield Road just east of Highway One to a depth of 31.66 feet (approximate Elevation 101 feet). CPT-2 was advanced on Springfield Road west of Highway One to refusal at a depth of 28.62 feet (approximate Elevation 91 feet).

The results of the CPT site investigation, including plots with interpreted soil types, are presented in Appendix B.

#### LABORATORY TESTING

The laboratory testing program was developed to aid in evaluating the engineering properties of the materials encountered at the site. Laboratory tests performed include:



- Moisture Density relationships in accordance with ASTM D2937.
- Field penetrometer testing to approximate unconfined compressive strength.
- Gradation testing in accordance with ASTM D1140.
- Atterberg Limits testing in accordance with ASTM D4318.
- Unconfined Compression testing in accordance with ASTM D2166.
- "R" Value testing in accordance with California 301.
- Direct Shear testing in accordance with ASTM D3080.
- Corrosivity testing in accordance with CTM 643 (resistivity), CTM 422-mod (chloride), CTM 417-mod (sulfide), and CTM 643 (pH).

The results of the laboratory testing are presented on the boring logs opposite the sample tested and/or presented graphically in Appendix A.

### **III. FINDINGS AND ANALYSIS**

#### **GEOLOGIC SETTING**

The surficial geology in the area of the project site is mapped as Quaternary Terrace Deposits & Marine Sand Deposits (Rosenberg, 2001). Terrace deposits locally are described as *"Weakly consolidated to semiconsolidated, moderately to poorly sorted silt, silty clay, sand, and gravel mostly deposited in a fluvial environment."* Marine Sand deposits locally are described as *"Unconsolidated, gray to buff, fine- to coarse-grained sand on sea floor."* The soils encountered during our field investigation are generally consistent with these descriptions.

Quaternary Basin deposits, most likely associated with the margins of McClusky Slough, are mapped along portions of the access road to the Moss Landing Mobile Home Park and Struve Road. Basin deposits are described as *"unconsolidated, plastic clay and silty clay containing much organic material; locally contains interbedded thin layers of silt and silty sand"*. We encountered materials Borings B-1 and B-11 that appear to be consistent with Basin Deposit materials.

#### **SURFACE CONDITIONS**

The general topography of the project area slopes gently downward to the south from Springfield Road and to the west from Highway 1. The site of the proposed tank facility north of Moss Landing Middle School includes a flat, undeveloped lot adjacent to residential mobile home(s) and related out-structures. The undeveloped lot is generally overgrown with thickly vegetated grasses and shrubs.

The proposed waterline alignment will traverse primarily agricultural farmland between Springfield and Struve Roads before entering the Moss Landing Mobile Park development. The alignment will follow paved streets as well as unpaved farm roads and will connect to the existing Springfield Water System at Struve Road. The roadways show various stages of distress including potholing and alligator cracking.



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## SUBSURFACE CONDITIONS

Our subsurface exploration consisted of two CPT's and eleven small diameter borings, two of which were drilled within the proposed tank site and the remainder along the planned pipeline alignment. The borings and CPT's advanced along the pipeline alignment were generally sited within the road shoulder. The following briefly describes the general subsurface soil conditions encountered within the test borings and CPT soundings. The Logs of Test Borings in Appendix A and CPT plots in Appendix B provide, in more descriptive terms, the soil profiles and classifications, laboratory test results and groundwater conditions encountered at boring location.

The materials encountered in the CPT soundings at the Highway One crossing were interpreted by the CPT as interbedded clayey sand, sand and silt, underlain by fine grained silt and clay to the depths explored.

Subsurface conditions encountered at the proposed tank site (borings B-6 and B-7), generally consisted of approximately two to four feet of silty sand underlain by interbedded clayey sand and sand to the maximum explored depth of 26½ feet. The surficial silty sand was dry and medium dense. The underlying clayey sand and sand was generally, moist, poorly-graded and dense to very dense. The clay portions of these predominately sand materials exhibit low to intermediate plasticity characteristics.

Subsurface conditions varied for the remainder of the borings drilled along the proposed pipeline, as expected for such a large area and the geologic processes that have formed the landscape in this area of north Monterey County. Pavement sections generally consisted of 2 to 3 inches of asphalt overlying 4 to 5 inches of aggregate baserock. The underlying soils generally consisted of predominately sandy soils containing varying fractions of clay and silt, with occasional clay interbeds. A notable exception is boring B-11, which revealed a soil profile comprised entirely of fine-grained, high plasticity clay and silt to the maximum depth explored of 11 ½ feet. The sand soils were generally poorly graded with silt or clay contents ranging from 12% to 49%. The density of these materials ranged from medium dense to very dense. Dense to very dense soils were encountered along Springfield Road and the area of the Highway One crossing at depths ranging from about 5 to 10 feet below the ground surface. Elsewhere the soils were typically medium dense with increasing density at depths ranging from 8 to 17 feet.

Consistencies of the interbedded clay zones, where encountered, ranged from firm to hard but were generally stiff. The clay soils exhibited low to high plasticity characteristics.

Groundwater was encountered within B-3 at an approximate depth of 12½ feet. Groundwater levels along this portion of the proposed pipeline alignment may be influenced by the water level in the nearby McClusky Slough. The phreatic surface within CPT-2 was noted to be about 26 feet below the road surface (approximate elevation 91 feet).

Groundwater was not encountered within the other borings or CPT to the depths explored. It should be noted that the groundwater level was not allowed to stabilize for more than a few hours; therefore, the actual groundwater level may be higher or lower than initially encountered. The groundwater



conditions described in this report reflect the conditions encountered during our subsurface investigation in November of 2019 at the specific locations drilled. It must be anticipated that the perched and regional groundwater tables may vary with location and could fluctuate with variations in rainfall, runoff, irrigation and other changes to the conditions existing at the time our measurements were made.

Please refer the Logs of Test Borings in Appendix A and CPT logs in Appendix B for a more detailed description of the subsurface conditions encountered in each of our test borings.

## FAULTING AND SEISMICITY

### Faulting

Mapped faults which have the potential to generate earthquakes that could significantly affect the subject site are listed in Table No. 1. The fault distances are approximate distances based on the U.S. Geological Survey and California Geological Survey, Quaternary fault and fold database, accessed in November 2019 from the USGS website (<http://earthquake.usgs.gov/hazards/qfaults/>) and overlaid onto Google Earth.

**Table No. 1 - Distance to Significant Faults (Tank Site)**

Fault Name	Distance (miles)	Direction
Zayante-Vergeles	5	Northeast
San Andreas	8½	Northeast
Chupines	10½	West
Monterey Bay-Tularcitos	12	West
Sargent	15½	East

### Seismic Shaking and CBC Design Parameters

Due to the proximity of the site to active and potentially active faults, it is reasonable to assume the site will experience high intensity ground shaking during the lifetime of the project. Structures founded on thick soft soil deposits are more likely to experience more destructive shaking, with higher amplitude and lower frequency, than structures founded on bedrock. Generally, shaking will be more intense closer to earthquake epicenters. Thick soft soil deposits large distances from earthquake epicenters, however, may result in seismic accelerations significantly greater than expected in bedrock.

Selection of seismic design parameters should be determined by the project structural designer. The site coefficients and seismic ground motion values shown in Table 2A below were developed based on AWWA D103 incorporating the ASCE 7-10 standard, and the project site location.



**Table No. 2A – ASCE 7-10 Seismic Design Parameters (Tanks)** <sup>Notes 1, 2</sup>

Seismic Design Parameter	ASCE 7-10 Value
Site Class	D
Spectral Acceleration for Short Periods	$S_s = 1.5g$
Spectral Acceleration for 1-second Period	$S_1 = 0.6g$
Short Period Site Coefficient	$F_a = 1.0$
1-Second Period Site Coefficient	$F_v = 1.5$
MCE Spectral Response Acceleration for Short Period	$S_{MS} = 1.5g$
MCE Spectral Response Acceleration for 1-Second Period	$S_{M1} = 0.9g$
Design Spectral Response Acceleration for Short Period	$S_{DS} = 1.0g$
Design Spectral Response Acceleration for 1-Second Period	$S_{D1} = 0.6g$
Seismic Design Category <sup>3</sup>	D

Note 1: Design values have been obtained by using the ASCE Hazard Tool at <https://asce7hazardtool.online>

Note 2: Seismic Design Category assumes the structure is a Risk Category IV as defined by Table 1.5-1 of ASCE 7-10.

Selection of seismic design parameters should be determined by the project structural designer. The site coefficients and seismic ground motion values shown in Table 2B below were developed based on 2019 CBC incorporating the ASCE 7-16 standard, and the project site location.

**Table No. 2B - 2019 CBC Seismic Design Parameters (Other Buildings)** <sup>Notes 3, 4, 5</sup>

Seismic Design Parameter	ASCE 7-16 Value
Site Class	D
Spectral Acceleration for Short Periods	$S_s = 1.961g$
Spectral Acceleration for 1-second Period	$S_1 = 0.716g$
Short Period Site Coefficient	$F_a = 1.0$
1-Second Period Site Coefficient	$F_v = N/A$ <sup>Note 4</sup>
MCE Spectral Response Acceleration for Short Period	$S_{MS} = 1.961g$
MCE Spectral Response Acceleration for 1-Second Period	$S_{M1} = N/A$ <sup>Note 4</sup>
Design Spectral Response Acceleration for Short Period	$S_{DS} = 1.307g$
Design Spectral Response Acceleration for 1-Second Period	$S_{D1} = N/A$

Note 3: Design values have been obtained by using the ASCE Hazard Tool at <https://asce7hazardtool.online>

Note 4: Per Section 11.4.8 of ASCE 7-16, a ground motion hazard analysis is required for Site Class D sites with  $S_1$  greater than or equal to 0.2. The values provided in this table assume that the value of the seismic response coefficient  $C_s$  can be determined by the structural engineer based on the Exceptions as detailed in Section 11.4.8. This should be verified by the structural designer and Pacific Crest Engineering, Inc. should be contacted for revised Table 2B parameters if these Exceptions are not applicable to the project.

Note 5: Seismic Design Category assumes the structure is a Risk Category IV as defined by Table 1604.5 of the 2019 CBC.



The recommendations of this report are intended to reduce the potential for structural damage to an acceptable risk level, however strong seismic shaking could result in the need for post-earthquake repairs.

### GEOTECHNICAL HAZARDS

A quantitative analysis of geotechnical hazards was beyond our scope of services for this project. In general, the geotechnical hazards associated with the project site include seismic shaking (discussed above), ground surface fault rupture, liquefaction, lateral spreading, landsliding and expansive soils. A qualitative discussion of these hazards is presented below.

#### Ground Surface Fault Rupture

Pacific Crest Engineering Inc. has not performed a specific investigation for the presence of active faults at the project site. Based upon our review of the Monterey County GIS Hazard Maps, the project site is not mapped within a fault hazard zone.

Ground surface fault rupture typically occurs along the surficial traces of active faults during significant seismic events. Since the nearest known active, or potentially active fault trace is mapped approximately 7½ miles from the site, it is our opinion that the potential for ground surface fault rupture to occur at the site may be considered low.

#### Liquefaction and Lateral Spreading

Liquefaction tends to occur in loose, saturated and fine grained cohesionless sands, coarse silts or clays with a low plasticity. These conditions were generally not present within our test borings to the maximum depths explored, however given the variable soil conditions and wide spacing between test borings they could be present elsewhere along the pipeline alignment. In order for liquefaction to occur there must be the proper soil type, soil saturation, and cyclic accelerations of sufficient magnitude to progressively increase the water pressures within the soil mass. Non-cohesive soil shear strength is developed by the point to point contact of the soil grains. As the water pressures increase in the void spaces surrounding the soil grains the soil particles become supported more by the water than the point to point contact. When the water pressures increase sufficiently, the soil grains begin to lose contact with each other resulting in the loss of shear strength and continuous deformation of the soil where the soil appears to liquefy.

Based upon our review of the Monterey County GIS Hazard Maps, the liquefaction hazard is mapped as “low” at the proposed tank site and along the Springfield Road alignment. The majority of the proposed pipeline alignment south of Springfield Road is mapped in a “high” liquefaction hazard zone (Rosenberg, 2001). Conversely, as mapped by Dupre and Tinsley, 1980, the entire project area lies within an area of “low” liquefaction potential. To our knowledge there is no documented evidence of liquefaction or lateral spreading within the project area due to the 1989 Loma Prieta or the 1906 San Francisco events (Rosenberg 2001, Tinsley et. al, 1998).

Based on the results of our investigation, it is our opinion that liquefaction should be considered feasible within portions of the proposed pipeline alignment south of Springfield Road.



Liquefaction induced lateral spreading occurs when a liquefied soil mass fails toward an open slope face or fails on an inclined topographic slope. Based on the results of our investigation we believe the potential exists for lateral spreading to affect the portion of pipeline alignment that lies within 300 feet north of McClusky Slough. We consider the potential for lateral spreading within remainder of the project area to be low.

Landsliding

The subject site and immediate vicinity are relatively flat to gently sloping. It is our opinion that the potential for landsliding to occur and adversely affect the proposed development should be considered negligible.

Expansive Soils

The subject site is underlain by highly variable and interbedded clayey sand and clay soils of low to high expansion potential. Expansive soils were noted at various depths within our borings, and it is possible that other expansive soils exist that our subsurface investigation did not detect. Expansive soils tend to heave during the rainy season and contract during the summer and this shrink/swell action extends down to the depth of seasonal moisture change. When this cyclical volume change occurs on sloping ground it results in “soil creep” due to the downward vector of the shrink/swell action. Seasonal moisture fluctuation and subsequent expansion and contraction of these types of soils typically occurs more near the ground surface where the seasonal moisture fluctuation is the greatest and decreases with depth below ground surface.

SOIL CORROSIVITY

Corrosion is an electrochemical process involving oxidation and reduction reactions. To help determine the corrosive potential of the earth materials along the pipeline alignment, eight samples of the earth materials underlying the site were collected and analyzed. The samples were tested for concentrations of chloride (Cl) and sulfate (SO<sub>4</sub>), and for pH values and resistivity. The laboratory corrosivity test results are included in Figure No. 22 in Appendix A of this report. The analytical results are summarized below.

**Table No. 3 - Corrosivity Test Summary**

Sample Location	Sample Depth (feet)	Soil Resistivity (ASTM G57)	Chloride (ASTM D4327)	Sulfate (ASTM D4327)	pH (ASTM G51)
		Ohm-cm	mg/kg	mg/kg	
B1	1½-5	2,702	35	86	7.8
B2	1½-5	5,867	5	208	6.9
B3	1½ - 9	2,641	34	192	7.4
B4	1-3	1,761	40	113	8.2
B5	4-5	1,080	214	158	7.3
B8	½ to 2	8,459	34	202	6.4
B10	5-6	11,820	9	102	7.2
B11	1-3	521	216	550	6.8



CalTrans defines soil corrosivity in terms of resistivity, pH and soluble salt content (chloride and sulfate concentrations). Refer to the CalTrans Corrosion Guidelines, Version 3.0 (March, 2018) for additional information. According to the Cal Trans Corrosion Guidelines, a corrosive area is defined as an area where the soil and/or water meets one or more of the following conditions:

- The soil resistivity is less than 1,100 ohm-cm
- Chloride concentration is greater than or equal to 500 mg/Kg (ppm)
- Sulfate concentration is greater than or equal to 1500 mg/Kg (ppm)
- The soil pH is 5.5 or less

In comparing the test results to the threshold values, we have determined that soils along Struve Road (B5 and B11) may be corrosive due to low resistivity and elevated chloride values. The remaining samples did not meet the CalTrans threshold values for corrosivity. The corrosion potential for any imported select fill or bedding sand should also be tested for corrosivity. Please refer to Appendix A for specific results of the corrosivity testing by the analytical laboratory (Figure No. 22).

The Project Civil and Structural Engineer and/or Corrosion Specialist should review the aforementioned test results and apply mitigating measures for achieving the design service life of the structure, as they deem necessary.

#### **IV. DISCUSSION AND CONCLUSIONS**

##### GENERAL

1. The results of our investigation indicate that the proposed improvements are feasible from a geotechnical engineering standpoint, provided our recommendations are included in the design and construction of the project.
2. Grading and foundation plans should be reviewed by Pacific Crest Engineering Inc. during their preparation and prior to contract bidding.
3. Pacific Crest Engineering Inc. should be notified at least four (4) working days prior to any site clearing and grading operations on the property in order to observe the stripping and disposal of unsuitable materials, and to coordinate this work with the grading contractor. During this period, a pre-construction conference should be held on the site, with at least the client or their representative, the grading contractor, and one of our engineers present. At this meeting, the project specifications and the testing and inspection responsibilities will be outlined and discussed.
4. The validity of the findings, conclusions and recommendations contained in this report are dependent upon an adequate testing and observation program during the construction phase. Field observation and testing must therefore be provided by a representative of Pacific Crest Engineering Inc., to enable us to form an opinion as to whether the extent of work related to earthwork or foundation excavation complies with the project plans, specifications and our geotechnical





recommendations. It is the responsibility of the owner, or their representative, to ensure that the information and recommendations provided by Pacific Crest Engineering, Inc. are called to the attention of the Contractor and subcontractors and that the necessary steps are taken to ensure that such recommendations are carried out in the field. Pacific Crest Engineering assumes no responsibility for the future performance of work related to grading or foundation excavation that is performed without the full knowledge and direct observation of Pacific Crest Engineering Inc.

#### PRIMARY GEOTECHNICAL CONSIDERATIONS

5. The following section provides geotechnical considerations for the design and construction of the pipeline and are intended for use in design of the project and preparation of the project plans and specifications. It is neither the intent nor within the scope of this investigation to recommend construction procedures or methods used by the Contractor. It is the responsibility of the Contractor to use sound construction procedures and methods of the industry in accordance with local, state and federal safety standards.

6. Variations in soil conditions due to agricultural processing, local grading, or seismic activity can occur and should be expected over segments of the pipeline alignment. Therefore, subsurface conditions at some locations may differ from those observed or inferred from this investigation. The presence of pre-existing utilities and variable trench backfill therein could also impact the site conditions and construction operations.

7. Based upon the results of our investigation, it is our opinion that the primary geotechnical issues associated with the design and construction of the proposed project are the following:

- a. Compressible Soils and Divergent Bearing Conditions: Variable and compressible native soils underlie the upper 2 to 4 feet at the proposed tank site. Additionally, due to remnant effects of demolition and removal of existing structures the upper 2 to 3 feet of surficial soil is likely to be highly disturbed. Building and tank foundations, concrete slabs-on-grade, and pavements underlain by compressible material may be subject to settlement and distress. In order to reduce potential settlement and distress we recommend that soils underlying proposed structure foundations be subexcavated and recompacted as engineered fill. Please refer to the Earthwork and Foundations sections of this report for further recommendations.
- b. Expansive Soils: High plasticity, potentially expansive soils have been identified within the proposed pipeline alignment. These materials appear to be located primarily along the access road between the Moss Landing Mobile Home Park and Struve Road, however there could be other areas that our investigation did not detect. These materials should not be used as backfill beneath or around structures or as trench backfill.
- c. Seismically Induced Settlement: Based on the results of our investigation, it is our opinion that seismically induced settlement due to liquefaction should be considered feasible within portions of the proposed pipeline alignment south of Springfield Road. In addition, the potential exists for lateral spreading to affect the portion of pipeline alignment that lies within



300 feet north of McClusky Slough. Portions of the pipeline may therefore require repair following a strong seismic event.

- d. *Excavation Conditions:* We anticipate excavations should be possible with conventional excavation equipment, however variations in soils conditions are likely and should be expected during construction. Where very moist or saturated sands and soft clays are encountered, trench wall instability is likely to necessitate shoring of trench walls for various portions of the pipeline, especially south of Springfield Road. Any temporary sloping or shoring of trenches and excavations (including temporary dewatering, if required) will be the responsibility of the Contractor.

Shallow groundwater or saturated soil conditions could affect excavation conditions, compaction requirements, backfill specifications and bearing capacity. We anticipate shallow groundwater conditions to persist year-round in certain areas of the proposed alignment, especially in the vicinity of McClusky Slough.

- e. *Special Crossings:* The proposed pipeline alignment is expected to cross State Highway One at Springfield Road using a trenchless (jack and bore) undercrossing method. This method appears generally compatible with the geotechnical conditions observed in CPT-1 and CPT-2. We caution however, that settlements above tunneled reaches may be excessive at the ground surface where the ratio of pipe depth to diameter is insufficient and/or significant earth volume is lost around the pipeline during tunneling operations. Trenchless undercrossing operations will be the responsibility of the Contractor as to methods and job site safety and should be performed by a Contractor with sufficient experience in trenchless pipeline installation.
- f. *Strong Seismic Shaking:* The project site is located within a seismically active area and strong seismic shaking is expected to occur within the design lifetime of the project. Improvements should be designed and constructed in accordance with the most current AWWA Standards and the recommendations of this report to minimize reaction to seismic shaking. Improvements designed and constructed in accordance with applicable codes have an increased potential for experiencing relatively minor damage which should be repairable, however strong seismic shaking could result in the need for post-earthquake repairs.

## **V. RECOMMENDATIONS**

### EARTHWORK

#### Clearing and Stripping

1. The initial preparation of the tank site is expected to consist of the removal of existing structures and their foundations, abandoned underground utilities, concrete slabs, and any subsurface obstructions not slated to remain. All debris and foundation elements from existing structures must be completely removed from the building areas. Septic tanks, leach lines, other buried tanks and/or related appurtenances, if found, must be completely removed. Soils contaminated with deleterious



material should be removed from the site. The extent of this soil removal will be designated by a representative of Pacific Crest Engineering Inc. in the field.

2. Any wells encountered shall be capped in accordance with the requirements and approval of the County Health Department. The strength of the cap shall be equal to the adjacent soil and shall not be located within 5 feet of a structural footing.
3. Surface vegetation, tree roots and organically contaminated topsoil should then be removed ("stripped") from the area to be graded. Tree removal should include the entire stump and root ball. In addition, any remaining debris or large rocks must also be removed (this includes asphalt or rocks greater than 2 inches in greatest dimension). This material may be stockpiled for future landscaping.
4. Any voids created by the removal of deleterious material as outlined above must be backfilled with properly compacted engineered fill which meets the requirements of this report.
5. It is anticipated that the depth of stripping may be 4 to 6 inches (excluding tree roots and root balls). Final required depth of stripping must be based upon visual observations by a representative of Pacific Crest Engineering Inc., in the field. The required depth of stripping will vary based upon the type and density of vegetation across the project site and with the time of year.

#### Subgrade Preparation

6. It is possible that there are areas of man-made fill at the site that our field investigation did not detect. Areas of man-made fill, if encountered within proposed improvement areas, will need to be completely excavated to undisturbed native material. The excavation process should be observed, and the extent designated by a representative of Pacific Crest Engineering Inc., in the field. Any voids created by fill removal must be backfilled with properly compacted engineered fill.
7. After clearing and stripping are completed, the following subexcavation depths are recommended:
  - Structural Foundations: 18 inches below bottom of footing, or 36 inches below design subgrade, whichever is deeper
  - Exterior concrete flatwork/slabs: 24 inches below bottom of slab
  - Interior slab-on-grade: 24 inches below capillary break
  - Roadways and pavements: 12 inches below subgrade
8. Subexcavations should extend at least 5 feet horizontally beyond foundations and at least 2 feet horizontally beyond pavements and flatwork.
9. Final depth of subexcavation should be determined by a representative of Pacific Crest Engineering Inc., in the field.



10. Following clearing, stripping and any necessary subexcavations, the exposed subgrade soil that is to support concrete slabs-on-grade, foundations or pavements should then be scarified 8 inches, and the soil moisture conditioned and compacted as outlined below.

11. If wet or unstable subgrades are encountered at the base of excavations, they may need to further subexcavated and replaced with stabilization fabric, crushed rock or other materials to create a stable working surface. The depth of over-excavations and method used should be determined in the field at the time of construction. All subexcavations should be observed by a representative of Pacific Crest Engineering Inc. and modified as necessary to establish a stable subgrade.

#### Material for Engineered Fill

12. In general, we anticipate that non-expansive native soils can be used as engineered fill for this project. Moderate to highly expansive materials, if encountered, are not suitable as engineered fill below foundations or concrete slab-on-grade, or as trench backfill. If these materials are encountered during earthwork operations, it should be anticipated that additional processing will be required as recommended by a representative of Pacific Crest Engineering, Inc. Highly expansive clay soils, if encountered, will need to be removed replaced with non-expansive engineered fill.

13. Select native and/or imported soils proposed for use as engineered fill should meet the following requirements:

- a. free of organics, debris, and other deleterious materials,
- b. granular in nature, well graded, and contain sufficient binder to allow utility trenches to stand open,
- c. free of rocks in excess of 2 inches in size,
- d. plasticity Index between 4 and 12,
- e. non-expansive,
- f. Minimum Resistance "R" Value of 30.

14. Samples of any proposed imported fill planned for use on this project should be submitted to Pacific Crest Engineering Inc. for appropriate testing and approval not less than ten (10) working days before the anticipated jobsite delivery. This includes proposed import trench sand, drain rock and for aggregate base materials. Imported fill material delivered to the project site without prior submittal of samples for appropriate testing and approval must be removed from the project site.

#### Engineered Fill Placement and Compaction

15. Following any necessary subexcavations and/or subgrade preparation, areas should be brought up to design grades with engineered fill that is moisture conditioned and compacted according to the recommendations of this report.

16. Engineered fill should be placed in maximum 8-inch lifts, before compaction, at a water content which is within 2 to 4 over the laboratory optimum value.



17. The soil on the project site should be compacted as follows:

- a. In pavement areas the upper 8 inches of subgrade, and all aggregate subbase and aggregate base, should be compacted to a minimum of 95% of its maximum dry density,
- b. In pavement areas all utility trench backfill should be compacted to 95% of its maximum dry density,
- c. All remaining soil on the project site should be compacted to a minimum of 90% of its maximum dry density.

18. The maximum dry density will be obtained from a laboratory compaction curve run in accordance with ASTM Procedure #D1557. This test will also establish the optimum moisture content of the material. Field density testing will be performed in accordance with ASTM Test #D6938 (nuclear method).

19. We recommend field density testing be performed in maximum 2-foot elevation differences. In general terms, we recommend at least one compaction test per 500 linear feet of utility trench or retaining wall backfill, and at least one compaction test per 1,000 square feet of building or structure area. This is a subjective value and may be changed by the geotechnical engineer based on a review of the final project layout and exposed field conditions.

#### Cut and Fill Slopes

20. No permanent cut or fill slopes are anticipated. Should cut or fill slopes be proposed, supplemental geotechnical engineering recommendations will be required.

#### Soil Moisture and Weather Conditions

21. If earthwork activities are done during or soon after the rainy season, the on-site soils and other materials may be too wet in their existing condition to be used as engineered fill. These materials may require a diligent and active drying and/or mixing operation to reduce the moisture content to the levels required to obtain adequate compaction as an engineered fill. If the on-site soils or other materials are too dry, water may need to be added. In some cases the time and effort to dry the on-site soil may be considered excessive, and the import of aggregate base may be required.

### PIPELINE CONSTRUCTION AND UTILITIES

#### General

22. To prevent damage to existing utilities it is essential to identify their existence and location, including depth, prior to commencing with open cut or trenchless pipeline installation. General surface utility location methods, keyhole type vacuum excavations or other applicable methods should be used to locate utilities within the zone of influence and to verify their clearance from the pipe to be installed.

23. Where pipe is required to be installed under railroad embankments, highways, streets, or other facilities by jacking, boring or tunneling methods, it is the Contractor's responsibility to ensure



construction shall be made in such a manner that will not interfere with the operation of the railroad, street, highway, or other facility, and shall not weaken or damage any embankment or structure.

24. The pits or trenches excavated to facilitate jacking, boring or tunneling operations shall be backfilled immediately after the installation of the pipe has been completed.

25. Trenchless undercrossing operations will be the responsibility of the Contractor as to methods and job site safety and shall be performed by a Contractor with sufficient experience in trenchless pipeline installation. The Contractor shall furnish for the District Engineer's approval, a plan showing the proposed construction methods, including as applicable, boring methods, location of pits, design for the jacking head, jacking support or back stop, arrangement and position of augers, jacks, pipe guides, etc. The plan should include provisions for maintaining the boring alignment within construction specifications.

26. We recommend a program of measure and monitoring to mitigate potential heave be employed. The monitoring program should include a preconstruction survey of all nearby structures, culverts, manholes and pavement. Nearby structures and utilities should be actively and continuously monitored throughout the trenchless pipeline operation. The monitoring program should be submitted for review and approval by the District Engineer and should be in-place prior to commencing the trenchless pipeline operations.

#### Modulus of Subgrade Reaction

27. Vertical loading on a flexible pipe can cause the pipe to deform. The diameter of the pipe tends to decrease in the vertical direction and increase in the horizontal direction. The composite modulus of subgrade reaction ( $E'_c$ ) is used in the design of buried flexible pipes to estimate the passive resistance developed by the soil when the pipe is vertically loaded.  $E'_c$  is a function of depth of cover, trench width, the diameter of the pipe, the modulus ( $E'_b$ ) of the pipe zone material (the soil and bedding material directly surrounding the pipe), and the modulus ( $E'_n$ ) of the native material adjacent to the trench walls.

28. The native soils encountered during our subsurface investigation generally consisted of medium dense to dense silty to clayey sand (SM, SC) and stiff sandy clay, (CL, CI).

29. The following table provides preliminary values for the Modulus of Subgrade Reaction ( $E'_n$ ) for open-cut pipe embedment.



**Table No. 4 – Modulus of Subgrade Reaction**

Type of Soil	Modulus of Subgrade Reaction ( $E'_b, E'_n$ ) <sup>(1)</sup> for open-cut trench installation
Expansive Clays and Silts (CH, MH, Liquid Limit	Do not use as backfill
Clays and Silts (CL, CI, ML)	700 psi <sup>(2)</sup>
Sand (SM, SC)	900 psi <sup>(2)</sup>

(1) Jey Jeyapalan P. E., “Modulus of Soil Reaction (E') Values for Pipeline Design”

(2) The above values apply when the soil cover is between 0 and 5 feet. These values may be increased by 25 psi for every foot of soil cover above the pipe greater than 5 feet.

30. To determine  $E'_c$  for the buried pipe  $E'_n$  for the native soil and  $E'_b$  for the backfill material must be determined then combined using the following formula:

$$E'_c = S_c E'_b$$

31. The value of  $S_c$  is a function of  $E'_n/E'_b$  and  $B_d/D$  where  $B_d$  is the width of the trench at the pipeline and  $D$  is the diameter of the pipe.

**Table No. 5 –  $S_c$  Values**

$E'_n/E'_b$	$S_c$ for $B_d/D^*$					
	1.5	2.0	2.5	3.0	4.0	5.0
0.1	0.15	0.30	0.60	0.80	0.90	1.00
0.2	0.30	0.45	0.70	0.85	0.92	1.00
0.4	0.50	0.60	0.80	0.90	0.95	1.00
0.6	0.70	0.80	0.90	0.95	1.00	1.00
0.8	0.85	0.90	0.95	0.98	1.00	1.00
1.0	1.00	1.00	1.00	1.00	1.00	1.00
1.5	1.30	1.15	1.10	1.05	1.00	1.00
2.0	1.50	1.30	1.15	1.10	1.05	1.00
3.0	1.75	1.45	1.30	1.20	1.08	1.00
$\geq 5.0$	2.00	1.60	1.40	1.25	1.10	1.00

\*Jey Jeyapalan P. E., “Modulus of Soil Reaction (E') Values for Pipeline Design”

### Trenching, Open-Cut Excavations and Shoring

32. Open-cut excavations may be used to create trenches for pipeline installation and for constructing the insertion and reception pits associated with trenchless pipeline construction. There may be some sections of the pipeline alignment where it may be feasible to slope the trench sides to provide a safe environment for pipe installations. Alternatively, the trenches and pit walls may be vertically cut and shored. Excavation pits and trench excavations should have either temporary sidewall slopes constructed in accordance with CAL-OSHA guidelines or be mechanically shored.

33. It must be understood that on-site safety is the *sole responsibility* of the Contractor, and that the Contractor shall designate a *competent person* (as defined by CAL-OSHA) to monitor the slope



excavation prior to the start of each work day, and throughout the work day as conditions change. The competent person designated by the Contractor shall determine if flatter slope gradients are more appropriate, or if shoring should be installed or modified to protect workers in the vicinity of the slope excavation. Refer to Title 8, California Code of Regulations, Sections 1539-1543.

34. Excavation shoring is the sole responsibility of the contractor. All excavations must be evaluated for stability prior to entry. The contractor must act in accordance with the project specifications, Cal/OSHA and/or any other applicable government regulation concerning excavation safety and shoring.

35. Excavation design and shoring systems should be submitted to the District Engineer a minimum of three weeks prior to construction for a review to determine the conformance of the design with standard engineering practices and specific site conditions. The shoring submittal should include alternative systems that are contingent upon the actual soil and groundwater conditions encountered during construction. The contractor must be prepared to install the alternative shoring systems in a timely manner should the initial system not be appropriate for achieving the minimum safety and performance requirements. The actual shoring systems used should be modified during construction, if necessary, and must be based on the actual soil and groundwater conditions encountered at the time of construction.

36. We anticipate that a retained excavation support system will be used for open-cut trenching in most areas. A braced excavation system could limit lateral deflection of the trench walls and limit settlement behind the shoring.

37. The native soils encountered during our subsurface investigation along the pipeline alignment vary in composition and consistency in both the vertical and horizontal directions. The soils encountered generally consisted of medium dense clayey/silty sand, and stiff sandy clay (SM, SC, CL, CI). Based on our field and laboratory investigations we recommend that for sloping and benching design purposes, the subsurface soils be preliminarily classified as Type C soils in accordance with Cal/OSHA. The actual sloping and benching systems should be based on the actual soil and groundwater conditions encountered at the time of construction.

38. Shoring systems that do not positively buttress the excavation walls and allow trench side walls to move into the excavation may result in settlement and damage to adjacent pavement, utilities and structures. To help create a positive buttress, we recommended that all voids behind the shoring system be completely filled with soil or gravel backfill while the shoring work is in progress. The following table provides a preliminary rough estimate of potential surface settlement for positively shored excavations.





**Table No. 6 - Potential Surface Settlement of Passively Shored Excavations**

Soil Type	Surface Settlement (% of Excavation Depth)	Lateral Zone of Disturbance (Multiples of Excavation Depth)
Stiff Clay	<1%H	2H
Sand	0.5%H	H

39. The temporary shoring wall system chosen by the designer should be designed using the geotechnical design criteria presented in the “Lateral Pressures” section of this report.

40. The “top” of any temporary cut slope should be set-back at least ten feet (measured horizontally) from any nearby structure or property line. Any pit or trench excavation that cannot meet these side slope gradients will need to have a shoring system designed to support steeper sidewall gradients.

#### Excavatability

41. Based on the soils encountered in our borings, we anticipate that excavations may generally be constructed using appropriately-sized, conventional excavators. Contractors must independently assess the excavatability of the earth material along the pipeline alignment and choose suitable equipment and excavation methods.

#### Excavation Dewatering

42. We anticipate shallow groundwater conditions to persist year-round in certain areas of the proposed alignment, especially in the vicinity of McClusky Slough.

43. Pipeline construction should be performed in dry excavations. The design, construction and installation of the groundwater dewatering systems, if required, is the sole responsibility of the Contractor. The groundwater dewatering systems should be based on the actual groundwater conditions encountered at the time of construction. Dewatering plans should be submitted to the project design professionals for review prior to execution.

#### Utility Trench Backfill

44. Following the installation of the new pipeline, the trenches and insertion/exit pits should be backfilled with either approved native soil or import fill. All native and import fill should be placed in maximum 8 inch lifts, before compaction.

45. In general, we anticipate that excavated non-expansive native soil may be re-used as engineered fill provided it meets the criteria provided above. We recommend that the upper 2 feet of trench backfill beneath road or pavement areas consist of approved non-expansive engineered fill or Class 2 aggregate base.



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46. Utility trenches that are parallel to the sides of building or tank structures should be placed so that they do not extend below a line sloping down and away at a 2:1 (horizontal to vertical) slope from the bottom outside edge of all footings.
47. Utility pipes should be designed and constructed so that the top of pipe is a minimum of 24 inches below the finish subgrade elevation of any road or pavement areas. Any pipes within the top 24 inches of finish subgrade should be concrete encased, per design by the project civil engineer.
48. For the purpose of this section of the report, backfill is defined as material placed in a trench starting one foot above the pipe, and bedding is all material placed in a trench below the backfill.
49. Unless concrete bedding is required around utility pipes, free-draining clean sand should be used as bedding. Sand bedding should be compacted to at least 95 percent relative compaction. Clean sand is defined as 100 percent passing the #4 sieve, and less than 5 percent passing the #200 sieve.
50. Approved imported clean sand or native soil should be used as utility trench backfill. Backfill in trenches located under and adjacent to structural fill, foundations, concrete slabs and pavements should be placed in horizontal layers no more than 8 inches thick. This includes areas such as sidewalks, patios, and other hardscape areas. Each layer of trench backfill should be water conditioned and compacted to at least 95 percent relative compaction
51. All utility trenches beneath perimeter footing or grade beams should be backfilled with controlled density fill (such as 2-sack sand\cement slurry) to help minimize potential moisture intrusion below interior floors. The length of the plug should be at least three times the width of the footing or grade beam at the building perimeter, but not less than 36 inches. A representative from Pacific Crest Engineering Inc. should be contacted to observe the placement of slurry plugs. In addition, all utility pipes which penetrate through the footings, stemwalls or grade beams (below the exterior soil grade) should also be sealed water-tight, as determined by the project civil engineer or architect.
52. Utility trenches which carry “nested” conduits (stacked vertically) should be backfilled with a control density fill (such as 2-sack sand\cement slurry) to an elevation one foot above the nested conduit stack. The use of pea gravel or clean sand as backfill within a zone of nested conduits is not recommended.
53. A representative from our firm should be present to observe the bottom of all trench excavations, prior to placement of utility pipes and conduits. In addition, we should observe the condition of the trench prior to placement of sand bedding, and to observe compaction of the sand bedding, in addition to any backfill planned above the bedding zone.
54. Jetting of the trench backfill is not recommended as it may result in an unsatisfactory degree of compaction.



55. Trenches must be shored as required by the local agency and the State of California Division of Industrial Safety construction safety orders.

### LATERAL PRESSURES

56. Vertical excavations may be temporarily shored with a variety of methods including sheet piling, soldier piers with lagging, braced shoring or other techniques. Our borings indicate that the vertical excavations associated with the project will be excavated in a variety of divergent earth material including silty sand, clayey sand, and sandy clay. Shoring methods may vary and will depend on the soil actually exposed along the trench sides. Shoring design and construction must be provided by the Contractor and their shoring designer.

57. The following lateral earth pressure values may be used for the design of structures that will be retaining soil. Active earth pressure values may be used when walls are free to yield an amount sufficient to develop the active earth pressure condition (about 1/2% of height). When walls are restrained, use at-rest values.

**Table No. 7 - Lateral Earth Pressures**

Ultimate Static Lateral Earth Pressures Expressed as an Equivalent Fluid Density in a triangular distribution		
Backfill Slope (H:V)	Active Earth Pressure (psf/ft of depth)	At-rest Earth Pressure (psf/ft of depth)
Level	45	75
3:1	48	98
2:1	60	108

58. For resisting passive earth pressure use 350 psf/ft of depth. Ignore passive pressure in the upper two feet of embedment.

59. Any live or dead loads which will transmit a force to the wall, refer to the Surcharge Pressure Diagram in Appendix A.

60. The above criteria are based on fully drained conditions. If the walls are not able to be fully drained, hydrostatic forces should be added to the wall, as appropriate.

### TANK SITE FOUNDATIONS

61. The following recommendations are based on the proposed tank and building location envelopes as shown on Figure 2A of this report. If the building sites are changed, we request the opportunity to review proposed plans to confirm if these recommendations still apply.



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### Spread Footings

62. We recommend the proposed structures be supported by reinforced concrete spread foundations embedded into compacted engineered fill as outlined in the Earthwork section of this report. Spread footing systems could consist of continuous perimeter footings in conjunction with either isolated or continuous interior foundations or concrete slabs. A perimeter ring footing may be used to act as a continuous perimeter footing to support the outer tank walls. Geotechnical design parameters for these systems are provided below.

63. Tank and building areas should be underlain by soil subgrades that have been prepared as outlined in the Earthwork section of this report. We recommend a six-inch layer of compacted Class 2 aggregate base be provided below the bottom of the water tank.

64. All footings must be trenched at least 18 inches below lowest adjacent pad grade.

65. Footings should be designed for the following allowable bearing capacity:

- a. 2,000 psf for Dead plus Live Load
- b. a 1/3rd increase for Seismic or Wind Load

66. In computing the pressures transmitted to the soil by the footings, the embedded weight of the footing may be neglected.

67. No footings shall be constructed with the intent of placing engineered fill against the footing after the footing is poured and counting that engineered fill as part of the embedment depth of the footing.

68. Footings may be assumed to have a resistance to lateral sliding coefficient of 0.30.

69. Footings may be assumed to have a lateral bearing pressure resistance value of 350 psf/foot. The upper one foot of soil should be ignored when calculating lateral resistance.

70. Passive soil resistance and friction on the base of the footing may be used in combination with no reduction.

71. Passive resistance between the sides of the footing and the adjacent soil is only applicable where concrete is placed neatly against undisturbed soil. Voids created by concrete forms should be backfilled with compacted engineered fill or concrete.

72. The footing excavations must be free of loose material prior to placing concrete. The footing excavations should be thoroughly moisture conditioned prior to placing concrete.

73. Provided our recommendations are followed, under static loading conditions, we estimate that total post-construction foundation settlement will be less than 1 inch, and post-construction differential foundation settlement will be less than 1/2 inch.



74. Footing excavations must be observed by a representative of Pacific Crest Engineering Inc. before placement of formwork, steel and concrete to ensure bedding into proper material.

75. The footings should contain steel reinforcement as determined by the project civil or structural engineer in accordance with applicable CBC or ACI Standards.

#### SLAB-ON-GRADE CONSTRUCTION

76. In addition to the recommendations presented below, design and construction of interior concrete slab-on-grade floors should also follow Section 4.505.2 of the 2016 California Green Building Standards Code, which includes installing a vapor retarder in direct contact with concrete and a mix design that addresses bleeding, shrinkage and curling.

77. Concrete slabs-on-grade should bear upon non-expansive engineered fill that has been prepared as described in the Earthwork section of this report.

78. All exterior slabs, patios, walkways, etc., should be structurally independent of structural foundation system(s).

79. Interior slabs may be structurally integrated with the footings. If the slabs are constructed as “free floating” slabs, they should be provided with a minimum ¼ inch felt separation between the slab and footing. The slabs should be separated into approximately 15’ x 15’ square sections with dummy joints or similar type crack control devices.

80. All interior concrete slabs-on-grade should be underlain by a minimum 6 inch thick capillary break of ¾ inch clean crushed rock (no fines). It is recommended that neither Class II baserock nor sand be employed as the capillary break material.

81. Where floor coverings are anticipated or vapor transmission may be a problem, a vapor retarder/membrane should be placed between the capillary break layer and the floor slab in order to reduce the potential for moisture condensation under floor coverings. We recommend a high quality vapor retarder at least 10 mil thick and puncture resistant (Stego Wrap or equivalent). The vapor retarder must meet the minimum specifications for ASTM E-1745, Standard Specification For Water Vapor Retarder. Please note that low density polyethylene film (such as Visqueen) may meet minimum current standards for permeability but not puncture resistance. Laps and seams should be overlapped at least six inches and properly sealed to provide a continuous layer beneath the entire slab that is free of holes, tears or gaps. Joints and penetrations should also be properly sealed.

82. Floor coverings should be installed on concrete slabs that have been constructed according to the guidelines outlined in ACI 302.2R and the recommendations of the flooring material manufacturer.

83. Currently, ACI 302-1R and Section 4.505.2 of the 2016 California Green Building Standards Code recommend that concrete slabs to receive moisture sensitive floor coverings be placed directly upon the vapor retarder, with **no sand cushion**. ACI states that vapor retarders are not effective in



preventing residual moisture within the concrete slab from migrating to the surface. Including a low water-to-cement ratio (less than 0.50) and/or admixtures into the mix design are generally necessary to minimize water content, reduce soluble alkali content, and provide workability to the concrete. As noted in CIP 29 (*Concrete in Practice by the National Ready Mixed Concrete Association*), placing concrete directly on the vapor retarder can also create potential problems. If environmental conditions do not permit rapid drying of bleed water from the slab surface then the excess bleeding can delay finishing operations (refer to CIP 13, 19 and 20). Most of these problems can be alleviated by using a concrete with a low water content, moderate cement factor, and well-graded aggregate with the largest possible size. With the increased occurrence of moisture related floor covering failures, minor cracking of floors placed on a vapor retarder and other problems discussed here are considered a more acceptable risk than failure of floor coverings, and these potential risks should be clearly understood by the Client and Project Owner.

84. If a sand layer is chosen as a cushion for slabs without floor coverings, it should consist of a clean sand. Clean sand is defined as 100 percent passing the #4 sieve, and less than 5 percent passing the #200 sieve.

85. Requirements for pre-wetting of the subgrade soils prior to the pouring of the slabs will depend on the specific soils and seasonal moisture conditions and will be determined by a representative of Pacific Crest Engineering Inc. at the time of construction. It is important that the subgrade soils be properly moisture conditioned at the time the concrete is poured. Subgrade moisture contents should not be allowed to exceed our moisture recommendations for effective compaction, and should be maintained until the slab is poured.

86. Recommendations given above for the reduction of moisture transmission through the slab are general in nature and present good construction practice. Moisture protection measures for concrete slabs-on-grade should meet applicable ACI and ASTM standards. Pacific Crest Engineering Inc. are not waterproofing experts. For a more complete and specific discussion of moisture protection within the structure, a qualified waterproofing expert should be consulted to evaluate the general and specific moisture vapor transmission paths and any impact on the proposed construction. The waterproofing consultant should provide recommendations for mitigation of potential adverse impacts of moisture vapor transmission on various components of the structure as deemed appropriate.

87. Slab thickness, reinforcement, and doweling should be determined by the project civil or structural engineer. The use of welded wire mesh is not recommended for slab reinforcement.

#### PAVEMENT DESIGN

88. We obtained representative samples of soil along the proposed pipeline alignment for "R"-Value testing. The results of the "R"-Value tests are presented in the table below.



**Table No. 8 - "R"-Value Test Results**

Sample Location	Soil Type	"R"-Value
R-1 B1, B2 & B3	Dark Brown Silty SAND w/ Gravel	17
R-2 Boring B5	Dark Brown Clayey SAND w/Gravel	15

89. The preliminary design of the pavement sections noted below is based on an "R" Value of 15. The soil type must be corroborated in the field at the time of construction and, if necessary, modifications made to these tentative sections.

90. Pacific Crest Engineering Inc. has not performed a site specific traffic study to determine the actual traffic indices associated with this project. These values are for general design purposes only and the values may need modification. Traffic volume and equivalent axle loads that exceed the assumed TI could be destructive to the pavement, resulting in an accelerated rate of deterioration and the need for increased maintenance.

91. The following tables provide flexible pavement design which is based on the Caltrans Highway Design Manual - Chapter 630. The design thickness layer was determined to the nearest 0.5 inch, and includes a factor of 0.20 feet added to the asphalt concrete and aggregate base thicknesses, as outlined in the design procedure. Based on this procedure, the following minimum pavement sections are recommended:

**Table No. 9 - Recommended Pavement Sections ("R"-Value = 15)**

Material	Traffic Index			
	4	4½	5	6
Asphalt Concrete	2 inches	2.5 inches	3.0 inches	3.5 inches
Class 2 Aggregate Base R=78 min.	7 inches	8 inches	8 inches	11 inches

92. To have the selected pavement sections perform to their greatest efficiency, it is very important that the following items be considered:

- a. Properly scarify and moisture condition the upper 8 inches of the subgrade soil and compact it to a minimum of 95% of its maximum dry density, at a moisture content of 1 to 3% over the optimum moisture content for the soil.
- b. Provide sufficient gradient to prevent ponding of water.
- c. Use only quality materials of the type and thickness (minimum) specified. All aggregate base and subbase must meet Caltrans Standard Specifications for Class 2 materials and be angular in shape. All Class 2 aggregate base should be ¾ inch maximum in aggregate size.



- d. Compact the base and subbase uniformly to a minimum of 95% of its maximum dry density.
- e. Use ½ inch maximum, Type “A” medium graded asphaltic concrete. Place the asphaltic concrete only during periods of fair weather when the free air temperature is within prescribed limits by Cal Trans Specifications.
- f. Porous pavement systems which consist of porous paving blocks, asphaltic concrete or concrete are generally not recommended due to the potential for saturation of the subgrade soils and resulting increased potential for a shorter pavement life. At a minimum, porous pavement systems should include a layer of Mirafi HP370 geotextile fabric placed on the subgrade soil beneath the porous paving section. These pavement systems should only be used with the understanding by the Owner of the increased potential for pavement cracking, rutting, potholes, etc.
- g. Maintenance should be undertaken on a routine basis.

#### SURFACE DRAINAGE

93. Surface water drainage is the responsibility of the project civil engineer. The following should be considered by the civil engineer in design of the project.

94. Surface water must not be allowed to pond or be trapped adjacent to foundations, or on building pads and parking areas.

95. All roof eaves should be guttered, with the outlets from the downspouts provided with adequate capacity to carry the storm water away from structures to reduce the possibility of soil saturation and erosion. The connection should be in a closed conduit which discharges at an approved location away from structures and graded areas.

96. Slope failures can occur where surface drainage is allowed to concentrate on unprotected slopes. Appropriate landscaping and surface drainage control around the project area is imperative in order to minimize the potential for shallow slope failures and erosion. Stormwater discharge locations should not be located at the top or on the face of any slope.

97. Final grades should be provided with positive gradient away from all foundation elements. Soil grades should slope away from foundations at least 5 percent for the first 10 feet. Impervious surfaces should slope away from foundations at least 2 percent for the first 10 feet. Concentrations of surface runoff should be handled by providing structures, such as paved or lined ditches, catch basins, etc.

98. Irrigation activities at the site should be done in a controlled and reasonable manner.

99. Following completion of the project we recommend that storm drainage provisions and performance of permanent erosion control measures be closely observed through the first season of





significant rainfall, to determine if these systems are performing adequately and, if necessary, resolve any unforeseen issues.

100. The building and surface drainage facilities must not be altered nor any filling or excavation work performed in the area without first consulting Pacific Crest Engineering Inc. Surface drainage improvements developed by the project civil engineer must be maintained by the property owner at all times, as improper drainage provisions can produce undesirable affects.

### EROSION CONTROL

101. The surface soils are classified as having a moderate potential for erosion. The finished ground surface should be planted with ground cover and continually maintained to minimize surface erosion. For specific and detailed recommendations regarding erosion control on and surrounding the project site, you should consult your civil engineer or an erosion control specialist.

### PLAN REVIEW

102. We respectfully request an opportunity to review the project plans and specifications during preparation and before bidding to ensure that the recommendations of this report have been included and to provide additional recommendations, if needed. These plan review services are also typically required by the reviewing agency. Misinterpretation of our recommendations or omission of our requirements from the project plans and specifications may result in changes to the project design during the construction phase, with the potential for additional costs and delays in order to bring the project into conformance with the requirements outlined within this report. Services performed for review of the project plans and specifications are considered “post-report” services and billed on a “time and materials” fee basis in accordance with our latest Standard Fee Schedule.

## **VI. LIMITATIONS AND UNIFORMITY OF CONDITIONS**

1. This Geotechnical Investigation was prepared specifically for MNS Engineers and for the specific project and location described in the body of this report. This report and the recommendations included herein should be utilized for this specific project and location exclusively. This Geotechnical Investigation should not be applied to nor utilized on any other project or project site. Please refer to the ASFE “Important Information about Your Geotechnical Engineering Report” attached with this report.
2. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that planned at the time, our firm should be notified so that supplemental recommendations can be provided.
3. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are called to the attention of the Architects and Engineers for the project and incorporated into the plans, and that



the necessary steps are taken to ensure that the Contractors and Subcontractors carry out such recommendations in the field.

4. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural process or the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or partially, by changes outside of our control. This report should therefore be reviewed in light of future planned construction and then current applicable codes. This report should not be considered valid after a period of two (2) years without our review.

5. This report was prepared upon your request for our services in accordance with currently accepted standards of professional geotechnical engineering practice. No warranty as to the contents of this report is intended, and none shall be inferred from the statements or opinions expressed.

6. The scope of our services mutually agreed upon for this project did not include any environmental assessment or study for the presence of hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site.



# Important Information About Your Geotechnical Engineering Report

*Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.*

*The following information is provided to help you manage your risks.*

## Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply the report for any purpose or project except the one originally contemplated.*

## Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

## A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

## Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

## A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

## A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

## Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

## Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

## Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

## Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

## Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

## Rely on Your ASFE-Member Geotechnical Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



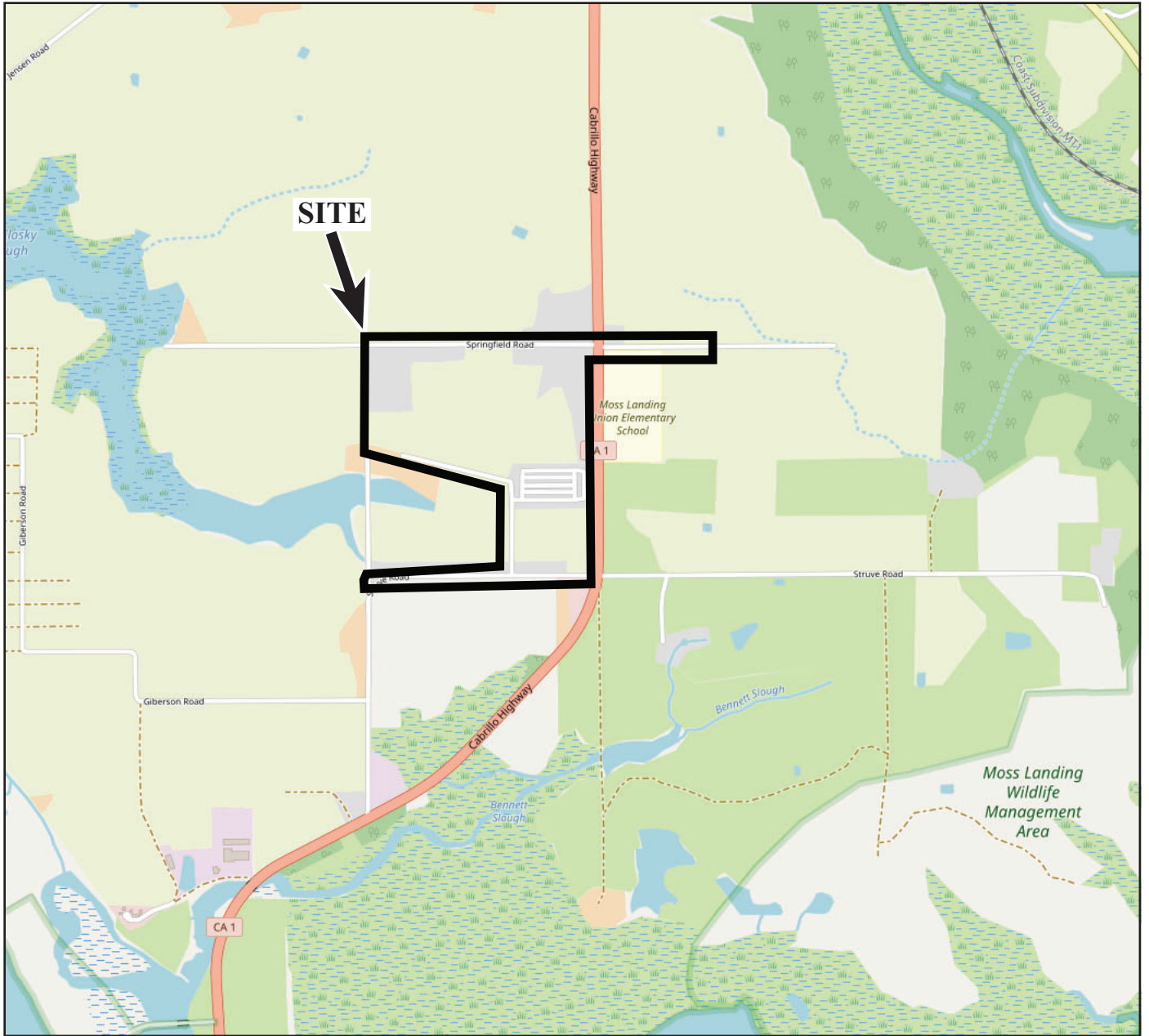
8811 Colesville Road/Suite G106, Silver Spring, MD 20910  
Telephone: 301/565-2733 Facsimile: 301/589-2017  
e-mail: [info@asfe.org](mailto:info@asfe.org) [www.asfe.org](http://www.asfe.org)

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## APPENDIX A

Regional Site Map  
Site Map Showing Test Borings  
Key to Soil Classification  
Log of Test Borings  
Atterberg Limits  
R-Value Test Results  
Surcharge Pressure Diagram  
Corrosivity Test Results



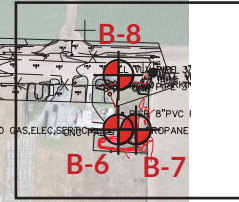


Base Map: © OpenStreetMap contributors






**Regional Site Map**  
Springfield Water System Improvements  
Moss Landing, California

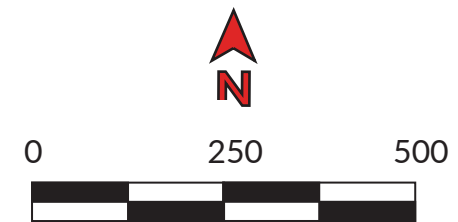
Figure No. 1  
Project No. 19114  
Date: 1/10/20



See Figure 2A

**LEGEND**

- B-11**  Approximate location of test boring
- CPT-2**  Approximate location of CPT sounding
- R-1**  Approximate location of R-Value sample



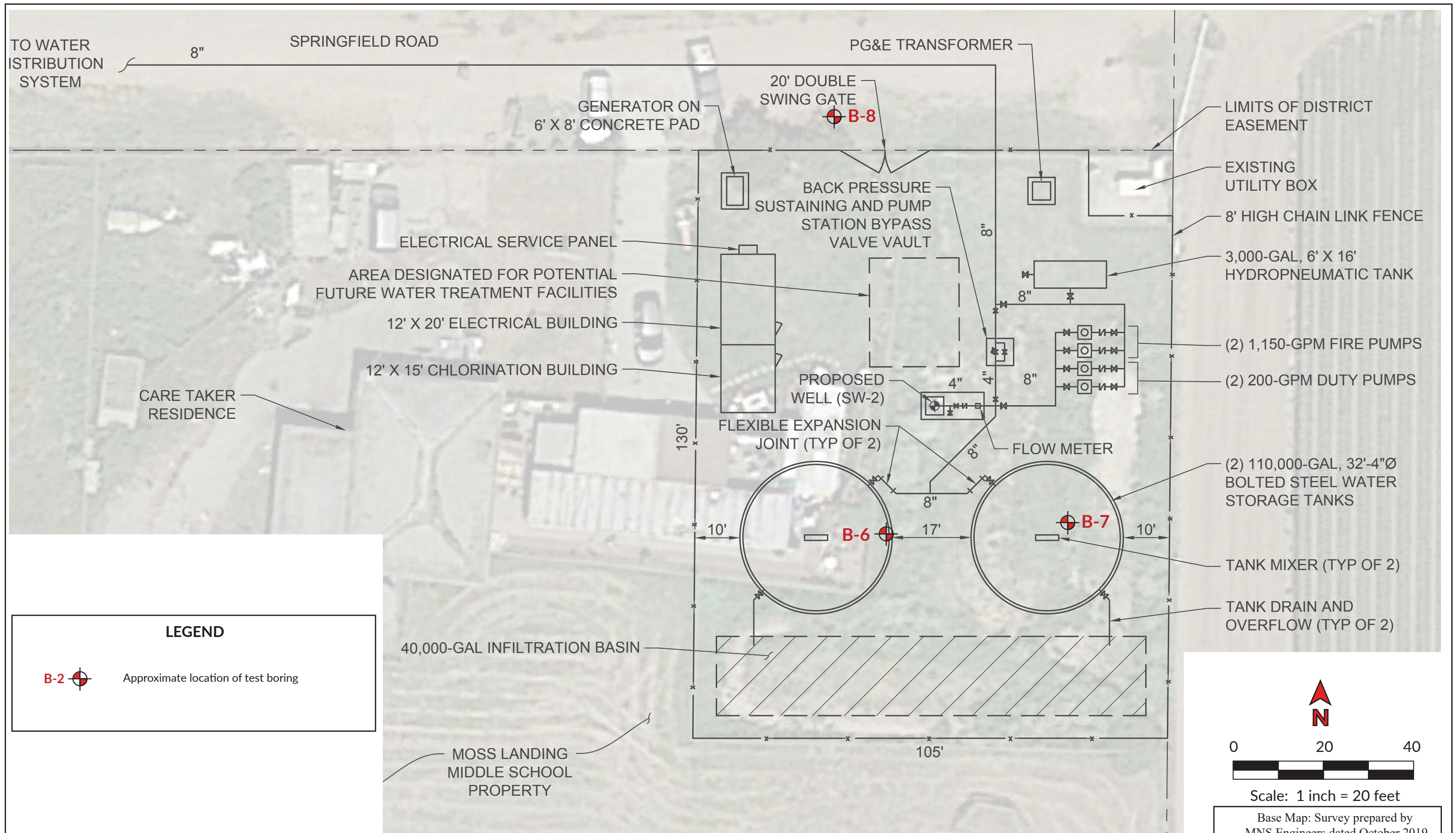
Scale: 1 inch = 250 feet

Base Map provided by Central Coast Aerial Mapping, dated 8-21-19



**Site Map Showing Test Borings**  
 Springfield Water System Improvements  
 Moss Landing, California

Figure No. 2  
 Project No. 19114  
 Date: 2/3/20



Site Map Showing Test Borings  
Springfield Water System Improvements  
Moss Landing, California

Figure No. 2A  
Project No. 19114  
Date: 1/10/20

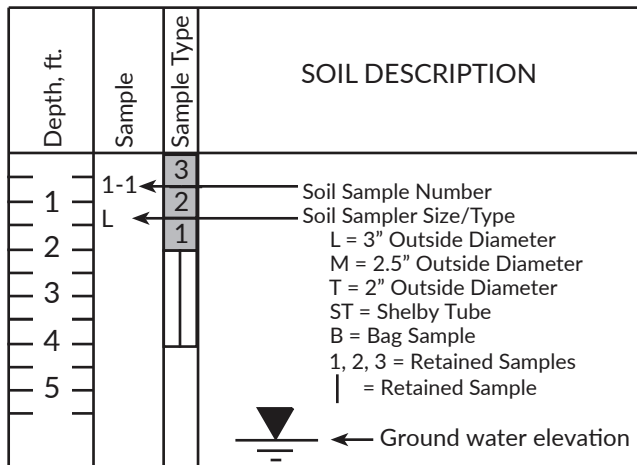


**KEY TO SOIL CLASSIFICATION - FINE GRAINED SOILS (FGS)**  
**UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D2487 (Modified)**

MAJOR DIVISIONS	SYMBOL	FINES	COARSENESS	SAND/GRAVEL	GROUP NAME		
<b>SILT AND CLAY</b>	<b>CL</b> Lean Clay PI > 7 Plots Above A Line	<30% plus No. 200	<15% plus No. 200		Lean Clay / Silt		
			15-30% plus No. 200	% sand ≥ % gravel	Lean Clay with Sand / Silt with Sand		
		-OR-	≥30% plus No. 200	% sand ≥ % gravel	< 15% gravel	Lean Clay with Gravel / Silt with Gravel	
					≥ 15% gravel	Sandy Lean Clay / Sandy Silt	
		Plots Below A Line	≥30% plus No. 200	% sand < % gravel	< 15% sand	Sandy Lean Clay with Gravel / Sandy Silt with Gravel	
					≥ 15% sand	Gravelly Lean Clay / Gravelly Silt	
	<b>CL - ML</b> 4 < PI < 7	<30% plus No. 200	15-30% plus No. 200	<15% plus No. 200		Silty Clay	
				% sand ≥ % gravel	Silty Clay with Sand		
		-OR-	≥30% plus No. 200	% sand ≥ % gravel	% sand < % gravel	Silty Clay with Gravel	
					< 15% gravel	Sandy Silty Clay	
		Plots Below A Line	≥30% plus No. 200	% sand < % gravel	≥15% gravel	Sandy Silty Clay with Gravel	
					< 15% sand	Gravelly Silty Clay	
	≥ 15% sand	Gravelly Silty Clay with Sand					
	35% ≤ *LL < 50% Intermediate Plasticity	<b>CI</b>	<30% plus No. 200	<15% plus No. 200		Clay	
				15-30% plus No. 200	% sand ≥ % gravel	Clay with Sand	
			-OR-	≥30% plus No. 200	% sand ≥ % gravel	% sand < % gravel	Clay with Gravel
						< 15% gravel	Sandy Clay
			Plots Below A Line	≥30% plus No. 200	% sand < % gravel	≥ 15% gravel	Sandy Clay with Gravel
< 15% sand						Gravelly Clay	
≥ 15% sand	Gravelly Clay with Sand						
*LL > 50% High Plasticity	<b>CH</b> Fat Clay Plots Above A Line	<30% plus No. 200	<15% plus No. 200		Fat Clay or Elastic Silt		
			15-30% plus No. 200	% sand ≥ % gravel	Fat Clay with Sand		
	-OR-	≥30% plus No. 200	% sand ≥ % gravel	% sand < % gravel	Elastic Silt with Sand		
				< 15% gravel	Fat Clay with Gravel / Elastic Silt with Gravel		
	Plots Below A Line	≥30% plus No. 200	% sand < % gravel	≥ 15% gravel	Sandy Fat Clay / Sandy Elastic Silt		
				< 15% sand	Sandy Fat Clay with Gravel / Sandy Elastic Silt with Gravel		
≥ 15% sand	Gravelly Fat Clay / Gravelly Elastic Silt						
					Gravelly Fat Clay with Sand / Gravelly Elastic Silt with Sand		

\* LL = Liquid Limit  
 \* PI = Plasticity Index

**BORING LOG EXPLANATION**



**MOISTURE**

DESCRIPTION	CRITERIA
DRY	Absence of moisture, dusty, dry to the touch
MOIST	Damp, but no visible water
WET	Visible free water, usually soil is below the water table

**CONSISTENCY**

DESCRIPTION	UNCONFINED SHEAR STRENGTH (KSF)	STANDARD PENETRATION (BLOWS/FOOT)
VERY SOFT	< 0.25	< 2
SOFT	0.25 - 0.5	2 - 4
FIRM	0.5 - 1.0	5 - 8
STIFF	1.0 - 2.0	9 - 15
VERY STIFF	2.0 - 4.0	16 - 30
HARD	> 4.0	> 30



**Boring Log Explanation - FGS**  
 Springfield Water System Improvements  
 Moss Landing, California

Figure No. 3  
 Project No. 19114  
 Date: 1/10/20

**KEY TO SOIL CLASSIFICATION - COARSE GRAINED SOILS**  
**UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D2487 (Modified)**

MAJOR DIVISIONS		FINES	GRADE/TYPE OF FINES	SYMBOL	GROUP NAME *
<b>GRAVEL</b>	More than 50% of coarse fraction is larger than No. 4 sieve size	<5%	Cu ≥ 4 and 1 ≤ Cc ≤ 3	<b>GW</b>	Well-Graded Gravel / Well-Graded Gravel with Sand
			Cu < 4 and/or 1 > Cc > 3	<b>GP</b>	Poorly Graded Gravel / Poorly Graded Gravel with Sand
		5-12%	ML or MH	<b>GW - GM</b>	Well-Graded Gravel with Silt / Well- Graded Gravel with Silt and Sand
				<b>GP - GM</b>	Poorly Graded Gravel with Silt / Poorly Graded Gravel with Silt and Sand
			CL, CI or CH	<b>GW - GC</b>	Well-Graded Gravel with Clay / Well-Graded Gravel with Clay and Sand
				<b>GP - GC</b>	Poorly Graded Gravel with Clay / Poorly Graded Gravel with Clay and Sand
		>12%	ML or MH	<b>GM</b>	Silty Gravel / Silty Gravel with Sand
			CL, CI or CH	<b>GC</b>	Clayey Gravel / Clayey Gravel with Sand
			CL - ML	<b>GC - GM</b>	Silty, Clayey Gravel / Silty, Clayey Gravel with Sand
		<b>SAND</b>	50% or more of coarse fraction is smaller than No. 4 sieve size	<5%	Cu ≥ 6 and 1 ≤ Cc ≤ 3
Cu < 6 and/or 1 > Cc > 3	<b>SP</b>				Poorly Graded Sand / Poorly Graded Sand with Gravel
5-12%	ML or MH			<b>SW - SM</b>	Well-Graded Sand with Silt / Well- Graded Sand with Silt and Gravel
				<b>SP - SM</b>	Poorly Graded Sand with Silt / Poorly Graded Sand with Silt and Gravel
	CL, CI or CH			<b>SW - SC</b>	Well-Graded Sand with Clay / Well-Graded Sand with Clay and Gravel
				<b>SP - SC</b>	Poorly Graded Sand with Clay / Poorly Graded Sand with Clay and Gravel
>12%	ML or MH			<b>SM</b>	Silty Sand / Silty Sand with Gravel
	CL, CI or CH			<b>SC</b>	Clayey Sand / Clayey Sand with Gravel
	CL - ML			<b>SC - SM</b>	Silty, Clayey Sand / Silty, Clayey Sand with Gravel

\* The term "with sand" refers to materials containing 15% or greater sand particles within a gravel soil, while the term "with gravel" refers to materials containing 15% or greater gravel particles within a sand soil.

<b>US STANDARD SIEVE SIZE:</b>	3 inch	¾ inch	No. 4	No. 10	No. 40	No. 200	0.002 μm
	COARSE	FINE	COARSE	MEDIUM	FINE		
COBBLES AND BOULDERS	GRAVEL		SAND			SILT	CLAY

**RELATIVE DENSITY**

DESCRIPTION	STANDARD PENETRATION (BLOWS/FOOT)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	> 50

**MOISTURE**

DESCRIPTION	CRITERIA
DRY	Absence of moisture, dusty, dry to the touch
MOIST	Damp, but no visible water
WET	Visible free water, usually soil is below the water table



**Boring Log Explanation - CGS**  
 Springfield Water System Improvements  
 Moss Landing, California

Figure No. 4  
 Project No. 19114  
 Date: 1/10/20

LOGGED BY CLA DATE DRILLED 11/15/19 BORING DIAMETER 6" SS BORING NO. 1

DRILL RIG CCD Tractor HAMMER TYPE Wireline - Downhole Hammer

Depth (feet)	Sample	Sample Type	Soil Description	USCS	Field Blow Counts	SPT "N" Value	Pocket Pen. (tsf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200	Plasticity Index	Additional Lab Results
			2" Asphalt Concrete and 3½" Aggregate Base									
1	1-1	L	<b>FILL: SILTY SAND:</b> Brown (10YR 4/3), fine-grained, residual AB; moist, medium dense	SM	14							
2	1-2	L	<b>NATIVE: SILTY SAND:</b> Brown (10YR 4/3), fine- to medium-grained, sub-angular to sub-rounded shaped, poorly-graded, moist, medium dense	SM	17							
3	1-2	T	Thin, interbedded SANDY SILT lenses, moist, medium dense		30	25		8.3	119.2			
4	1-3	L	Moist, loose		4							
5	1-3	L			5							
6	1-3	L			6	11		13.9		41.7		
7	1-3	L			9							
8	1-4	T	<b>FAT CLAY:</b> Variegated white (WHITE 2.5Y 9.5/1), and light olive brown (2.5Y 5/4), silty, very moist, stiff	CH	9							
9	1-4	T			3							
10	1-4	T			6							
11	1-4	T			5	11		38.7		87.8	46	
12	1-5	L	<b>SAND:</b> Pale olive (5Y 6/3), fine-grained with trace medium grains, poorly-graded, mica flakes scattered throughout the sample, moist, very dense	SP	18							
13	1-5	L			22							
14	1-6	T	Slight increase in coarseness of sand, moist, very dense		50/6"	50/6"		13.6	110.2			
15	1-6	T			18							
16	1-6	T			50/6"	50/6"		7.3				
15	Boring terminated at 14½ feet. No groundwater encountered.											
16												
17												
18												
19												
20												
21												
22												
23												



**Log of Test Borings**  
Springfield Water System Improvements  
Moss Landing, California

Figure No. 5  
Project No. 19114  
Date: 1/10/20

LOGGED BY CLA      DATE DRILLED 11/15/19      BORING DIAMETER 6" SS      BORING NO. 2

DRILL RIG CCD Tractor      HAMMER TYPE Wireline - Downhole Hammer

Depth (feet)	Sample	Sample Type	Soil Description	USCS	Field Blow Counts	SPT "N" Value	Pocket Pen. (tsf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200	Plasticity Index	Additional Lab Results
			2½" Asphalt Concrete and 5" Aggregate Base									
1	2-1	L	CLAYEY SAND: Brown (10YR 4/3), fine-grained, poorly-graded; clay appears to exhibit low plasticity, scattered mica flakes, moist, loose	SC	7							
2		9										
2	2-2	T	SILTY SAND: Light olive brown (2.5Y 5/4), fine- to medium-grained, sub-angular to sub-rounded shaped, poorly-graded, slightly moist, medium dense	SM	11	10		11.3	119.3	45.4	9	
3		8										
4	2-3	L	CLAYEY SAND: Light yellowish-brown (10YR 6/4), fine- to medium-grained, sub-angular to sub-rounded shaped, poorly-graded, clay appears to exhibit low plasticity, slightly moist, medium dense	SC	9	21		11.5		28.3		
5		7										
5	2-3	L	CLAYEY SAND: Light yellowish-brown (10YR 6/4), fine- to medium-grained, sub-angular to sub-rounded shaped, poorly-graded, clay appears to exhibit low plasticity, slightly moist, medium dense	SC	10			6.3	101.1	13.3		
6		15				13		6.9	105.1			
7												
8	2-4	T	Moist, medium dense		8							
9		12										
9					18	30		15.5				
10												
11												
12	2-5	L	SAND: Yellowish-brown (10YR 5/4), fine- to medium-grained, poorly-graded, sub-angular to sub-rounded shaped, poorly-graded, clean, very poorly cemented/ no cementation, slightly moist, medium dense	SP	12							
13		15										
13					21	19		11.8	103.5			
14												
15												
16	2-6	T	SAND WITH CLAY: Yellowish-brown (10YR 5/4), very fine- to fine-grained, poorly-graded, micaceous, slightly moist, medium dense	SP	8							
17		13										
17					12	25		18.1				
18			Boring terminated at 17½ feet. No groundwater encountered.									
19												
20												
21												
22												
23												



**Log of Test Borings**  
Springfield Water System Improvements  
Moss Landing, California

Figure No. 6  
Project No. 19114  
Date: 1/10/20

LOGGED BY CLA      DATE DRILLED 11/15/19      BORING DIAMETER 6" SS      BORING NO. 3

DRILL RIG CCD Tractor      HAMMER TYPE Wireline - Downhole Hammer

Depth (feet)	Sample	Sample Type	Soil Description	USCS	Field Blow Counts	SPT "N" Value	Pocket Pen. (tsf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200	Plasticity Index	Additional Lab Results
1	3-1 L	2	SILTY SAND: Dark yellowish-brown (10YR 4/4), fine- to medium-grained, sub-angular to sub-rounded shaped, poorly-graded, moderately cemented, slightly moist, dense	SM	18							
2					32							
3	3-2 T	1	SANDY LEAN CLAY: Black (10YR 2/1), fine-grained, poorly-graded quartz sand, moist, firm	CL	30	32		5.1	110.8	16.0		
4					3							
5	3-3 L	2	Soil coarsens with depth as sand content increases, moist to very moist, stiff		3	6		12.2				
6					6							
8	3-4 T	1	CLAYEY SAND: Light olive brown (2.5Y 5/4), fine- to medium-grained, sub-angular to sub-rounded shaped, poorly-graded, clay appears to exhibit low plasticity, moist, medium dense	SC	10							
9					11							
10					18	29		14.8				
12	3-5 L	2	Decrease in clay content, sample coarsens with depth, wet, medium dense		10							
13					12							
14	3-6 T	1	SAND WITH SILT: Light olive brown (2.5Y 5/4), fine- to medium-grained, sub-angular to sub-rounded shaped, poorly-graded, wet, medium dense	SP	21	17		18.1	120.7			
15					3							
16					5							
17					10	15		24.7		4.8		
18	Boring terminated at 15 feet. Groundwater encountered at 12½ feet.											
19												
20												
21												
22												
23												



**Log of Test Borings**  
Springfield Water System Improvements  
Moss Landing, California

Figure No. 7  
Project No. 19114  
Date: 1/10/20

LOGGED BY CLA      DATE DRILLED 11/15/19      BORING DIAMETER 6" SS      BORING NO. 4

DRILL RIG CCD Tractor      HAMMER TYPE Wireline - Downhole Hammer

Depth (feet)	Sample	Sample Type	Soil Description	USCS	Field Blow Counts	SPT "N" Value	Pocket Pen. (tsf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200	Plasticity Index	Additional Lab Results
1			3" Asphalt Concrete and 4½" Aggregate Base Straight drilled slowly to 3 feet to check for utilities									
2												
3	4-1	L	CLAYEY SAND: Mottled grayish-brown (2.5Y 5/2) and strong brown (7.5YR 5/8), fine-grained quartz sand with trace medium grains, moist, medium dense Slightly moist, medium dense	SC	12							
4		2			12							
5	4-2	T			1	28	28	4.5	10.9	121.6	38.0	20
6			Consistent slow hard drilling to 8 feet		10							
7					20	30		13.4				
8	4-3	L	Slight increase in sand content, slightly moist, dense		12							
9		2			26							
10		1			35	40	4.5	13.0	115.7	40.6	19	
11												
12	4-4	T	CLAYEY SAND: Strong brown (7.5YR 5/6), fine- to medium-grained, sub-angular to sub-rounded shaped, poorly-graded, clay appears to exhibit low plasticity, slightly moist, medium dense	SC	8							
13					11							
14					15	26		10.7				
15												
16	4-5	L	Decrease in clay content, slightly moist medium dense		6							
17		2			21							
18		1			24	23		11.3	107.8			
18			Boring terminated at 17½ feet. No groundwater encountered.									
19												
20												
21												
22												
23												



**Log of Test Borings**  
Springfield Water System Improvements  
Moss Landing, California

Figure No. 8  
Project No. 19114  
Date: 1/10/20

LOGGED BY CLA      DATE DRILLED 11/15/19      BORING DIAMETER 6" SS      BORING NO. 5

DRILL RIG CCD Tractor      HAMMER TYPE Wireline - Downhole Hammer

Depth (feet)	Sample	Sample Type	Soil Description	USCS	Field Blow Counts	SPT "N" Value	Pocket Pen. (tsf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200	Plasticity Index	Additional Lab Results
			2" Asphalt Concrete and 5" Aggregate Base									
1	5-1	L	CLAYEY SAND: Dark grayish-brown (10YR 4/2) and very dark grayish-brown (10YR 3/2), fine-grained with trace medium grains, poorly-graded, clay content increases with depth, slightly moist, medium dense	SC	8							
2		12										
3	5-2	T	Soil fines with depth, clay appears to be lean, silty, slightly moist, medium dense		15	14		11.3	116.8	33.5		
4		3			6							
5	5-3	L	SILTY SAND: Light olive brown (2.5Y 5/4), very fine- to fine-grained, poorly-graded, poorly indurated, micaceous, slightly moist, medium dense	SM	9	15		17.3			27	
6		2			12							
7		1			18							
8	5-4	T	SAND: Brown (10YR 5/3) and yellowish-brown (10YR 5/4), fine- to medium-grained, sub-angular to sub-rounded shaped, poorly-graded, clean, slightly moist, dense	SP	30	25		13.9	97.4			
9					10							
10					18							
11					23	41		7.4				
12	5-5	L	Increase in coarseness of sand, medium-grained, sub-angular to sub-rounded shaped, poorly-graded, very poorly indurated, moist, very dense		8							
13		2			21						4.7	
14	5-6	T	Slightly moist, dense		50/6"	50/6"		6.1	97.4			
15		1			20							
16					20							
17					30	50		6.0				
18			Boring terminated at 15 feet. No groundwater encountered.									
19												
20												
21												
22												
23												



**Log of Test Borings**  
 Springfield Water System Improvements  
 Moss Landing, California

Figure No. 9  
 Project No. 19114  
 Date: 1/10/20

LOGGED BY MWL DATE DRILLED 11/15/19 BORING DIAMETER 6" SS BORING NO. 6

DRILL RIG CCD Mobile B53 HAMMER TYPE Wireline - Downhole Hammer

Depth (feet)	Sample	Sample Type	Soil Description	USCS	Field Blow Counts	SPT "N" Value	Pocket Pen. (tsf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200	Plasticity Index	Additional Lab Results	
1	6-1	2	SILTY SAND: Grayish-brown, very fine- to medium-grained, poorly-graded, trace rootlets, trace small gravels, dry, medium dense	SM	10								
2	L	1			13							4	Direct Shear φ = 35° c = 0 psf
3	6-2	1	CLAYEY SAND: Dark yellowish-brown, very fine- to fine-grained, poorly-graded, clay exhibits intermediate plasticity, dry, dense	SC	19	17		2.5	99.8	35.5			
4	T				10								
5					15								
6	6-3	2	Color change to dark yellowish-brown, increased sand fraction, moist, very dense		28	43		10.1		49.0	26		
7	L	1			19								
8					50/6"	50/6"		14.7	110.0	31.6			
9													
10	6-4		SAND: Dark yellowish-brown, fine- to medium-grained, poorly-graded, moist, very dense	SP									
11	T				12								
12					25								
13					35	60		9.8					
14													
15	6-5	2	CLAYEY SAND: Dark yellowish-brown and yellowish-brown, very fine- to medium-grained, poorly-graded, moist, very dense	SC									
16	L	1			12								
17					50/6"	50/6"		11.1	113.0	22.6			
18													
19													
20	6-6		Color change to yellowish-brown, subvertical olive-gray clay lens at 21½ feet, moist, dense										
21	T				8								
22					16								
23					25	41		13.8					



**Log of Test Borings**  
Springfield Water System Improvements  
Moss Landing, California

Figure No. 10  
Project No. 19114  
Date: 1/10/20



LOGGED BY MWL      DATE DRILLED 11/15/19      BORING DIAMETER 6" SS      BORING NO. 6

DRILL RIG CCD Mobile B53      HAMMER TYPE Wireline - Downhole Hammer

Depth (feet)	Sample	Sample Type	Soil Description	USCS	Field Blow Counts	SPT "N" Value	Pocket Pen. (tsf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200	Plasticity Index	Additional Lab Results
24	6-7 T		CLAYEY SAND: Yellowish-brown, very fine- to medium-grained, poorly-graded, manganese oxide staining, moist, dense	SC								
25					10							
26					15	35	18.8					
27			Boring terminated at 26½ feet. No groundwater encountered.									
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												
45												
46												



**Log of Test Borings**  
Springfield Water System Improvements  
Moss Landing, California

Figure No. 11  
Project No. 19114  
Date: 1/10/20

LOGGED BY MWL      DATE DRILLED 11/15/19      BORING DIAMETER 6" SS      BORING NO. 7

DRILL RIG CCD Mobile B53      HAMMER TYPE Wireline - Downhole Hammer

Depth (feet)	Sample	Sample Type	Soil Description	USCS	Field Blow Counts	SPT "N" Value	Pocket Pen. (tsf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200	Plasticity Index	Additional Lab Results
1	7-1	L	SILTY SAND: Grayish-brown, very fine- to medium-grained, poorly-graded, trace rootlets, trace small gravels, dry, medium dense	SM	10							
2		2			14							
2	7-2	L	Slough in sample, dry, medium dense		22	19		3.0	101.9	38.2	4	
3		T			1							
4					1							
4			CLAYEY SAND: Mottled dark yellowish-brown and olive gray, fine-grained, poorly-graded sand, clay exhibits intermediate plasticity, moist, very dense	SC	15	16		3.2			5	
5	7-3	L			2	12						
6					50/6"	50/6"		9.1	118.1	30.6		
7												
8												
9												
10	7-4	T	Color change to dark yellowish-brown and yellowish-brown, very fine- to medium-grained, poorly-graded, moist, dense	SC	14							
11					15							
11					25	40		10.4				
12			Boring terminated at 11½ feet. No groundwater encountered.									
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												



**Log of Test Borings**  
Springfield Water System Improvements  
Moss Landing, California

Figure No. 12  
Project No. 19114  
Date: 1/10/20

LOGGED BY MWL      DATE DRILLED 11/15/19      BORING DIAMETER 6" SS      BORING NO. 8

DRILL RIG CCD Mobile B53      HAMMER TYPE Wireline - Downhole Hammer

Depth (feet)	Sample	Sample Type	Soil Description	USCS	Field Blow Counts	SPT "N" Value	Pocket Pen. (tsf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200	Plasticity Index	Additional Lab Results
1	8-1	2	SANDY CLAY: Gray with yellowish-brown, clay exhibits intermediate plasticity, very fine- to fine-grained sand, poorly graded, moist, stiff	CI	6							
2	L	1			8							
3	8-2	1	Color change to mottled grayish-brown, yellowish-brown and strong brown, moist, hard		10	14	3.8	15.5	107.5	54.4		Qu = 5.99 ksf
4	8-3	2	CLAYEY SAND: Gray with yellowish-brown, very fine- to fine-grained sand, poorly graded, clay exhibits intermediate plasticity, moist, very dense	SC	10			12.2				
5	L	1			25	39		11.6	104.3	38.3		23
6			Boring terminated at 5 feet. No groundwater encountered.		50/6"	50/6"		10.8	115.1			
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												



**Log of Test Borings**  
 Springfield Water System Improvements  
 Moss Landing, California

Figure No. 13  
 Project No. 19114  
 Date: 1/10/20

LOGGED BY MWL      DATE DRILLED 11/15/19      BORING DIAMETER 6" SS      BORING NO. 9

DRILL RIG CCD Mobile B53      HAMMER TYPE Wireline - Downhole Hammer

Depth (feet)	Sample	Sample Type	Soil Description	USCS	Field Blow Counts	SPT "N" Value	Pocket Pen. (tsf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200	Plasticity Index	Additional Lab Results
1	9-1	L	<b>SILTY SAND with GRAVEL:</b> Dark brown, fine- to coarse-grained, gravels up to ½ inch in diameter, poorly-graded, moist, medium dense	SM	10							
2					12							
2	9-2	L	<b>CLAYEY SAND:</b> Dark yellowish-brown with olive gray, very fine- to medium-grained, poorly-graded, moist, medium dense	SC	20	17		6.1	120.5	12.3		
3						7						
3	9-2	T			10							
4					13	23		8.7				
5	9-3	L	Moist, very dense		12							
6					28							
6		L			50/6"	50/6"		12.3	114.3			
7												
8												
9												
10	9-4	L	Moist, dense		20							
11		T			20							
11					23	43		11.6		23.1		
12	Boring terminated at 11½ feet. No groundwater encountered.											
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												



**Log of Test Borings**  
Springfield Water System Improvements  
Moss Landing, California

Figure No. 14  
Project No. 19114  
Date: 1/10/20

LOGGED BY MWL      DATE DRILLED 11/15/19      BORING DIAMETER 6" SS      BORING NO. 10

DRILL RIG CCD Mobile B53      HAMMER TYPE Wireline - Downhole Hammer

Depth (feet)	Sample	Sample Type	Soil Description	USCS	Field Blow Counts	SPT "N" Value	Pocket Pen. (tsf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200	Plasticity Index	Additional Lab Results		
1	10-1	L	CLAYEY SAND: Dark yellowish-brown with olive gray, very fine- to medium-grained, poorly-graded, moist, loose	SC	6									
2		2			6									
3	10-2	T	Moist, loose		8	7		7.4	114.6	26.6				
4		1			4									
5	10-3	L	Manganese oxide staining, moist, medium dense		5	9		10.4			12			
6						6								
7		1			9									
8					15	13		14.0	115.0					
9														
10	10-4	T	Moist, dense		15									
11						15								
12						23	38	15.3						
13	Boring terminated at 11½ feet. No groundwater encountered.													
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														



**Log of Test Borings**  
 Springfield Water System Improvements  
 Moss Landing, California

Figure No. 15  
 Project No. 19114  
 Date: 1/10/20

LOGGED BY MWL      DATE DRILLED 11/15/19      BORING DIAMETER 6" SS      BORING NO. 11

DRILL RIG CCD Mobile B53      HAMMER TYPE Wireline - Downhole Hammer

Depth (feet)	Sample	Sample Type	Soil Description	USCS	Field Blow Counts	SPT "N" Value	Pocket Pen. (tsf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200	Plasticity Index	Additional Lab Results
1	11-1	L	CLAY WITH SAND: Dark gray, intermediate to high plasticity, sand is poorly-graded and very fine- to fine-grained, moist, very stiff	CH	4							
2		2			10							
2	11-2	L	Color change to light gray at 3½ feet, moist, very stiff		12	17	2.3	20.6	95.6	75.9	38	Qu = 3.53 ksf
3		1			4							
3	11-3	L	ELASTIC SILT: Mottled gray, yellowish-brown and white, oxidation staining, moist, very stiff	MH	7			34.5				
4					10	17						
5	11-3	L			9							
6		1			15							
6	11-4	L	CLAY WITH SAND: Gray with oxidation staining, intermediate plasticity, very fine to fine-grained sand, poorly-graded sand, moist, stiff	CI	21	26	4.3	31.5	81.1	90.7	50	Qu = 3.68 ksf
7					7							
10	11-4	T			7							
11					8	15		23.6		77.7	23	
12	Boring terminated at 11½ feet. No groundwater encountered.											
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												

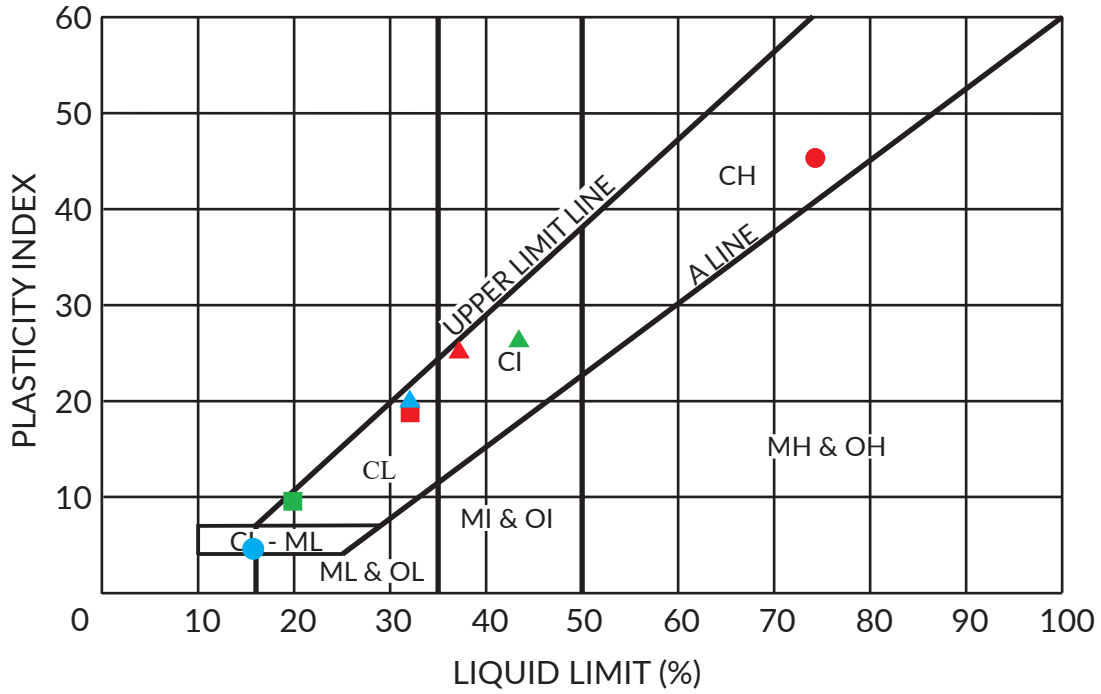


**Log of Test Borings**  
 Springfield Water System Improvements  
 Moss Landing, California

Figure No. 16  
 Project No. 19114  
 Date: 1/10/20

## ATTERBERG LIMITS - ASTM D4318

### PLASTICITY CHART

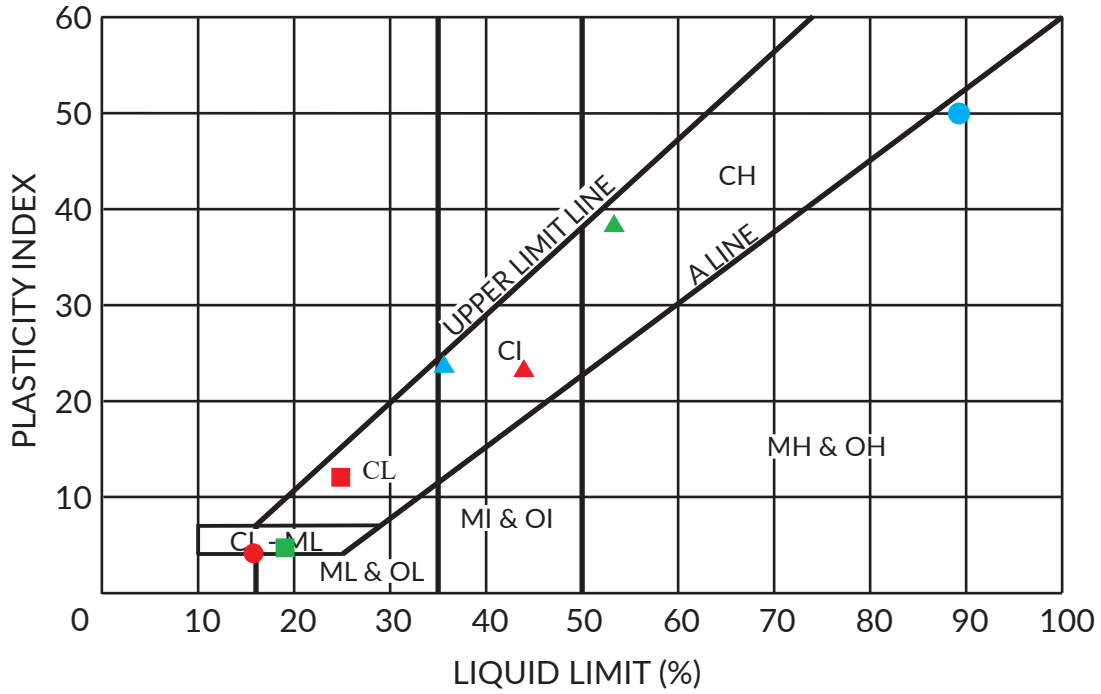


\*This chart has been modified to include the intermediate classifications CI, MI and OI for clays and silts with liquid limits between 35 and 50.

<u>SYMBOL</u>	<u>SAMPLE #</u>	<u>LL (%)</u>	<u>PL (%)</u>	<u>PI</u>
●	1-4	74	28	46
■	2-1-1	20	11	9
▲	4-1-1	32	12	20
■	4-3-1	32	13	19
▲	5-2	43	16	27
●	6-1-2	15	11	4
▲	6-2	37	11	26

### ATTERBERG LIMITS - ASTM D4318

#### PLASTICITY CHART



\*This chart has been modified to include the intermediate classifications CI, MI and OI for clays and silts with liquid limits between 35 and 50.

<u>SYMBOL</u>	<u>SAMPLE #</u>	<u>LL (%)</u>	<u>PL (%)</u>	<u>PI</u>
●	7-1-2	16	12	4
■	7-2	19	14	5
▲	8-2	36	13	23
■	10-2	25	13	12
▲	11-1-1	52	15	38
●	11-3-1	89	39	50
▲	11-4	44	21	23

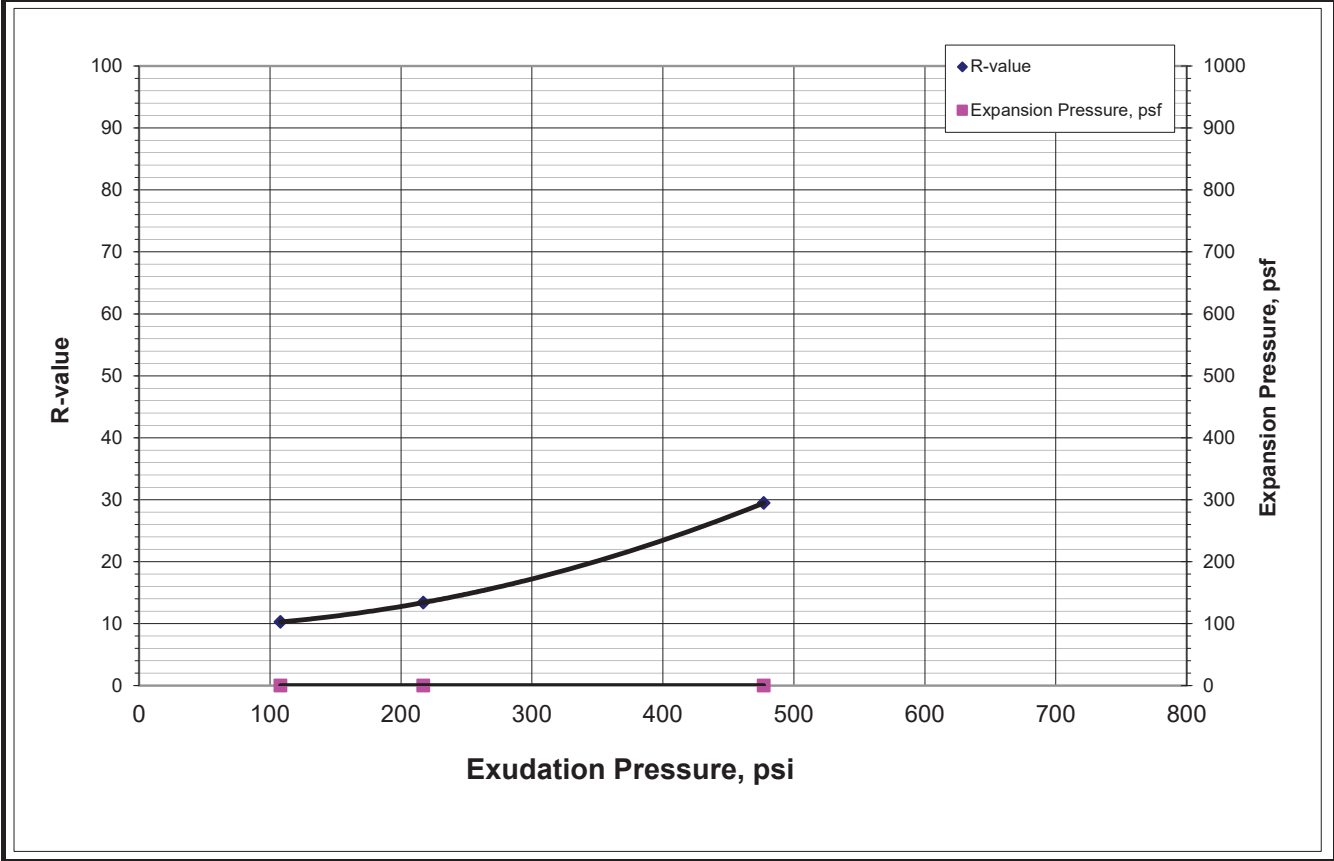




## R-value Test Report (Caltrans 301)

Job No.: 416-601	Date: 12/18/19	Initial Moisture, <u>7.7</u>			
Client: Pacific Crest Engineering	Tested: PJ	<b>R-value</b> <b>17</b>			
Project: 19114	Reduced: RU	<b>Expansion Pressure</b> <b>0</b> psf			
Sample: R1	Checked: DC				
Soil Type: Dark Brown Silty SAND w/ Gravel					
Specimen Number	A	B	C	D	Remarks:

Exudation Pressure, psi	108	477	217		
Prepared Weight, grams	1200	1200	1200		
Final Water Added, grams/cc	60	20	40		
Weight of Soil & Mold, grams	3173	3256	3263		
Weight of Mold, grams	2082	2102	2110		
Height After Compaction, in.	2.38	2.50	2.52		
Moisture Content, %	13.1	9.5	11.3		
Dry Density, pcf	122.9	127.8	124.6		
Expansion Pressure, psf	0	0	0		
Stabilometer @ 1000					
Stabilometer @ 2000	130	94	126		
Turns Displacement	4.82	4.20	4.36		
R-value	10	29	13		



**R-Value Test Results**  
Springfield Water System Improvements  
Moss Landing, California

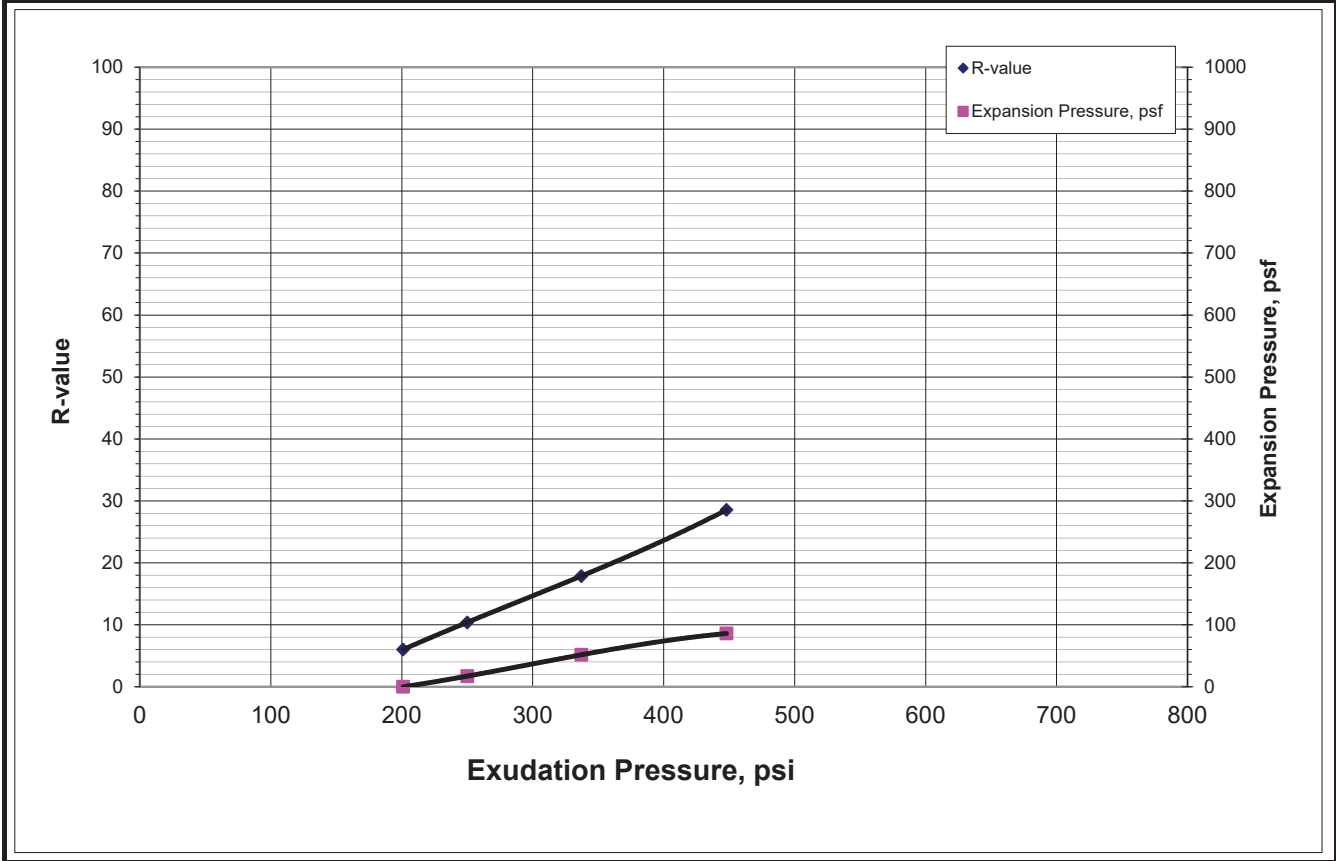
Figure No. 19  
Project No. 19114  
Date: 1/10/20



## R-value Test Report (Caltrans 301)

Job No.: 416-601	Date: 12/18/19	Initial Moisture, <u>10.3</u>
Client: Pacific Crest Engineering	Tested: PJ	<b>R-value 15</b>
Project: 19114	Reduced: RU	<b>Expansion Pressure 40 psf</b>
Sample: R2	Checked: DC	
Soil Type: Dark Brown Clayey SAND w/ Gravel		

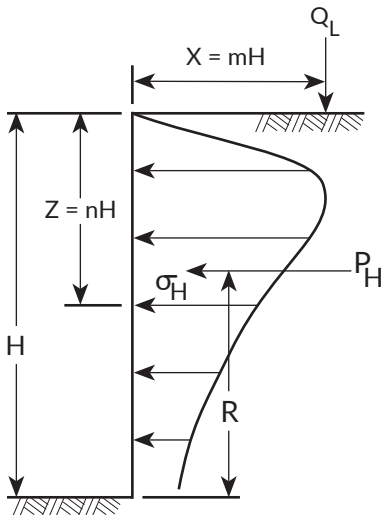
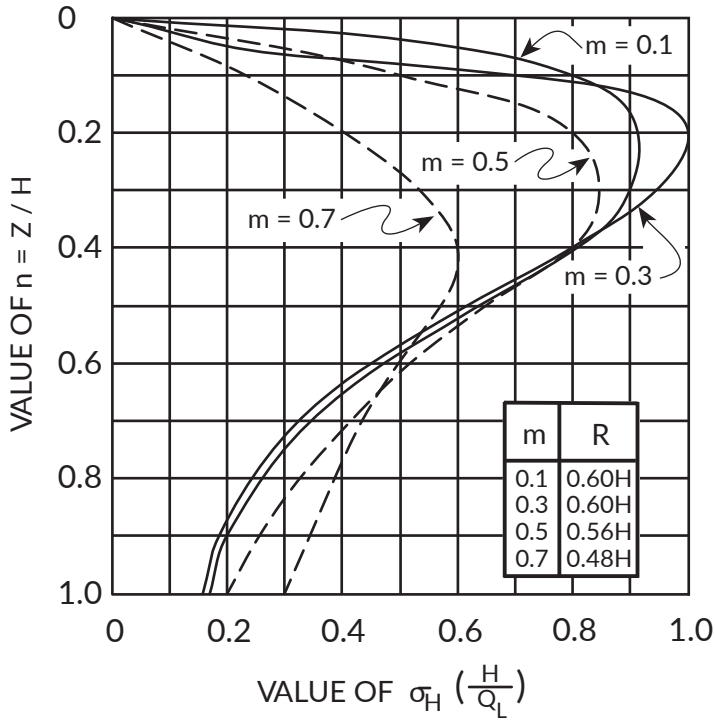
Specimen Number	A	B	C	D	Remarks:
Exudation Pressure, psi	337	250	201	448	
Prepared Weight, grams	1200	1200	1200	1200	
Final Water Added, grams/cc	30	55	75	15	
Weight of Soil & Mold, grams	3207	3183	3151	3278	
Weight of Mold, grams	2079	2087	2098	2090	
Height After Compaction, in.	2.47	2.51	2.37	2.56	
Moisture Content, %	13.0	15.3	17.2	11.7	
Dry Density, pcf	122.5	114.8	114.9	126.0	
Expansion Pressure, psf	52	17	0	86	
Stabilometer @ 1000					
Stabilometer @ 2000	122	134	144	108	
Turns Displacement	3.58	4.18	4.24	3.18	
R-value	18	10	6	29	



**R-Value Test Results**  
Springfield Water System Improvements  
Moss Landing, California

Figure No. 20  
Project No. 19114  
Date: 1/10/20

### LINE LOAD



FOR  $m \leq 0.4$ :

$$\sigma_H \left( \frac{H}{Q_L} \right) = \frac{0.20 n}{(0.16 + n^2)^2}$$

$$P_H = 0.55 Q_L$$

FOR  $m > 0.4$ :

$$\sigma_H \left( \frac{H}{Q_L} \right) = \frac{1.28 m^2 n}{(m^2 + n^2)^2}$$

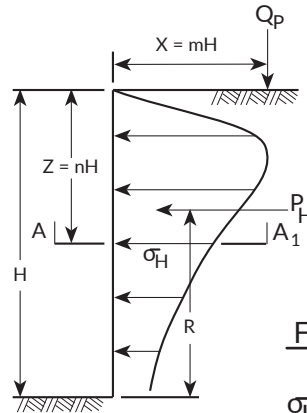
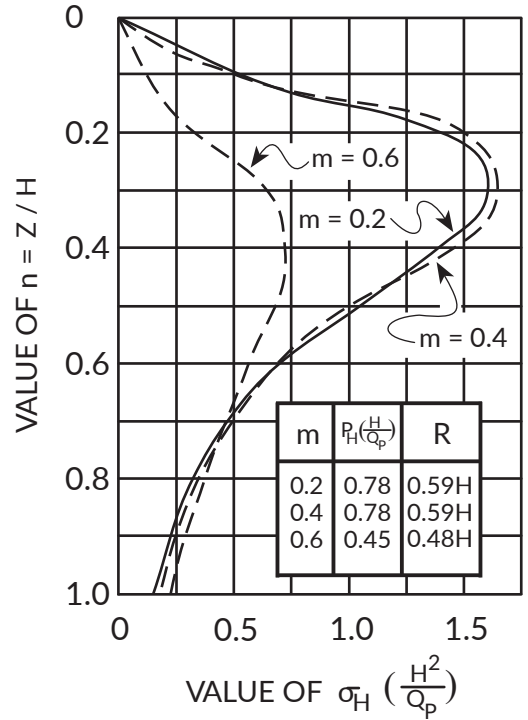
$$\text{RESULTANT } P_H = \frac{0.64 Q_L}{(m^2 + 1)}$$

### PRESSURES FROM LINE LOAD $Q_L$

(BOUSSINESQ EQUATION MODIFIED BY

REFERENCE: Design Manual  
NAVFAC DM-7.02  
Figure 11  
Page 7.2-74

### POINT LOAD



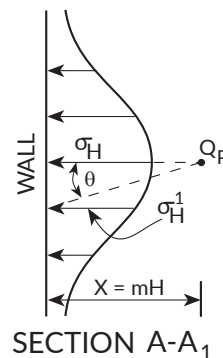
FOR  $m \leq 0.4$ :

$$\sigma_H \left( \frac{H^2}{Q_p} \right) = \frac{0.28 n^2}{(0.16 + n^2)^3}$$

FOR  $m > 0.4$ :

$$\sigma_H \left( \frac{H^2}{Q_p} \right) = \frac{1.77 m^2 n^2}{(m^2 + n^2)^3}$$

$$\sigma_H^1 = \sigma_H \cos^2(1.1 q)$$



### PRESSURES FROM POINT LOAD $Q_p$

(BOUSSINESQ EQUATION MODIFIED



# Corrosivity Test Summary

CTL # 416-604 Date: 2/3/2020 Tested By: PJ Checked: PJ  
 Client: Pacific Crest Engineering Project: Springfield Proj. No: 19114

Remarks:

Boring	Sample Location or ID Sample, No.   Depth, ft.	Resistivity @ 15.5 °C (Ohm-cm)		Chloride mg/kg Dry Wt. Cal 422-mod. Cal 417-mod.	Sulfate		pH	ORP (Redox) mv SM 2580B ASTM D2216	Moisture At Test % ASTM D2216	Soil Visual Description
		As Rec. ASTM G57	Minimum Cal 643		Saturated ASTM G57	mg/kg Dry Wt. Cal 417-mod.				
B1	-   1.5-5	-	2702	35	86	0.0086	7.8	-	0.2	Dark Brown Clayey SAND
B2	-   1.5-5	-	5867	5	208	0.0208	6.9	-	0.3	Dark Brown Clayey SAND
B3	-   1.5-9.5	-	2641	34	192	0.0192	7.4	-	0.3	Dark Brown Clayey SAND
B4	-   1-3	-	1761	40	113	0.0113	8.2	-	7.7	Dark Yellowish Brown Clayey SAND
B5	-   4-5	-	1081	214	158	0.0158	7.3	-	0.5	Light Olive Brown Silty SAND
B8	-   0.5-2	-	8459	34	202	0.0202	6.4	-	9.2	Dark Grayish Brown Silty SAND
B10	-   5-6	-	11820	9	102	0.0102	7.2	-	6.6	Dark Yellowish Brown SAND w/ Silt
B11	-   1-3	-	521	216	550	0.0550	6.8	-	5.4	Dark Gray Sandy CLAY
										Project No. 19114
										Figure No. 22

## APPENDIX B

### Cone Penetration Test Summary and Standard Cone Penetration Test Plots



## PRESENTATION OF SITE INVESTIGATION RESULTS

### Springfield Water Systems Improvements

*Prepared for:*

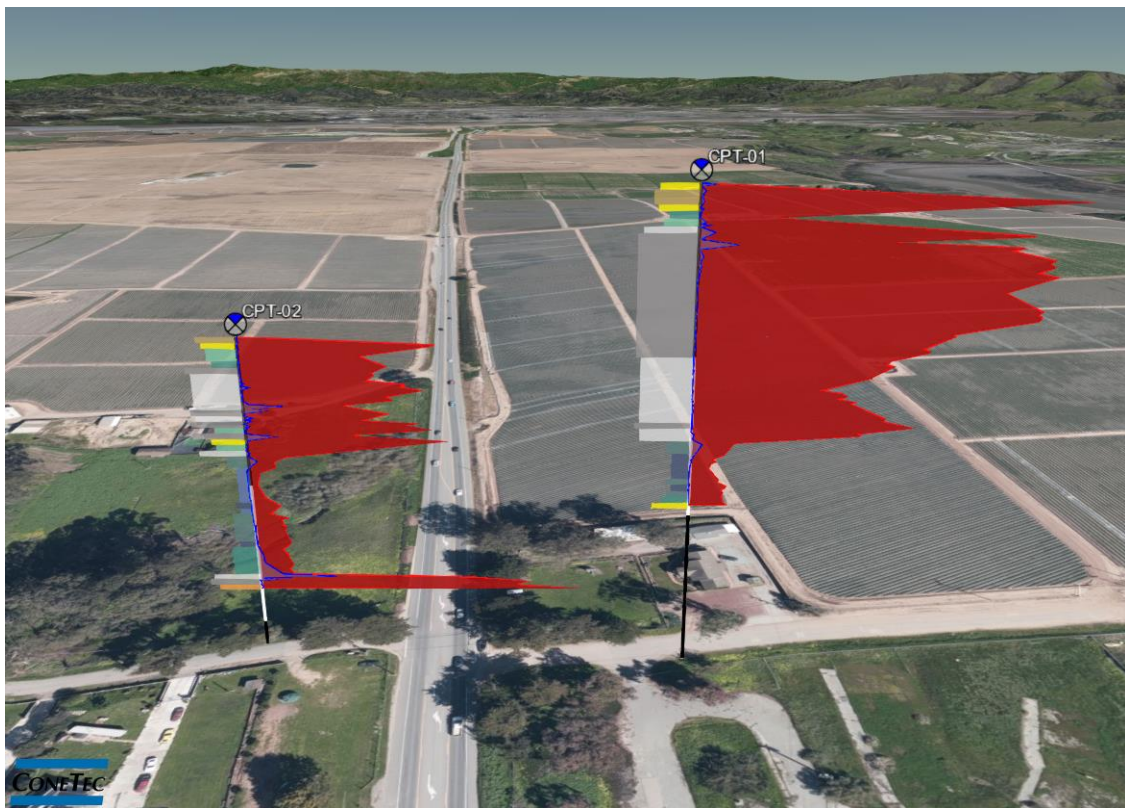
Pacific Crest Engineering

ConeTec Job No: 19-56177

Project Start Date: 12-Nov-2019

Project End Date: 12-Nov-2019

Report Date: 15-Nov-2019



*Prepared by:*

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San Leandro, CA 94577

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www.conetecdataservices.com

**Introduction**

The enclosed report presents the results of the site investigation program conducted by ConeTec Inc. for Pacific Crest Engineering of Watsonville, CA. The program consisted of cone penetration testing (CPTu) at two (2) locations.

**Project Information**

Project	
Client	Pacific Crest Engineering
Project	Springville Water Systems Improvements
ConeTec Project #	19-56177

An aerial overview from Google Earth including the CPT test location is presented below.



Rig Description	Deployment System	Test Type
CPT truck rig	30-ton truck mounted cylinder	CPTu

Coordinates		
Test Type	Collection Method	EPSG Number
CPTu	Consumer grade GPS	32610

Cone Penetrometers Used for this Project						
Cone Description	Cone Number	Cross Sectional Area (cm <sup>2</sup> )	Sleeve Area (cm <sup>2</sup> )	Tip Capacity (bar)	Sleeve Capacity (bar)	Pore Pressure Capacity (psi)
443:T1500F15U500	443	15	225	1500	15	500
Cone 443 was used in all soundings.						

Cone Penetration Test	
Depth reference	Depths are referenced to the existing ground surface at the time of test.
Tip and sleeve data offset	0.1 Meter This has been accounted for in the CPT data files.
Additional Comments	Advanced plots with $I_c$ , $\Phi_i$ , $S_u(Nkt)$ , and $N1(60)I_c$ , as well as Soil Behavior Type (SBT) Scatter plots have been included in the data release package.

Calculated Geotechnical Parameter Tables	
Additional information	<p>The Normalized Soil Behaviour Type Chart based on <math>Q_{tn}</math> (SBT <math>Q_{tn}</math>) (Robertson, 2009) was used to classify the soil for this project. A detailed set of calculated CPTu parameters have been generated and are provided in Excel format files in the release folder. The CPTu parameter calculations are based on values of corrected tip resistance (<math>q_t</math>) sleeve friction (<math>f_s</math>) and pore pressure (<math>u_2</math>).</p> <p>Effective stresses are calculated based on unit weights that have been assigned to the individual soil behaviour type zones and the assumed equilibrium pore pressure profile.</p> <p>Soils were classified as either drained or undrained based on the <math>Q_{tn}</math> Normalized Soil Behaviour Type Chart (Robertson, 2009). Calculations for both drained and undrained parameters were included for materials that classified as silt mixtures (zone 4).</p>

### Limitations

This report has been prepared for the exclusive use of Pacific Crest Engineering (Client) for the project titled "Springville Water Systems Improvements". The report's contents may not be relied upon by any other party without the express written permission of ConeTec, Inc. (ConeTec). ConeTec has provided site investigation services, prepared the factual data reporting, and provided geotechnical parameter calculations consistent with current best practices. No other warranty, expressed or implied, is made.

The information presented in the report document and the accompanying data set pertain to the specific project, site conditions and objectives described to ConeTec by the Client. In order to properly understand the factual data, assumptions and calculations, reference must be made to the documents provided and their accompanying data sets, in their entirety.



Cone penetration tests (CPTu) are conducted using an integrated electronic piezocone penetrometer and data acquisition system manufactured by Adara Systems Ltd., a subsidiary of ConeTec.

ConeTec's piezocone penetrometers are compression type designs in which the tip and friction sleeve load cells are independent and have separate load capacities. The piezocones use strain gauged load cells for tip and sleeve friction and a strain gauged diaphragm type transducer for recording pore pressure. The piezocones also have a platinum resistive temperature device (RTD) for monitoring the temperature of the sensors, an accelerometer type dual axis inclinometer and a geophone sensor for recording seismic signals. All signals are amplified down hole within the cone body and the analog signals are sent to the surface through a shielded cable.

ConeTec penetrometers are manufactured with various tip, friction and pore pressure capacities in 5 cm<sup>2</sup>, 10 cm<sup>2</sup> and 15 cm<sup>2</sup> tip base area configurations in order to maximize signal resolution for various soil conditions. The specific piezocone used for each test is described in the CPT summary table presented in the first appendix. The 15 cm<sup>2</sup> penetrometers do not require friction reducers as they have a diameter larger than the deployment rods. The 10 cm<sup>2</sup> piezocones use a friction reducer consisting of a rod adapter extension behind the main cone body with an enlarged cross-sectional area (typically forty-four millimeter diameter over a length of thirty-two millimeter with tapered leading and trailing edges) located at a distance of 585 millimeters above the cone tip.

The penetrometers are designed with equal end area friction sleeves, a net end area ratio of 0.8 and cone tips with a sixty-degree apex angle.

All ConeTec piezocones can record pore pressure at various locations. Unless otherwise noted, the pore pressure filter is located directly behind the cone tip in the "u<sub>2</sub>" position (ASTM Type 2). The filter is six millimeters thick, made of porous plastic (polyethylene) having an average pore size of 125 microns (90-160 microns). The function of the filter is to allow rapid movements of extremely small volumes of water needed to activate the pressure transducer while preventing soil ingress or blockage.

The piezocone penetrometers are manufactured with dimensions, tolerances and sensor characteristics that are in general accordance with the current ASTM D5778 standard. ConeTec's calibration criteria also meets or exceeds those of the current ASTM D5778 standard. An illustration of the piezocone penetrometer is presented in [Figure CPTu](#).

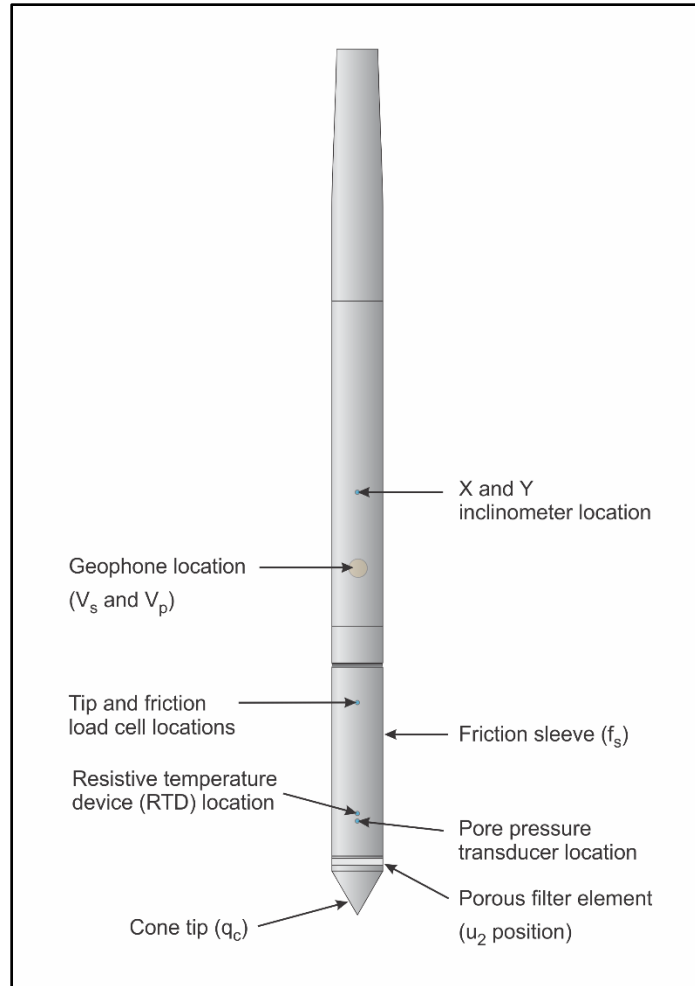


Figure CPTu. Piezocone Penetrometer (15 cm<sup>2</sup>)

The ConeTec data acquisition systems consist of a Windows based computer and a signal conditioner and power supply interface box with a sixteen bit (or greater) analog to digital (A/D) converter. The data is recorded at fixed depth increments using a depth wheel attached to the push cylinders or by using a spring loaded rubber depth wheel that is held against the cone rods. The typical recording interval is 2.5 centimeters; custom recording intervals are possible. The system displays the CPTu data in real time and records the following parameters to a storage media during penetration:

- Depth
- Uncorrected tip resistance ( $q_c$ )
- Sleeve friction ( $f_s$ )
- Dynamic pore pressure ( $u$ )
- Additional sensors such as resistivity, passive gamma, ultra violet induced fluorescence, if applicable

All testing is performed in accordance to ConeTec's CPT operating procedures which are in general accordance with the current [ASTM D5778](#) standard.

Prior to the start of a CPTu sounding a suitable cone is selected, the cone and data acquisition system are powered on, the pore pressure system is saturated with silicone oil and the baseline readings are recorded with the cone hanging freely in a vertical position.

The CPTu is conducted at a steady rate of two centimeters per second, within acceptable tolerances. Typically, one-meter length rods with an outer diameter of 38.1 millimeters are added to advance the cone to the sounding termination depth. After cone retraction final baselines are recorded.

Additional information pertaining to ConeTec's cone penetration testing procedures:

- Each filter is saturated in silicone oil under vacuum pressure prior to use
- Recorded baselines are checked with an independent multi-meter
- Baseline readings are compared to previous readings
- Soundings are terminated at the client's target depth or at a depth where an obstruction is encountered, excessive rod flex occurs, excessive inclination occurs, equipment damage is likely to take place, or a dangerous working environment arises
- Differences between initial and final baselines are calculated to ensure zero load offsets have not occurred and to ensure compliance with [ASTM](#) standards

The interpretation of piezocone data for this report is based on the corrected tip resistance ( $q_t$ ), sleeve friction ( $f_s$ ) and pore water pressure ( $u$ ). The interpretation of soil type is based on the correlations developed by [Robertson et al. \(1986\)](#) and [Robertson \(1990, 2009\)](#). It should be noted that it is not always possible to accurately identify a soil behaviour type based on these parameters. In these situations, experience, judgment and an assessment of other parameters may be used to infer soil behaviour type.

The recorded tip resistance ( $q_c$ ) is the total force acting on the piezocone tip divided by its base area. The tip resistance is corrected for pore pressure effects and termed corrected tip resistance ( $q_t$ ) according to the following expression presented in [Robertson et al. \(1986\)](#):

$$q_t = q_c + (1-a) \cdot u_2$$

where:  $q_t$  is the corrected tip resistance

$q_c$  is the recorded tip resistance

$u_2$  is the recorded dynamic pore pressure behind the tip ( $u_2$  position)

$a$  is the Net Area Ratio for the piezocone (0.8 for ConeTec probes)

The sleeve friction ( $f_s$ ) is the frictional force on the sleeve divided by its surface area. As all ConeTec piezocones have equal end area friction sleeves, pore pressure corrections to the sleeve data are not required.

The dynamic pore pressure ( $u$ ) is a measure of the pore pressures generated during cone penetration. To record equilibrium pore pressure, the penetration must be stopped to allow the dynamic pore pressures to stabilize. The rate at which this occurs is predominantly a function of the permeability of the soil and the diameter of the cone.

The friction ratio ( $R_f$ ) is a calculated parameter. It is defined as the ratio of sleeve friction to the tip resistance expressed as a percentage. Generally, saturated cohesive soils have low tip resistance, high friction ratios and generate large excess pore water pressures. Cohesionless soils have higher tip resistances, lower friction ratios and do not generate significant excess pore water pressure.

A summary of the CPTu soundings along with test details and individual plots are provided in the appendices. A set of files with calculated geotechnical parameters were generated for each sounding based on published correlations and are provided in Excel format in the data release folder. Information regarding the methods used is also included in the data release folder.

For additional information on CPTu interpretations and calculated geotechnical parameters, refer to [Robertson et al. \(1986\)](#), [Lunne et al. \(1997\)](#), [Robertson \(2009\)](#), [Mayne \(2013, 2014\)](#) and [Mayne and Peuchen \(2012\)](#).

## References

ASTM D5778-12, 2012, "Standard Test Method for Performing Electronic Friction Cone and Piezocone Penetration Testing of Soils", ASTM International, West Conshohocken, PA. DOI: [10.1520/D5778-12](#).

Lunne, T., Robertson, P.K. and Powell, J. J. M., 1997, "Cone Penetration Testing in Geotechnical Practice", Blackie Academic and Professional.

Mayne, P.W., 2013, "Evaluating yield stress of soils from laboratory consolidation and in-situ cone penetration tests", Sound Geotechnical Research to Practice (Holtz Volume) GSP 230, ASCE, Reston/VA: 406-420. DOI: [10.1061/9780784412770.027](#).

Mayne, P.W. and Peuchen, J., 2012, "Unit weight trends with cone resistance in soft to firm clays", Geotechnical and Geophysical Site Characterization 4, Vol. 1 (Proc. ISC-4, Pernambuco), CRC Press, London: 903-910.

Mayne, P.W., 2014, "Interpretation of geotechnical parameters from seismic piezocone tests", CPT'14 Keynote Address, Las Vegas, NV, May 2014.

Robertson, P.K., Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of InSitu 86, ASCE Specialty Conference, Blacksburg, Virginia.

Robertson, P.K., 1990, "Soil Classification Using the Cone Penetration Test", Canadian Geotechnical Journal, Volume 27: 151-158. DOI: [10.1139/T90-014](#).

Robertson, P.K., 2009, "Interpretation of cone penetration tests – a unified approach", Canadian Geotechnical Journal, Volume 46: 1337-1355. DOI: [10.1139/T09-065](#).

The cone penetration test is halted at specific depths to carry out pore pressure dissipation (PPD) tests, shown in [Figure PPD-1](#). For each dissipation test the cone and rods are decoupled from the rig and the data acquisition system measures and records the variation of the pore pressure ( $u$ ) with time ( $t$ ).

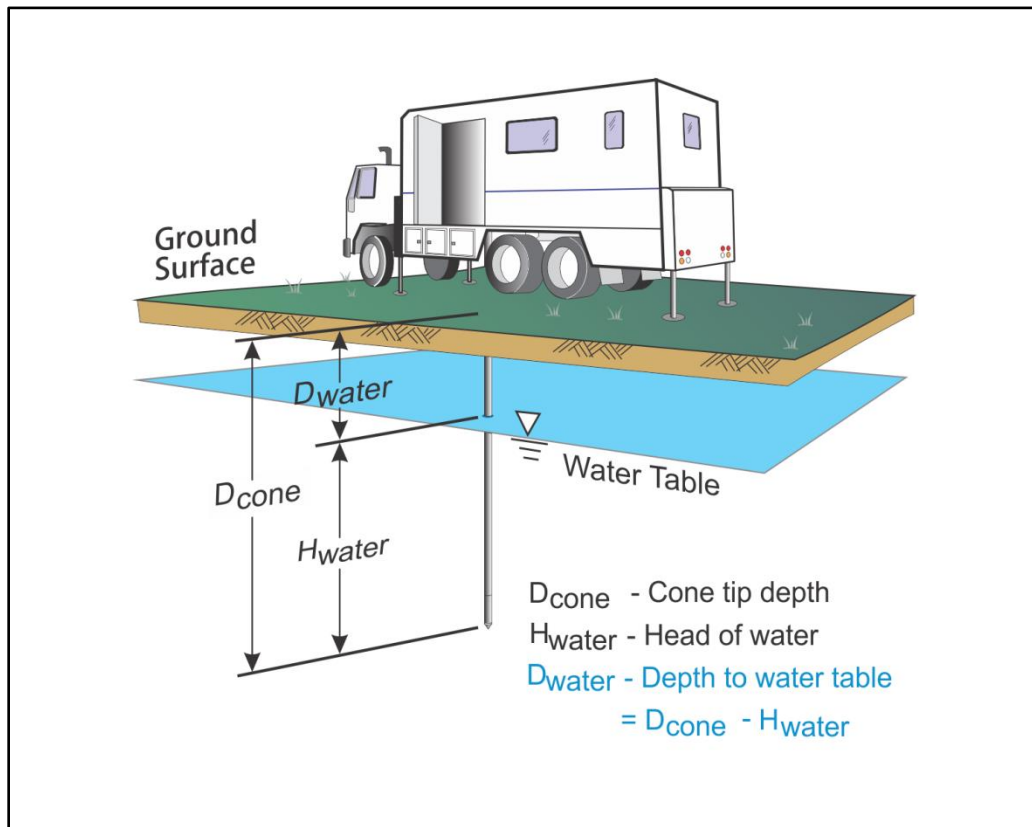


Figure PPD-1. Pore pressure dissipation test setup

Pore pressure dissipation data can be interpreted to provide estimates of ground water conditions, permeability, consolidation characteristics and soil behaviour.

The typical shapes of dissipation curves shown in [Figure PPD-2](#) are very useful in assessing soil type, drainage, in situ pore pressure and soil properties. A flat curve that stabilizes quickly is typical of a freely draining sand. Undrained soils such as clays will typically show positive excess pore pressure and have long dissipation times. Dilative soils will often exhibit dynamic pore pressures below equilibrium that then rise over time. Overconsolidated fine-grained soils will often exhibit an initial dilatory response where there is an initial rise in pore pressure before reaching a peak and dissipating.

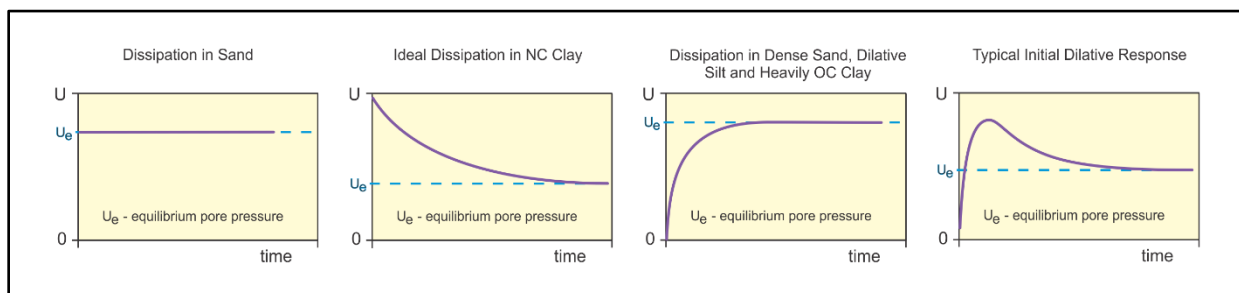


Figure PPD-2. Pore pressure dissipation curve examples

In order to interpret the equilibrium pore pressure ( $u_{eq}$ ) and the apparent phreatic surface, the pore pressure should be monitored until such time as there is no variation in pore pressure with time as shown for each curve in [Figure PPD-2](#).

In fine grained deposits the point at which 100% of the excess pore pressure has dissipated is known as  $t_{100}$ . In some cases this can take an excessive amount of time and it may be impractical to take the dissipation to  $t_{100}$ . A theoretical analysis of pore pressure dissipations by [Teh and Houlsby \(1991\)](#) showed that a single curve relating degree of dissipation versus theoretical time factor ( $T^*$ ) may be used to calculate the coefficient of consolidation ( $c_h$ ) at various degrees of dissipation resulting in the expression for  $c_h$  shown below.

$$c_h = \frac{T^* \cdot a^2 \cdot \sqrt{I_r}}{t}$$

Where:

- $T^*$  is the dimensionless time factor ([Table Time Factor](#))
- $a$  is the radius of the cone
- $I_r$  is the rigidity index
- $t$  is the time at the degree of consolidation

Table Time Factor.  $T^*$  versus degree of dissipation ([Teh and Houlsby \(1991\)](#))

Degree of Dissipation (%)	20	30	40	50	60	70	80
$T^* (u_2)$	0.038	0.078	0.142	0.245	0.439	0.804	1.60

The coefficient of consolidation is typically analyzed using the time ( $t_{50}$ ) corresponding to a degree of dissipation of 50% ( $u_{50}$ ). In order to determine  $t_{50}$ , dissipation tests must be taken to a pressure less than  $u_{50}$ . The  $u_{50}$  value is half way between the initial maximum pore pressure and the equilibrium pore pressure value, known as  $u_{100}$ . To estimate  $u_{50}$ , both the initial maximum pore pressure and  $u_{100}$  must be known or estimated. Other degrees of dissipations may be considered, particularly for extremely long dissipations.

At any specific degree of dissipation the equilibrium pore pressure ( $u$  at  $t_{100}$ ) must be estimated at the depth of interest. The equilibrium value may be determined from one or more sources such as measuring the value directly ( $u_{100}$ ), estimating it from other dissipations in the same profile, estimating the phreatic surface and assuming hydrostatic conditions, from nearby soundings, from client provided information, from site observations and/or past experience, or from other site instrumentation.

For calculations of  $c_h$  ([Teh and Houlsby \(1991\)](#)),  $t_{50}$  values are estimated from the corresponding pore pressure dissipation curve and a rigidity index ( $I_r$ ) is assumed. For curves having an initial dilatatory response in which an initial rise in pore pressure occurs before reaching a peak, the relative time from the peak value is used in determining  $t_{50}$ . In cases where the time to peak is excessive,  $t_{50}$  values are not calculated.

Due to possible inherent uncertainties in estimating  $I_r$ , the equilibrium pore pressure and the effect of an initial dilatatory response on calculating  $t_{50}$ , other methods should be applied to confirm the results for  $c_h$ .

Additional published methods for estimating the coefficient of consolidation from a piezocone test are described in Burns and Mayne (1998, 2002), Jones and Van Zyl (1981), Robertson et al. (1992) and Sully et al. (1999).

A summary of the pore pressure dissipation tests and dissipation plots are presented in the relevant appendix.

## References

Burns, S.E. and Mayne, P.W., 1998, "Monotonic and dilatatory pore pressure decay during piezocone tests", Canadian Geotechnical Journal 26 (4): 1063-1073. DOI: [1063-1073/T98-062](https://doi.org/10.1139/T98-062).

Burns, S.E. and Mayne, P.W., 2002, "Analytical cavity expansion-critical state model cone dissipation in fine-grained soils", Soils & Foundations, Vol. 42(2): 131-137.

Jones, G.A. and Van Zyl, D.J.A., 1981, "The piezometer probe: a useful investigation tool", Proceedings, 10<sup>th</sup> International Conference on Soil Mechanics and Foundation Engineering, Vol. 3, Stockholm: 489-495.

Robertson, P.K., Sully, J.P., Woeller, D.J., Lunne, T., Powell, J.J.M. and Gillespie, D.G., 1992, "Estimating coefficient of consolidation from piezocone tests", Canadian Geotechnical Journal, 29(4): 539-550. DOI: [10.1139/T92-061](https://doi.org/10.1139/T92-061).

Sully, J.P., Robertson, P.K., Campanella, R.G. and Woeller, D.J., 1999, "An approach to evaluation of field CPTU dissipation data in overconsolidated fine-grained soils", Canadian Geotechnical Journal, 36(2): 369-381. DOI: [10.1139/T98-105](https://doi.org/10.1139/T98-105).

Teh, C.I., and Houlsby, G.T., 1991, "An analytical study of the cone penetration test in clay", Geotechnique, 41(1): 17-34. DOI: [10.1680/geot.1991.41.1.17](https://doi.org/10.1680/geot.1991.41.1.17).

The appendices listed below are included in the report:

- Cone Penetration Test Summary and Standard Cone Penetration Test Plots
- Advanced Cone Penetration Test Plots with  $I_c$ ,  $S_u(N_{kt})$  and  $N1(60)I_c$
- Soil Behavior Type (SBT) Scatter Plots
- Pore Pressure Dissipation Summary and Pore Pressure Dissipation Plots



## Cone Penetration Test Summary and Standard Cone Penetration Test Plots




Job No: 19-56177  
 Client: Pacific Crest Engineering  
 Project: Springfield Water Systems Improvements  
 Start Date: 12-Nov-2019  
 End Date: 12-Nov-2019

**CONE PENETRATION TEST SUMMARY**

Sounding ID	File Name	Date	Cone	Assumed Phreatic Surface <sup>1</sup> (ft)	Final Depth (ft)	Northing <sup>2</sup> (m)	Easting <sup>2</sup> (m)	Elevation <sup>3</sup> (ft)	Refer to Notation Number
CPT-01	19-56177_CP01	12-Nov-2019	443:T1500F15U500	>32	31.66	4077617	609641	133	4
CPT-02	19-56177_CP02	12-Nov-2019	443:T1500F15U500	26.4	28.63	4077640	609544	117	

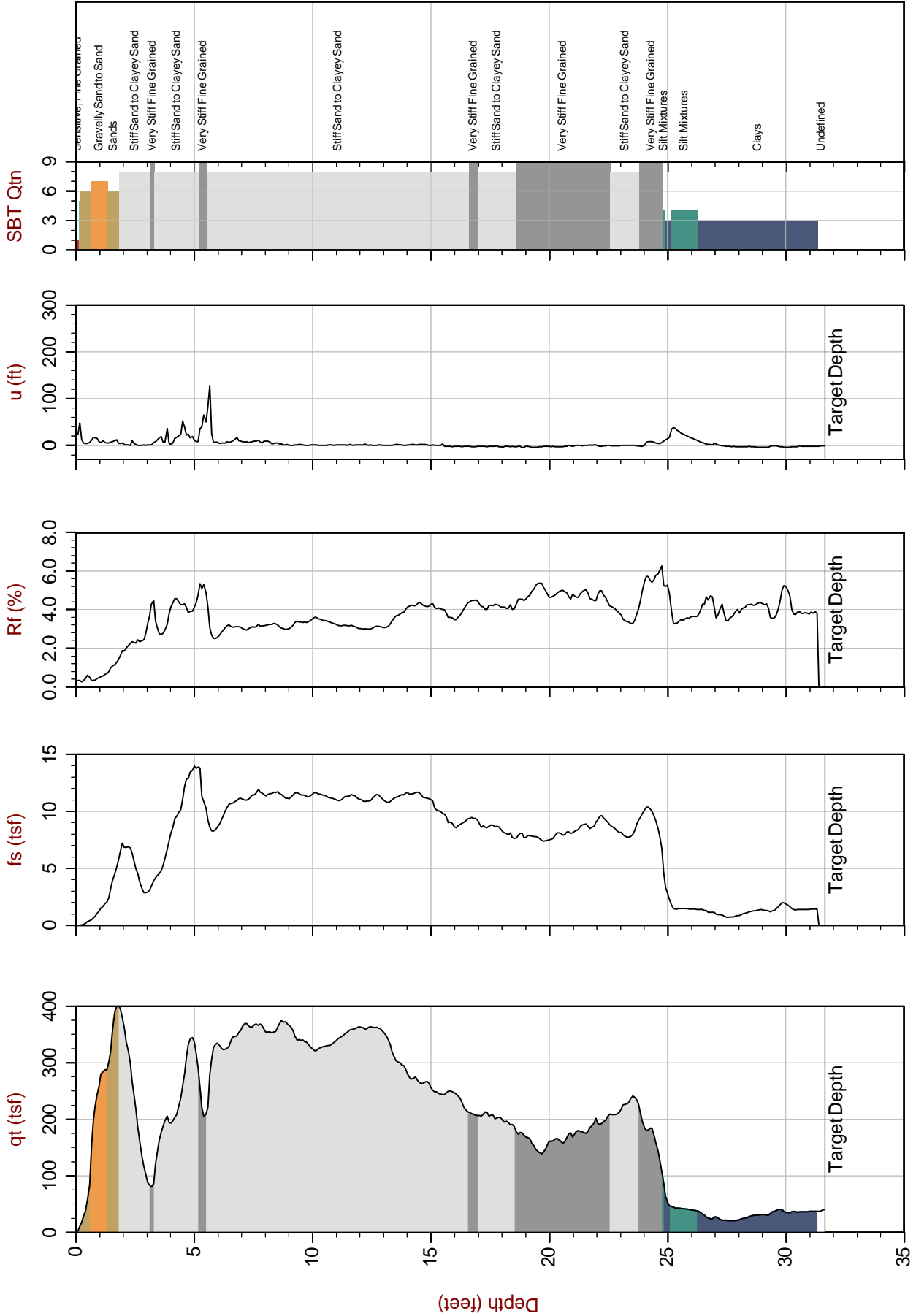
1. The assumed phreatic surface was based on the results of the shallowest pore pressure dissipation test performed within the sounding. Hydrostatic conditions were assumed for the calculated parameters.
2. The coordinates were acquired using consumer grade GPS equipment, datum: WGS 1984 / UTM Zone 10 North.
3. Elevations are referenced to the ground surface and are derived from Google Earth Elevation for the recorded coordinates.
4. The assumed phreatic surface is assumed to be below the bottom of the sounding. This is based off elevation change from the pore pressure test at CPT-02 and dynamic pore pressure.



**Pacific Crest Engineering**

Job No: 19-56177  
 Date: 2019-11-12 08:54  
 Site: Springfield Water System Improvements

Sounding: CPT-01  
 Cone: 443:T1500F15U500




Max Depth: 9.650 m / 31.66 ft  
 Depth Inc: 0.025 m / 0.082 ft  
 Avg Int: Every Point  
 ● Equilibrium Pore Pressure (Ueq)  
 The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

File: 19-56177\_CP01.COR  
 Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010  
 Coords: UTM 10N N: 4077617m E: 609641m

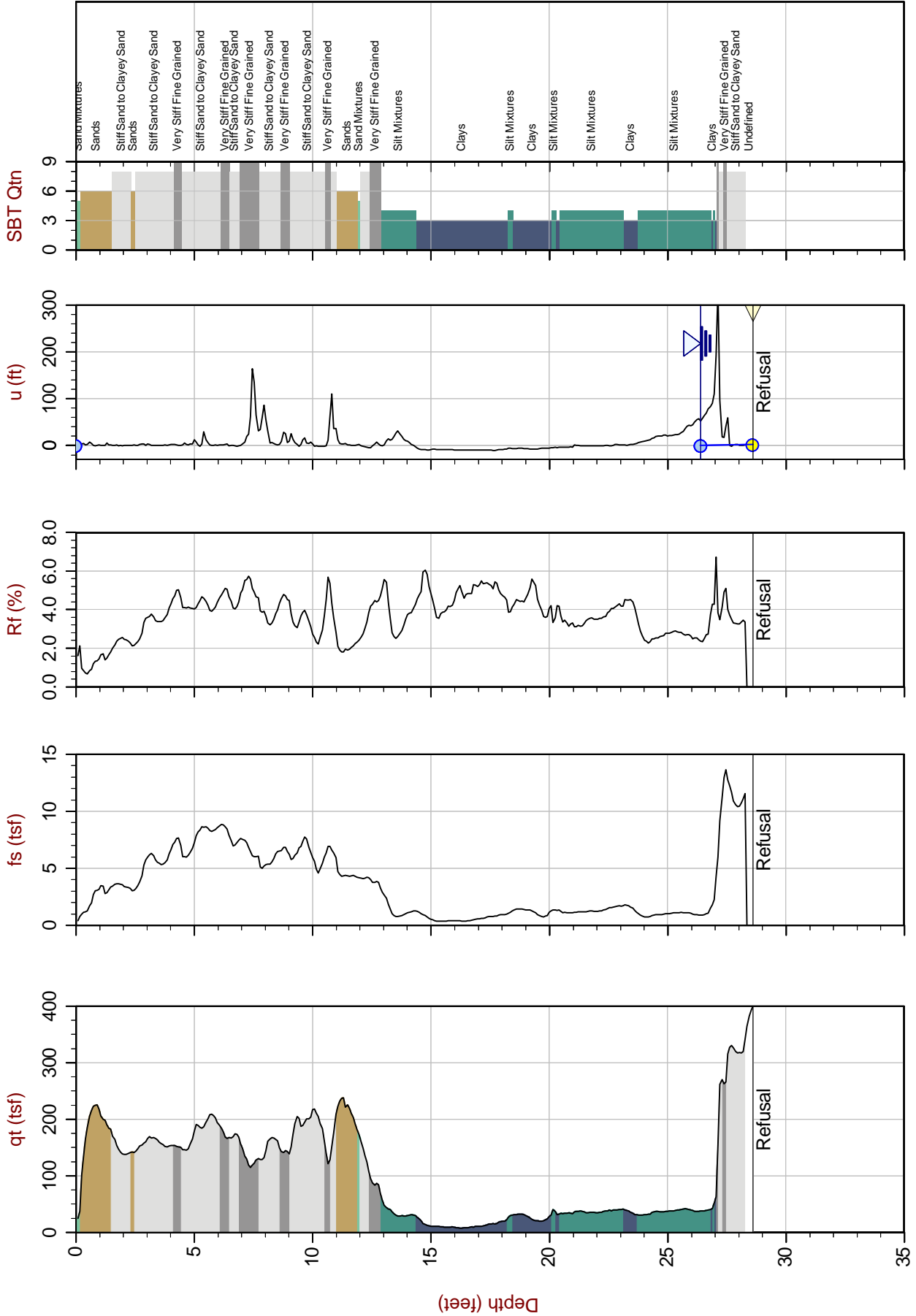
● Assumed Ueq  
 ▲ Dissipation, Ueq achieved  
 ▼ Dissipation, Ueq not achieved  
 — Hydrostatic Line



**Pacific Crest Engineering**

Job No: 19-56177  
 Date: 2019-11-12 10:00  
 Site: Springfield Water System Improvements

Sounding: CPT-02  
 Cone: 443:T1500F15U500




Max Depth: 8.725 m / 28.62 ft  
 Depth Inc: 0.025 m / 0.082 ft  
 Avg Int: Every Point  
 ● Equilibrium Pore Pressure (Ueq)  
 The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

File: 19-56177\_CP02.COR  
 Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010  
 Coords: UTM 10N N: 4077640m E: 609544m

● Assumed Ueq  
▼ Dissipation, Ueq achieved  
— Hydrostatic Line  
— Dissipation, Ueq not achieved  
 The coordinates should not be used for design purposes.

Advanced Cone Penetration Test Plots with  $I_c$ ,  $\Phi$ ,  $S_u(N_{kt})$ , and  $N1(60)I_c$



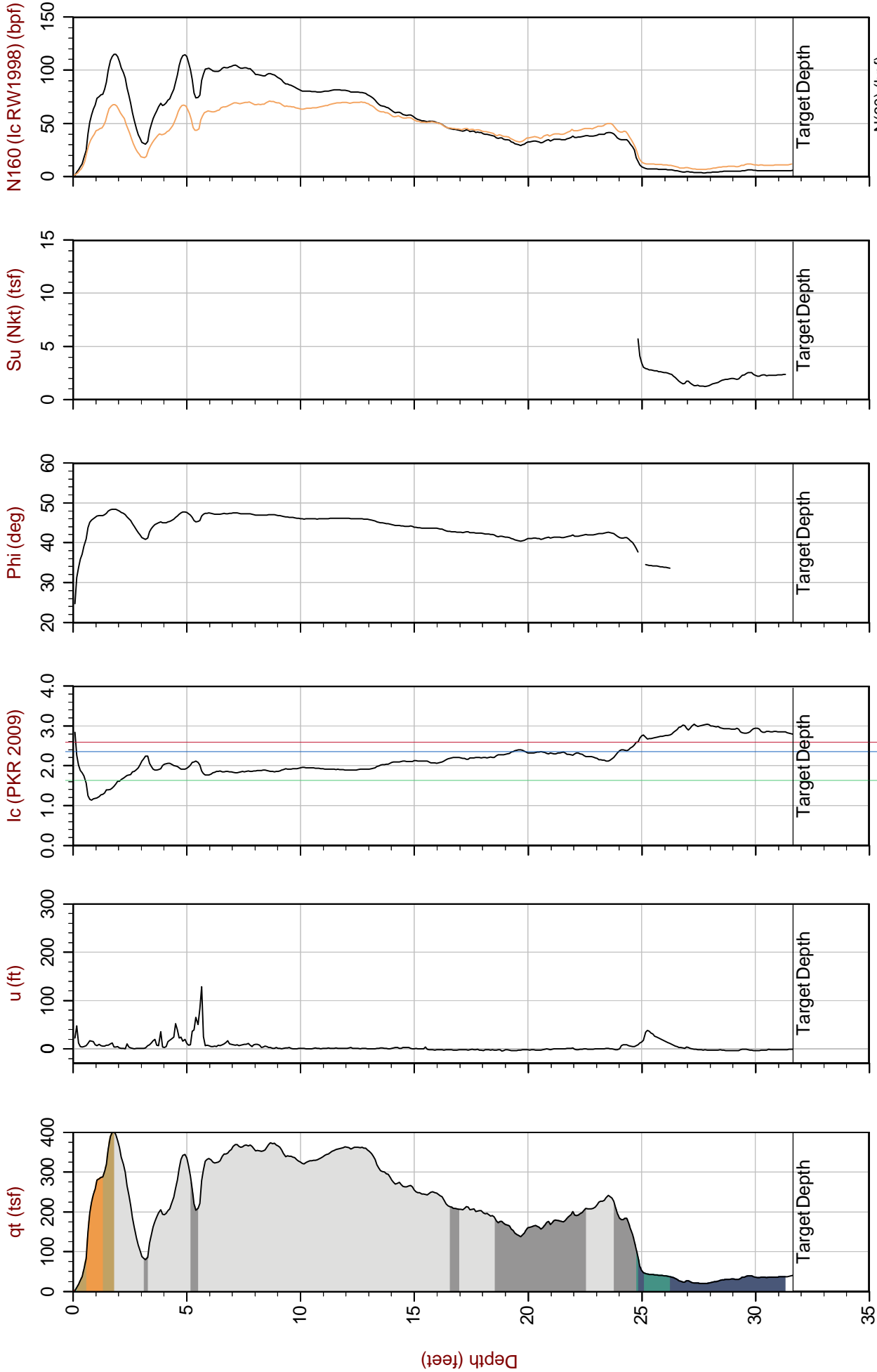
# Pacific Crest Engineering

Sounding: CPT-01

Cone: 443:T1500F15U500

Job No: 19-56177      Date: 2019-11-12 08:54

Site: Springfield Water System Improvements



Max Depth: 9.650 m / 31.66 ft  
 Depth Inc: 0.025 m / 0.082 ft  
 Avg Int: Every Point

- Assumed Ueq
- Dissipation, Ueq achieved
- Dissipation, Ueq not achieved
- Equilibrium Pore Pressure (Ueq)
- The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

File: 19-56177\_CP01.COR  
 Unit Wt: SBTQin (PKR2009)  
 Su Nkt: 15.0

- Hydrostatic Line

SBT: Robertson, 2009 and 2010  
 Coords: UTM 10N N: 4077617m E: 609641m

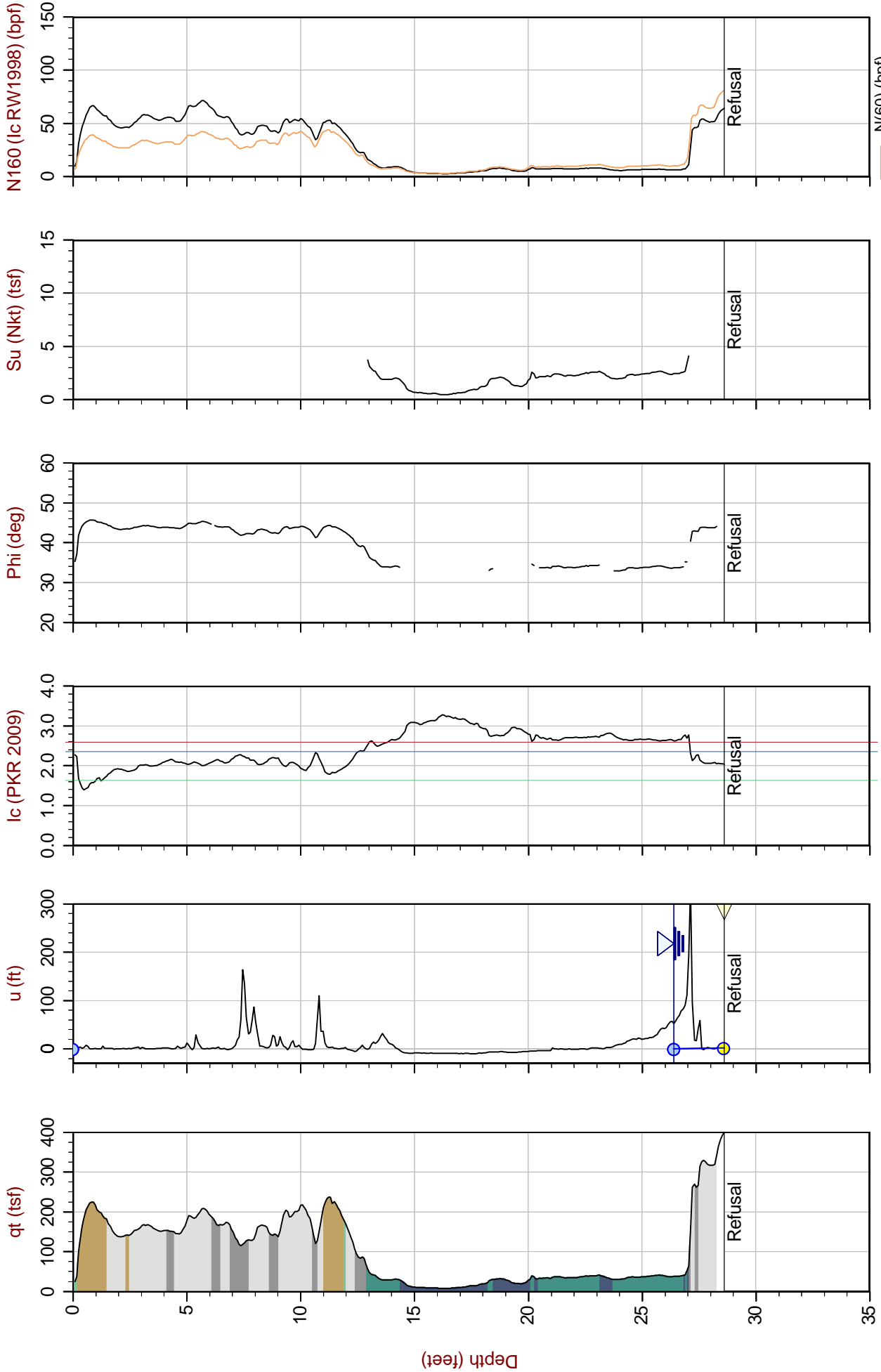


# Pacific Crest Engineering

Job No: 19-56177  
 Date: 2019-11-12 10:00  
 Site: Springfield Water System Improvements

Sounding: CPT-02

Cone: 443:T1500F15U500



SBT: Robertson, 2009 and 2010  
 Coords: UTM 10N N: 4077640m E: 609544m

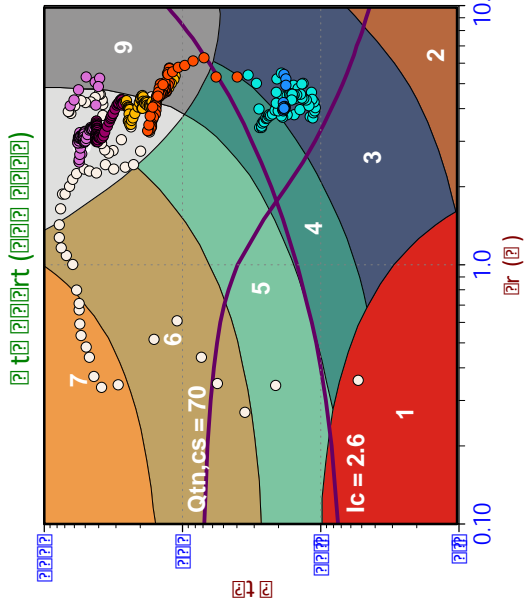
File: 19-56177\_CP02.COR  
 Unit Wt: SBTQin (PKR2009)  
 Su Nkt: 15.0

Max Depth: 8.725 m / 28.62 ft  
 Depth Inc: 0.025 m / 0.082 ft  
 Avg Int: Every Point

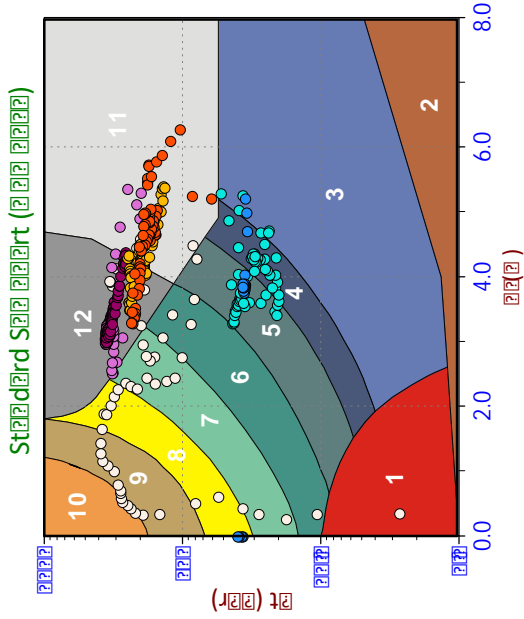
- Equilibrium Pore Pressure (Ueq)
  - Assumed Ueq
  - △ Dissipation, Ueq not achieved
  - △ Dissipation, Ueq achieved
  - Hydrostatic Line
- The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

## Soil Behavior Type (SBT) Scatter Plots

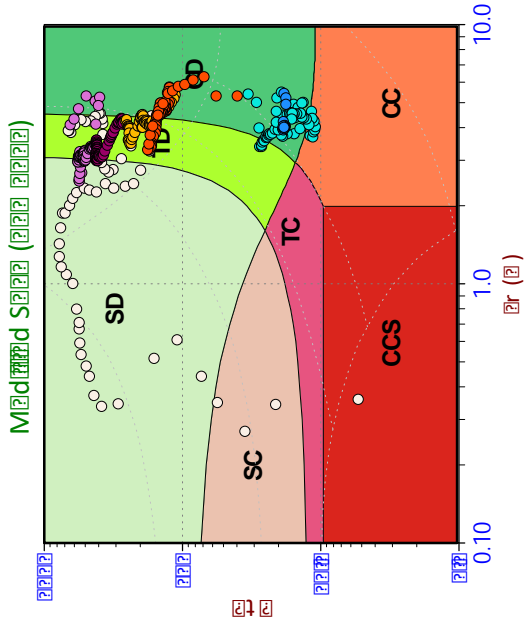




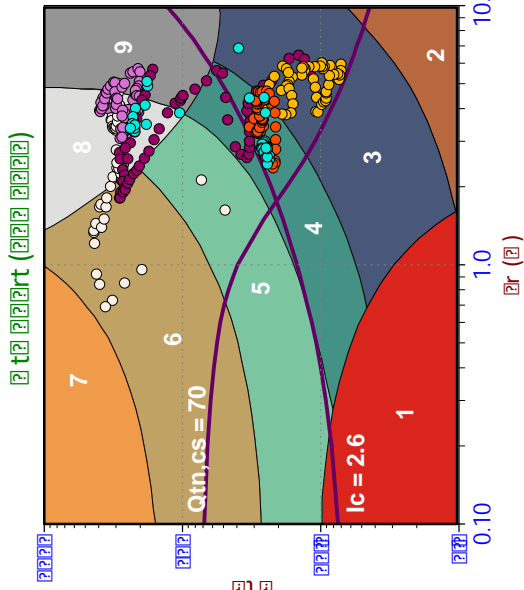
- Depth Ranges**
- >0.0 to 5.0 ft
  - >5.0 to 10.0 ft
  - >10.0 to 15.0 ft
  - >15.0 to 20.0 ft
  - >20.0 to 25.0 ft
  - >25.0 to 30.0 ft
  - >30.0 to 35.0 ft
  - >35.0 to 40.0 ft
  - >40.0 to 45.0 ft
  - >45.0 to 50.0 ft
  - >50.0 ft
- Legend**
- Sensitive, Fine Grained
  - Organic Soils
  - Clays
  - Silt Mixtures
  - Sand Mixtures
  - Sands
  - Gravelly Sand to Sand
  - Stiff Sand to Clayey Sand
  - Very Stiff Fine Grained



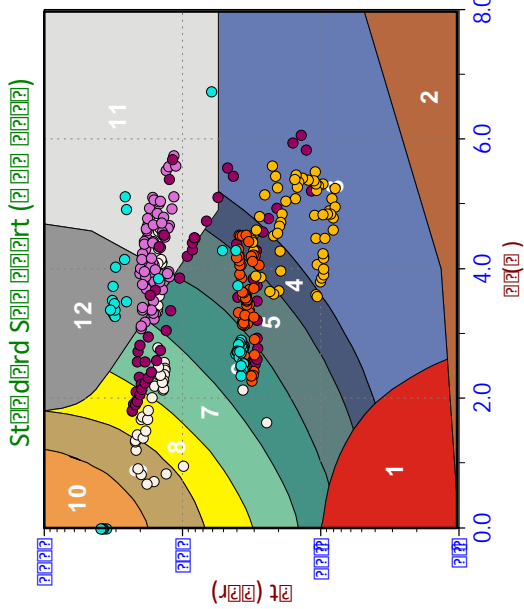
- Legend**
- Sensitive Fines
  - Organic Soil
  - Clay
  - Silty Clay
  - Clayey Silt
  - Silt
  - Sandy Silt
  - Silty Sand/Sand
  - Sand
  - Gravelly Sand
  - Stiff Fine Grained
  - Cemented Sand



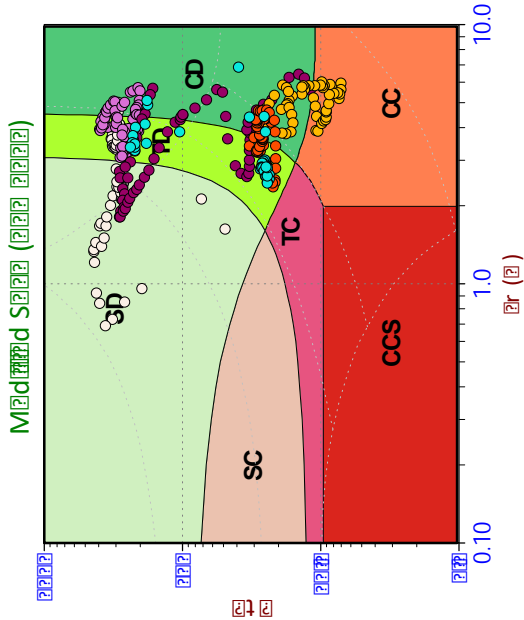
- Legend**
- CCS (Cont. sensitive clay like)
  - CC (Cont. clay like)
  - TC (Cont. transitional)
  - SC (Cont. sand like)
  - CD (Dil. clay like)
  - TD (Dil. transitional)
  - SD (Dil. sand like)



- Depth Ranges**
- >0.0 to 5.0 ft
  - >5.0 to 10.0 ft
  - >10.0 to 15.0 ft
  - >15.0 to 20.0 ft
  - >20.0 to 25.0 ft
  - >25.0 to 30.0 ft
  - >30.0 to 35.0 ft
  - >35.0 to 40.0 ft
  - >40.0 to 45.0 ft
  - >45.0 to 50.0 ft
  - >50.0 ft
- Legend**
- Sensitive, Fine Grained
  - Organic Soils
  - Clays
  - Silt Mixtures
  - Sand Mixtures
  - Sands
  - Gravelly Sand to Sand
  - Stiff Sand to Clayey Sand
  - Very Stiff Fine Grained



- Legend**
- Sensitive Fines
  - Organic Soil
  - Clay
  - Silty Clay
  - Clayey Silt
  - Silt
  - Sandy Silt
  - Silty Sand/Sand
  - Sand
  - Gravelly Sand
  - Stiff Fine Grained
  - Cemented Sand



- Legend**
- CCS (Cont. sensitive clay like)
  - CC (Cont. clay like)
  - TC (Cont. transitional)
  - SC (Cont. sand like)
  - CD (Dil. clay like)
  - TD (Dil. transitional)
  - SD (Dil. sand like)

## Pore Pressure Dissipation Summary and Pore Pressure Dissipation Plots



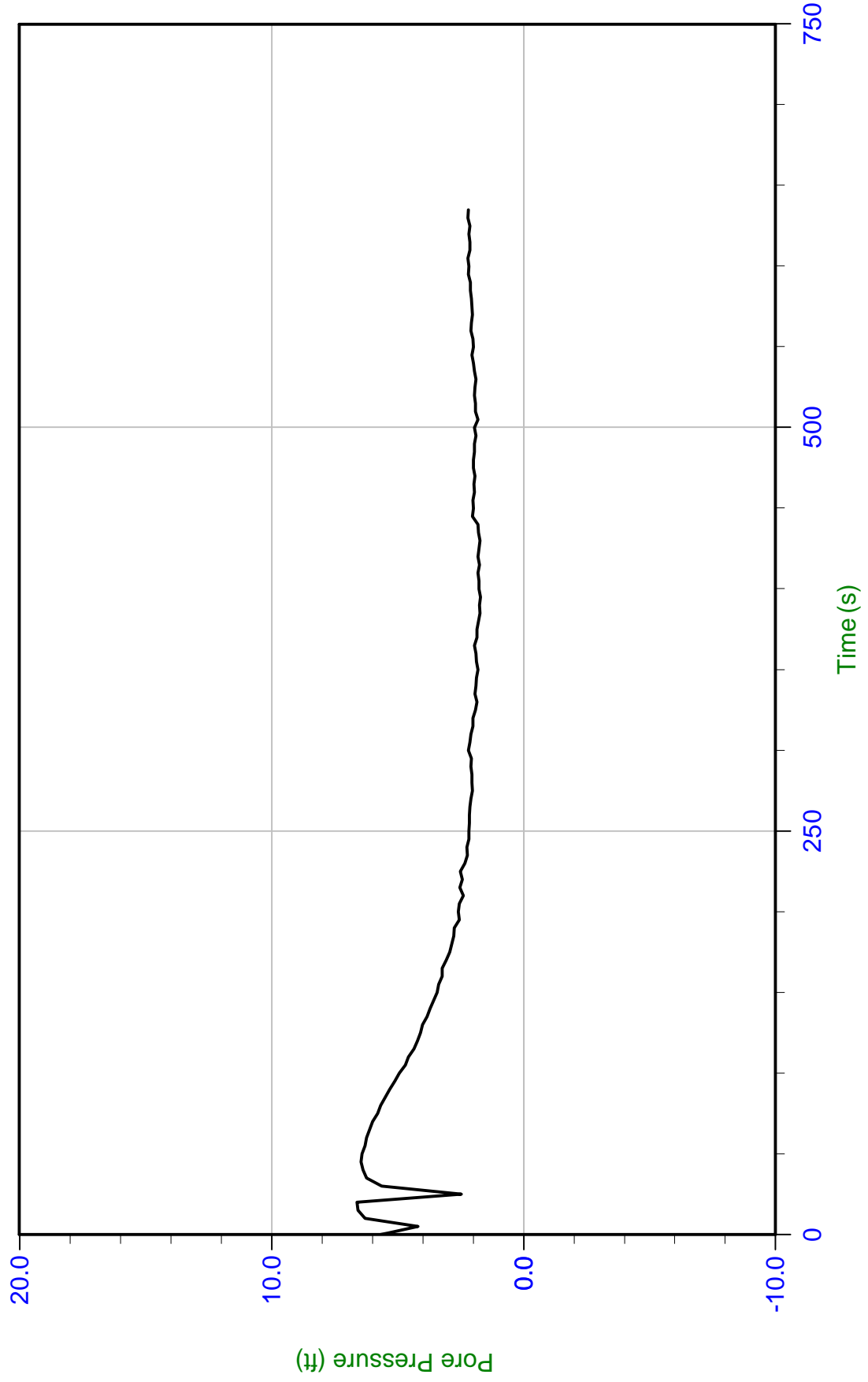
Job No: 19-56177  
 Client: Pacific Crest Engineering  
 Project: Springfield Water Systems Improvements  
 Start Date: 12-Nov-2019  
 End Date: 12-Nov-2019

### ***CPT<sub>u</sub> PORE PRESSURE DISSIPATION SUMMARY***

Sounding ID	File Name	Cone Area (cm <sup>2</sup> )	Duration (s)	Test Depth (ft)	Estimated Equilibrium Pore Pressure U <sub>eq</sub> (ft)	Calculated Phreatic Surface (ft)
CPT-02	19-56177_CP02	15	635	28.62	2.2	26.4

**Job No:** 19-56177      **Sounding:** CPT-02  
**Date:** 1/12/2019 10:00      **Cone:** 443:T1500F15U500      **Area:** 15 cm<sup>2</sup>  
**Site:** Springfield Water System Improvements

**Pacific Crest Engineering**



WT: 8.058 m / 26.438 ft  
Ueq: 2.2 ft  
u Min: 1.7 ft  
u Max: 6.6 ft  
u Final: 2.2 ft

Filename: 19-56177\_CP02.PPF  
Depth: 8.725 m / 28.625 ft  
Duration: 635.0 s

**Trace Summary:**

**Appendix D**  
**Tribal Consultation**



**holman & ASSOCIATES**  
Archaeological Consultants  
"SINCE THE BEGINNING"

**3615 FOLSOM ST. SAN FRANCISCO,  
CALIFORNIA 94110 415/550-7286**

26 February 2020

Native American Heritage Commission  
915 Capitol Mall, Room 364  
Sacramento, CA 95814

Re: Consultation for the Proposed Springfield Water System Improvement Project near Moss Landing, Monterey County, California

Holman & Associates is assisting Don Rosa, General Manager with the Pajaro Sunny Mesa Community Services District with initial consultation with Native Americans for the above referenced project. The District proposes to plan and design upgrades, and potential additions to the Springfield Water System. This will expand and enhance the System including development of new a source of supply; storage, treatment, and pumping facilities; and distribution system improvements.

A portion of the Moss Landing Middle School will be developed as a new municipal water location. The recently constructed SW-2 well site improvements will include a new submersible well pump, piping, valves, and appurtenances; electrical and communication improvements; chlorination facilities; two new 110,000-gallon bolted steel water storage tanks; a permanent back-up generator; a new booster pump station including a hydropneumatic tank and four pumps to provide fully redundant domestic and fire service; and civil site improvements including fencing and security improvements, hardscape, a new building to house the new well and associated equipment, and miscellaneous other site improvements. Approximately 2.4 linear miles (12,500 linear ft.) of new eight-inch water line will be constructed in the Springfield and Struve Roads areas. New distribution system piping would include valves, fire hydrants, air release valves, blow-offs, sampling stations, and other appurtenances as appropriate. New distribution system piping will be installed primarily by the open trench method; distribution piping crossing Highway One will be installed with a steel casing by the jack and bore method. Approximately 3,600 linear feet of existing distribution system piping is currently planned to be replaced along Struve Road. Water service laterals will be replaced from the existing distribution mains to each residence currently receiving water from the system and individual water meters will be provided for each service connection. Proposed impacts will include four to eight feet deep for pipe trenching and six to eight feet at the school.

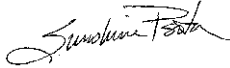
The Project's environmental compliance will include the California Environmental Quality Act (CEQA) and certain regulation of the Nation Environmental Project Act (NEPA) under the State Water Board protocol as the acting federal lead agency. A Caltrans Encroachment Permit will also be required. The project is located within the Section 5 of Township 13 South and Range 2 East of MDBM as depicted on the Moss Landing 7.5' topographic quadrangle See attached map).

Please review the Sacred Lands File for any Native American cultural resources that may be within or adjacent to the study area. Please let Mr. Rosa and me know if you have any information or concerns. We also request a current list of Native American individuals and groups who may have

knowledge of cultural resources in the immediate vicinity of the Project Area, specifically those representatives who wish to be contacted regarding potential cultural resources impacts in this portion of Monterey County. Should you have any questions, I can be reached at my cell (707.291.8786) or by email (spsota@sonic.net). Please email or fax back results to **707.861.3424**.

We look forward to hearing from you. Thank you for your assistance with this project.

Sincerely,

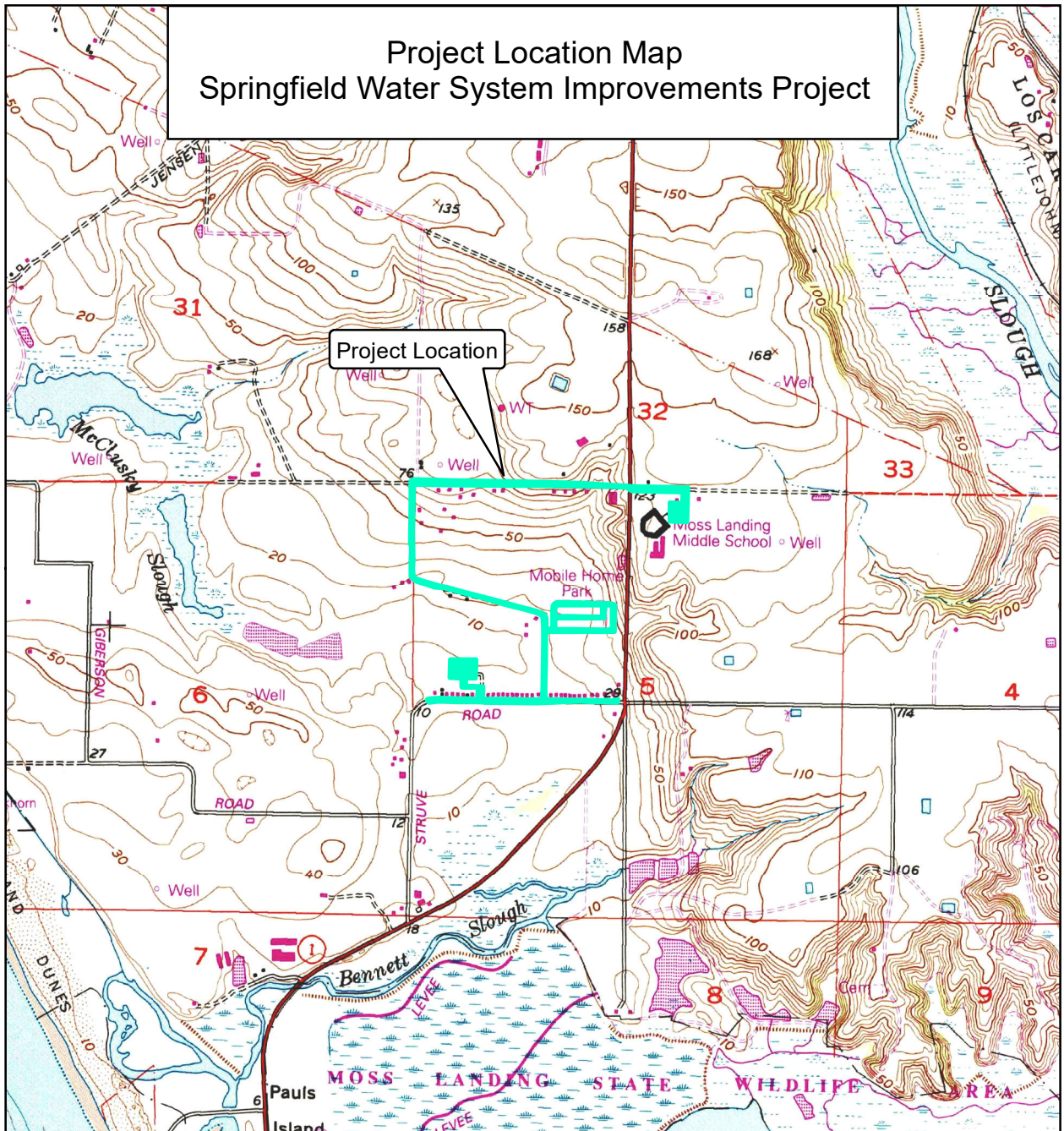
A handwritten signature in cursive script, appearing to read "Sunshine Psota".

Sunshine Psota

Cc: Don Rosa, General Manager, 136 San Juan Road, Royal Oaks, CA 95076  
[donrosa@pajarosunnymesa.com](mailto:donrosa@pajarosunnymesa.com); 831-722-1389



# Project Location Map Springfield Water System Improvements Project



USGS 7.5' Maps: Moss Landing 1954;  
photorevised 1994

T12S; R2E, Sections 31 & 31  
T13S; R2E, Sections 5 & 6

NAD 1983, Zone 10 S  
N. Hemisphere

Scale 1: 24,000

Project Area



0 0.25 0.5 1 Kilometers

0 0.25 0.5 1 Miles

Soquel	Watsonville West	Watsonville East	Chittenden
	Moss Landing	Prunedale	
	Marina	Salinas	San Juan Bautista

## NATIVE AMERICAN HERITAGE COMMISSION

February 27, 2020

Don Rosa  
Pajaro Sunny Mesa Community Services District

Via Email to: [donrosa@pajarosunnymesa.com](mailto:donrosa@pajarosunnymesa.com)  
Cc: [spsota@sonic.net](mailto:spsota@sonic.net)  
[rumsen@aol.com](mailto:rumsen@aol.com)  
[ramirez.louise@yahoo.com](mailto:ramirez.louise@yahoo.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, Springfield Water System Improvement Project, Monterey County**

Dear Mr. Rosa:

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:



CHAIRPERSON  
**Laura Miranda**  
Luiseño

VICE CHAIRPERSON  
**Reginald Pagaling**  
Chumash

SECRETARY  
**Merri Lopez-Keifer**  
Luiseño

PARLIAMENTARIAN  
**Russell Attebery**  
Karuk

COMMISSIONER  
**Marshall McKay**  
Wintun

COMMISSIONER  
**William Mungary**  
Paiute/White Mountain  
Apache

COMMISSIONER  
**Joseph Myers**  
Pomo

COMMISSIONER  
**Julie Tumamait-**  
**Stenslie**  
Chumash

COMMISSIONER  
[Vacant]

EXECUTIVE SECRETARY  
**Christina Snider**  
Pomo

**NAHC HEADQUARTERS**  
1550 Harbor Boulevard  
Suite 100  
West Sacramento,  
California 95691  
(916) 373-3710  
[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)  
[NAHC.ca.gov](http://NAHC.ca.gov)

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 positive. Please contact the Costanoan Rumsen Carmel Tribe and the Ohlone/Costanoan-Esselen Nation on the attached list for more information.

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: [Sarah.Fonseca@nahc.ac.gov](mailto:Sarah.Fonseca@nahc.ac.gov).

Sincerely,



Sarah Fonseca  
Cultural Resources Analyst

Attachment

Native American Heritage Commission  
Tribal Consultation List  
Monterey County  
2/27/2020

**Amah Mutsun Tribal Band**

Valentin Lopez, Chairperson  
P.O. Box 5272  
Galt, CA, 95632  
Phone: (916) 743 - 5833  
vlopez@amahmutsun.org

Costanoan  
Northern Valley  
Yokut

**Ohlone/Costanoan-Esselen  
Nation**

Louise Miranda-Ramirez,  
Chairperson  
P.O. Box 1301  
Monterey, CA, 93942  
Phone: (408) 629 - 5189  
ramirez.louise@yahoo.com

Costanoan  
Esselen

**Amah Mutsun Tribal Band of  
Mission San Juan Bautista**

Irenne Zwielerlein, Chairperson  
789 Canada Road  
Woodside, CA, 94062  
Phone: (650) 851 - 7489  
Fax: (650) 332-1526  
amahmutsuntribal@gmail.com

Costanoan

**Costanoan Rumsen Carmel  
Tribe**

Tony Cerda, Chairperson  
244 E. 1st Street  
Pomona, CA, 91766  
Phone: (909) 629 - 6081  
Fax: (909) 524-8041  
rumsen@aol.com

Costanoan

**Esselen Tribe of Monterey  
County**

Tom Little Bear Nason, Chairman  
P. O. Box 95  
Carmel Valley, CA, 93924  
Phone: (831) 659 - 2153  
Fax: (831) 659-0111  
TribalChair@EsselenTribe.com

Costanoan  
Esselen

**Indian Canyon Mutsun Band of  
Costanoan**

Ann Marie Sayers, Chairperson  
P.O. Box 28  
Hollister, CA, 95024  
Phone: (831) 637 - 4238  
ams@indiancanyon.org

Costanoan

**Ohlone/Costanoan-Esselen  
Nation**

Christanne Arias, Vice  
Chairperson  
519 Viejo Gabriel  
Soledad, CA, 93960  
Phone: (831) 235 - 4590

Costanoan  
Esselen

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 Springfield Water System Improvement Project, Monterey County.



**holman & ASSOCIATES**  
Archaeological Consultants  
"SINCE THE BEGINNING"

3615 FOLSOM ST. SAN FRANCISCO,  
CALIFORNIA 94110 415/550-7286

27 February 2020

Valentin Lopez, Chairperson  
Amah Mutsun Tribal Band  
P O Box 5272  
Galt, CA 95632

Re: Consultation for the Proposed Springfield Water System Improvement Project near Moss Landing, Monterey County, California

Dear Mr. Lopez:

Holman & Associates is assisting Don Rosa, General Manager with the Pajaro Sunny Mesa Community Services District with initial consultation with Native Americans for the above referenced project. The District proposes to plan and design upgrades, and potential additions to the Springfield Water System near Moss Landing. This will expand and enhance the System including development of new a source of supply; storage, treatment, and pumping facilities; and distribution system improvements.

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The Native American Heritage Commission conducted a Sacred Lands File check for this project and it was positive. That agency has referred us to Costanoan Rumsen Carmel Tribe and the Ohlone/Costanoan-Esselen Nation for more information. Both of these groups are being contacted.

Please notify Don Rosa ([donrosa@pajarosunnymesa.com](mailto:donrosa@pajarosunnymesa.com)) or me if you have any additional information or concerns about cultural resources that may be within or adjacent to the Project Area. I request that you respond in writing within 10 working days if you have such information or concerns. To reach me, please use email ([spsota@sonic.net](mailto:spsota@sonic.net)), or fax to (707.861.3424).

Sincerely,

Sunshine Psota

Cc: Don Rosa, General Manager, 136 San Juan Road, Royal Oaks, CA 95076  
[donrosa@pajarosunnymesa.com](mailto:donrosa@pajarosunnymesa.com); 831-722-1389



**holman & ASSOCIATES**  
Archaeological Consultants  
"SINCE THE BEGINNING"

3615 FOLSOM ST. SAN FRANCISCO,  
CALIFORNIA 94110 415/550-7286

27 February 2020

Irenne Zwierlein, Chairperson  
Amah/Mutsun Tribal Band of Mission San Juan Bautista  
789 Canada Rd.  
Woodside, CA 94062

Re: Consultation for the Proposed Springfield Water System Improvement Project near Moss Landing, Monterey County, California

Dear Ms. Zwierlein:

Holman & Associates is assisting Don Rosa, General Manager with the Pajaro Sunny Mesa Community Services District with initial consultation with Native Americans for the above referenced project. The District proposes to plan and design upgrades, and potential additions to the Springfield Water System near Moss Landing. This will expand and enhance the System including development of new a source of supply; storage, treatment, and pumping facilities; and distribution system improvements.

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Please notify Don Rosa ([donrosa@pajarosunnymesa.com](mailto:donrosa@pajarosunnymesa.com)) or me if you have any additional information or concerns about cultural resources that may be within or adjacent to the Project Area. I request that you respond in writing within 10 working days if you have such information or concerns. To reach me, please use email ([spsota@sonic.net](mailto:spsota@sonic.net)), or fax to (707.861.3424).

Sincerely,

Sunshine Psota

Cc: Don Rosa, General Manager, 136 San Juan Road, Royal Oaks, CA 95076  
[donrosa@pajarosunnymesa.com](mailto:donrosa@pajarosunnymesa.com); 831-722-1389





**holman & ASSOCIATES**  
Archaeological Consultants  
"SINCE THE BEGINNING"

**3615 FOLSOM ST. SAN FRANCISCO,  
CALIFORNIA 94110 415/550-7286**

27 February 2020

Tony Cerda, Chairperson  
Costanoan Rumsen Carmel Tribe  
244 E 1<sup>st</sup> Street  
Pomona, CA 91766

Re: Consultation for the Proposed Springfield Water System Improvement Project near Moss Landing, Monterey County, California

Dear Mr. Cerda:

Holman & Associates is assisting Don Rosa, General Manager with the Pajaro Sunny Mesa Community Services District with initial consultation with Native Americans for the above referenced project. The District proposes to plan and design upgrades, and potential additions to the Springfield Water System near Moss Landing. This will expand and enhance the System including development of new a source of supply; storage, treatment, and pumping facilities; and distribution system improvements.

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Please notify Don Rosa ([donrosa@pajarosunnymesa.com](mailto:donrosa@pajarosunnymesa.com)) or me. I request that you respond in writing within 10 working days if you have such information or concerns. To reach me, please use email ([spsota@sonic.net](mailto:spsota@sonic.net)), or fax to (707.861.3424).

Sincerely,

Sunshine Psota

Cc: Don Rosa, General Manager, 136 San Juan Road, Royal Oaks, CA 95076  
[donrosa@pajarosunnymesa.com](mailto:donrosa@pajarosunnymesa.com); 831-722-1389



**holman & ASSOCIATES**  
Archaeological Consultants  
"SINCE THE BEGINNING"

3615 FOLSOM ST. SAN FRANCISCO,  
CALIFORNIA 94110 415/550-7286

27 February 2020

Tom Little Bear Nason, Chairperson  
Indian Canyon Mutsun Band of Costanoan  
P O Box 95  
Carmel Valley, CA 93924

Re: Consultation for the Proposed Springfield Water System Improvement Project near Moss Landing, Monterey County, California

Dear Mr. Nason:

Holman & Associates is assisting Don Rosa, General Manager with the Pajaro Sunny Mesa Community Services District with initial consultation with Native Americans for the above referenced project. The District proposes to plan and design upgrades, and potential additions to the Springfield Water System near Moss Landing. This will expand and enhance the System including development of new a source of supply; storage, treatment, and pumping facilities; and distribution system improvements.

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Sincerely,

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**holman & ASSOCIATES**  
Archaeological Consultants

"SINCE THE BEGINNING"

**3615 FOLSOM ST. SAN FRANCISCO,  
CALIFORNIA 94110 415/550-7286**

27 February 2020

Ann Marie Sayers, Chairperson  
Indian Canyon Mutsun Band of Costanoan  
P O Box 28  
Hollister, CA 95024

Re: Consultation for the Proposed Springfield Water System Improvement Project near Moss Landing, Monterey County, California

Dear Ms. Sayers:

Holman & Associates is assisting Don Rosa, General Manager with the Pajaro Sunny Mesa Community Services District with initial consultation with Native Americans for the above referenced project. The District proposes to plan and design upgrades, and potential additions to the Springfield Water System near Moss Landing. This will expand and enhance the System including development of new a source of supply; storage, treatment, and pumping facilities; and distribution system improvements.

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Sincerely,

Sunshine Psota

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**holman & ASSOCIATES**  
Archaeological Consultants  
"SINCE THE BEGINNING"

3615 FOLSOM ST. SAN FRANCISCO,  
CALIFORNIA 94110 415/550-7286

28 February 2020

Christanne Arias, Vice Chairperson  
Ohlone/Costanoan-Esselen Nation  
519 Viejo Gabriel  
Soledad, CA 93960

Re: Consultation for the Proposed Springfield Water System Improvement Project near Moss Landing, Monterey County, California

Dear Ms. Arias:

Holman & Associates is assisting Don Rosa, General Manager with the Pajaro Sunny Mesa Community Services District with initial consultation with Native Americans for the above referenced project. The District proposes to plan and design upgrades, and potential additions to the Springfield Water System. This will expand and enhance the System including development of new a source of supply; storage, treatment, and pumping facilities; and distribution system improvements.

A portion of the Moss Landing Middle School will be developed as a new municipal water location. The recently constructed SW-2 well site improvements will include a new submersible well pump, piping, valves, and appurtenances; electrical and communication improvements; chlorination facilities; two new 110,000-gallon bolted steel water storage tanks; a permanent back-up generator; a new booster pump station including a hydropneumatic tank and four pumps to provide fully redundant domestic and fire service; and civil site improvements including fencing and security improvements, hardscape, a new building to house the new well and associated equipment, and miscellaneous other site improvements. Approximately 2.4 linear miles (12,500 linear ft.) of new eight-inch water line will be constructed in the Springfield and Struve Roads areas. New distribution system piping would include valves, fire hydrants, air release valves, blow-offs, sampling stations, and other appurtenances as appropriate. New distribution system piping will be installed primarily by the open trench method; distribution piping crossing Highway One will be installed with a steel casing by the jack and bore method. Approximately 3,600 linear feet of existing distribution system piping is currently planned to be replaced along Struve Road. Water service laterals will be replaced from the existing distribution mains to each residence currently receiving water from the system and individual water meters will be provided for each service connection. Proposed impacts will include four to eight feet deep for pipe trenching and six to eight feet at the school.

The Project's environmental compliance will include the California Environmental Quality Act (CEQA) and certain regulation of the Nation Environmental Project Act (NEPA) under the State Water Board protocol as the acting federal lead agency. A Caltrans Encroachment Permit will also be required. The project is located within the Section 5 of Township 13 South and Range 2 East of MDBM as depicted on the Moss Landing 7.5' topographic quadrangle See attached map).

The Native American Heritage Commission conducted a Sacred Lands File check for this project and it was positive. That agency has referred us to Costanoan Rumsen Carmel Tribe and the Ohlone/Costanoan-Esselen Nation for more information. Both your tribe and the Costanoan Rumsen Carmel Tribe are being contacted. Should you have any concerns or additional information that can assist with this project we would appreciate your comments.

Please notify Don Rosa ([donrosa@pajarosunnymesa.com](mailto:donrosa@pajarosunnymesa.com)) or me. I request that you respond in writing within 10 working days if you have such information or concerns. To reach me, please use email ([spsota@sonic.net](mailto:spsota@sonic.net)), or fax to (707.861.3424).

Sincerely,

Sunshine Psota

Cc: Don Rosa, General Manager, 136 San Juan Road, Royal Oaks, CA 95076  
[donrosa@pajarosunnymesa.com](mailto:donrosa@pajarosunnymesa.com); 831-722-1389





**holman & ASSOCIATES**  
Archaeological Consultants  
"SINCE THE BEGINNING"

3615 FOLSOM ST. SAN FRANCISCO,  
CALIFORNIA 94110 415/550-7286

28 February 2020

Louise Miranda-Ramirez Chairperson  
Ohlone/Costanoan-Esselen Nation  
P O Box 1301  
Monterey, CA 93942

Re: Consultation for the Proposed Springfield Water System Improvement Project near Moss Landing, Monterey County, California

Dear Ms. Miranda-Ramirez:

Holman & Associates is assisting Don Rosa, General Manager with the Pajaro Sunny Mesa Community Services District with initial consultation with Native Americans for the above referenced project. The District proposes to plan and design upgrades, and potential additions to the Springfield Water System. This will expand and enhance the System including development of new a source of supply; storage, treatment, and pumping facilities; and distribution system improvements.

A portion of the Moss Landing Middle School will be developed as a new municipal water location. The recently constructed SW-2 well site improvements will include a new submersible well pump, piping, valves, and appurtenances; electrical and communication improvements; chlorination facilities; two new 110,000-gallon bolted steel water storage tanks; a permanent back-up generator; a new booster pump station including a hydropneumatic tank and four pumps to provide fully redundant domestic and fire service; and civil site improvements including fencing and security improvements, hardscape, a new building to house the new well and associated equipment, and miscellaneous other site improvements. Approximately 2.4 linear miles (12,500 linear ft.) of new eight-inch water line will be constructed in the Springfield and Struve Roads areas. New distribution system piping would include valves, fire hydrants, air release valves, blow-offs, sampling stations, and other appurtenances as appropriate. New distribution system piping will be installed primarily by the open trench method; distribution piping crossing Highway One will be installed with a steel casing by the jack and bore method. Approximately 3,600 linear feet of existing distribution system piping is currently planned to be replaced along Struve Road. Water service laterals will be replaced from the existing distribution mains to each residence currently receiving water from the system and individual water meters will be provided for each service connection. Proposed impacts will include four to eight feet deep for pipe trenching and six to eight feet at the school.

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The Native American Heritage Commission conducted a Sacred Lands File check for this project and it was positive. That agency has referred us to Costanoan Rumsen Carmel Tribe and the Ohlone/Costanoan-Esselen Nation for more information. Both your tribe and the Costanoan Rumsen Carmel Tribe are being contacted. Should you have any concerns or additional information that can assist with this project we would appreciate your comments.

Please notify Don Rosa ([donrosa@pajarosunnymesa.com](mailto:donrosa@pajarosunnymesa.com)) or me. I request that you respond in writing within 10 working days if you have such information or concerns. To reach me, please use email ([spsota@sonic.net](mailto:spsota@sonic.net)), or fax to (707.861.3424).

Sincerely,

Sunshine Psota

Cc: Don Rosa, General Manager, 136 San Juan Road, Royal Oaks, CA 95076  
[donrosa@pajarosunnymesa.com](mailto:donrosa@pajarosunnymesa.com); 831-722-1389

**Table C-1. Initial Native American Consultation for Proposed Springfield Water System Improvement Project near Moss Landing** (Phone caller: S. Psota\*)

<b>Individual/Group</b>	<b>Date</b>	<b>Description</b>
<b>Native American Heritage Commission</b>	26 Feb 2020	-Holman & Associates emailed contacted letter to NAHC on behalf of PSMCSD.
	27 Feb 2020	-NAHC responded that the Scared Lands Search was positive and referred PSMCSD to Costanoan Rumsen Carmel Tribe**and Ohlone/Costanoan-Esselen Nation
	13 April 2020	-Called NAHC and talked with Emily. She does not have a newer phone number for Tony Cerda.
<b>Valentin Lopez,</b> Chairperson, Amah Mutsun Tribal Band	28 Feb 2020	-Send contact letter by email.
	6 April 2020	-Left phone message describing project and emailed original contact letter.
	7 April 2020	-Mr. Lopez responded by email. The Project APE is considered highly sensitive by his tribe and he believes his tribe is the only documented one with descendants from Mission Santa Cruz. He recommended a tribal monitor for all work and referred us to Rob Cuthrell, Ph.D., Director of Archaeological Resource Management for the Tribe. Mr. Lopez email was forwarded to Judy Vasquez with PSMCSD.
	8 April 2020	-Mr. Lopez called to confirm letter was received and asked if there was any questions.
<b>Irene Zwielerlein,</b> Chairperson, Amah Mutsun Tribal Band of Mission San Juan Bautista	28 Feb 2020	-Send contact letter by email.
	6 April 2020	-Spoke with Ms. Zwielerlein by phone. She responded that that area is sensitive for sites. She recommends cultural sensitivity training for the construction crew and someone from her tribe is available for training or whatever else might be needed. If any human remains are exposed, she would like to be notified.
<b>Tony Cerda,</b> Chairperson, Costanoan Rumsen Carmel Tribe	28 Feb 2020	-Send contact letter by email.
	6 April 2020	-Phone number has been disconnected or is no longer in service. Emailed original contact letter.
	13 April 2020	-Phone number has been disconnected or is no longer in service.
<b>Tom Little Bear Nason,</b> Chairperson, Esselen Tribe of Monterey County	28 Feb 2020	-Send contact letter by email.
	16 Mar 2020	-Susan Morley, Cultural Resources Consultant for ETMA responded by letter. ETMC would like to be informed of the progress of the permitting process. They would like to be further consulted prior to of any plan approvals, construction or proposed construction.
<b>Ann Marie Sayers,</b> Chairperson, Indian Canyon Mutsun Band of Costanoan	28 Feb 2020	-Send contact letter by email.
	6 April 2020	-Mailbox is full. Emailed original contact letter.
<b>Christanne Arias,</b> Vice Chairperson, Ohlone/Costanoan-Esselen Nation	28 Feb 2020	-Send contact letter by regular mail.
	6 April 2020	-Left phone message.
<b>Louise Miranda-Ramirez,</b> Chairperson, Ohlone/Costanoan-Esselen Nation	28 Feb 2020	-Send contact letter by email.
	6 April 2020	-Spoke with Ms. Miranda-Ramirez by phone. She had not reviewed the original letter because of health issues, but will now. She plans to send two letters. One to be appended to this report and a confidential letter that I will forward to my client who will forward it to PSMCSD.

\* Refer to the attached pages for additional Tribal Consultation conducted by PSMCSD through July 2020



The local and historic  
**Esselen Tribe of Monterey County**  
PO Box 95, Carmel Valley, CA 93924  
Esselentribe.org

**Our Mission Statement:**

To preserve and to protect our cultural heritage and ancestral sacred sites, namely of the Esselen, Rumsen, Chalone, Sureño and Guatcharrone people, which includes but is not limited to the villages of Achasta, Chalon, Echilat, Ensen, Excelen, Esslenajan, Ixchenta, Jojopan, Kuchun, Pachepas, Sargenta-Ruc, Soccoronda, ad Tucutnut, located within sacred pre-historic and historic tribal lands of Monterey County, California.

March 16, 2020

Sunshine Psota MA, RPA  
Holman & Associates  
3615 Folsom Street  
San Francisco, California 94001

RE: Consultation for the Proposed Springfield Water System Improvement Project near Moss Landing, Monterey County, California

Dear Sunshine,

Thank you for informing the Esselen Tribe of Monterey County of the plans of the Pajaro Sunny Mesa Community Services District I to upgrade, and potentially add to the Springfield Water System near Moss Landing.

This area is of great cultural importance for the members of the ETMC. As you may already know from your record search here are numerous precontact sites within the area identified on your accompanying map that will impact recorded prehistoric sites. These include P-27-000341, P-27-002420, P-27-002421, P-27-001484. Please keep us informed about the progress of the permitting process. We ask to be consulted previous to any proposed plan approvals, construction or proposed construction planned for that location.

Sincerely,

Sue Morley

A handwritten signature in cursive script that reads "Susan Morley".

Cultural Resources Consultant  
Esselen Tribe of Monterey County

*Ohlone/Costanoan-Esselen Nation*



*Previously acknowledged as  
The San Carlos Band of Mission Indians  
The Monterey Band  
And known as  
O.C.E.N. or Esselen Nation  
P.O. Box 1301  
Monterey, CA 93942*

[www.ohlonecostanoanesselenation.org](http://www.ohlonecostanoanesselenation.org).

Sunshine Psota  
Holman & Associates  
Archaeological Consultants  
3615 Folsom St.  
San Francisco, CA 94110

Re: Consultation for the Proposed Springfield Water System Improvement Project near Moss Landing, Monterey County, California

Saleki Atsa,

Ohlone/Costanoan-Esselen Nation is an historically documented previously recognized tribe. OCEN is the legal tribal government representative for over 600 enrolled members of Esselen, Carmeleno, Monterey Band, Rumsen, Chalon, Soledad Mission, San Carlos Mission and/or Costanoan Mission Indian descent of Monterey County. Though other indigenous people may have lived in the area, the area is the indigenous homeland of our people. Included with this letter please find a territorial map by Taylor 1856; Levy 1973; and Milliken 1990, identifying Tribal areas.

**OCEN TRIBAL GOVERNMENT REQUEST AB52/SB18 CONSULTATION WITH THE LEAD AGENCIES.**

Sincerely and Respectfully Yours,

Louise J. Miranda Ramirez  
Tribal Chairwoman  
Ohlone/Costanoan-Esselen Nation  
(408) 629-5189

Cc: OCEN Tribal Council

**Subject:** Re: initial consultation for the Springfield Water System Improvement Project near Moss Landing  
**From:** Val Lopez <vlopez@amahmutsun.org>  
**Date:** 4/7/2020, 7:15 AM  
**To:** Sunshine Psota <spsota@sonic.net>  
**CC:** donrosa@pajarosunnymesa.com, Rob Cuthrell <rcuthrell@amahmutsun.org>

Dear Ms. Psota,

This project is of high interest to our Amah Mutsun Tribal Band, therefore we request that a Native American monitor from our tribe be hired for all ground disturbance work on this project. Our Tribe is the only Tribe that has documented descendants to mission Santa Cruz. In addition, an ancestor from our Tribe is documented by the Smithsonian Institute as being the last speaker of the Awaswas language. Because of this we request that a Native American Monitor from our Tribe be hired as a monitor on this project. To arrange a Monitor from our Tribe please contact Rob Cuthrell, Ph.D., Director of Archaeological Resource Management, Rob's email is cc'd on this email.

Thank you,

Valentin Lopez, Chair  
Amah Mutsun Tribal Band  
916-743-5833  
[www.amahmutsun.org](http://www.amahmutsun.org)  
[www.amahmutsunlandtrust.org](http://www.amahmutsunlandtrust.org)

Tha

On Mon, Apr 6, 2020 at 2:18 PM Sunshine Psota <[spsota@sonic.net](mailto:spsota@sonic.net)> wrote:

Here is the letter I sent last month. I just left you a voice mail message about this project. If you have any comments or concerns, please let me know,

Please take care of yourself,

Sunshine

--

**Sunshine Psota, M.A., RPA**  
**Senior Associate**  
**Phone 707/291.8786**  
Holman & Associates  
Main Address:  
3615 Folsom St.  
San Francisco, CA 94110  
Main Phone 415/550.7286

**Summary of Additional Tribal Consultation  
Conducted by Lead Agency PSMCSD  
July 2020**

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Summary of Additional Consultation. As reported by Judy Vazquez (JV) for PSM/CSD, and involving the following four groups that were interested in further Tribal Consultation.

JV called **Valentin Lopez**, Amah Mutsun Tribal Band initially on July 22, 2020 but was unable to leave a message due to full mailbox. Called again July 24, 2020 and spoke to him. His comment is if ground is disturbed and in the event cultural remains or materials are discovered, PSM/CSD notify the Tribe immediately and requests a Tribal representative be present.

JV called **Irene Zwiernlein**, Amah Mutsun Tribal Band of Mission San Juan Bautista on July 22, 2020 and notified of the phase II auger testing results; results confirmed there was no cultural resource that would be impacted.

JV called **Tom Little Bear Nason**, Esselen Tribe of Monterey County on July 22, 2020 and left a message. Cara returned my call at 2:16 pm same day. JV provided her with the update regarding the negative results from the auger testing program and she will forward information to Tom.

JV called **Louise Miranda-Ramirez**, Ohlone/Costanoa-Esselen Nation on July 22, 2020 and left a message. Reached out again July 24, 2020. Louise requested to be provided with archaeological reports and to be included in mitigation and recovery programs. Requests that human remains be reburied and not placed in museums and cultural items to provided to Tribe. Also a Native American monitor approved by Tribal Council be present.

Friday, July 24, 2020, As reported by:

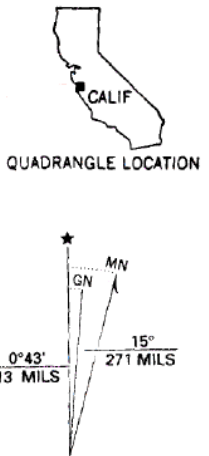
Judith Vazquez-Varela Pajaro/Sunny Mesa Community Services District  
136 San Juan Road  
Royal Oaks, CA 95076 831-722-1389  
Fax 831-722-2137 pajarosunnymesa.com

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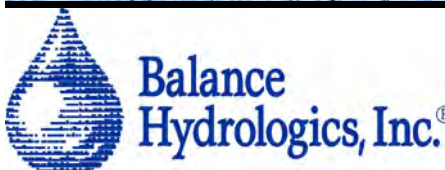
## **Appendix E**

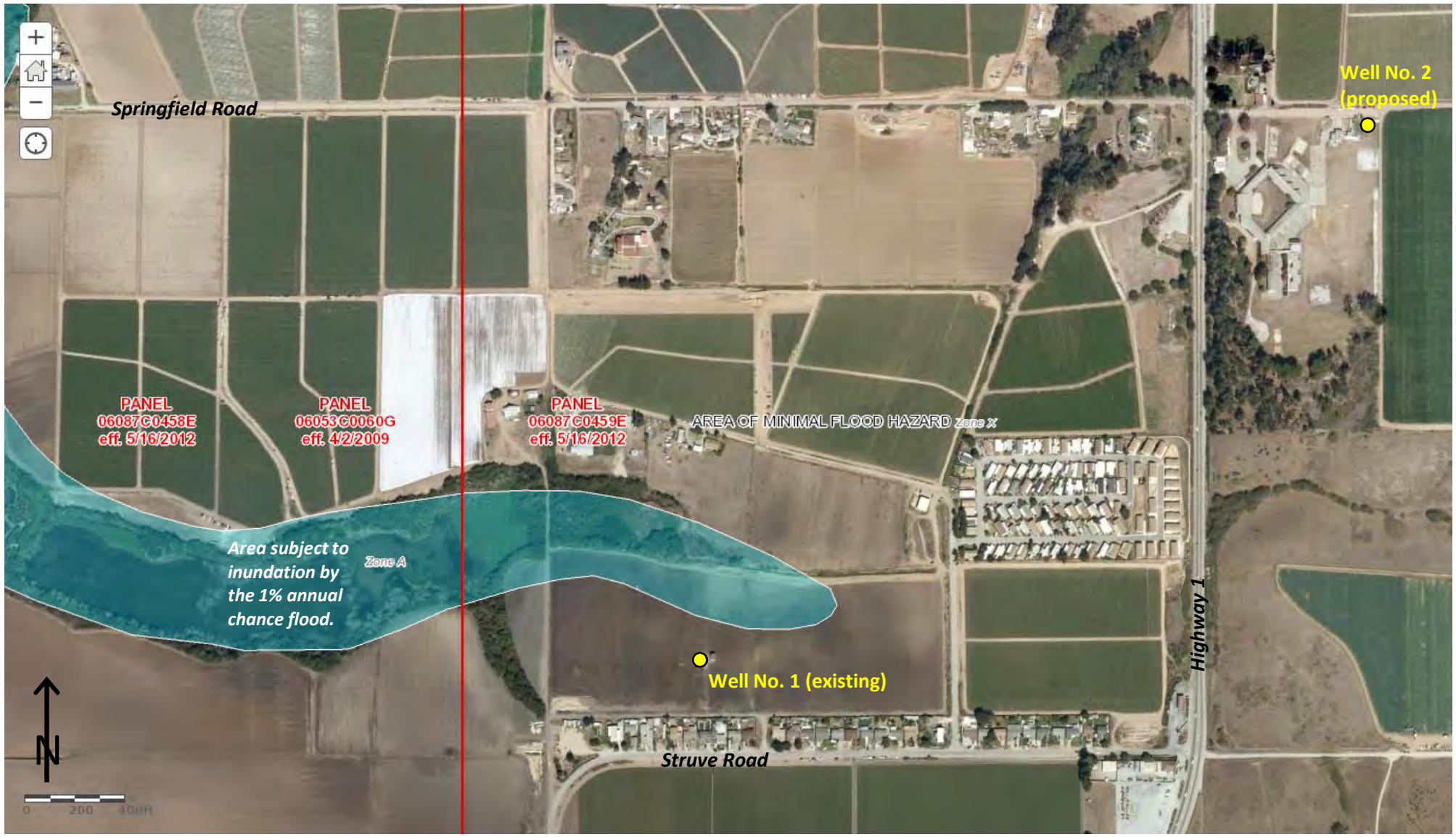
### **Excerpts from the Preliminary Engineering Report**





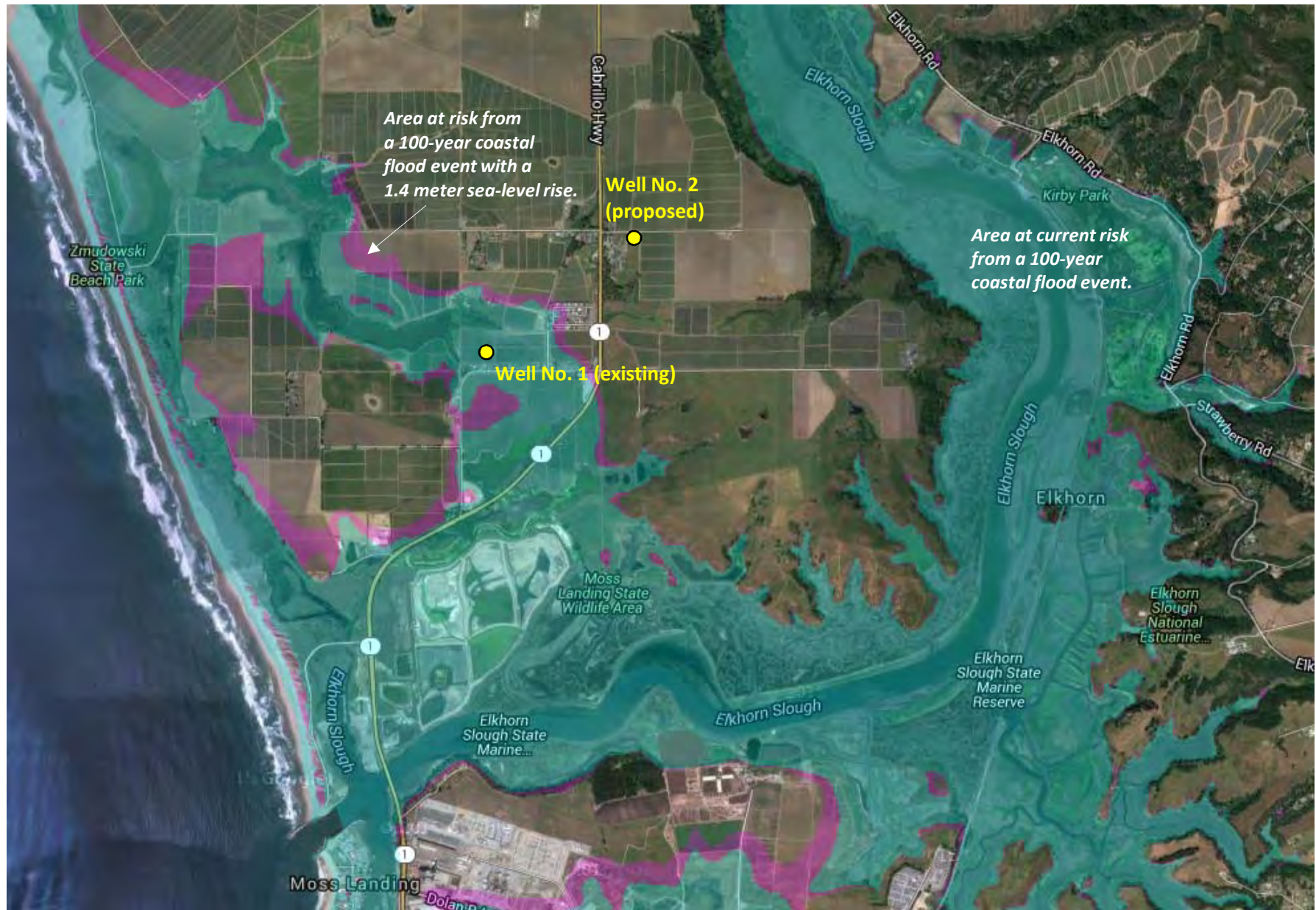
**Figure 1. Existing well 1 and test well 2, Springfield water system, Pajaro / Sunny Mesa Community Services District, Monterey County, California.** Source of base map: USGS 7.5-minute quadrangle, Moss Landing, 1994





**Figure 2. FEMA flood hazard at existing well no. 1 and proposed well no. 2, Springfield water system, Moss Landing, CA.** The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. Zone A identifies the area subject to inundation by the 1% annual flood chance with no published base-flood elevations. Zone X is outside of the 0.2% annual chance floodplain. Source: Flood Insurance Rate Map (FIRM), Monterey County, California, panel 60 of 2050, map no. 06053C0060G, effective date April 2, 2009.





**Figure 3. Coastal flooding and sea-level rise hazard at existing well no. 1 and proposed well no. 2, Springfield water system, Moss Landing, CA.** Data not intended to be used in lieu of Flood Insurance Studies and Flood Insurance Rate Maps issued by the Federal Emergency Management Agency (FEMA).

Source: Pacific Institute, 2009. Sea Level Rise Maps. [http://www.pacinst.org/reports/sea\\_level\\_rise/maps/](http://www.pacinst.org/reports/sea_level_rise/maps/).  
 Heberger and others, 2009, <http://pacinst.org/publication/the-impacts-of-sea-level-rise-on-the-california-coast/>



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