LEAD AGENCY:
CITY OF PITTSBURG
Civic Center, 65 Civic Avenue
Pittsburg, CA 94565
Telephone: (925) 252-4920 • FAX: (925) 252-4814

CEQA INITIAL STUDY CHECKLIST

1. Project title: **Americana Park Bypass Channel**

2. Contact person and phone number: Ron Nevels, Senior Civil Engineer (925) 252-4949

3. Lead Agency name and address: City of Pittsburg
   65 Civic Avenue
   Pittsburg, CA 94565

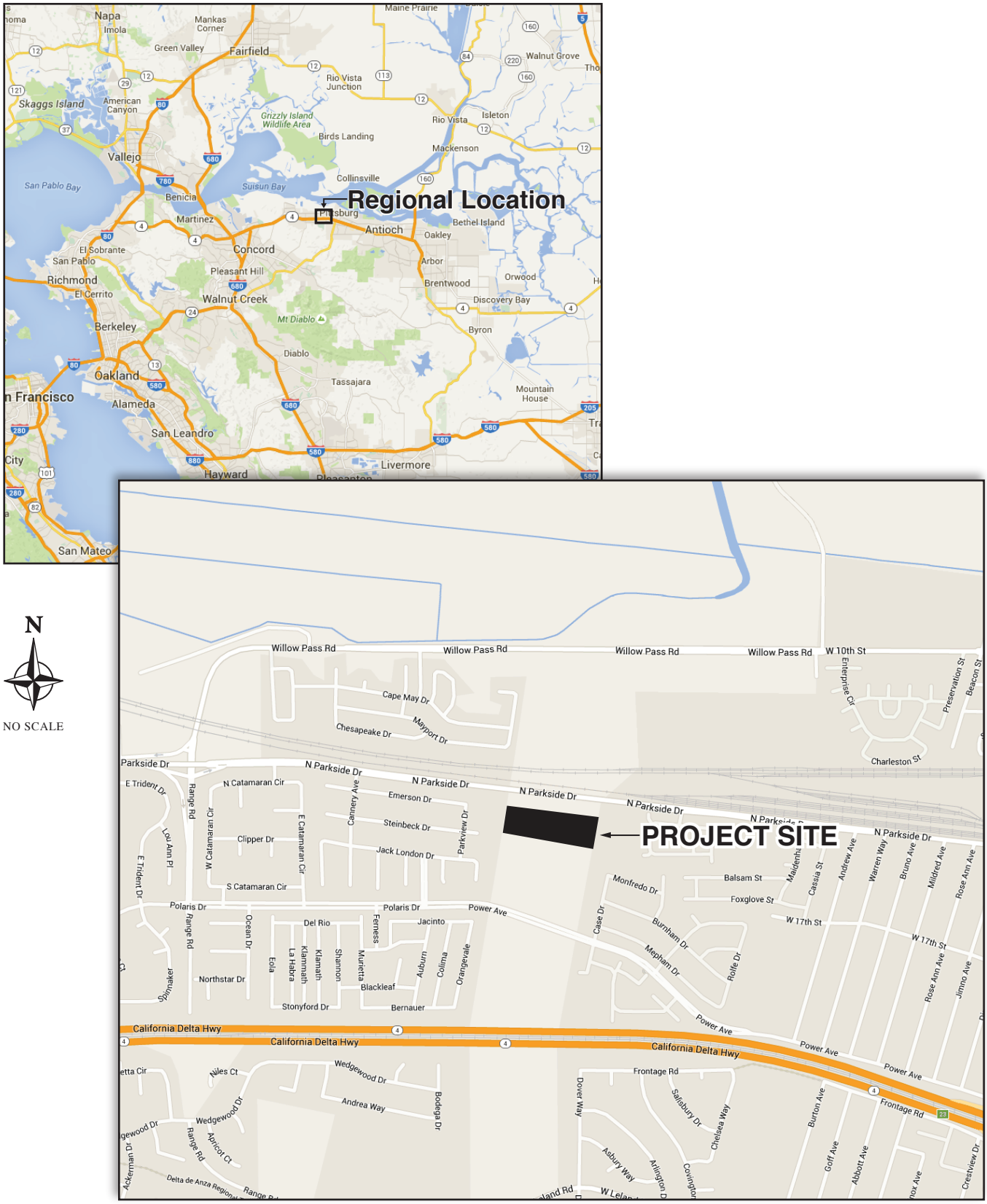
4. Project location: The project site consists of a utility corridor owned by Pacific Gas & Electric (PG&E) and is located between North Parkside Drive on the north and Power Avenue the south, to the north of State Route 4 (SR4) (Figures 1 and 2), Assessor's Parcel Number 086-010-023. The Americana subdivision bounds the project area to the west, while the River Run Community and Willow Brook neighborhoods adjoin the project area to the east. The property immediately adjacent to the project site's northeast corner is developed with a church and associated parking lot, accessed from North Parkside Drive by private driveway.

   Americana Park was developed in the northeastern part of the Americana subdivision and adjoins the northwestern corner of the proposed bypass project site. The park includes a detention basin to receive excess peak storm runoff flows from the Americana subdivision. Overflow from the detention basin runs into a roadside ditch on the north side of North Parkside Drive, flowing eastward and emptying into an intermittent tributary to Willow Creek. Periodic overflow from the basin causes minor street flooding.

   A culvert under Power Avenue conveys runoff flows northward from a tributary of Willow Creek discharging to an earthen channel that extends along the east side of the project site. Homes along Case Drive in the River Run Community neighborhood back onto the earthen channel and contribute storm runoff to flows in this channel. Stream flows in the channel course northward under North Parkside Drive, ultimately draining to Willow Creek and Suisun Bay.

   The proposed bypass channel would be aligned parallel to North Parkside Drive, approximately 200 ft. south of the road right-of-way. The 970-foot long bypass would receive detention basin overflows and convey the runoff to the existing earthen channel on the east side of the utility corridor, discharging into the Willow Creek tributary.

5. Project sponsor's name and address: City of Pittsburg
   65 Civic Avenue
   Pittsburg, CA 94565



Source: Google Maps (2016)

Source: Google Earth (2016)

6. General Plan designation: Utility/ROW

7. Zoning: OS (Open Space)

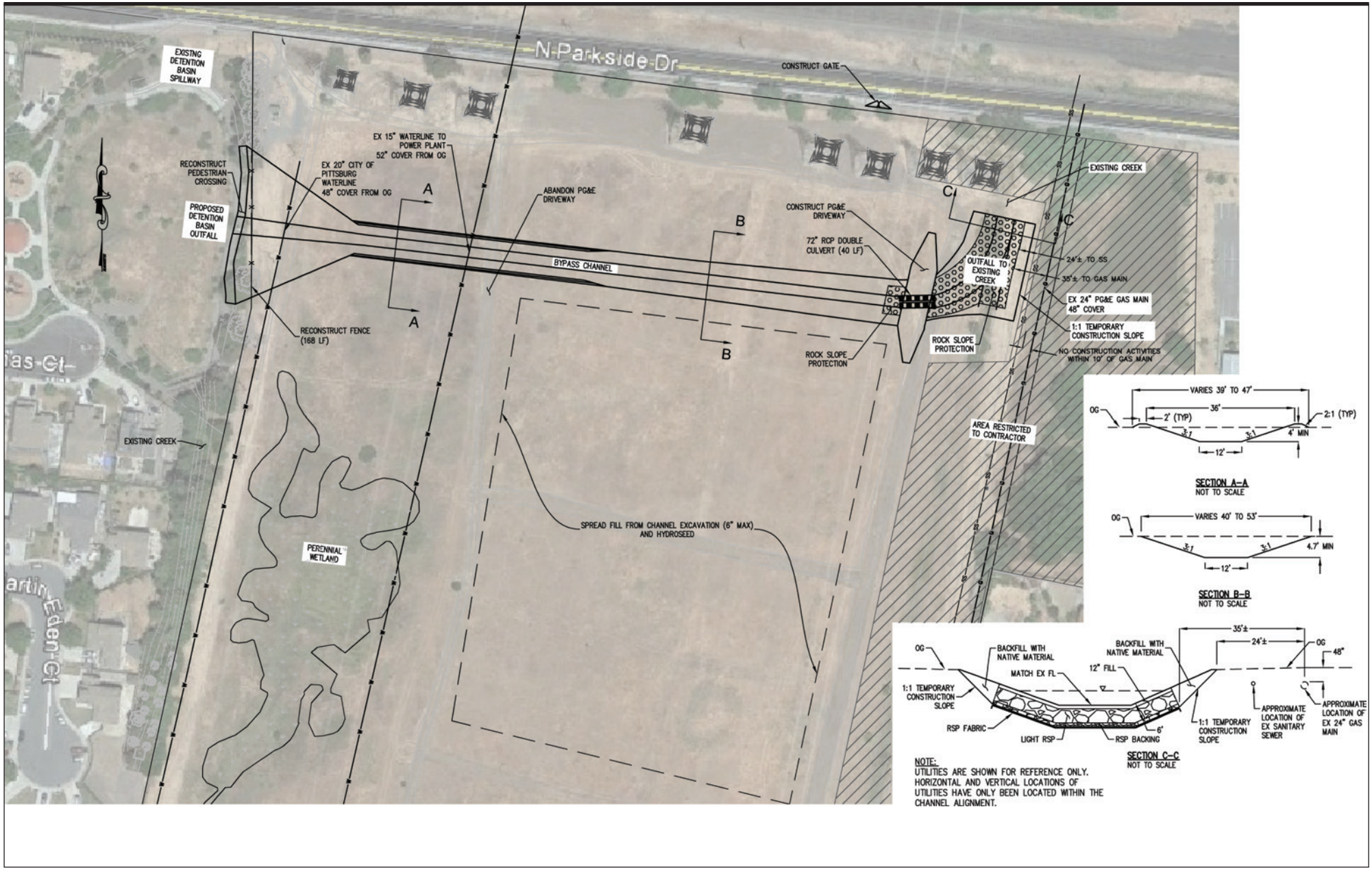
8. Description of project: The existing Americana Park detention basin has insufficient capacity, which results in the flooding of North Parkside Drive on a nearly annual basis. The purpose of the project is to divert high stormwater flows from the detention basin, to the east across the PG&E property in an open earth channel, to a tributary to Willow Creek that runs along the easterly boundary of the PG&E parcel. The proposed bypass channel would be constructed on the east side of the detention basin in an upland area, avoiding existing wetlands and wetland hydrology, with the exception of the connection with the Willow Creek tributary.

   The proposed project would divert detention basin overflows into the proposed bypass channel, conveying storm flows eastward across the PG&E property, emptying into the tributary to Willow Creek. The proposed channel alignment is shown in Figure 3. Current and historic drainage patterns are presented in Figure 4. The engineering plans for the bypass channel are shown in Figure 5.

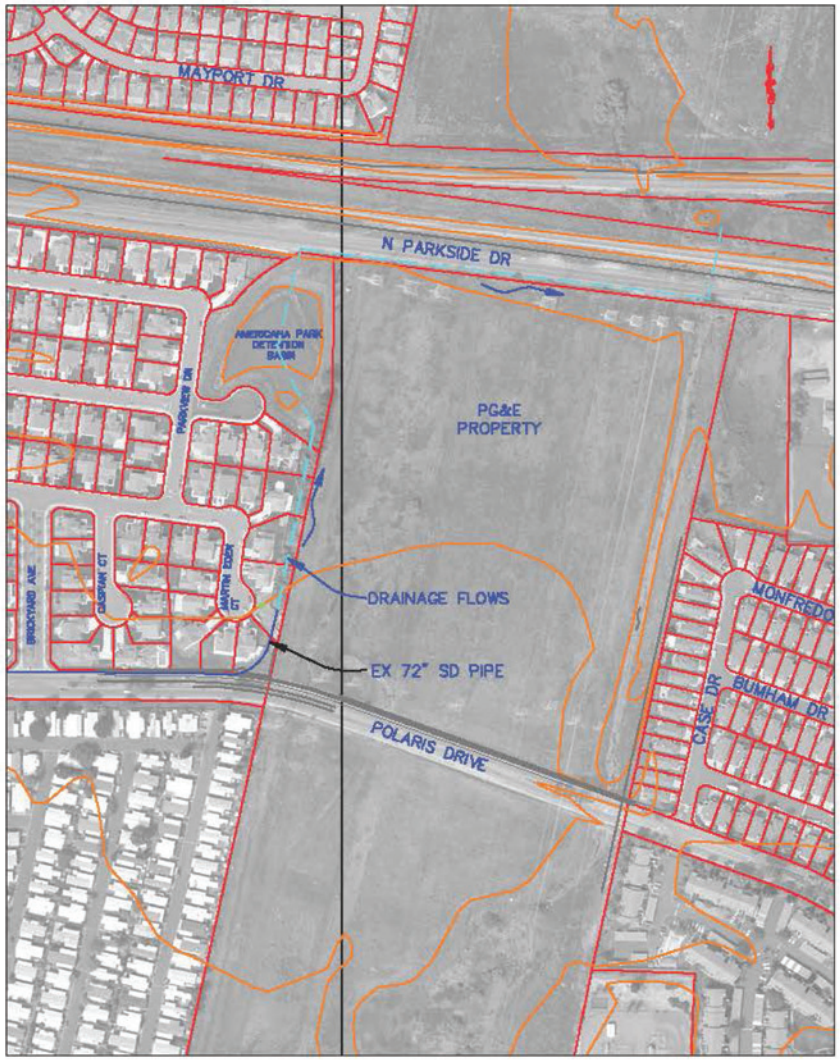
   The length of the proposed earthen channel would be approximately 780 ft. from the edge of the detention basin, located in the northeast parcel of the Americana subdivision, to the end of the proposed RCP at the existing tributary to Willow Creek channel along the easterly boundary of the PG&E parcel. The bottom of the proposed trapezoidal earthen channel would be 12 ft. wide, and top of the channel would vary in width from 39 to 53 ft. The depth would be a minimum of 4 to 5 ft. in order to maintain the slope of the channel and the original grade of the PG&E property. The outfall transition from the earthen channel to the existing tributary to Willow Creek channel that runs along the easterly boundary of the PG&E parcel would be protected with rock slope protection for a length of approximately 25 ft.

   The total area of the project footprint, which encompasses areas to be excavated, filled and dredged, would be 49,500 s.f. Soils excavated for the bypass construction would be deposited over a 210,000 s.f. area, to a maximum depth of 6 in., in the utility corridor immediately southeast of the bypass channel. Total soil excavation of 105,000 cubic feet (cf) will remain onsite. No offhaul of excavated material is anticipated. The fill deposition would avoid the utility corridor's perennial wetlands area southwest of the proposed bypass alignment.

   The channel construction will require the reconstruction of two water transmission mains that run north-south through the site. One main is owned and operated by the City of Pittsburg and the other is currently owned and operated by NRG Energy, Inc.



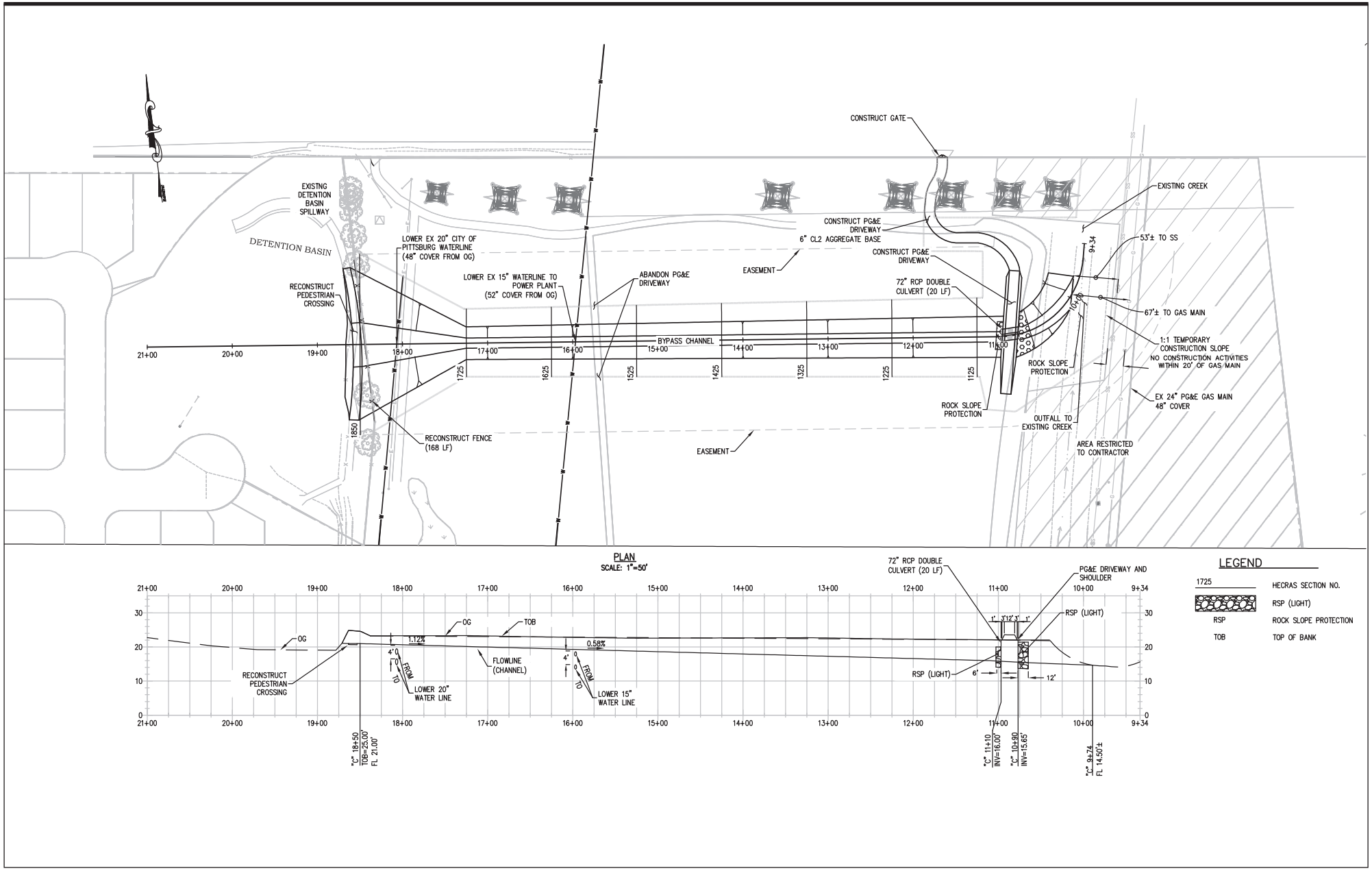
Source: Harrison Engineering, Inc. (2016)



CURRENT CONDITIONS

HISTORIC CONDITIONS
(BASED ON 1993 AERIAL IMAGE)

Source: Harrison Engineering, Inc. (2009)



Source: Harrison Engineering, Inc. (2016)

PG&E access through the site would be maintained across the proposed bypass channel alignment. A 12-ft. wide driveway would be constructed over a double 72-in. RCP culvert approximately where existing access through the site is located. During dry months, access across the channel will also be available on the western end of the channel where the channel side slopes will be less than 10%.

It should be noted that the currently proposed bypass channel alignment was developed after evaluating the potential environmental effects of two alternative design concepts that proposed a bypass channel in the southerly areas of the utility corridor parcel, north of the Power Avenue right-of-way. Those designs would have resulted in the severing of surface hydrology supporting an expanse of perennial herbaceous wetland habitat that has evolved on the southern portion of the PG&E parcel. In discussions with staff of the CDFW and USFWS, an alternate alignment was identified and this project description incorporates the recommendations of those agencies.[1]

9. Surrounding land uses and setting: Power Avenue and associated right-of-way bounds the project site on the south and North Parkside Drive adjoins the northern boundary of the PG&E utility corridor. The Americana residential subdivision, Americana Park, and associated detention basin are located immediately west of the project area. Five homes on Salinas Court and Martin Eden Court in this subdivision adjoin the west side of the PG&E corridor.

   East of the project area, a vacant parcel (APN: 086-020-023-7) and 15 homes in the residential development of the River Run Community are located adjacent to the utility corridor and the earthen-channel tributary that drains to Willow Creek. A parcel developed with a church and the Willow Brook residential subdivision are situated immediately east of the vacant parcel.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)

    - California Regional Water Quality Control Board;
    - California Department of Fish and Game;
    - U.S. Army Corps of Engineers;
    - East Contra Costa County Habitat Conservancy;
    - California Public Utilities Commission;
    - Pacific Gas & Electric Company[2]

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[1] *Email communication from Mike Wood, Wood Biological Consulting, Inc. to Harrison Engineering Inc., dated November 29, 2016.*

[2] *Although PG&E is not a public agency, the project would require PG&E approval for the work within the PG&E right-of-way.*

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. Check marks are indicated by the following symbol: ☑

☐ Aesthetics	☐ Agriculture Resources	☑ Air Quality
☑ Biological Resources	☐ Cultural Resources	☐ Geology /Soils
☐ Hazards & Hazardous Materials	☑ Hydrology / Water Quality	☐ Land Use / Planning
☐ Mineral Resources	☐ Noise	☐ Population / Housing
☐ Public Services	☐ Recreation	☐ Transportation/Traffic
☐ Utilities / Service Systems	☑ Mandatory Findings of Significance	

DETERMINATION: (To be completed by the Lead Agency)

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 (EIR) 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.

Prepared By:

Frederick Geier, Geier & Geier Consulting, Inc.

Reviewed By:

Kristin Pollot, AICP, Planning Manager, City of Pittsburg

Signature Date

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS -- Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☑

There are no designated scenic vistas in the vicinity of the site that would be adversely affected by the proposed project. The proposed project would involve the excavation of a bypass channel to accommodate storm runoff flows from a detention basin with insufficient capacity in the Americana subdivision to the west of the PG&E utility corridor. The proposed channel would not include any substantial vertical elements. Although portions of the project area would be visible from North Parkside Avenue, those views are not part of any scenic vistas. Additionally, the proposed bypass channel would be located approximately 0.15 and 0.34 miles north of Power Avenue and State Route 4, respectively, and views of the channel from these roadways would be obstructed by intervening topography and vegetation in the utility corridor.

(Pittsburg General Plan, Figure 4-1.)

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☑

There are no designated scenic resources within the project area and there are no designated state scenic highways in the vicinity of the project site. Therefore, the proposed project would not impact scenic resources within any state scenic highway.

(California Scenic Mapping System, Contra Costa County, website: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/)

c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☑

The proposed drainage improvement project involves the construction of a straight drainage channel to convey storm runoff flows from the detention basin in the Americana residential subdivision immediately west of the utility corridor to a tributary channel of Willow Creek on the eastern perimeter of the corridor. The channel construction would require engineered excavation of soils to ensure appropriate gradient and connection for flows between the two

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

channels. There would be no vertical components in the project design and the visual character of the proposed bypass channel would be consistent with and similar in appearance to the existing channel of the Willow Creek tributary.

(Project Plans; Staff Determination/Observation)

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☑

Lighting in the project area consists of residential and street lighting in the subdivisions adjoining the PG&E utility corridor, and along North Parkside Drive and Power Avenue. With the exception of aviation warning lights on the corridor's utility towers, there is no lighting within the project area. The proposed project would not include new lighting or potential sources of glare. Consequently, the project would not adversely affect day or nighttime views in the area

(Project Plans; Staff Determination/Observation)

II. AGRICULTURE AND FORESTRY 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 Dept. 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 Dept. of Forestry and Fire Protection regarding the state's inventory of forest land, and forest carbon measurement methodology				

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

There is no farming occurring on the project site or its immediate vicinity, and there are no timberlands or forest resources on the site or in the project area. The project site is within an area designated as "Other Land" by the California Farmland Mapping and Monitoring Program.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Other Land is defined as vacant and nonagricultural land greater than 40 acres that is surrounded on all sides by urban development. No farmland would be converted to non-agricultural use as a part of the proposed bypass channel improvements.

(California Farmland Mapping and Monitoring Program, Contra Costa County Important Farmland 2014: ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2014/con14.pdf; Site Visit)

III. 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?	☐	☐	☑	☐

An air quality plan describes air pollution control strategies to be implemented by a city, county or region classified as a non-attainment area. The main purpose of an air quality plan is to bring the area into compliance with the requirements of the federal and state air quality standards. The San Francisco Bay Area Air Basin (SFBAAB) is classified as non-attainment for ozone (ROG, reactive organic gases) and particulate matter (PM_{10} and $PM_{2.5}$). To address these exceedances, the BAAQMD, in cooperation with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG), prepared the Bay Area 2005 Ozone Strategy (BAOS) in September 2005 and Particulate Matter Implementation Schedule (PMIS) in November 2005. The PMIS discusses how the BAAQMD implements the California Air Resources Board's 103 particulate matter control measures. The most recently adopted air quality plan in the SFBAAB is the 2010 Bay Area Clean Air Plan (CAP). This CAP outlines how the SFBAAB will attain air quality standards, reduce population exposure and protect public health, and reduce greenhouse gas (GHG) emissions.

The consistency of the proposed project with the most recently adopted regional air quality plan, the CAP, is determined by comparing the project's consistency with pertinent land use

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and transportation control measures contained in the CAP. Pertinent measures relate to evaluating impacts according to the BAAQMD's CEQA Guidelines and such an impact evaluation is presented below.

As indicated in the analysis below, the project's construction-related emissions would exceed the BAAQMD's CEQA significance threshold for NO_X, but thresholds would not be exceeded for other criteria air pollutants. There would be no criteria pollutant emissions associated with the long-term operation of the proposed bypass channel. Construction-related diesel particulate emissions during construction would not pose significant health risks. Therefore, the proposed project's emissions would be consistent with the BAAQMD's CAP (the most recently adopted regional air quality plan). Also, because there would be no population growth associated with the proposed project, the project would have a less-than-significant impact on regional air quality planning efforts.

(2010 Clean Air Plan; City of Pittsburg General Plan, page 9-23 to 9-24)

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☑	☐	☐

Regulatory and Planning Framework. *The BAAQMD is responsible for attaining and/or maintaining air quality in the San Francisco Bay Area Air Basin (SFBAAB) within Federal and State air quality standards. Specifically, the BAAQMD has the responsibility to monitor ambient air pollutant levels throughout the Basin and to develop and implement strategies to attain the applicable Federal and State standards. In June 2010, the BAAQMD adopted CEQA thresholds of significance and updated its CEQA Air Quality Guidelines, which provides guidance for assessing air quality impacts under CEQA. However, on March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the Thresholds. The court issued a writ of mandate ordering the BAAQMD to set aside the Thresholds and cease dissemination of them until the BAAQMD had complied with CEQA. On August 13, 2013, the California Court of Appeal reversed the Alameda County Superior Court judgment that invalidated the BAAQMD's CEQA thresholds of significance. The Court directed that the Superior Court vacate the writ of mandate issued in March 2012, ordering the BAAQMD to set aside its June 2010 resolution (Res. #2010-06) "Adopting Thresholds for Use in Determining the Significance of Projects' Environmental Effects Under the California Environmental Quality Act." Although the California Supreme Court has granted review in the litigation to hear one particular issue of law, the*

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granting of review does not alter the result in the Court of Appeal, though the latter court's decision is no longer a published, citable precedent. Further, the legal cloud created by the trial court decision no longer exists. Local agencies such as the City of Pittsburg may rely on the BAAQMD thresholds.

Significance Thresholds. *Exercising its own discretion as lead agency and similarly to multiple other San Francisco Bay Area jurisdictions, the City of Pittsburg has decided to rely on the thresholds within the Options and Justification Report (dated October 2009) prepared by the BAAQMD.[3] The BAAQMD Options and Justification Report establishes thresholds based on substantial evidence and are consistent with the thresholds outlined within the 2011 CEQA Air Quality Guidelines. Although BAAQMD failed to comply with CEQA before completing its 2010 recommendations, City staff believes that these recommendations, which are listed as follows, still represent the best available science on the subject of what constitute significant air quality effects in the SFBAAB:*

- *NO_X and ROG: 54 pounds/day*
- *PM_{10}: 82 pounds/day*
- *$PM_{2.5}$: 54 pounds/day*

In addition to establishing the above significance thresholds for criteria pollutant emissions, the BAAQMD Options and Justification Report also recommended the following quantitative thresholds to determine the significance of construction-related and operational emissions of toxic air contaminants from individual project and cumulative sources on cancer and non-cancer health risks:

- *Increased cancer risk of >10.0 in a million for individual projects and >100 in a million (from all local sources) for cumulative sources;*
- *Increased non-cancer risk of >1.0 Hazard Index (Chronic or Acute) for individual projects and >10.0 Hazard Index (from all local sources) for cumulative sources; and*
- *Ambient $PM_{2.5}$ increase: >0.3 µg/m^3 annual average for individual projects and >0.8 µg/m^3 annual average (from all local sources) for cumulative sources.*

Impact AIR-1: *Proposed construction of the bypass channel would generate fugitive dust (including PM_{10} and $PM_{2.5}$) and other criteria pollutants, primarily as a result of a variety of*

[3] *Bay Area Air Quality Management District, 2009. Revised Draft Options and Justification Report. October. Available online at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx.*

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

construction activities, including excavation, grading, demolition, vehicle travel on paved and unpaved surfaces, and vehicle exhaust. Sensitive receptors in the project vicinity include residential uses located as close as 160 feet to the southwest of project construction and 300 feet to the southeast of proposed construction activities.

Construction of the proposed bypass channel would generate fugitive dust[4] (including suspended particulate matter [PM_{10} and $PM_{2.5}$]) and other criteria pollutants, primarily as a result of a variety of construction activities, including excavation, grading, and vehicle travel on paved and unpaved surfaces. Construction equipment and vehicles (i.e., heavy equipment, delivery/haul trucks, worker commute vehicles) would also generate exhaust emissions during project construction. Combustion or exhaust emissions from construction equipment and vehicles (i.e., heavy equipment and delivery/haul trucks, worker commute vehicles, air compressors, and generators) would be generated during project construction. Criteria pollutant emissions of reactive organic gases (ROG) and nitrogen oxides (NO_X) from these emission sources would incrementally add to regional atmospheric loading of ozone precursors during project construction. These impacts would be temporary, spanning the 10-week construction duration.

Construction-related air pollutant emissions are evaluated in accordance with the BAAQMD guidelines for assessing and mitigating air quality impacts.[5] The BAAQMD guidelines indicate that the significance of a project's impact should be evaluated based on the effectiveness of proposed control measures to reduce construction-related emissions (e.g., whether BAAQMD control measures are implemented as part of construction). If appropriate mitigation measures are implemented to control PM_{10} emissions during construction, the BAAQMD considers the potentially significant construction-related project and cumulative impacts to be less than significant. There would be no air quality emissions associated with operation of the project; therefore, potential air quality impacts related to project operation are not discussed further.

The project's construction-related emissions are estimated and compared to the above significance thresholds in Table 1. The estimated emissions are based upon a total project

[4] *"Fugitive" emissions generally refer to those emissions that are released to the atmosphere by some means other than through a stack or tailpipe.*

[5] *Bay Area Air Quality Management District (BAAQMD), BAAQMD California Environmental Quality Act, Air Quality Guidelines, Updated May 2012. Available online at http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines. Accessed on June 5, 2016.*

Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

area footprint of 57,208 s.f.; however, the project footprint area has been reduced to 49,500 s.f. As shown in this table, the project's construction-related air pollutant emissions would not exceed the BAAQMD significance thresholds for criteria pollutants, and would constitute a less-than-significant impact. With a further reduced project footprint, the project's construction-related emissions would remain below the BAAQMD significance thresholds for criteria pollutants, also resulting in a less-than-significant impact. However, the BAAQMD recommends that all Basic Construction Mitigation Measures be implemented for all construction projects, whether or not construction-related emissions exceed these significance

Table 1

Project-related Construction and Operational Criteria Pollutant Emissions

		Average Daily Emissions (pounds/day)					
Project Activity		***ROG***	***NO_X***	***CO***	***SO_2***	***PM_{10} (Total)***	***$PM_{2.5}$ (Total)***
2017							
Off-Road Equipment Emissions[a]		*4.1*	*44.1*	*25.3*	*0.1*	*8.4*	*5.1*
Earthwork Trip Totals On-Site[b]		*0.1*	*2.2*	*0.3*	*0.0*	*0.1*	*0.1*
Excess Earthwork Trip Total[c]		*0.2*	*5.6*	*0.6*	*0.0*	*0.1*	*0.1*
	Total	***4.4***	***51.9***	***26.2***	***0.1***	***8.6***	***5.3***
Significance Thresholds		*54*	*54*	*-*[d]	*-*[e]	*82*	*54*
Exceeds Significance Thresholds?		*No*	*No*	*-*	*-*	*No*	*No*
		Average Annual Emissions (tons/year)					
Project Activity		***ROG***	***NO_X***	***CO***	***SO_2***	***PM_{10} (Total)***	***$PM_{2.5}$ (Total)***
2017							
Off-Road Equipment Emissions[a]		*0.10*	*1.10*	*0.63*	*0.00*	*0.21*	*0.13*
Earthwork Trip Totals On-Site[b]		*0.07*	*0.06*	*0.01*	*0.01*	*0.02*	*0.02*
Excess Earthwork Trip Total[c]		*0.17*	*0.14*	*0.02*	*0.01*	*0.06*	*0.06*
	Total	***0.34***	***1.3***	***0.66***	***0.02***	***0.29***	***0.21***
Significance Thresholds		*10*	*10*	*-*[d]	*-*[e]	*15*	*10*
Exceeds Significance Thresholds?		*No*	*No*	*-*	*-*	*No*	*No*

NOTES: ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide; exhaust PM_{10} = particulate matter less than 10 microns; exhaust $PM_{2.5}$ = particulate matter less than 2.5 microns.

[a] *The CalEEMod model was used to calculate these emissions assuming construction would occur over 10 weeks using the following equipment: 1 sheepsfoot compactor (modeled as tractor), 1 excavator, 1 loader, 1 generator set, and 4 dump trucks (modeled as off-highway trucks).*

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[b] *The EMFAC2014 model was used to calculate these emissions assuming a total of 7,600 miles traveled.*
[c] *The EMFAC2014 model was used to calculate these emissions assuming a total of 19,200 miles traveled.*
[d] *CO: If localized carbon monoxide estimated emissions exceed 550 pounds/day, more detailed analysis is required. Therefore, emissions below this threshold indicate that CO emissions would be less than significant.*
[e] *SO_2: The SO_2 state and federal standards are currently being met throughout the Bay Area and have been met in recent decades. Therefore, the project's estimated emissions would be less than significant.*

SOURCE: CalEEMod Model Output (see Attachment 1)

thresholds. Therefore, the project's construction-related and operational increases in criteria pollutant emissions would be less than significant with implementation of Mitigation Measure AQ-1.

Mitigation Measure AQ-1: Although the project's construction-related air pollutant emissions would not exceed the BAAQMD's applicable significance thresholds, the following BAAQMD-recommended Basic Construction Mitigation Measures shall be included in the project's grading plan, building plans, and contract specifications to limit the project's construction-related dust and criteria pollutant emissions:

a. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. Recycled water should be used wherever feasible.
b. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
c. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
d. All vehicle speeds on unpaved roads shall be limited to 15 mph.
e. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible.
f. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
g. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
h. Post a publicly visible sign with the telephone number and person to contact at the City regarding dust complaints. This person shall respond and take corrective action

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within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

(Bay Area Air Quality Management District, 2012, CEQA Guidelines; Bay Area Air Quality Management District, 2009, Revised Draft CEQA Thresholds Options and Justifications Report, 2009; CalEEMod model outputs, see Attachment 1)

c) 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 (including releasing emissions which exceed quantitative thresholds for ozone *precursors)?*	☐	☐	☑	☐

To address cumulative impacts on regional air quality, the BAAQMD has established thresholds of significance for construction-related and operational criteria pollutants and precursor emissions. These thresholds represent the levels at which a project's individual emissions of criteria pollutants and precursors would result in a cumulatively considerable contribution to the SFBAAB's existing air quality conditions. If daily average or annual emissions exceed these thresholds, the project would result in a cumulatively significant impact. There would be no operational emissions associated with the proposed drainage channel improvement project and the project's construction-related criteria pollutant emissions would not exceed BAAQMD significance thresholds (see Section III.b above for more discussion). Therefore, the project's contribution is also considered to be less than cumulatively considerable, a less-than-significant impact.

In addition, when the project's construction-related diesel particulate matter (DPM) emissions are considered with other existing stationary and mobile sources of toxic air contaminants (TACs), cumulative health risks were determined to be less than significant. Therefore, the project's contribution to cumulative DPM emissions would be less than cumulatively considerable, a less-than-significant impact (see Section 3d below for more discussion).

(Bay Area Air Quality Management District, 2012, CEQA Guidelines)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☑	☐

Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. The Californian Air Resources Board (CARB) has identified the following groups of individuals as the most likely to be affected by air pollution:

the elderly over 65 years of age, children under 14 years of age, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis. There are sensitive residential receptors located as close as 160 feet southwest of the project construction area and more than 300 feet east of the project area.

Potential TAC emissions would be associated solely with proposed bypass channel construction activities. Combustion emissions from construction equipment and haul trucks would be generated during proposed construction activities, which could expose sensitive receptors to DPM and other TACs. DPM emissions were estimated for this project and are presented in Table 2. As indicated in this table, the project's construction-related DPM emissions would not exceed the above significance thresholds for health risks. Therefore, the health risks associated with the project's construction-related DPM emissions would be less than significant.

The BAAQMD also recommends that existing stationary and mobile emissions sources (i.e. freeways or roadways with more than 10,000 vehicles per day) within 1,000 feet of the project area also be considered when evaluating a project's cumulative risks. Any potential cumulative health risk would, therefore, derive from project activities plus any existing identified risk sources within the project vicinity. BAAQMD records indicate that there are no stationary sources within 1,000 feet of the project site. There are no roadways within 1,000 feet of the project site with average daily traffic volumes exceeding 10,000; the most recent average daily traffic count (2006) for North Parkside Drive was 7,625 vehicles per day.[6] Consequently, the project's contribution to cumulative construction-related risk and hazard impacts would be less than cumulatively considerable, a less-than-significant impact.
(Bay Area Air Quality Management District, 2012, CEQA Guidelines)

[6] *City of Pittsburg, 2016. Personal Communication with Paul Reinders, P.E., Traffic Engineer, City of Pittsburg Engineering Division.*

Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Table 2

Cancer Risk Health Risks at the Closest Sensitive Receptors due to DPM Exposure during Project Construction

	$PM_{2.5}$ Exposure,[a] Excess Cancer Risk,[b] and Non-Cancer Chronic Hazard Index from Project Construction Activities at Maximally Exposed Individuals
Maximum One-Hour $PM_{2.5}$	*0.9783 µg/m^3*
Annual Average $PM_{2.5}$ (one-hour x 0.1)	*0.0978 µg/m^3*
Annual Average $PM_{2.5}$ Significance Threshold	*0.3 µg/m^3*
Exceeds Significance Threshold?	*No*
Age-Weighted Excess Risk for Infants	*4.193 in a million*
Children	*1.258 in a million*
Adults	*0.419 in a million*
Cancer Risk Significance Threshold	*Excess Cancer Risk >10 in a million*
Exceeds Threshold?	*No*
Chronic/Acute Non-Cancer Hazard Index	*0.020/0.114*
Chronic Non-Cancer Significance Threshold	*Hazard Index >1.0*
Exceeds Threshold?	*No*

NOTES:

[a] The predicted maximum one-hour DPM concentration is 0.9783 µg/m^3 resulting from on-site total project DPM emissions of 0.101 tons. The hourly to annual scaling factor is 0.1. AERSCREEN output thus indicates that project construction would produce an annual average DPM concentration of 0.0978 µg/m^3.

[b] The excess individual cancer risk factor for DPM exposure is approximately 300 in a million per 1 µg/m^3 of lifetime exposure (DPM (µg/m^3) x ASF x 300 x 10^{-6}) / 70 years. More recent research has determined that young children are substantially more sensitive to DPM exposure risk. If exposure occurs in the first several years of life, an age sensitivity factor (ASF) of 10 should be applied. For toddlers though mid-teens, the ASF is 3.

SOURCES: A screening-level individual cancer analysis was conducted to determine the maximum $PM_{2.5}$ concentration from diesel exhaust. This concentration was combined with the DPM exposure unit risk factor to calculate the inhalation cancer risk from project-related construction activities at the closest sensitive receptor. The EPA AERSCREEN air dispersion model was used to evaluate concentrations of DPM and $PM_{2.5}$ from diesel exhaust. The AERSCREEN model was developed to provide an easy to use method of obtaining pollutant concentration estimates and is a single source Gaussian plume model which provides a maximum one-hour ground-level concentration. The model output for this analysis is included in the Attachment 1 of this report.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☑	☐

Operation of construction equipment in proximity to nearby residents could result in nuisance odor impacts from diesel exhaust emissions; however, the intervening distance between the proposed project and the closest downwind residents to the east (approximately 300 feet or more) would minimize the potential for nuisance odors occurring at the nearby residents. Therefore, potential nuisance odor impacts are considered to be less than significant.

(Staff Determination)

IV. 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 Game or U.S. Fish and Wildlife Service?	☐	☑	☐	☐

The following analysis of the project's potential impacts on biological resources is based on the findings of a biological resources assessment of the Americana Park Bypass Channel area prepared by Wood Biological Consulting (WBC) in July 2014 and revised in December 2015. The biological resource assessment is included as Attachment 2 to this initial study.

Although highly modified from its natural condition as a result of historic land uses and development, the subject parcel supports an intermittent stream course, an artificial stormwater channel, riparian woodland, and a mosaic of perennial herbaceous wetlands. Impacts to these features are regulated under federal, State, and County laws and policies.

No federally listed, State-listed, or other special-status plant species were detected and none are expected to occur within the project site. Project implementation would not result in any significant impacts to special-status plant species. No further surveys, mitigation measures, or impact avoidance/minimization measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Although no special-status animal species were detected within the study area and none have been recorded on site, considering the site's proximity to known records of special-status species, the potential exists for numerous such species to occur on site. Two federally or State-listed animal species (California red-legged frog [CRF] and California tiger salamander [CTS]) are known to occur in the project vicinity, and there is a low potential for dispersing individuals to occur on site. In addition, six other special-status animal species (white-tailed kite, Pacific pond turtle, burrowing owl, northern harrier, western red bat, and hoary bat) and numerous species of migratory birds could occur on site at the time of construction.

Pursuant to CEQA guidelines, potentially significant adverse effects on regulated biological resources would result from project implementation. These impacts, along with measures to avoid, minimize or compensate for unavoidable or potential impacts are discussed below.

Impact BIO-1: *The potential for occurrence of a total of 49 special-status animal species was evaluated (Wood Biological Consulting, Inc. 2015). The potential for occurrence of 41 of the target species can be ruled out entirely based on the developed nature of the subject parcel and surroundings, soil types, existing habitats, and geographic location. The potential exists for the occurrence on site of eight of the target species, including two federally listed species (Alameda whipsnake, CRF), one fully protected species (white-tailed kite), four species of special concern (PPT, northern harrier, burrowing owl and western red bat), and one special animal (hoary bat), as well as numerous migratory birds species.*

Due to the presence of suitable habitat on site and the known occurrence of occupied habitat nearby, the potential exists for CRF, CTS and PPT to disperse along the tributary to Willow Creek. Although their occurrence on site is considered unlikely, construction activities in and adjacent to the channels could result in a take.

Within the study area, trees, shrubs, vines, and grasslands provide suitable nesting habitat for three special-status bird species (white-tailed kite, burrowing owl, and northern harrier) as well as many other migratory bird species. Ground disturbing activities (e.g., grubbing, grading, trenching, and tree removal or pruning) could result in direct or indirect impacts to nesting birds by causing the destruction or abandonment of occupied nests. Direct and indirect impacts to special-status and migratory bird species would be considered significant under CEQA guidelines.

Suitable roosting habitat for special-status bat species is present in the riparian and ornamental trees on site. The proposed project would require the removal and/or pruning of

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

mature trees. If present, the bat roosts could be inadvertently destroyed. In addition, construction activities in the vicinity of a maternity roost could result in roost abandonment and mortality of young. The destruction of the roosts of special-status bat species or disturbance of maternity roosting would be a violation of the California Fish and Game Code (CFGC) and would be considered a significant impact pursuant to CEQA.

Mitigation Measure BIO-1a: In order to minimize and avoid impacts to California red-legged frog, California tiger salamander, or Pacific pond turtle during in-stream project-related disturbances, the following measures shall be implemented.

1. The City shall apply for coverage under the HCP/NCCP, which would provide the City with incidental take coverage for CTS, CRF, and PPT. Under the HCP/NCCP, no preconstruction surveys are required.
2. Work shall be limited to the dry season, from April 15 to October 15.
3. Nighttime construction shall be restricted to avoid effects on nocturnally active species such as CRF.
4. Before commencement of construction activities, a qualified biologist shall conduct an environmental awareness program for all construction personnel. At a minimum the training shall include a description of special-status species that could be encountered, their habitats, regulatory status, protective measures, work boundaries, lines of communication, reporting requirements, and the implications of violations of applicable laws.
5. Prior to the start of construction, wildlife exclusion fencing (WEF)[7] shall be installed to isolate the work area from any habitats potentially supporting special-status animals or through which such species may move. The final project plans shall indicate where and how the WEF is to be installed. The bid solicitation package special provisions shall provide further instructions to the contractor about acceptable fencing material. The fencing shall remain throughout the duration of the work activities, be regularly inspected and properly maintained by the contractor. Fencing and stakes shall be completely removed following project completion.

[7] *Wildlife Exclusion Fencing provides a barrier for terrestrial wildlife gaining access to the project work areas. The fencing may vary to meet the needs of a particular species, but must be buried and/or backfilled to prevent animals passing under the fence and must be high enough to deter reptiles and amphibian or small mammals from climbing or jumping over the fence. Acceptable fencing materials including Animex® wildlife exclusion fencing, ERTEC E-Fence™ (Ertec Environmental Systems LLC), plywood, corrugated metal, and silt fencing .*

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

6. Under the HCP/NCCP, preconstruction survey for CTS and CRF are not required. A preconstruction survey for PPT will be conducted immediately prior to vegetation clearing and construction activities within the both channels.
7. Prior to the initiation of work Best Management Practices (BMPs) consistent with those identified under the Contra Costa County Clean Water Program's Stormwater C.3 Guidebook[8] shall be in place to prevent the release of any pollutants or sediment into the creek, storm drains, or tributaries; all BMPs shall be properly maintained. Leaks, drips, and spills of hydraulic fluid, oil, or fuel from construction equipment shall be promptly cleaned up to prevent contamination of water ways. All workers shall be properly trained regarding the importance of preventing and cleaning up spills of contaminants. Protective measures shall include, at a minimum:
    a) No discharge of pollutants from vehicle and equipment cleaning shall be allowed into any storm drains or watercourses.
    b) Spill containment kits shall be maintained onsite at all times during construction operations and/or staging or fueling of equipment.
    c) Coir rolls or straw wattles shall be installed along or at the base of slopes during construction to capture sediment.
8. Protection of graded areas from erosion using a combination of silt fences, fiber rolls along toes of slopes or along edges of designated staging areas, and erosion control netting (such as jute or coir) shall be installed as appropriate on sloped areas.
9. The following measures shall be implemented to avoid adversely affecting sensitive habitats and harm or harassment to listed species:
    a) Any fill material shall be certified to be non-toxic and weed free.
    b) All food and food-related trash items shall be enclosed in sealed trash containers and removed completely from the site at the end of each day.
    c) No pets from project personnel shall be allowed anywhere on the project site during construction.
    d) No firearms shall be allowed on the project site except for those carried by authorized security personnel, or local, State or Federal law enforcement officials.

[8]Available online at http://www.cccleanwater.org/Publications/Guidebook/Stormwater_C3_Guidebook_6th_Edition.pdf

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

e) All equipment shall be maintained such that there are no leaks of automotive fluids such as gasoline, oils or solvents and a Spill Response Plan shall be prepared. Hazardous materials such as fuels, oils, solvents, *etc.* shall be stored in sealable containers in a designated location that is isolated from wetlands and aquatic habitats.

f) Servicing of vehicles and construction equipment including fueling, cleaning, and maintenance shall occur only at sites isolated from any aquatic habitat unless separated by topographic or drainage barrier or unless it is an already existing gas station. Staging areas may occur closer to the project activities as required.

g) Plastic mono-filament netting (e.g., that used with erosion control matting) or similar material shall not be used within the action area; wildlife can become entangled or trapped by such non-biodegradable materials. Acceptable substitutes include coconut coir matting, tackified hydroseeding, blown straw, or other organic mulching material.

Mitigation Measure BIO-1b: In order to minimize and avoid impacts to White-tailed kite, Northern Harrier, and other migratory birds, the following measures shall be implemented.

1. The removal of trees and shrubs shall be minimized to the extent practicable.
2. If ground-disturbing activities (e.g., site clearing, disking, grading, etc.) can be performed outside of the nesting season (i.e., between September 1 and January 31), no surveys additional surveys are warranted. If ground disturbing activities are scheduled to commence during the breeding season (i.e., between February 1 and August 31), preconstruction surveys shall be conducted by a qualified biologist within the 76 m (250 ft) radius of the project footprint no more than two weeks prior to commencing with ground-disturbing activities.
3. If no active nests are found, no further measures are necessary. If active nests (i.e. nests with eggs or young birds present) are found, a no-disturbance buffer zone shall be established at a distance sufficient to minimize disruption of breeding based on the nest location, topography, cover, the specie's tolerance to disturbance, and the type/duration of potential disturbance. No work shall occur within the non-disturbance buffers until the young birds have fledged. The size of the buffer zone shall be determined by the project biologist; typically non-disturbance buffer zones are 15 m (50 ft.) for passerines and 92 m (300 ft.) for raptors.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

4. If work must be performed during the breeding season and within the designated buffer zone, a qualified biologist shall monitor the work site and the nest to determine if work activities are causing substantial stress on the breeding pair. If it is determined that project activities threaten the successful breeding of the pair, work shall cease immediately.
5. If project activities result in the abandonment of the occupied nest of a migratory or special-status bird, the CDFW and/or the USFWS Division of Migratory Bird Management shall be contacted for further guidance.

Mitigation Measure BIO-1c: In order to avoid impacts to burrowing owl during project implementation, the measures outlined below shall be implemented.

1. Prior to the initation of any ground-disturbing activities (e.g., site clearing, disking, grading, etc.), an assessment of burrowing owl habitats on site shall be performed by a qualified biologist. The preconstruction survey shall be conducted at least 30 days prior to the beginning of work and shall conform to the most recent survey protocol (CDFW 2012).
2. If there are no suitable burrowing sites on site or within 153 m (500 ft) of the limits of work, site clearing or grading may proceed.
3. If suitable burrows are detected during the breeding season (February 1 through August 31), focused surveys, conforming to published protocol (CDFW 2012), shall be conducted to determine the presence or absence of burrowing owl. Focused surveys may be delayed until the project is closer to implementation, generally no more than 30 days prior to grading or site clearing. Focused surveys consist of four separate surveys to observe each burrow, conducted over four days.
4. If occupied burrowing owl nest sites are detected, work may not proceed. The taking of burrowing owls or occupied nests is prohibited under CFGC.[9] Nest sites must be flagged and protected by a designated disturbance-free buffer zone of at least 76 m (250 ft.). Relocation (i.e., passive exclusion) of burrowing owls is only permitted during the non-breeding season (September 1 through January 31), and in consultation with CDFW. Owls shall be excluded from burrows in the immediate impact zone and within a 160-foot buffer zone by installing one-way doors in burrow entrances. Burrow doors shall be in place for 48 hours prior to the initiation of grading.

[9]CFGC §§3503, 3503.5 and 3800

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Mitigation Measure BIO-1d: In order to avoid impacts to special-status bat species during project implementation, the measures outlined below shall be implemented.

1. No more than 14 days prior to the cutting or pruning of any trees, or the initiation of site clearing, a preconstruction survey shall be performed by a qualified biologist. The biologist shall inspect all suitable bat roosting habitat, including snags, rotten stumps, mature trees with broken limbs, exfoliating bark, and dense foliage, within and adjacent to the limits of work. If no sign of occupation by bats is observed, work may proceed. If site clearing or tree cutting is postponed for more than 14 days, the inspection shall be repeated.
2. If evidence of potential roosting by bats is detected, the CDFW shall be consulted regarding appropriate protective measures. At a minimum, to avoid direct impacts on special-status bats, the measures outlined below shall be followed before removing or trimming any trees suspected of supporting an active roost:

    a) If a tree provides potentially suitable roosting habitat, but bats are not present, the project biologist may exclude bats by sealing cavities, pruning limbs, or removing the entire tree. Trees and snags with cavities or loose bark that exhibit evidence of use by bats may be scheduled for humane bat exclusion and eviction, conducted during appropriate seasons and supervised by the bat biologist.

    b) If the biologist determines or presumes bats are present, the biologist will exclude the bats from suitable tree cavities by installing one-way exclusion devices. After the bats vacate the cavities, the biologist will plug the cavities or remove the limbs. The construction contractor will only remove trees after the biologist verifies that the exclusion methods have successfully prevented bats from returning, usually in seven to 10 days. To avoid impacts on non-volant bats, the biologist will only conduct bat exclusion and eviction.

With the incorporation of Mitigation Measure BIO-1a, 1b, 1c, and 1d, project implementation would not have a significant adverse effect on special-status animal species.

(Wood Biological Consulting, December 2015)

b) Have a substantial adverse effect on any riparian habitat or other sensitive	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?				

Two special-status natural communities are present within the study area. These include Arroyo Willow Thicket Alliance and Creeping Rye Grass Turfs. Although not classified as special-status natural communities, per se, three additional plant associations would be regarded as having special-status because they meet the federal definition of wetlands. These include Salt Grass Flat, Baltic Rush Marsh, and Ruderal Seasonal Wetland Seasonal Wetland. With the redesigned project, no impacts to these habitats would result.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☑	☐	☐

The unnamed tributary to Willow Creek and the stormwater detention basin fall under federal and State jurisdiction. Pursuant to the CWA, the USACE exerts regulatory authority over that portion of both features falling below the limits of the Ordinary High Water Mark. Pursuant to the CFGC, the CDFW would exert regulatory authority that portion of both features below the tops of bank. Impacts to these features are regulated under the CWA and CFGC.

Without the mitigation measures outlined below, the proposed activity would result in significant impacts on waters of the U.S. and waters of the State. Impacts on the water courses would be considered significant under CEQA guidelines.

Impact BIO-2: The proposed activity would result in significant temporary impacts on waters of the U.S. and waters of the State. Significant impacts include the placement of temporary fill into the unnamed tributary to Willow Creek. The length of channel to be impacted is 50 feet. Such impacts are regulated under federal and State law and require prior authorization from federal, State and local regulatory agencies.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Mitigation Measure BIO-2: The project has been designed in such a way as to minimize direct and indirect impacts on regulated aquatic features. The preliminary concept was to cut an open channel across the utility corridor permitting direct diversion of storm flows from the storm drain to the unnamed tributary to Willow Creek. Such a design would truncate the stormwater sheet flow directed onto the field and which sustains the perennial wetlands there. The hydrologic connection to as much as 0.3 ha (0.75 ac) of wetlands would be have been severed, leading to their conversion to upland grasslands. The redesigned project avoids impacting these wetlands entirely.

However, in order to achieve a hydrologic connection and positive flows from the detention basin, temporary impacts to the unnamed tributary to Willow Creek are necessary. In order to avoid, minimize and compensate for unavoidable impacts on waters of the U.S./waters of the State, the following measures shall be implemented:

1. Prior to construction, the project proponent shall secure authorization from the USACE, CDFW and RWQCB in conformance to the CWA and LSAP.
2. A copy of this report shall be submitted to the USACE, CDFW and RWQCB in support of the permit application process. Work may not proceed until authorization has been received from these agencies.
3. Coordination with the East Contra Costa County Habitat Conservancy is also required. Participation in the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP; Jones and Stokes, 2006) is expected to satisfy the requirements of the regulatory agencies for compensatory mitigation for unavoidable impacts on stream channels, wetlands and riparian habitat. A copy of the HCP/NCCP Planning Survey Report shall be included with the submittals to each agency.
4. Per the terms of the adopted HCP/NCCP, a wetland mitigation fee may be paid in-lieu of habitat restoration *in situ*. If accepted by the regulatory agencies, no additional mitigation for wetland impacts is required. The payment of in-lieu fees must be made prior to issuance of a grading permit. If a grading permit is not required, fees must be paid prior to issuance of the first construction permit.
5. For all work within and adjacent to stream channels and ditches, best management practices (BMPs) must be incorporated into the project design to prevent erosion, sedimentation, and the release of other contaminants into the water way.

With the incorporation of Mitigation Measure BIO-2, project effects on wetlands, riparian habitat and other waters of the U.S./waters of the State would be less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☑

Potential impacts are considered significant if a project would interfere substantially with the movement of 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. Wildlife corridors (i.e., linear habitats that naturally connect and provide passage between two or more large habitats or habitat fragments) are important for persistence of wildlife overtime.

The relatively wide but sparsely vegetated Willow Creek tributary on the eastern edge of the study area is unlikely to provide for any significant movement of wildlife species. Conversely, the stormwater channel on the western edge of the study area supports a dense canopy of native riparian trees with a complete understory of native herbs and shrubs. However, this channel does not connect two open areas of wildlife habitat and therefore does not function as a corridor of any type. While vegetation associated with this channel provides excellent cover for wildlife and even breeding opportunities, it is not expected to serve as a significant wildlife movement corridor. Consequently, the proposed project is not expected to have a significant adverse effect on wildlife movements.

(Wood Biological Consulting, December 2015)

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑

The project would not be in conflict with the City of Pittsburg General Plan. Although General Plan policies 9-P-9 through 9-P-11 require the protection of and establishment of setbacks from riparian corridors, the open segments of the bypass channel do not represent a significant riparian or aquatic resource as designated under the General Plan.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

A single ornamental eucalyptus tree would be removed to accommodate project construction. This tree meets the definition of a "protected tree" under the City's Tree Preservation and Protection Ordinance (Title 18, Article XIX, Section 18.84.835); however, the removal of this tree is exempt from the provisions of this article as the tree's removal is part of a development plan requiring approval by the City Council.

No mitigation measures are warranted.

(City of Pittsburg General Plan; Wood Biological Consulting, December 2015)

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?	☐	☐	☐	☑

The project site is within the inventory area of the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) and is a covered activity. The HCP/NCCP was developed as a means to provide an effective framework to protect the natural resources of eastern Contra Costa County, while streamlining the environmental permitting process for impacts on special-status species and natural communities (ECCCHCPA). The HCP/NCCP confers authorization for take of covered species under the Federal Endangered Species Act (FESA; Section 10) and NCCPA (Natural Community Conservation Planning Act; 2081 permit) for future development in the cities of Clayton, Pittsburg, Brentwood, and Oakley, and specific areas of unincorporated Contra Costa County. The HCP/NCCP proposes to provide take authorization for 28 listed and non-listed species.[10] The HCP/NCCP is also intended to serve as the basis for subsequent applications for regional wetland permits for compliance with Clean Water Act (CWA) section 404 and 401, the Porter-Cologne Water Quality Act and Section 1602 of the CFGC relative to the Lake and Streambed Alteration Program.

The City of Pittsburg is a permittee of the HCP. As such, the City may satisfy the concerns of federal and State regulatory agencies for covered species and habitats by participating in the HCP and by the payment of development fees, dedication of land, and/or habitat restoration or creation, pursuant to PMC chapter 15.108.

[10] ECCCHCPA (2006; see Table ES-1)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

The proposed project would not have any adverse effects on covered species[11], and no federal or State consultation is needed. The applicant will seek separate permits for unavoidable impacts to waters of the U.S./waters of the State and provide mitigation in conformance to the requirements of the regulatory agencies.

(East Contra Costa County HCP/NCCP and Pittsburg Municipal Code (PMC) chapter 15.108; Wood Biological Consulting, December 2015)

V. CULTURAL RESOURCES -- Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?	☐	☐	☑	☐

A comprehensive cultural resources evaluation was conducted for the proposed project by Holman & Associates, archaeological consultants, in June 2014. The study included an archaeological literature review, field investigation, and Native American consultation. That study found no recorded archival evidence of significant historical resources within the project area. Additionally, a visual inspection of the entire project area f also failed to discover any evidence of historic and/or Native American archaeological materials.

A review of the City's General Plan indicates that there are no known historical resources in the project area. Consequently, the proposed project would not cause a substantial adverse change in the significance of a historical resource as defined in CEQA Section 15064.5.

(Holman & Associates, June 2014; CEQA Guidelines section 15064.5; City of Pittsburg General Plan, Table 9-2 and Figure 9-3)

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?	☐	☐	☑	☐

[11] ECCCHCPA (2006; see Table ES-1)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

As part of the Americana Park Bypass Channel project, archival research was conducted in January 2014 for archeological resources. In addition, a field survey of the entire project site was conducted in May 2014. No archeological resources have been identified on the project site, and the area was found not to be sensitive for prehistoric resources. The project site is relatively flat and has been subject to ground disturbing activities when utility towers were constructed within the PG&E corridor.

In accordance with General Plan Policies 9-P-40 and 9-P-41, if any archeological resources are found during grading or construction activities, all construction activities would be required to halt and an archeological investigation to document and collect all valuable remnants would be required; the City will ensure the preparation of a resource mitigation plan and monitoring program by a qualified archeologist in the event that archeological resources are uncovered.

(City of Pittsburg General Plan, page 9-32; Holman & Associates, June 2014)

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☑

The project area does not extend into bedrock units. Rather, all grading from the project is expected to expose relatively young alluvial deposits composed of eroded materials from the Pliocene age bedrock in the hills to the south. Those bedrock units may contain some freshwater mullosk shells or mammal bones. However, any fossils eroded from the bedrock units that have been transported to, and deposited in, the alluvial fans in the project area are likely to be degraded and not have any paleontological significance. In addition, City records indicate that no unique paleontological resources or unique geologic features have been identified in the project area.

(City of Pittsburg General Plan, Chapter 10.1 [Geology and Seismicity] and Chapter 9.5 [Historic and Cultural Resources]).

d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☑

No human remains are believed to be present at the project site based on cultural resource assessments performed as part of the environmental review for the proposed project. In accordance with the California Health and Safety Code (Section 7052), in the event that human remains are discovered, construction or grading shall be stopped in the vicinity of the

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

human remain until the coroner can determine whether the remains are those of a Native American and to ensure the remains are handled in accordance with State law; therefore, no project specific mitigation is deemed warranted.

The cultural resources study for the proposed project included contact with the California Native Heritage Commission (NAHC) in May 2014. The NAHC responded that the files contained no information regarding Native American resources; a list of three Native Informants was sent. On May 20, 2014, letters were sent to the three named informants asking if they had any information or concerns they wished to share. No responses were received and a second attempt to contact the informants was made by phone and/or email after the 30-day response period had been reached and no response was received. Nevertheless, in the event that unknown human remains are uncovered, Native American representatives will be re-contacted for appropriate consultation.

(Holman & Associates, June 2014; California Health and Safety Code Section 7052)

VI. GEOLOGY AND SOILS -- Would the project:				
a) Expose people or structures to 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?	☐	☐	☐	☑

Based upon California Department of Conservation records, there are no Earthquake Fault Zones established under the Alquist-Priolo Act that are located within Pittsburg and, consequently, none are located on the proposed project site. The nearest mapped active fault is the Clayton-Greenville Fault, located about 4.5 miles south of the site. Two other active faults, the Antioch Fault and the Concord-Green Valley Fault, are located 7 miles east and 7.5 miles west of the project site, respectively. The City of Pittsburg General Plan's Table 10-1 and Figure 10-2 present a list of the active faults in the vicinity of the city, and indicate the locations

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

of fault branches for both major and minor faults within the Pittsburg Planning Area. None of the faults identified by the General Plan are located on or near the bypass channel project site. Consequently, the potential for surface rupture due to primary faulting at the site is negligible.

(City of Pittsburg General Plan, Table 10-1; California Department of Conservation, Regulatory Maps: Alquist-Priolo Zones of Required Investigation; Geotechnical Investigation Report, Brickyard Subdivision, Pittsburg, California, March 1994)

ii) Strong seismic ground shaking? ☐ ☐ ☑ ☐

Although the site is not located within an Alquist-Priolo designated active fault zone, it is about 4.5 miles from the active Clayton-Greenville Fault. Two other active faults, the Antioch Fault and the Concord-Green Valley Fault, are located 7 miles east and 7.5 miles west of the project site, respectively. In addition, earthquakes on other faults in the region, including the Calaveras, Hayward, Marsh Creek-Greenville, and San Andreas Faults could result in strong ground shaking at the site. The intensity of ground shaking that is likely to occur within the project area will generally be dependent on the magnitude of the earthquake and the distance from the earthquake epicenter (City of Pittsburg General Plan, p. 10-8).

Due to the proximity of the site to numerous active fault systems, it is likely that the project would be subjected to the effects of a major earthquake during the design life of the bypass drainage channel. Strong seismic shaking could damage the proposed improvements, including lighting, storm drains, etc. The adverse effects from seismic shaking would be reduced to less than significant levels by designing the improvements in accordance with the Chapter 16, Structural Design Requirements, of the California Building Code (2010) and compliance with City policies for seismic hazards. City Policy 10-P-16 would ensure compliance with the current Uniform Building Code during development review. Therefore, no project specific mitigation measures are deemed necessary.

(City of Pittsburg General Plan, p. 10-13; Project Plans)

iii) Seismic-related ground failure, including liquefaction? ☐ ☐ ☐ ☑

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

The City's General Plan provides a map of the geologic hazards that affect various parts of the community. Potential geologic hazards include generally and moderately unstable lands, areas with slopes over 30%, and areas where there is high liquefaction potential. The bypass channel site is located in the city's lowlands, which are characterized as having high liquefaction potential.

Liquefaction is the rapid transformation of saturated, loose, fine-grained sediment to a fluid-like state because of earthquake groundshaking. Liquefaction has resulted in substantial loss of life, injury, and damage to property. In addition, liquefaction increases the hazards of fires because of explosions induced when underground gas lines break, and because the breakage of water mains substantially reduces fire suppression capability.

Liquefaction hazard in Pittsburg ranges from very low to high. ABAG has identified most of the lowland areas adjacent to Suisun Bay as being highly susceptible to liquefaction hazards (Figure 10-1 Geologic Hazards). Alluvial fan and terrace deposits that underlie most of Pittsburg have low liquefaction potential, and upland areas that are underlain by bedrock have very low liquefaction potential.

The USDA Natural Resources Conservation Service provides mapping of soil types in Contra Costa County and has identified soils on the project site as belonging to the Capay-Rincon soil association. Nearly level to strongly sloping, moderately well-drained and well-drained clays and clay loams on valley fill. The soils in this association are more than 60 inches deep. They formed in alluvium from sedimentary rock. Slopes are 0 to 15 percent. This association makes up about 3 percent of the county. It consists of about 50 percent Capay soils and 40 percent Rincon soils. The rest is Antioch, Brentwood, and Sycamore soils. For the project site, Capay soils constitute over 95 percent of the soil type, while Rincon soils are confined to a small portion (< 5%) of the project area's southwestern corner.

Capay soils are moderately well drained, having a surface layer of dark grayish brown and grayish brown clay. The substratum is brown clay and yellowish-brown silty clay loam. Rincon soils are well-drained and have a surface layer of dark grayish-brown clay loam and a subsoil of brown clay. The substratum is light yellowish brown silty clay loam and loam.

Capay soils extend over a major portion of the Americana subdivision adjoining the project site to the west. The Geotechnical Investigation for this adjacent site included subsurface borings and characterizes the Capay soils on that site as dark silty to sandy clays that were highly

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

plastic. Underlying surface clays were clayey sand and sandy clay layers to a depth of 25.5 feet. All of the underlying clays and sands were relatively strong and incompressible. The evaluation of Capay soils for the Americana subdivision project indicated that the sands encountered in the project area are sufficiently dense that liquefaction potential in the project area is very low.

To ensure that potential geologic and soils hazards are adequately addressed as part of the project review process, the City's General Plan policies require the preparation of geotechnical studies prior to development approval in geologic hazard areas, as shown in Figure 10-1, including comprehensive geologic and engineering studies of critical structures regardless of location. The City will also require the preparation of a soils report by a City-approved engineer or geologist in areas identified as having geological hazards in Figure 10-1, as part of project review.

(City of Pittsburg General Plan, Figure 10-1; Geotechnical Investigation Report, Brickyard Subdivision, Pittsburg, California, March 1994; USDA Soil Conservation Service, Soil Survey of Contra Costa County, September 1977)

iv) Landslides?	☐	☐	☐	☑

The project site is low-lying and flat (0-2% grade), and is not surrounded by higher ground that is susceptible to landslides. Therefore, it is highly unlikely that a landslide could impact the project site, and no project specific mitigation measures are deemed necessary.

(Topographic Maps; Site Visit)

b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☑	☐

As described above, site soils are generally clayey, belonging to the Capay soil series. Capay soils (0 to 2 percent slopes) are characterized by the USDA Soil Conservation Service as having very slow runoff and no hazard of erosion where the soil is tilled and exposed. The project site is generally flat, and as required by PMC chapter 15.88 (Grading, Erosion and Sediment Control), construction activities would be subject to a required erosion and sediment control plan to ensure that the potential impacts from soil erosion would be reduced to less than significant levels during project construction.

(Topographic Maps; Site Visit; USDA Soil Conservation Service, Soil Survey of Contra Costa County, September 1977)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☑

As described under a.iii, above, the project site is not susceptible to liquefaction. Lateral spreading can occur when either the ground surface or the soil layer subject to liquefaction is sloped, or where there is an open face or stream channel adjacent to a potentially liquefiable soil layer. None of these prerequisite conditions occurs in the site vicinity.

Seismically induced ground settlement and subsidence generally results from the densification of loose sands and sandy silts due to vibration or liquefaction. Based on local geologic mapping, characterization of site soils by the USDA Soil Conservation Service's Soil Survey, and the evaluation in a geotechnical study for adjoining project area soils, the potential for seismically induced subsidence is considered nil.

Ground lurching can occur when strong seismic shaking causes cracking and deformation of the ground surface in areas underlain by weak soils. Based on known soils conditions at the site and the project geotechnical soils analyses, the potential for ground lurching is nil.

Findings and recommendations of a geotechnical report are required by the City to be incorporated in the final grading and improvement plans to ensure that potential impacts to facilities are reduced to less than significant levels.

In addition, the project area is not identified in the Pittsburg General Plan as having unstable ground, nor would the project cause the ground to become unstable. As a result, no project specific mitigation measures are deemed necessary.

(City of Pittsburg General Plan, Figure 10-1; Geotechnical Investigation Report, Brickyard Subdivision, Pittsburg, California, March 1994; USDA Soil Conservation Service, Soil Survey of Contra Costa County, September 1977)

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?	☐	☐	☑	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

The countywide soil survey indicates that the project site is underlain by Capay and Rincon soils. In general, these soil types are identified as having moderate to high shrink swell potential. This potential will be evaluated through a project geotechnical report that includes a number of specific design recommendations to address this issue. Findings and recommendations of the soil report are required by the City to be incorporated in the final grading and improvement plans to ensure that potential impacts to facilities are reduced to less than significant levels.

(City of Pittsburg General Plan, Policies 10-P-1 and 10-P-9; Geotechnical Investigation Report, Brickyard Subdivision, Pittsburg, California, March 1994)

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☑

The proposed Americana Park Bypass Channel project would not generate any wastewater. No septic tanks or alternative wastewater systems would be used on the site. Therefore, there would be no impact.

(Project Plans)

VII. GREENHOUSE GAS EMISSIONS -- Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impacts on the environment, based on any applicable threshold of significance?	☐	☐	☑	☐

"Greenhouse gases" (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as "global warming." These greenhouse gases contribute to an increase in the temperature of

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

the earth's atmosphere by transparency to short wavelength visible sunlight, but near opacity to outgoing terrestrial long wavelength heat radiation. The principal greenhouse gases (GHGs) are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. Fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions.

Short-term GHG emissions from direct sources (traffic increases and minor secondary fuel combustion emissions from space heating) would be generated by project-related construction activities, but project implementation would not result in long-term increases in greenhouse gases (GHGs) from direct sources. Electricity generation in California is mainly from natural gas-fired power plants; however, since California imports about 20 to 25 percent of its total electricity (mainly from the northwestern and southwestern states), GHG emissions associated with electricity generation could also occur outside of California. Space or water heating, water delivery, wastewater processing and solid waste disposal also generate GHG emissions.

The CalEEMod 2011.1.1 computer model was used to calculate GHG emissions that would be generated by the construction of the proposed bypass channel project (see Attachment 1 for model outputs), and project construction is estimated generate up to approximately 192 metric tons of CO_2-equivalents[12] (MT CO_2e) per year. The BAAQMD does not have a quantitative significance threshold for construction-related GHG emissions, but the project's estimated construction-related GHG emissions are expected to have a less-than-significant impact on global climate change. For comparison purposes, this emissions rate is well below the BAAQMD's recommended operational significance threshold of 1,100 metric tons (MT) of CO_2e per year,[13] which would be an indication that the project's construction-related GHG emissions would be less than significant. The proposed project would also be subject to the

[12] *Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents" or CO_2e, which present a weighted average based on each gas's heat absorption (or "global warming") potential. When CO_2 and non-CO_2 GHG emissions are considered together, they are referenced as CO_2e, which add approximately 0.9 percent to CO_2 emissions from diesel equipment exhaust (California Climate Action Registry, General Reporting Protocol, Version 3.1, January 2009. Available online at: http://www.climateregistry.org/tools/protocols/general-reporting-protocol.html. Accessed on November 20, 2015). See Table 1 for other construction assumptions.*

[13] *The BAAQMD's Options and Justification Report establishes thresholds based on substantial evidence and are consistent with the thresholds outlined within the BAAQMD's 2010 CEQA Air Quality Guidelines, and the recommended GHG threshold for operational GHG emissions is 1,100 MT CO_2e per year.*

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

existing CARB regulation (Title 13 of the California Code of Regulations, Section 2485), which limits idling of diesel-fueled commercial motor vehicles, and compliance with this regulation would further reduce GHG emissions associated with project construction vehicles (compliance with idling limits is required under Mitigation Measure AQ-1 in Section 3, Air Quality). The BAAQMD also encourages implementation of construction-related GHG reduction strategies where feasible, such as: using alternative-fueled (e.g., biodiesel, electric) construction vehicles/equipment such that these vehicles/equipment comprise at least 15 percent of the fleet; using local building materials such that these materials comprise at least 10 percent of all construction materials; and recycling or reusing at least 50 percent of construction waste or demolition materials. None of these measures is specifically proposed as part of the project.

There would be no operational GHG emissions associated with the bypass channel project. Therefore, implementation of the proposed drainage channel improvement project would not directly or indirectly contribute to long-term increases in GHG emissions.

(CalEEMod model outputs, see Attachment 1; Staff Determination)

b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☑	☐

California has passed a number of bills related to GHG emissions and the Governor has signed at least three executive orders regarding greenhouse gases. The Governor's Office of Planning and Research has not yet established CEQA significance thresholds for GHG emissions. GHG statutes and executive orders (EO) include EO S-1-07, EO S-3-05, EO S-13-08, EO S-14-08, EO S-20-04, EO S-21-09, AB 32, AB 341, AB 1493, AB 3018, SB 97, SB375, SB 1078 and 107, SB 1368, and SB X12. AB 32 establishes regulatory, reporting, and market mechanisms to reduced statewide GHG emissions to 1990 levels by 2020. Pursuant to this requirement, the California Air Resources Board (CARB) adopted its Scoping Plan, which contains the main strategies to achieve required reductions by 2020.

The proposed bypass channel project would maximize reuse of on-site soil materials. In addition, as indicated above, the project's construction-related GHG emissions would not exceed the above GHG significance threshold, which was established by the BAAQMD in

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

response to AB 32. Therefore, the project's short-term GHG emissions would have a less-than-significant impact on climate change. Since there are no long-term GHG emissions associated with operation of the bypass channel, project operation would have no impact on climate change. Therefore, project-related GHG emissions would not conflict with applicable plans and policies adopted for the purpose of reducing GHG emissions, a less-than-significant impact.

(CalEEMod model outputs, see Attachment 1; Staff Determination)

VIII. 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?	☐	☐	☐	☑

The proposed bypass channel project does not involve the routine transport, use, or disposal of hazardous materials and would therefore not induce a significant hazard to the public.

The California Highway Patrol and California Department of Transportation have primary responsibility in regulating the transportation of hazardous waste and materials. Recently, the City designated roadways within Pittsburg that are acceptable for transport of hazardous materials; these roadways include North Parkside Drive, adjoining the project site to the north.

(Project Plans; Pittsburg General Plan; Site Visit)

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?	☐	☐	☐	☑

As noted above in section VIII.a, the project would not include the routine transport, use or disposal of hazardous materials; therefore, there is no risk of the accidental release of hazardous materials.

(Project Plans)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☑

See section VII.a, above. The project would not result in the release of hazardous emission or involve the routine handling of hazardous materials and is not within ¼ mile of any schools; therefore, the project would not pose a risk to existing or proposed schools in the vicinity of the site.

(Project Plans; Google Earth, 2016)

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?	☐	☐	☐	☑

This project is not located on the Cortese List of hazardous materials sites; therefore, no project specific mitigation measures are deemed necessary.

(Cal EPA Cortese List website: www.calepa.ca.gov/SiteCleanup/CorteseList/default.htm)

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?	☐	☐	☐	☑

The project site is not located within two miles of an airport, and the proposed modifications to the site would not result in a safety hazard related to airport use.

(Aerial Photograph, Google Earth, 2016)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑

The project site is not located within two miles of a private airstrip, and the proposed modifications to the site would not result in a safety hazard related to airport use. (Aerial Photograph, Google Earth, 2016)

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☑	☐

The proposed project would not obstruct or remove any existing roadway identified for use by emergency vehicles. The proposed project would not impair or interfere with the City's adopted Emergency Plan.

The construction activities for bypass channel could cause temporary disruption of traffic on North Parkside Drive and temporarily affect response to calls for emergency services from local residents and commercial uses in the project area. In order to minimize these potential effects on emergency service responders, the City requires the preparation of a traffic control plan by the project contractor; the traffic control plan would include procedures to ensure that emergency services are informed of potential detours, road closures, and other construction activities that may affect emergency service response during construction.

(Project Plans; City of Pittsburg General Plan; Site Visit; Staff Determination)

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☑	☐

The project is located in a PG&E utility corridor adjoining an urbanized area. The proposed bypass channel site adjoins Power Avenue and North Parkside Drive, along with residential,

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

uses; there are no wildlands adjacent to the project area and, consequently, no people or structures are exposed to significant risk of loss, injury or death involving wildland fires.

(Project Plans; Site Visit; Google Earth, 2016; City of Pittsburg General Plan)

IX. HYDROLOGY AND WATER QUALITY -- Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☑	☐	☐

The project area is bordered by residential developments to the east and west. A realigned earth-lined tributary to Willow Creek flows south to north along the eastern edge of the PG&E utility corridor. A storm drain outfall is located in the southwestern corner of the project area; surface flows are conveyed northward via an open channel where they empty into a stormwater detention basin constructed as part of the Americana subdivision.

The proposed construction of a new flood control channel that would divert peak flows away from the existing Americana Park stormwater detention basin and into an intermittent tributary to Willow Creek that extends south to north along the eastern perimeter of the PG&E utility corridor. Overflows from the detention basin currently run into a roadside ditch on the south side of North Parkside Drive, flowing eastward and emptying into the intermittent tributary to Willow Creek. Periodic overflow from the basin causes minor street flooding along North Parkside Drive. The City is responsible for alleviating additional flows into the detention facility to prevent overflow and flooding of this roadway.

The proposed earthen diversion channel would be approximately 780 feet long, extending from the existing Americana Park detention basin in the west to the existing tributary to Willow Creek in the east. The outfall transition from the earthen channel to the existing tributary to Willow Creek channel that runs along the easterly boundary of the PG&E parcel would be protected with rock slope protection for a length of 25 feet.

Due to site soils characteristics, i.e. slow permeability and runoff, stormwater collects on the project site and percolates slowly. The biological resources assessment for the site indicates support for wetland habitat on portions of the site. Runoff from the project site is currently discharged to the City's existing stormwater conveyance system serving the existing roadways and adjacent parcels. The project would not result in any sanitary sewage discharges.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Impact HYD-1*: Construction of the project bypass channel has the potential to adversely affect water quality in a tributary to Willow Creek that extends along the east side of the PG&E utility corridor. Grading and earthwork required for the western connection of the proposed bypass channel to the detention basin in Americana Park could adversely affect the water quality of waters of the U.S. and the State. Construction activities associated with the project will be subject to the City's grading ordinance, Pittsburg Municipal Code Chapter 15.88, which requires the implementation of a grading, erosion and sediment control plan during ground disturbing activities. However, project construction could potentially result in a significant impact to water quality, including violation of applicable standards. Mitigation IX-1, below, would reduce this impact to a less than significant level.*

Mitigation Measure HYD-1: *To preserve downstream water quality, the following mitigation measures shall be performed:*

1. *Work in active stream channels or wetlands shall be conducted during the dry season (Approximately April 15 through October 15). The work period may be extended with the written approval of the RWQCB and CDFG.*
2. *If work is to be performed in any channel with surface flows, a water diversion plan shall be implemented allowing uninterrupted stream flow. Cofferdams shall be built only from materials such as clean gravel, sandbags filled with clean river sand, or inflatable structures to avoid release of any silt or sediment. Cofferdams and bypass culverts shall be installed and removed by hand. Normal flows shall be restored upon completion of work; no permanent structures or construction materials shall be left behind. The use of cofferdams is only allowed under permits issued by the USACE and CDFG, and shall be subject to all permit conditions.*
3. *Best management practices (BMPs) shall be incorporated into construction operations to prevent the release of any contaminants (e.g., soil, silt, construction debris, raw cement, concrete, petroleum products, or any substance that could be hazardous to aquatic life, wildlife, or riparian habitat) into any creek or storm channel. All erosion control devices shall be removed upon completion of construction activities. A detailed description of BMPs is presented in Attachment 2 of this Initial Study.*
4. *Staging and storage areas for equipment, construction materials, fuels, lubricants and solvents shall be located outside of any channel and banks. Stationary equipment such as pumps, generators, compressors, and welders that must be located within any channel shall be placed on drip pans. Equipment operated in any channel shall be*

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

inspected and maintained daily to prevent release of hydraulic fluids or fuels into surface waters. Fueling and maintenance of equipment shall be performed outside of any channel.

5. *All disturbed soil surfaces within or adjacent to any channel shall be reseeded with an appropriate blend of locally occurring native plant species. The seed mix shall be developed by a qualified restoration ecologist and shall be tailored to the individual* watershed in which the work takes place.

(PMC chapter 15.88; Project Plans; Wood Biological Consulting, December 2015)

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☑

The Pittsburg Plain Groundwater Basin (DWR Basin Number 2-4) is located along the southern shore of Suisun Bay. The Basin consists of mild sloping alluvial plains ranging from sea level to +100 feet elevation. The primary water-bearing units of the Basin are alluvium deposits ranging from Pleistocene to Recent in age. Characterization of the Basin hydrogeologic setting is limited to the area around the City. Aquifer units beneath the City consist of north-dipping sand and gravel material under confined to semi-confined conditions. To the south, a deeper zone, where most of the Basin groundwater production occurs, is close to the ground surface and appears to interbed with the sandy clay surface layer. Recharge to the deeper zone is interpreted to occur in the hills along the southern portion of the Basin where the primary aquifer units outcrop at the land surface. Groundwater flow appears to be generally to the north-northeast toward the Suisun Bay, which defines the northern border of the Basin.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

The City is a local public agency that supplies water to customers within its service area. The City has prepared a Groundwater Management Plan (October 2012) to manage and protect groundwater resources within the City and the underlying groundwater basin.

Groundwater depths in the project area were reported as part of the Geotechnical Investigation for the Brickyard Project Site (Americana subdivision). Borings and excavation pits for the geotechnical study indicated that groundwater was encountered at depths of 15.5 to 19 feet below ground surface. Groundwater elevations may be highly variable due to a number of factors such as annual precipitation, local topography, site soil characteristics, etc.

For the proposed bypass channel, the project would not use groundwater during construction or post-construction. The operation of the Americana Park Bypass Channel would provide a new 780-foot earthen drainage channel to convey storm runoff overflows from the Americana Park detention basin to the tributary of the Willow Creek. The collection of overflows in the bypass channel would provide additional surface area on the project site for percolation of surface flows and groundwater recharge. This would be a beneficial impact of the project for groundwater resources in the project area.

(Geotechnical Investigation Report, Brickyard Subdivision, Pittsburg, California, March 1994; City of Pittsburg, Pittsburg Plain Groundwater Basin Groundwater Management Plan; Project Plans)

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☑	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☑	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

The Americana subdivision was constructed between 2001 and 2003, at which time a portion of a storm drain channel, which previously emptied directly into the utility corridor, was placed into a buried culvert beneath the new development. The outfall in the southwestern corner of the area directed flows to the new detention basin via an excavated surface channel. Figure 4 presents current and historic drainage patterns for the project site.

Within the project area, the tributary to Willow Creek is a 70-ft. wide straightened, earthen, trapezoidal channel. Its slopes support non-native grassland species and only a few scattered woody trees and shrubs. The channel bottom, approximately 14 ft. below the surrounding grade, supports an assortment of native and non-native wetland herbs and grasses, and a preponderance of upland grasses. Elevations of the surface of the field range from 28-34 ft. above mean sea level (msl).

A detailed Hydraulic Study for the Americana Park Bypass Channel was prepared for the proposed project by Harrison Engineering Inc. (HEI). The Hydraulic Study is included in this Initial Study as Attachment 3.

Presently, high stormwater flows discharge from the Americana Park detention basin northward to North Parkside Drive, flooding the roadway on a regular basis. From North Parkside Drive, flood flows drain to the east on and along the north side of the roadway, collecting in the Willow Creek tributary north of the project site. Storm runoff continues flowing northward through culverts under the roadway and two railroad (BNSF) embankments to the north of North Parkside Drive.

In brief, the proposed Americana Park Bypass Channel would collect overflow storm runoff from the Americana Park detention basin and convey these runoff volumes to the tributary of Willow Creek on the eastern perimeter of the PG&E utility corridor project site. The proposed project would not generate new or increased runoff flows from the site. Anticipated detention overflows would discharge to the proposed bypass channel and same Willow Creek tributary, remaining on the project site rather than flowing off-site along North Parkside Drive. The proposed alteration of the drainage pattern of both off-site and on-site flows would not substantially increase the rate or amount of surface runoff that would result in flooding on- or off-site. Consequently, this would be a less than significant impact of the project and no project-specific mitigations are necessary.

(Project Plans; HEI, Hydraulic Study: Americana Park Bypass Channel, 2016); Pittsburg Municipal Code chapter 13.28)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) 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?	☐	☐	☑	☐

Please see discussion in section VIII.d, above.

f) Otherwise substantially degrade water quality?	☐	☐	☑	☐

Please see discussion in sections IX.a and IX.d, above.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☑

The proposed bypass channel project does not include housing and therefore would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.

(Project Plans)

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☑	☐

The Americana Park Bypass Channel project is generally located outside of the 100-year flood hazard zone (Zone A) that occurs in the southeast corner of the project area and is contained within the tributary of Willow Creek along the eastern perimeter of the project area. The eastern end of the bypass channel, at its confluence with the tributary would be situated within the Zone A flood hazard area. However, the proposed drainage channel would not impede flood flows nor redirect flood flows carried within the Willow Creek tributary. As discussed above in section IX.d., detention basin overflows would be channeled into the tributary on-site rather than 225 feet to the north at North Parkside Drive, off of the project site. The proposed

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

project would not increase the rate or amount of surface runoff. Therefore, this would be a less than significant impact of the project.

(FEMA Flood Insurance Rate Map, Community Panel Numbers 06013C0118G and 06013C0119G, revised September 30, 2015)

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☑

The project site is not located within a levee or dam flood inundation area.

(Geostat, Dams Near Pittsburg, California, http://www.geostat.org/data/pittsburg-ca/dams)

j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☑

Elevations on the project site range between 16 and 34 feet above mean sea level. The project site is located approximately one mile south of Suisun Bay and therefore has little potential for inundation by sieche, tsunami, or mudflows.

(Project topographic map; City of Pittsburg General Plan, page 10-9; ABAG Resilience Program, Flooding Hazards, Tsunami Inundation Area for Emergency Planning,http://gis.abag.ca.gov/website/Hazards/; Google Earth)

X. LAND USE AND PLANNING - Would the project:				
a) Physically divide an established community?	☐	☐	☐	☑

The project site consists of a PG&E electric utility corridor with high voltage transmission lines extending north - south across the site. The proposed project would entail the construction of a bypass drainage channel connecting a detention basin in Americana Park with a constructed earthen tributary of Willow Creek along the east side of corridor. There are no public roads that extend along the corridor right-of-way. The proposed drainage channel would not physically divide an established community.

(Site visit and Pittsburg General Plan)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☑	☐

The project site is located in the West Central Planning Sub-area of Pittsburg. The General Plan Public Facilities Element includes section 11.5, which proposes multi-use purposes of utility corridors. The existing PG&E power line corridor bisects the City of Pittsburg from the Mirant (formerly PG&E) Power Plant along Suisun Bay in the north to the rolling hills in the southern portion of the Planning Area. This corridor is currently used only as an open space area over which power transmission lines and towers stand. Specifically, the General Plan indicates that the City could work with Mirant to transform this underutilized corridor into more useful public space, such as open space habitat or trails, parks and playing fields.

The proposed project would be consistent with the following Public Facilities goal and policies of the General Plan, as presented in the Public Facilities Element:

> *Goal 11-G-10: Encourage buffer landscaping and multi-use of utility sites and rights-of-way to harmonize with adjoining uses.*
>
> - *Policy 11-P-30: Continue to rely on the five-year Capital Improvement Program to provide for needed utilities in relation to the City's financial resources.*
>
> - *Policy 11-P-31: Work with Mirant Power Plant to acquire and/or develop transmission line corridors for attractive, community-serving, compatible uses.*

The General Plan indicates that utility corridors and rights-of-way provide an opportunity for the establishment of additional public improvements that would benefit the community at-large and local neighborhoods in particular. The project proposes to use the utility corridor for the construction of a drainage channel that would alleviate storm runoff overflows presently flooding public transportation facilities, i.e. North Parkside Drive, and impeding travel during storm events. The use of the PG&E utility corridor for this purpose would be consistent with the

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Public Facilities Element's goal and policies for multi-purpose use of utility sites and rights-of-way.

In addition to the policies of the Public Facilities Element, the General Plan's Health & Safety Element presents policies related to flood control improvements for the community. These policies include:

- *Policy 10-P-18: Evaluate storm drainage needs for each development project in the context of demand and capacity when the drainage area is fully developed. Ensure drainage improvements or other mitigation of the project's impacts on the storm drainage system appropriate to the project's share of the cumulative effect.*

- *Policy 10-P-26: Reduce the risk of localized and downstream flooding and runoff through the use of high infiltration measures, including the maximization of permeable landscape.*

The proposed bypass drainage channel rectifies a deficiency in the capacity of the Americana Park detention basin by discharging overflows to the proposed channel for conveyance to a tributary of Willow Creek on the east side of the utility corridor. The redirection of storm flows away from North Parkside Drive ensures that the storm drainage system functions as originally intended. Additionally, the proposed project reduces the risk of localized flooding and runoff through the containment of storm flows within an earthen channel that facilitates on-site infiltration and percolation, offering new opportunities for groundwater recharge and habitat restoration areas. In this manner, the project would fulfill the goals and conform to the policies of the General Plan.

(City of Pittsburg General Plan; City of Pittsburg General Plan EIR)

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☑	☐

See discussion under Section IV.f.

(City of Pittsburg General Plan; City of Pittsburg General Plan EIR; East Contra Costa County HCP/NCCP and Pittsburg Municipal Code (PMC) chapter 15.108; Wood Biological Consulting, March 2009)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. 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?	☐	☐	☐	☑

The project site is located in an area where there is little likelihood that mineral deposits are present.

(City of Pittsburg Existing Conditions and Planning Issues, figure 12-3)

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?	☐	☐	☐	☑

See response X.a, above.

XII. NOISE -- Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☑	☐

The proposed bypass channel project's potential to expose persons to excessive noise levels during construction and operation is discussed below under Sections XII.c and XII.d. The project's consistency with General Plan land use compatibility noise guidelines (Figure 12-3) specified in the City's General Plan Noise Element is not a concern with the proposed project (since a drainage channel is not a use that is sensitive to noise) and will not be discussed further.

The Noise Element's Policy 12-P-9 limits generation of loud noises on construction sites adjacent to noise-sensitive uses be limited to normal business hours (8:00 a.m. to 5:00 p.m.) but does not establish sound level limits. The City of Pittsburg noise ordinance does not

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

establish noise level limits related to fixed noise sources or construction noise (Title 9 Public Peace, Safety and Morals, Chapter 9.44 Noise, §9.44.010). The noise ordinance, however, prohibits the use of a pile driver, steam shovel, pneumatic hammer, derrick, steam or electric hoist, or other appliance between the hours of 10:00 p.m. and 7:00 a.m. Project construction is proposed to occur during normal business hours 8:00 a.m. to 5:00 p.m. on weekdays), and therefore, would be consistent with time limits specified by the Pittsburg Noise Element and Noise Ordinance, a less-than-significant impact.

(City of Pittsburg General Plan, Chapter 12 [Noise], Figure 12-3, page 12-10; Pittsburg Municipal Code Chapter 9.44)

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☑	☐

Temporary construction-related groundborne noise and vibrations would occur during construction activities. Operation of impact or vibratory pile drivers in proximity to residences could cause vibration levels that result in cosmetic or structural damage. However, such effects would not occur with project construction since there would be no pile driving and construction activities would be more than 150 feet from the closest structures. Operation of other types of construction equipment such as bulldozers, trucks, or jackhammers would not generate vibration levels that are expected to result in cosmetic damage to the closest structures. Since construction activities would be limited to normal business hours (8:00 a.m. to 5:00 p.m. on weekdays) and would avoid the more vibration-sensitive nighttime hours, annoyance effects related construction-generation vibration would also be less than significant.

(Caltrans, Transportation- and Construction-Induced Vibration Guidance Manual, 2004, page 27; Staff Determination)

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑	☐

Operation of the proposed bypass channel project would not generate noise and therefore, project implementation would have no significant impacts related to long-term or permanent increases in noise.

(Staff Determination)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑	☐

Project construction would result in temporary short-term noise increases due to the operation of heavy equipment. Construction noise sources range from about 76 to 85 dBA at 50 feet for most types of construction equipment. If noise controls are installed on construction equipment, the noise levels could be reduced by 1 to 10 dBA, depending on the type of equipment. The potential for construction-related noise increases to adversely affect nearby residential receptors would depend on the location and proximity of construction activities to these receptors. The closest sensitive receptors to the area where proposed bypass channel construction would occur are residential uses located a minimum of 160 feet to the west and a minimum of 300 feet to the southeast.

At 50 feet, maximum construction noise levels could reach 85 dBA, but at 160 feet, maximum construction noise levels would reach approximately 75 dBA. Temporary disturbance (e.g., speech interference) can occur if the noise level in the interior of a building exceeds 60 dBA.[14] To maintain such interior noise levels, exterior noise levels at the closest residences and school (with windows closed) should not exceed 80 dBA; this exterior noise level is used as a significance threshold or criterion, and maximum construction noise levels at the closest residences would not exceed this criterion. When the short 10-week timeframe of project construction is also taken into consideration with setbacks of 160 feet or more, these temporary construction-related noise increases are considered to be less than significant.

There is a church located approximately 250 feet east of the proposed construction area. However, noise impacts are not expected to occur since construction activities would be limited to normal business hours and would not conflict with Sunday and evening church activities.

(Staff determination)

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[14]In indoor noise environments, the highest noise level that permits relaxed conversation with 100% intelligibility throughout the room is 45 dBA. Speech interference is considered to become intolerable when normal conversation is precluded at 3 feet, which occurs when background noise levels exceed 60 dBA (U.S. Environmental Protection Agency, 1974).

	Potentially Significant Impact	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 expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑

Not applicable to this project. There are no public or private airports in Pittsburg.

(Pittsburg General Plan, Figure 2-2; Staff observation.)

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑

Not applicable to this project. There are no public or private airports in Pittsburg.

(Pittsburg General Plan, Figure 2-2; Staff observation.)

XIII. 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)?	☐	☐	☐	☑

The project would entail the construction of a bypass drainage channel in a PG&E utility corridor for flood control purposes. These infrastructure improvements would not include the development of new residential, commercial, or industrial nor involve the development of new or extended roadways that would induce substantial population growth.

(Project Plans)

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

There are no residences on the project site. Therefore, the project would not displace any housing.

(Site visit; Project Plans; Google Earth)

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? ☐ ☐ ☐ ☑

See response XII.b, above.

XIV. PUBLIC SERVICES

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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:

Fire protection? ☐ ☐ ☐ ☑

The proposed drainage channel would not require new fire protection facilities nor would it negatively impact fire protection performance objectives, since it entails only drainage improvements within a PG&E utility corridor. Fire equipment access to nearby residential areas and the project site during construction would be maintained by the proposed construction traffic management plan. Existing fire hydrants would remain in their current locations in the immediate project area.

(Project Plans)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Police protection?	☐	☐	☐	☑

The proposed drainage channel would not require new police facilities or staff as it would not bring new people to the area or expand any uses requiring police services. In addition, it would not interfere with the police department's ability to provide police protection services because access to the utility corridor would remain available from North Parkside Drive, Power Avenue, and Americana Park. Police vehicle access to nearby areas during construction would be maintained by a construction traffic management plan.

(Project Plans; Staff Determination)

Schools?	☐	☐	☐	☑

The proposed drainage channel project includes no new residential dwelling units and would not generate additional students requiring education services. Consequently, the project would not impact school services or require the construction of new school facilities or the expansion of existing school capacities

(Project Plans; Site Visit; Google Earth, 2016.)

Parks?	☐	☐	☐	☑

As discussed above, the proposed drainage channel project would not house or otherwise attract additional residents and would therefore not increase the demand for parks and recreation services or facilities. In addition, the detention basin in Americana Park adjacent to the drainage channel alignment would no longer overflow due to insufficient capacity, precluding future flooding hazards at and closure of the park. This would be a beneficial impact of the proposed project.

(Project Plans)

Other public facilities?	☐	☐	☐	☑

The project would construct a drainage channel to prevent flooding hazards currently affecting downstream public drainage and recreation facilities. The diversion of storm runoff flows to an existing drainage channel on the east side of the utility corridor would not adversely affect the channel's capacity of downstream infrastructure as determined by a hydraulic analysis performed for the project. Section IX, Hydrology and Water

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Quality, provides additional information regarding the potential effects of the project on the hydraulic and hydrologic conditions of the project site.

(Project Plans)

XV. RECREATION --

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?	☐	☐	☐	☑

See Parks discussion in Item XIV, above. The project would not increase park or recreational facility use through the generation of additional population or expanded access.

(Project Plans)

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?	☐	☐	☐	☑

See Parks discussion in Item XIV, above. The project would not increase park or recreational facility use or require new facilities.

(Project Plans)

XVI. TRANSPORTATION/TRAFFIC -- Would the project:

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and	☐	☐	☑	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				

Access to the project site would be provided by State Route 4 (SR 4), located approximately one-third mile to the south. From the freeway, access to the site is provided by either Bailey Road and Willow Pass Road or Railroad Avenue. These streets connect with North Parkside Drive, which extends along the project's northern boundary and provides direct access to the project construction area.

North Parkside Drive is identified as a minor arterial in the Pittsburg General Plan and it extends in an east-west direction. At the site, North Parkside Drive is a two-lane roadway with designated Class II bike lanes in both directions. There is a curb, gutter, and sidewalk that extends along the south side of this street (between this street and the project site) and an asphalt curb (no sidewalk) along the north side of this street. There are no on-street parking lanes on either side of this street. According to the Pittsburg General Plan Transportation Element, minor arterials carry moderate to high levels of traffic (15,000 to 40,000 vehicles per day) and driveways are generally not permitted and traffic speeds are moderate to high (35 to 50 mph).

Project Trip Generation and Distribution. *The proposed bypass channel project is expected to generate a total of 16 truck trips and 200 worker round-trips during the 10-week construction period. It is expected that truck volumes could vary substantially depending on the construction phase, ranging from 2 trips per day during early and final stages of construction to a peak volume of 8 trucks per day.*

The project would result in temporary traffic increases on North Parkside Drive with smaller increases on Willow Pass Road, Bailey Road, and Railroad Avenue. Given the small increase in traffic and short duration of the project, temporary increases in truck and worker traffic are expected to have a less-than-significant impact on existing traffic conditions along these streets.

No long-term operational traffic increases would occur with the proposed bypass channel project. Since no changes to North Parkside Drive are proposed as part of the project and the

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

project would not generate traffic after completion, there would be no long-term traffic impacts associated with this project.

Parking. *Project implementation would be expected to generate approximately 4 to 8 worker vehicles per day. There is sufficient area on-site to provide construction staging and worker parking, so the project would not generate any on-street parking on the north side of North Parkside Drive.*

(City of Pittsburg General Plan Transportation Element)

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☑	☐

See discussion in XVI.a). Operation of the proposed bypass channel would not result in any traffic increases. No project specific mitigation measures are deemed necessary.

(Staff determination)

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☑

The proposed project would not result in any change to air traffic patterns.

(General Plan; Staff determination)

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Project site access would be limited to one driveway on North Parkside Drive, which would limit potential conflicts between project-related vehicles turning into and out of this driveway and through traffic traveling on this street. However, traffic safety hazards would be posed by turning vehicles at this driveway and the moderately high travel speeds on this minor arterial street. The City requires the preparation of a Traffic Control Plan to address this and other traffic safety concerns, and the requirements of this plan, which includes the provision of a flagperson at this driveway intersection, eliminate or minimize this potential hazard.

(Project Plans; Staff Determination)

e) Result in inadequate emergency access?	☐	☐	☑	☐

The project would not result in any road or lane closures during construction, and the required Traffic Control Plan would ensure continuous access on North Parkside Drive for emergency vehicles. Therefore, the project's impact on emergency access is considered to be less than significant.

(Project Plans; Staff Determination)

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☑	☐

There are no transit facilities on North Parkside Drive. Therefore, project construction would have no impact since it is not expected to adversely affect access to transit services during the 10-week construction duration.

There are existing Class II bike lanes on North Parkside Drive (from Willow Pass Road to Railroad Avenue), including the section that extends along the site frontage. Safety hazards would be posed to bicyclists traveling on this road by construction-related vehicles turning into and out of this driveway. The City requires the preparation of a Traffic Control Plan to address this and other safety concerns, and the requirements of this plan, which includes the provision of a flagperson at this driveway intersection, eliminate or minimize this potential hazard.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Pedestrians would not be significantly affected by project construction. There is an existing sidewalk that extends along the south side of North Parkside Drive and it would remain open during project construction. Project-related construction traffic would cross the sidewalk when accessing the project site, posing safety concerns to pedestrians. However, the City's required Traffic Control Plan addresses this and other safety concerns, and the requirements of this plan, which includes the provision of a flagperson at this driveway intersection, eliminate or minimize this potential hazard.

There is also a paved pedestrian pathway around the detention basin. The east side of the pathway would be closed during construction to be reconstructed at the proposed grade. The closure of the detention basin pathway would not have a significant impact to pedestrians as it is only a loop around the detention basin and does not connect to North Parkside Drive.

(Staff Determination)

XVII. UTILITIES AND SERVICE SYSTEMS -- Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☑

The proposed project entails the construction and operation of a drainage channel to alleviate potential flood hazards resulting from the overflow of storm runoff from a detention basin in Americana Park adjoining the project site. The project would not generate wastewater and would no requirement for wastewater treatment.

(Project Plans)

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☑

See response XVII.a, above. The proposed project would not require wastewater treatment services.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☑

The proposed project would construct a new bypass channel for the redirection of storm runoff overflows from a detention basin in Americana Park to a tributary of Willow Creek. The project would alleviate flood hazards that currently result from an insufficient capacity of the detention basin and affect North Parkside Drive.

The hydraulic study conducted for this project evaluated four alternative east-west alignments as follows:

1. Adjacent and parallel to Polaris Drive/Power Avenue
2. 200 feet north of Polaris Drive/Power Avenue
3. 570 feet north of Polaris Drive/Power Avenue
4. 190 feet south of N. Parkside Drive (Preferred Alignment)

Alternatives 1 through 3 were discovered to impact seasonal wetlands, which resulted in a high mitigation cost. Alternative 4 resulted in a minimal impact to wetlands. The selected project design attempts to minimize potentially significant environmental effects through avoidance of sensitive resources. Please see sections III through VI and IX (Air Quality, Biological Resources, Cultural Resources, Geology and Soils, and Hydrology and Water Quality, respectively) for discussion of potentially significant impacts to these resources.

(Pittsburg General Plan; HEI, 2016, Hydraulic Study for Americana Park Bypass Channel)

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☑	☐

The proposed project does not include permanent irrigated landscaping and would not involve an increased demand for domestic water. Temporary irrigation during reseeding for the establishment of new soil-stabilizing vegetation will occur prior to the onset of winter rains.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Consequently, there would be no need for permanent new or expanded water entitlements for the operation of the bypass channel.

(Project Plans)

e) 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?	☐	☐	☐	☑

The proposed project would not result in any new wastewater treatment demand since the project involves improvements to the project area's storm drainage infrastructure. Storm runoff would enter an open channel that is a tributary to Willow Creek and drains to Suisun Bay.

(Staff Determination)

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☑

The proposed project would construct a bypass channel for the redirection of storm runoff overflows from a detention basin in Americana Park to a tributary of Willow Creek. The excavated soils from project construction would be placed on an open area within the utility corridor immediately south of the proposed drainage channel. Fill materials would be a maximum of 6 inches in depth over a 210,000 s.f. area. Ongoing operation of the drainage channel would not generate additional solid waste requiring disposal at local landfill sites.

(Site Plans; Project Design)

g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

The drainage channel project would involve the one-time disposal of excavated spoils for construction. The operation of the drainage channel would not create an on-going increase in solid waste generation. Please see discussion in section XVII.f, above.

(Site Plans; Project Design)

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE --

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, 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?	☐	☑	☐	☐

The proposed project involves the construction of a bypass drainage channel and drainage improvements within a PG&E utility corridor. As detailed in Section IV, Biology, the project could have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species. As detailed in Section V, Cultural Resources, archeological and historic resources are not known to exist on or near the project site. All potential environmental impacts that could occur as a result of the proposed project would be reduced to a less than significant level through the implementation of the mitigation measures recommended in this Initial Study.

(Project Plans; Wood Biological Consulting)

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	☐	☐	☑	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?				

The project involves the construction of a bypass drainage channel to rectify current flood hazards that occur from the overflow of a detention basin in Americana Park. The EIR for the General Plan (June, 2001) evaluated the potential cumulative impacts associated with implementation of the General Plan, including required drainage improvements within the City's planning sub-areas. Mitigation measures presented in the EIR would eliminate or minimize potentially significant cumulative impacts to a less than significant level. Consequently, the proposed project would not result in any cumulatively considerable impacts. This project would create a beneficial impact for the City by alleviating flood hazards that currently affect other city infrastructure, improving flood control facilities in the project area, and implementing certain policies of the Pittsburg General Plan.

(City of Pittsburg General Plan)

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☑	☐	☐

With the implementation of mitigation measures included in this study, the proposed project does not include any components that have adverse environmental affects that would result in adverse effect to human beings.

References Cited/Source List

The following information is available on-line, in the Development Services Department (DSD) files on the project, or at the Pittsburg Public Library (PPL). This supporting documentation is available for review on-line, at the Development Services Department located at 65 Civic Avenue in Pittsburg, or from the Pittsburg Public Library at 80 Power Avenue in Pittsburg:

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ATTACHMENTS

CEQA Initial Study Checklist
Americana Park Bypass Channel
December 2016

ATTACHMENT 1

CALEEMOD MODEL OUTPUTS

Americana Park Bypass Channel

San Francisco Bay Area Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	7.60	User Defined Unit	7.60	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2014
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Bypass Channel

Construction Phase - 10 weeks construction

Off-road Equipment - 1 excavator, 1 sheepshead compactor (modeled as tractor), 1 loader, 1 generator, 4 dump trucks

Trips and VMT - 25 workers (50 trips)

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	50.00
tblGrading	AcresOfGrading	25.00	10.00
tblLandUse	LotAcreage	0.00	7.60
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	4.00
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	UsageHours	8.00	6.40
tblTripsAndVMT	WorkerTripNumber	15.00	50.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.1016	1.1031	0.6283	1.5600e-003	0.1672	0.0435	0.2107	0.0863	0.0402	0.1265	0.0000	141.4625	141.4625	0.0399	0.0000	142.2999
Total	**0.1016**	**1.1031**	**0.6283**	**1.5600e-003**	**0.1672**	**0.0435**	**0.2107**	**0.0863**	**0.0402**	**0.1265**	**0.0000**	**141.4625**	**141.4625**	**0.0399**	**0.0000**	**142.2999**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.1016	0.0865	0.6283	1.5600e-003	0.0721	0.0435	0.1156	0.0355	0.0402	0.0757	0.0000	141.4624	141.4624	0.0399	0.0000	142.2997
Total	**0.1016**	**0.0865**	**0.6283**	**1.5600e-003**	**0.0721**	**0.0435**	**0.1156**	**0.0355**	**0.0402**	**0.0757**	**0.0000**	**141.4624**	**141.4624**	**0.0399**	**0.0000**	**142.2997**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**92.16**	**0.00**	**0.00**	**56.86**	**0.00**	**45.13**	**58.87**	**0.00**	**40.18**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0000e-005	0.0000	7.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.4000e-004	1.4000e-004	0.0000	0.0000	1.4000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.4000e-004**	**1.4000e-004**	**0.0000**	**0.0000**	**1.4000e-004**

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	1.0000e-005	0.0000	7.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.4000e-004	1.4000e-004	0.0000	0.0000	1.4000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.4000e-004**	**1.4000e-004**	**0.0000**	**0.0000**	**1.4000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	2/11/2017	4/21/2017	5	50	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Off-Highway Tractors	1	6.40	122	0.44
Grading	Rubber Tired Loaders	1	6.40	199	0.36
Grading	Generator Sets	1	2.40	84	0.74
Grading	Excavators	1	6.40	162	0.38
Grading	Off-Highway Trucks	4	6.40	400	0.38
Grading	Rubber Tired Dozers	0	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	6	50.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1559	0.0000	0.1559	0.0833	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0974	1.0970	0.5691	1.4200e-003		0.0434	0.0434		0.0401	0.0401	0.0000	131.5645	131.5645	0.0394	0.0000	132.3909
Total	**0.0974**	**1.0970**	**0.5691**	**1.4200e-003**	**0.1559**	**0.0434**	**0.1992**	**0.0833**	**0.0401**	**0.1234**	**0.0000**	**131.5645**	**131.5645**	**0.0394**	**0.0000**	**132.3909**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2100e-003	6.1500e-003	0.0592	1.3000e-004	0.0113	9.0000e-005	0.0114	3.0200e-003	8.0000e-005	3.1000e-003	0.0000	9.8981	9.8981	5.2000e-004	0.0000	9.9089
Total	**4.2100e-003**	**6.1500e-003**	**0.0592**	**1.3000e-004**	**0.0113**	**9.0000e-005**	**0.0114**	**3.0200e-003**	**8.0000e-005**	**3.1000e-003**	**0.0000**	**9.8981**	**9.8981**	**5.2000e-004**	**0.0000**	**9.9089**

3.2 Grading - 2017

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					0.0608	0.0000	0.0608	0.0325	0.0000	0.0325	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0974	0.0803	0.5691	1.4200e-003		0.0434	0.0434		0.0401	0.0401	0.0000	131.5643	131.5643	0.0394	0.0000	132.3908
Total	**0.0974**	**0.0803**	**0.5691**	**1.4200e-003**	**0.0608**	**0.0434**	**0.1042**	**0.0325**	**0.0401**	**0.0726**	**0.0000**	**131.5643**	**131.5643**	**0.0394**	**0.0000**	**132.3908**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2100e-003	6.1500e-003	0.0592	1.3000e-004	0.0113	9.0000e-005	0.0114	3.0200e-003	8.0000e-005	3.1000e-003	0.0000	9.8981	9.8981	5.2000e-004	0.0000	9.9089
Total	**4.2100e-003**	**6.1500e-003**	**0.0592**	**1.3000e-004**	**0.0113**	**9.0000e-005**	**0.0114**	**3.0200e-003**	**8.0000e-005**	**3.1000e-003**	**0.0000**	**9.8981**	**9.8981**	**5.2000e-004**	**0.0000**	**9.9089**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.546249	0.062948	0.174600	0.125189	0.034587	0.004960	0.015036	0.022157	0.002053	0.003311	0.006538	0.000702	0.001670

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0000e-005	0.0000	7.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.4000e-004	1.4000e-004	0.0000	0.0000	1.4000e-004
Unmitigated	1.0000e-005	0.0000	7.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.4000e-004	1.4000e-004	0.0000	0.0000	1.4000e-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	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	7.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.4000e-004	1.4000e-004	0.0000	0.0000	1.4000e-004
Total	**1.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.4000e-004**	**1.4000e-004**	**0.0000**	**0.0000**	**1.4000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	7.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.4000e-004	1.4000e-004	0.0000	0.0000	1.4000e-004
Total	**1.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.4000e-004**	**1.4000e-004**	**0.0000**	**0.0000**	**1.4000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

Americana Park Bypass Channel

San Francisco Bay Area Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	7.60	User Defined Unit	7.60	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2014
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Bypass Channel

Construction Phase - 10 weeks construction

Off-road Equipment - 1 excavator, 1 sheepshead compactor (modeled as tractor), 1 loader, 1 generator, 4 dump trucks

Trips and VMT - 25 workers (50 trips)

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	50.00
tblGrading	AcresOfGrading	25.00	10.00
tblLandUse	LotAcreage	0.00	7.60
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	4.00
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	UsageHours	8.00	6.40
tblTripsAndVMT	WorkerTripNumber	15.00	50.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	4.0786	44.0955	25.2997	0.0627	6.7057	1.7390	8.4447	3.4582	1.6071	5.0653	0.0000	6,269.8527	6,269.8527	1.7581	0.0000	6,306.7729
Total	**4.0786**	**44.0955**	**25.2997**	**0.0627**	**6.7057**	**1.7390**	**8.4447**	**3.4582**	**1.6071**	**5.0653**	**0.0000**	**6,269.8527**	**6,269.8527**	**1.7581**	**0.0000**	**6,306.7729**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	4.0786	3.4309	25.2997	0.0627	2.9029	1.7390	4.6418	1.4250	1.6071	3.0321	0.0000	6,269.8527	6,269.8527	1.7581	0.0000	6,306.7729
Total	**4.0786**	**3.4309**	**25.2997**	**0.0627**	**2.9029**	**1.7390**	**4.6418**	**1.4250**	**1.6071**	**3.0321**	**0.0000**	**6,269.8527**	**6,269.8527**	**1.7581**	**0.0000**	**6,306.7729**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**92.22**	**0.00**	**0.00**	**56.71**	**0.00**	**45.03**	**58.79**	**0.00**	**40.14**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.0000e-005	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.6600e-003	1.6600e-003	0.0000		1.7700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**8.0000e-005**	**1.0000e-005**	**8.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.6600e-003**	**1.6600e-003**	**0.0000**	**0.0000**	**1.7700e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.0000e-005	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.6600e-003	1.6600e-003	0.0000		1.7700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**8.0000e-005**	**1.0000e-005**	**8.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.6600e-003**	**1.6600e-003**	**0.0000**	**0.0000**	**1.7700e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	2/11/2017	4/21/2017	5	50	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Off-Highway Tractors	1	6.40	122	0.44
Grading	Rubber Tired Loaders	1	6.40	199	0.36
Grading	Generator Sets	1	2.40	84	0.74
Grading	Excavators	1	6.40	162	0.38
Grading	Off-Highway Trucks	4	6.40	400	0.38
Grading	Rubber Tired Dozers	0	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	6	50.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2342	0.0000	6.2342	3.3331	0.0000	3.3331			0.0000			0.0000
Off-Road	3.8974	43.8780	22.7629	0.0569		1.7354	1.7354		1.6038	1.6038		5,801.0002	5,801.0002	1.7353		5,837.4409
Total	**3.8974**	**43.8780**	**22.7629**	**0.0569**	**6.2342**	**1.7354**	**7.9696**	**3.3331**	**1.6038**	**4.9369**		**5,801.0002**	**5,801.0002**	**1.7353**		**5,837.4409**

3.2 Grading - 2017

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	0.1812	0.2174	2.5369	5.8000e-003	0.4715	3.6100e-003	0.4751	0.1251	3.3300e-003	0.1284		468.8526	468.8526	0.0228		469.3320
Total	**0.1812**	**0.2174**	**2.5369**	**5.8000e-003**	**0.4715**	**3.6100e-003**	**0.4751**	**0.1251**	**3.3300e-003**	**0.1284**		**468.8526**	**468.8526**	**0.0228**		**469.3320**

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					2.4313	0.0000	2.4313	1.2999	0.0000	1.2999			0.0000			0.0000
Off-Road	3.8974	3.2135	22.7629	0.0569		1.7354	1.7354		1.6038	1.6038	0.0000	5,801.0002	5,801.0002	1.7353		5,837.4409
Total	**3.8974**	**3.2135**	**22.7629**	**0.0569**	**2.4313**	**1.7354**	**4.1667**	**1.2999**	**1.6038**	**2.9037**	**0.0000**	**5,801.0002**	**5,801.0002**	**1.7353**		**5,837.4409**

3.2 Grading - 2017

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	0.1812	0.2174	2.5369	5.8000e-003	0.4715	3.6100e-003	0.4751	0.1251	3.3300e-003	0.1284		468.8526	468.8526	0.0228		469.3320
Total	**0.1812**	**0.2174**	**2.5369**	**5.8000e-003**	**0.4715**	**3.6100e-003**	**0.4751**	**0.1251**	**3.3300e-003**	**0.1284**		**468.8526**	**468.8526**	**0.0228**		**469.3320**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.546249	0.062948	0.174600	0.125189	0.034587	0.004960	0.015036	0.022157	0.002053	0.003311	0.006538	0.000702	0.001670

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.0000e-005	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.6600e-003	1.6600e-003	0.0000		1.7700e-003
Unmitigated	8.0000e-005	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.6600e-003	1.6600e-003	0.0000		1.7700e-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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.0000e-005	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.6600e-003	1.6600e-003	0.0000		1.7700e-003
Total	**8.0000e-005**	**1.0000e-005**	**8.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.6600e-003**	**1.6600e-003**	**0.0000**		**1.7700e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.0000e-005	1.0000e-005	8.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.6600e-003	1.6600e-003	0.0000		1.7700e-003
Total	**8.0000e-005**	**1.0000e-005**	**8.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.6600e-003**	**1.6600e-003**	**0.0000**		**1.7700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Vegetation

10.0 Vegetation

ATTACHMENT 2

BIOLOGICAL RESOURCE ASSESSMENT
FOR THE
AMERICANA PARK BYPASS CHANNEL PROJECT
CITY OF PITTSBURG, CONTRA COSTA COUNTY

WOOD BIOLOGICAL CONSULTING, INC.

JULY 14, 2014
REVISED DECEMBER 11, 2015

BIOLOGICAL RESOURCE ASSESSMENT
FOR THE
AMERICANA PARK BYPASS CHANNEL PROJECT
CITY OF PITTSBURG, CONTRA COSTA COUNTY

July 14, 2014
Revised December 11, 2015

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SUMMARY

This report presents the results of an assessment of existing or potentially occurring biological constraints to the proposed construction of a new flood control channel that would divert peak flows away from the existing Americana Park stormwater detention basin and into an intermittent tributary to Willow Creek.

It has been prepared in support of the environmental review by City of Pittsburg as well as permit review by the U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and the Regional Water Quality Control Board (RWQCB). The report provides background and site-specific information pertaining to special-status plant and wildlife species and other regulated biological resources (e.g., wetlands), which may represent constraints to the proposed activity. The conclusions contained herein are based on background research, a single reconnaissance-level site survey, wetland delineation, and review of the design features.

The subject property consists of a utility corridor owned by Pacific Gas & Electric (PG&E) and is located on the north side of Power Avenue and south of North Parkside Drive, north of State Route 4 (SR4). The proposed project has been deemed necessary due to excess peak storm flows into the Americana Park stormwater detention basin, overflows from which cause street flooding during peak storm events. The proposed project will divert high stream flows from the culvert outfall eastward across the PG&E property, emptying into a tributary to Willow Creek. Willow Creek is a tributary to Suisun Bay.

Two special-status plant associations occur within the study area; Arroyo Willow Thickets and Creeping Rye Grass Turfs. In addition, areas of Salt Grass Flats, Baltic Rush Marsh, and Ruderal Seasonal Wetlands qualifying as wetlands under the federal definition would also be regarded as having special status. Both the eastern and western stormwater channels are expected to qualify as waters of the U.S. and waters of the State; impacts below the tops of bank are regulated and fall under the jurisdiction of the USACE, RWQCB, and the CDFW. Project implementation would be regulated under the Clean Water Act and the California Lake and Streambed Alteration Program; **permits are required from the USACE, CDFW and RWQCB. Participation in the East Contra Costa County Habitat Conservation and Natural Community Conservation Plan is also required.**

The potential for occurrence of a total of 67 special-status plant species was evaluated. Based on the altered nature of the subject parcel and surroundings, soil types, existing habitats, and geographic location, the potential for occurrence of a majority of these target species can be ruled out entirely. And although the study area was deemed to provide marginally suitable habitat for four of the target species, they are not

considered to have any potential for occurrence on site due to the site's long history of disturbance from farming practices and development. No further surveys, mitigation measures, or impact avoidance/minimization measures are required.

The potential for occurrence of a total of 49 special-status animal species was evaluated. The potential for occurrence of 32 of the target species can be ruled out entirely based on the developed nature of the subject parcel and surroundings, soil types, existing habitats, and geographic location. The potential exists for the occurrence on site of eight of the target species, including two federally listed species (Alameda whipsnake, California red-legged frog), one fully protected species (white-tailed kite), four species of special concern (Pacific pond turtle, northern harrier and western red bat), and one special animal (hoary bat), as well as numerous migratory birds species.

Due to the presence of suitable habitat on site and the known occurrence of occupied habitat nearby, the potential exists for **California red-legged frog, California tiger salamander and Pacific pond turtle** to disperse along the tributary to Willow Creek. Although their occurrence on site is considered unlikely, construction activities in and adjacent to the channels could result in a take. With the implementation of avoidance measures, no impacts on these species are expected.

Nesting by **special-status and other migratory bird**s in trees, shrubs and grasslands is highly likely. If present at the time of construction, direct and indirect impacts could result. With the implementation of avoidance measures, no impacts on these species are expected.

Suitable roosting habitat for **special-status bat species** is present in the riparian and ornamental trees on site. The proposed project would require the removal and/or pruning of mature trees. If present, the bat roosts could be inadvertently destroyed. In addition, construction activities in the vicinity of a maternity roost could result in roost abandonment and mortality of young.

With the implementation of the avoidance measures outlined in this report, project implementation would not result in any potentially significant adverse biological effects to the environment. In addition, participation in the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) is expected to satisfy requirements of the regulatory agencies for compensatory mitigation.

LIST OF ABBREVIATED TERMS AND ACRONYMS

Abbreviations and Acronyms used in the text

acronym	explanation	acronym	explanation
°C	degrees Celsius	HCP	habitat conservation plan
°F	degrees Fahrenheit	in	inches
ac	acre	km	kilometers
BGEPA	Bald/Golden Eagle Protection Act	LSAP	Lake and Streambed Alteration Program
BMP	Best Management Practice	m/m^2	meters/square meters
BSA	biological site assessment	MBTA	Migratory Bird Treaty Act
CA	California	MBTRA	Migratory Bird Treaty Reform Act
Cal-IPC	CA Invasive Plant Council	mi	mile
CDFG	CA Dept. of Fish and Game	MSL	mean sea level
CDFW	CA Dept. of Fish and Wildlife	NOAA	National Oceanic and Atmospheric Administration
CEQA	CA Environmental Quality Act	Occ. #	CNDDB species occurrence no.
CESA	CA Endangered Species Act	OHWM	ordinary high water mark
CFGC	CA Fish and Game Code	PG&E	Pacific Gas & Electric Co.
cm	centimeters	RCP	reinforced concrete pipe
CNDDB	CA Natural Diversity Database	RSP	rock slope protection
CNPPA	CA Native Plant Protection Act	RWQCB	Reg. Water Quality Control Board
CNPS	CA Native Plant Society	SR4	State Route 4
CRF	CA red-legged frog	USACE	U.S. Army Corps of Engineers
CTS	CA tiger salamander	USC	United States Code
CWA	Clean Water Act	USDA	U.S. Dept. of Agriculture
FESA	Federal Endangered Species Act	USEPA	U.S. Environmental Protection Agency
FR	Federal Register	USFWS	U.S. Fish and Wildlife Service
ft/ft^2	feet/square feet	USGS	U.S. Geological Survey
ha	hectare		

LIST OF SCIENTIFIC NAMES

Scientific names of the plants referred to in the text

Common Name	Scientific Name	Common Name	Scientific Name
alkali mallow	*Malvella leprosa*	foxtail barley*	*Hordeum murinum* ssp. *leporinum*
annual willowherb	*Epilobium brachycarpum*	Fremont cottonwood	*Populus fremontii*
arroyo willow	*Salix lasiolepis*	Italian thistle**	*Carduus pycnocephalus*
Baltic rush	*Juncus balticus*	jungle rice*	*Echinochloa colona*
black mustard**	*Brassica nigra*	Mediterranean barley*	*Hordeum marinum* ssp. *gussonianum*
black walnut	*Juglans californica*	Oregon ash	*Fraxinus latifolia*
blue elderberry	*Sambucus nigra* spp. *caerulea*	perennial rye grass**	*Festuca perennis (Lolium perenne)*
broadleaf cattail	*Typha latifolia*	perennial pepperweed**	*Lepidium latifolium*
bugloss fiddleneck	*Amsinckia lycopsoides*	red stemmed filaree*	*Erodium cicutarium*
CA aster	*Symphyotrichum chilense*	ripgut brome**	*Bromus diandrus*
cotoneaster**	*Cotoneaster* sp.	salt grass	*Distichlis spicata*
coyote brush	*Baccharis pilularis*	Santa Barbara sedge	*Carex barbarae*
creeping wildrye	*Elymus triticoides*	softchess**	*Bromus hordeaceus*
curly dock**	*Rumex crispus*	Tasmanian blue gum**	*Eucalyptus globulus*
cutleaf geranium**	*Geranium dissectum*	tule	*Schoenoplectus acutus*
English plantain*	*Plantago lanceolata*	umbrella sedge	*Cyperus eragrostis*
false brome**	*Brachypodium distachyon*	willowherb	*Epilobium ciliatum*
field mustard**	*Hirschfeldia incana*	yellow nutgrass	*Cyperus esculentus*

* indicates non-native species;

** indicates invasive species per California Invasive Plant Council

LIST OF SCIENTIFIC NAMES

Scientific names of the animals referred to in the text

Common Name	Scientific Name	Common Name	Scientific Name
alligator lizard, southern	*Elgaria multicarinata*	mule deer	*Odoicoileus hemionus*
arboreal salamander	*Aneides lugubris*	myotis	*Myotis* sp.
barn swallow	*Hirundo rustica*	northern Pacific rattlesnake	*Crotalus oreganus*
black phoebe	*Sayornis nigricans*	Pacific pond turtle	*Emys marmorata*
black-crowned night heron	*Nycticorax nycticorax*	Pacific slender salamander	*Batrachoseps attenuatus*
black-tailed jackrabbit	*Lepus californicus*	Pacific treefrog	*Pseudacris regilla*
Botta's pocket gopher	*Thomomys bottae*	pallid bat	*Antrozous pallidus*
burrowing owl	*Athene cunicularia*	raccoon	*Procyon lotor*
CA ground squirrel	*Spermophilus beecheyi*	red-shouldered hawk	*Buteo lineatus*
CA. quail	*Callipepla californica*	red-tailed hawk	*Buteo jamaicensis*
CA vole	*Microtus californicus*	ring-necked snake	*Diadophis punctatus*
cat, feral or house	*Felis catus*	snowy egret	*Egretta thula*
common kingsnake	*Lampropeltis getula*	song sparrow	*Melospiza melodia*
coyote	*Canis latrans*	spotted towhee	*Pipilo maculatus*
deer mouse	*Peromyscus maniculatus*	striped skunk	*Mephitis mephitis*
garter snake	*Thamnophis spp.*	Virginia opossum	*Didelphis virginiana*
gopher snake	*Pituophis catenifer*	western bluebird	*Sialia mexicana*
great blue heron	*Ardea herodias*	western fence lizard	*Sceloporus occidentalis*
great egret	*Ardea alba*	western meadowlark	*Sturnella neglecta*
green-backed heron	*Butorides virescens*	western scrub-jay	*Aphelocoma californica*
house finch	*Carpodacus mexicanus*	white-crowned sparrow	*Zonotrichia leucophrys*
mourning dove	*Zenaida macroura*	yellow-rumped warbler	*Dendroica coronata*

1.0 INTRODUCTION

This report presents the results of an assessment of existing or potentially occurring biological constraints to the proposed construction of a new flood control channel that would divert peak flows away from the existing Americana Park stormwater detention basin and into an intermittent tributary to Willow Creek. As the lead agency, the City of Pittsburg must evaluate the project for potentially significant adverse effects on biological resources to assist it in completing its analysis of impact pursuant to the California Environmental Quality Act (CEQA).

In addition, the proposed project will require authorization from the U.S. Army Corps of Engineers (USACE) pursuant to the Clean Water Act (CWA[1]), the California Department of Fish and Wildlife (CDFW)[2] pursuant to the Lake and Streambed Alteration Program (LSAP[3]) and the Regional Water Quality Control Board (RWQCB) pursuant to the CWA.[4]

As a signatory agency to the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP), the City of Pittsburg is also required to seek coverage for this project under the HCP.

This Biological Site Assessment (BSA) has been prepared in support of the CEQA review by the lead agency, as well as permit review by the federal, State and local agencies listed above.

1.1 Project Background and Description

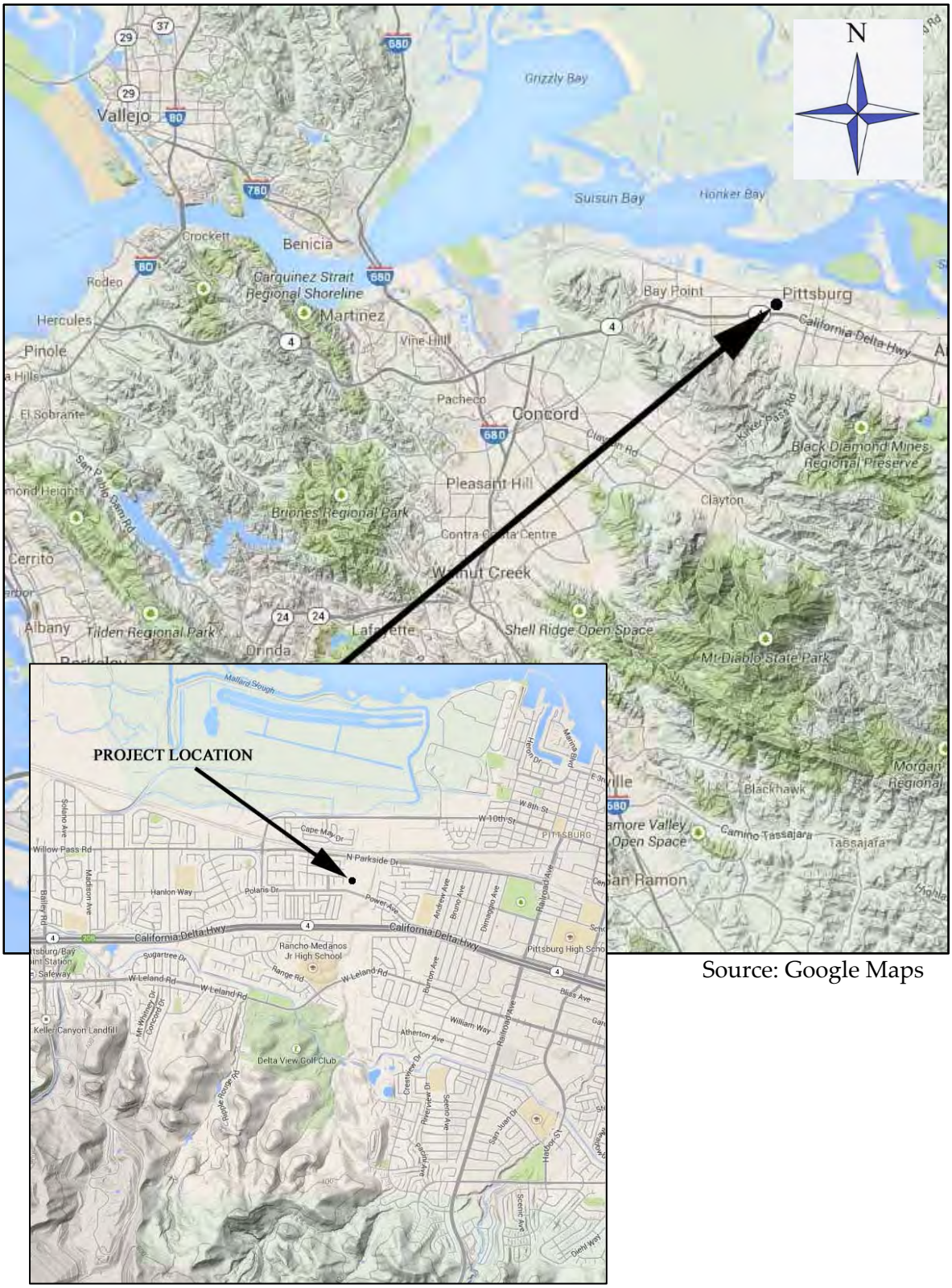
The subject property consists of a utility corridor owned by Pacific Gas & Electric (PG&E) and is located on the north side of Power Avenue and south of North Parkside Drive, north of State Route 4 (SR4) (Figures 1 and 2). The proposed project has been deemed necessary due to excess peak storm flows into the Americana Park stormwater detention basin. The detention basin was constructed to accommodate storm runoff from the Americana subdivision and the upstream watershed. Overflow from the detention basin runs into a roadside ditch on the north side of North Parkside Drive, flowing eastward and emptying into an intermittent tributary to Willow Creek. Periodic overflow from the basin causes minor street flooding. These

[1] CWA §404

[2] As of January 1, 2013, the California Department of Fish and Game (CDFG) changed its name to the California Department of Fish and Wildlife (CDFW). All publications released by the agency prior to that date are referenced by the former name CDFG.

[3] Calif. Fish and Game Code §1600 et seq.

[4] §401



Source: Google Maps

Figure 1. Project Location

Source: Google Earth
Imagery dated 6/2014

Figure 2. Aerial View of the Project Site

additional storm flows are directed into the detention basin from an existing 183 cm (72 in) diameter storm drain outlet located at the southeastern boundary of the subdivision, behind the home located at 205 Martin Eden Court; the outfall collects storm runoff from the development south of the Americana subdivision.

The City is responsible for alleviating additional flows into the detention facility to prevent overflow and flooding of North Parkside Drive. Consulting engineer, Harrison Engineering Inc. was contracted to develop a bypass channel to divert excess peak stormwater out of the detention basin. The proposed project will divert peak flows out of the detention basin eastward across the PG&E property, emptying into a tributary to Willow Creek. To prevent erosion at critical locations, rock slope protection (RSP) will be installed. Throughout the new diversion channel, the banks will be vegetated with regionally native plant species (grasses) to slow down the channel velocity, stabilize the banks, increase water absorption, and therefore prevent erosion.

The proposed earthen diversion channel is approximately 238 m (780 ft) long, extending from the existing Americana Park detention basin in the west to the existing tributary to Willow Creek in the east. The bottom of the trapezoidal earthen channel will be 3.7 m (12 ft) wide; the channel width at the top of bank will vary in width from 12-16.7- m (39-53 ft). Side slopes will be a maximum of 3:1 and vary in depth from a minimum of 1.2-1.5 m (4-5 ft) in order to maintain the slope of the channel and the original grade of the PG&E property.

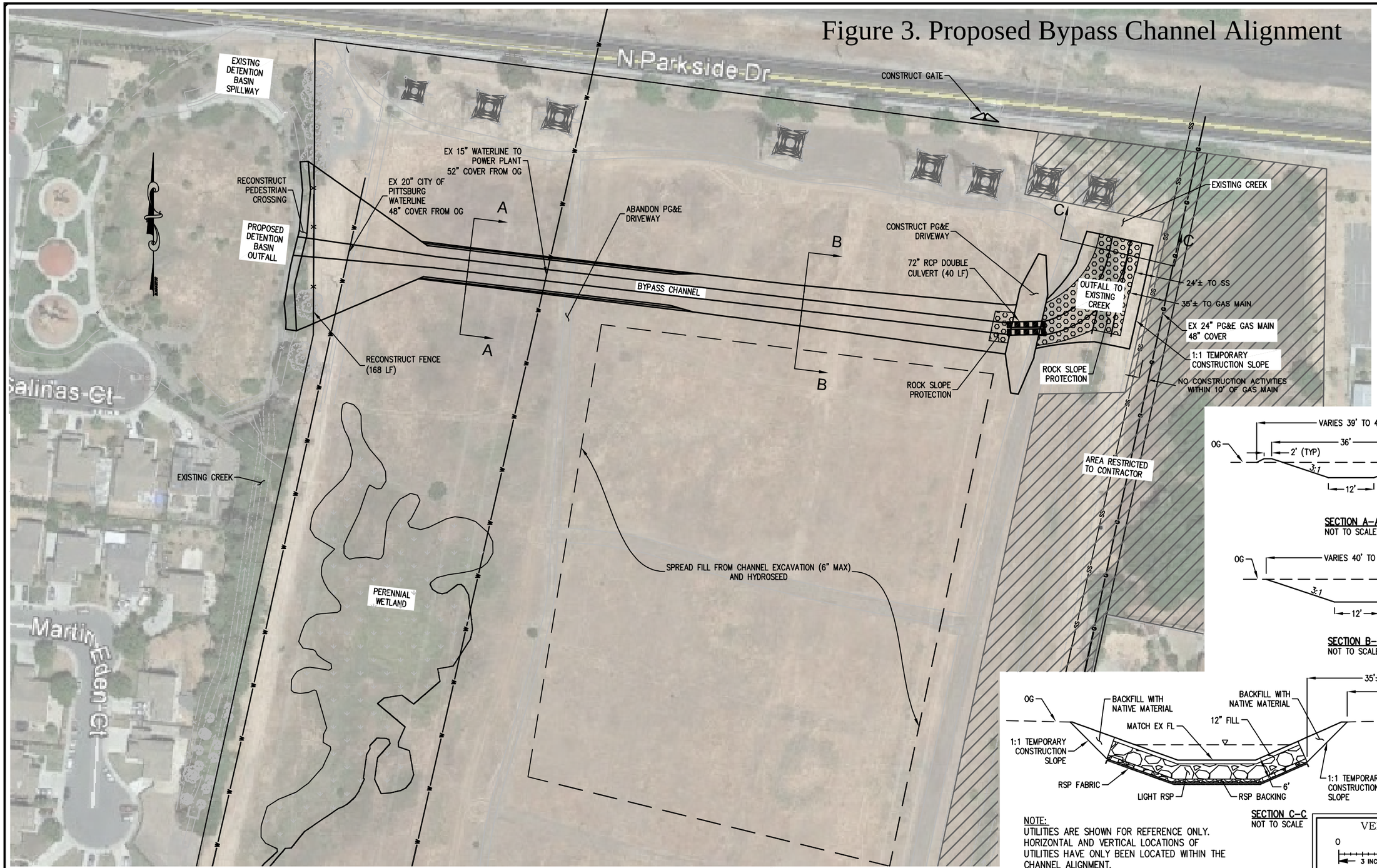
An existing dirt driveway across the PG&E property will be abandoned and a new access point will be constructed near the eastern end of the diversion channel, over a 183 cm (72 in) RCP double culvert 12.2 m (40 ft) long. During dry months, access across the new channel will also be accommodated at the western end where side slopes will be less than 10%.

The outfall transition from the earthen channel to the existing tributary to Willow Creek channel that runs along the easterly boundary of the PG&E parcel will be protected with rock slope protection for a length of 31 m (100 ft).

The proposed channel alignment is shown in Figure 3.

It is worth noting that the current alignment was developed after analyzing the potential environmental effects of a previous design. That design would have resulted in the severing of surface hydrology supporting an expanse of perennial herbaceous wetland habitat that has evolved on the southern portion of the PG&E corridor. In discussions with staff of the CDFW and USFWS, an alternate alignment was proposed; this project description incorporates those recommendations.

Figure 3. Proposed Bypass Channel Alignment



PLAN
SCALE: 1"=50'

SECTION A–A
NOT TO SCALE

SECTION B–B
NOT TO SCALE

SECTION C–C
NOT TO SCALE

NOTE:
UTILITIES ARE SHOWN FOR REFERENCE ONLY. HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES HAVE ONLY BEEN LOCATED WITHIN THE CHANNEL ALIGNMENT.

VERIFY SCALES
0 1 2 3
3 INCHES ON ORIGINAL PLAN
IF NOT THREE INCHES ON THIS SHEET, ADJUST SCALES ACCORDINGLY

ALL DIMENSIONS ARE IN FEET UNLESS NOTED OTHERWISE

PRELIMINARY

NO.	DATE	APPROV.	REVISION

DESIGNED: KS
DRAWN: KS
CHECKED: RO
REVIEWED: RTH
DATE: 09–23–2015

APPROVED BY:

City Engineer
Date:

REGISTERED PROFESSIONAL ENGINEER
RANDELL T. HARRISON
No. 46646
CIVIL
STATE OF CALIFORNIA
NOT FOR CONSTRUCTION

HEI HARRISON ENGINEERING INC.
399 TAYLOR BLVD., SUITE 100 • PLEASANT HILL, CA 94523
PHONE (925) 691–0450 • FAX (925) 691–0460

City of Pittsburg

CITY OF PITTSBURG
AMERICANA PARK BYPASS CHANNEL
BYPASS CHANNEL OPTIONS
SHEET
SCALE: AS SHOWN
SHEET: 1 OF 1

2.0 METHODS AND LIMITATIONS

The findings for this biological constraints assessment are based on the following:

1) database queries for the Honker Bay, Antioch South, Clayton, Vine Hill, Fairfield South, Walnut Creek, Antioch North, Birds Landing, and Denverton 7.5-minute USGS quadrangles from the available databases (CNDDB, 2015; CNPS, 2015; USFWS, 2015; see Appendix B);
2) an assessment of habitat types and surrounding land uses completed by reviewing recent aerial photographs;
3) reconnaissance-level surveys by a qualified biologist; and
4) performance of a formal wetland delineation by a qualified wetland delineator.

Additional information regarding special-status plants, animals, and habitats was compiled through a review of information sources maintained by the CDFW (2015a,b,c,d). Plant habitat affinities and local distribution information was obtained from Baldwin, et al. (2012), Lake (2010), Ertter and Bowerman (2002), and Ertter and Naumovich (2013), respectively. Nomenclature for common, widespread plants and animals conforms to Jepson Online Interchange[5] and CDFW (CDFG[6], 2005), respectively. Nomenclature for special-status plants and animals conforms to CDFW (CDFW, 2015a and 2015c, respectively). Plant community names conform to Sawyer, et al. (2009) and Cowardin et al. (1979) where appropriate; special-status plant communities follow CDFG (2010).

Other biological studies performed for nearby project were also reviewed, including a wetland delineation for the Brickyard Subdivision (Botanical Consulting Services, 1994); biological assessments for the Range Road Middle School (Benson Lee Consulting, 2006), a reclaimed water pipeline (Raines, Melton & Carella, Inc., 2005), a trash capture project (Wood Biological Consulting, 2011), and a road improvement project (Wood Biological Consulting, 2012).

A reconnaissance-level survey was performed by biologist Michael Wood on April 17, 2014 and on January 20-21, 2015. The limits of the study area include of the entire PG&E corridor between North Parkside Drive and Power Avenue, covering approximately 6.9 ha (17 ac) (see Figure 2). Focused botanical or wildlife surveys were not performed as part of this analysis.

[5] Available on line at http://ucjeps.berkeley.edu/ interchange.html

[6] On January 1, 2013, the CDFG changed its name to the CDFW; all publications released prior to that date are referenced by the former name CDFG.

A formal wetland delineation was also performed in conformance to the guidelines of the guidelines of the USACE (2006, 2008) and Environmental Laboratory (1987). Utilizing field data, site observations and recent and historic aerial photographs, the wetland/upland boundary was mapped over the entire study area (see Appendix D). A total of seven data points were sampled and data on vegetation, soils and hydrology were collected and recorded (field data forms are attached as Appendix E).

3.0 SETTING

The project site is situated in a north to south trending utility corridor owned by PG&E. It passes through a developed portion of the City of Pittsburg forming a 275 m (900 ft) wide swath of undeveloped ground connecting the open northeast-facing slopes below Mulligan Hill (428 m [1404 ft]) and the fringing marshes Suisun Bay at the mouth of Willow Creek (see Figure 2). The corridor is traversed by State Route 4 (SR4) and numerous heavily travelled surface streets. An intermittent tributary to Willow Creek has been realigned to the confines of the utility corridor.

The study area is bordered by residential developments to the east and west. A realigned earth-line tributary to Willow Creek flows south to north along the eastern edge of the corridor. A storm drain outfall is located in the southwestern corner of the study area; surface flows are conveyed northward via an open channel where they empty into a stormwater detention basin constructed as part of the Americana subdivision.

Based on an historical aerial photograph[7], the utility corridor and surrounding lands were dry-farmed for grain prior to development. After the surrounding lands were developed, the site was routinely disked. The corridor is dominated by plants characteristic of non-native annual grasslands and scattered patches of perennial wetlands.

The Americana subdivision was constructed between 2001 and 2003, at which time a portion of a storm drain channel, which previously emptied directly into the utility corridor, was placed into a buried culvert beneath the new development. The new outfall in the southwestern corner of the study area directed flows to the new detention basin via an excavated surface channel. Although planted with horticultural trees at the time of development, the channel has evolved a distinct riparian strip dominated by native trees and an understory dominated by native wetland plants.

Within the study area, the tributary to Willow Creek is a 21 m (70 ft) wide straightened, earthen, trapezoidal channel. Its slopes support non-native grassland

[7] Google Earth image dated 1939

species and only a few scattered woody trees and shrubs. The channel bottom, approximately 4.3 m (14 ft) below the surrounding grade, supports an assortment of native and non-native wetland herbs and grasses, and a preponderance of upland grasses. Elevations of the surface of the field range from 8-10 m (28-34 ft) above mean sea level (msl).

3.1 Plant Communities

The entire study area has been historically altered from its natural condition by farming practices, development, and alterations to the natural hydrology. The dominant plant association present is non-native annual grassland, a typical condition on fallow dry-farmed sites and long-abandoned fields. With the historic redirection of surface runoff from development onto the utility corridor, perennial wetlands dominated by several native and non-native perennial wetland indicator species have evolved. The storm drain channel along the western edge of the study area has evolved a band of perennial herbaceous wetland habitat as well as native woody riparian trees. The tributary to Willow Creek supports a strip of perennial herbaceous wetland plants. Patches of the highly invasive perennial pepperweed are also present on site.

A discussion of these plant associations is presented below. The location and extent of the plant associations within the study area are illustrated in Figure 4.

Non-native Annual Grassland

Non-native Annual Grasslands are generally found in open areas in valleys and foothills throughout coastal and interior California (Holland, 1986). They typically occur on soils consisting of fine-textured loams or clays that are somewhat poorly drained. This vegetation type is dominated by non-native annual grasses and weedy annual and perennial forbs, primarily of Mediterranean origin, that have replaced native perennial grasslands, scrub and woodland as a result of human disturbance. Scattered native wildflowers and grasses, representing remnants of the original vegetation may also be common.

Characteristic non-native annual grasses commonly found on site include perennial rye grass, ripgut brome, Mediterranean barley, wild oats, foxtail barley, and soft chess, among others. Non-native forbs also commonly encountered in this habitat include field mustard, cutleaf geranium, Italian thistle, and perennial pepperweed, among others. Native grassland species encountered include bugloss fiddleneck, alkali mallow, annual willowherb, and scattered shrubs of coyote brush. Characteristic photographs are provided in Appendix A (see photos 6-9).

FIGURE 4

AMERICANA PARK BYPASS CHANNEL
PLANT ASSOCIATIONS

Wood Biological Consulting, Inc.

N PARKSIDE DRIVE

EMERSON DRIVE

STEINBECK DRIVE

PARK VIEW DRIVE

JACK LONDON DRIVE

MARTIN EDEN COURT

POWER AVENUE

MONFREDO DRIVE

CASE DRIVE

BURNHAM DRIVE

MOPHAM DRIVE

TRIBUTARY TO WILLOW CREEK

LIMIT OF STUDY AREA

DETENTION POND

DEV

RPW

PED BRIDGE

NNAG

BRM

SGF

AWT

CRG

VERIFY SCALES

0 1 2 3

3 INCHES ON ORIGINAL PLAN

IF NOT THREE INCHES ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DEC. 14, 2015

FIGURE 4. HABITATS OCCURRING WITHIN THE STUDY AREA

SCALE: 1"=60'

LEGEND

AWT – ARROYO WILLOW THICKET
BRM – BALTIC RUCH MARSH
CRG – CREEPING RYE GRASS TURF
DEV – DEVELOPED (RIPRAP), PATHWAY AND LANDSCAPING
NNAG – NON–NATIVE ANNUAL GRASSLAND
RPW – RUDERAL PERENNIAL WETLAND
SGF – SALT GRASS FLAT

On site, areas of Non-native Annual Grassland most closely conforms to Annual Brome Grasslands (*Bromus [diandrus, hordeaceus]-Brachypodium distachyon* Semi-Natural Herbaceous Stands), as described in Sawyer, et al. (2009); these widespread non-native plant communities have no rarity ranking (Sawyer, et al., 2009; CDFG, 2010). This plant association has been described as Non-native Grassland by Holland (1986; Holland code 42200) and the CDFW (CA vegetation code 42.026.00). With the exception of Ruderal Seasonal Wetlands, described below, which are dominated by some of the same species, Non-native Annual Grasslands would be classified as an upland following Cowardin et al. (1979). As a common, widespread and non-natural plant association, Non-native Annual Grassland has no global or State rarity ranking. For purposes of analysis under the HCP, the Non-native Annual Grassland is lumped under the "Annual Grassland" land cover type.

Arroyo Willow Thicket Alliance

The Arroyo Willow Thicket Alliance (*Salix lasiolepis* Shrubland Alliance) consists of scrubby streamside, open to impenetrable stands with arroyo willow as the dominant or co-dominant species in the shrub or tree canopy. This plant community (CA Vegetation code 61.201.00) occurs along stream banks, benches and stringers along drainages, on sites that are seasonally or intermittently flooded, on fine-grained sand and gravel bars with a high water table. Outside of stream channels, arroyo willow thickets are also commonly found in isolated stands associated with seeps and springs on slopes and as stringers along ephemeral or intermittent channels.

As a plant community, Arroyo Willow Thickets are distributed throughout California along the entire length of the State on the coast, Coast Ranges, Interior Ranges, Great Valley, Klamath Mountains, southern Cascades, Modoc Plateau, Transverse Ranges, Mojave Desert, Sierra Nevada foothills and mountains, and into the Great Basin. They may be found from sea level to 2170 m (7100 ft) in elevation.

Membership in this alliance requires that arroyo willow comprises over 50 percent relative cover in the shrub or tree canopy. The Arroyo Willow Thicket community has been assigned a rarity ranking of G4/S4[8], indicating that this alliance may or may not be endemic to California and is presumed to be secure statewide (Sawyer, et al. 2009). However, some associations within this alliance are deemed rare and less secure statewide. Central Coast Riparian Scrub has been assigned a rarity ranking of G3/S3 indicating that it is rare and threatened in California (CDFG, 2010).

Within the study area, Arroyo Willow Thicket community occurs as a narrow band of mature arroyo willow trees and scattered Fremont cottonwood trees, Oregon ash and black walnut rooted on both sides of a stormwater channel between the existing storm drain outfall and the detention basin. The channel was excavated in dry ground

[8] For an explanation of global and state rarity rankings, see Appendix C.

around 2001, at the time of construction of the Americana subdivision. It is not known if the arroyo willow trees were planted or if they became spontaneously established once surface water began flowing along the channel. Scattered ornamental trees and shrubs, including Tasmanian blue gum and cotoneaster are also present. The understory is dominated by a dense turf of Santa Barbara sedge, with a few small patches of broadleaf cattail and tule. Other native wetland species detected along the channel include Baltic rush, yellow nutgrass, and blue elderberry. Photographs of the channel are presented in Appendix A (see photos 1 and 2).

Within the study area, Arroyo Willow Thicket habitat most closely conforms to the Central Coast riparian scrub (CA Vegetation code 61.201.00), also described in Holland (1986; Holland code 63200). Arroyo Willow Thickets are classified as a palustrine shrub-scrub wetland following Cowardin et al. (1979). Arroyo willow is listed as a "facultative wet" (FACW) wetland indicator species (Lichvar et al., 2014).[9] Impacts to this plant community are regulated under federal, State or local laws and policies. For purposes of analysis under the HCP, the Arroyo Willow Thicket Alliance is lumped under the "Riparian Woodland/Scrub" land cover type.

Creeping Rye Grass Turfs Alliance

As described in Sawyer, et al. (2009), the Creeping Rye Grass Turfs Alliance (*Leymus triticoides*[10] Herbaceous Alliance) occurs on heavy clay to clay loam soils. Stands are generally on poorly drained floodplains, drainage and valley bottoms, mesic flats and slopes, and marshes. Creeping rye grass is adapted to a wide range soil types and is tolerant of alkaline and saline conditions. Found along coastal northern, central and southern California, Creeping Rye Grass Turfs extend into the Sacramento-San Joaquin River Delta, the Central Valley and the Mono Basin, occurring at elevations from 0-2300 m (7544 ft).

Membership in this alliance requires that creeping rye grass comprise greater than 50 percent relative cover in the herb layer. The creeping rye grass alliance has been assigned a rarity ranking of G4/S3, indicating that this alliance is secure throughout its range outside of California but is rare and threatened in the State.

Within the study area, creeping rye grass occurs in dense patches where surface runoff accumulates. It is virtually the only species present in the patches (see Appendix A, photos 5 and 12). Creeping rye grass patches are part of a mosaic of other wetland plant communities including Salt Grass Flats, Baltic Rush Marshes, and

[9] For a detailed discussion of wetland indicator ratings, see Section 3.4 – Vegetation, below

[10] Since publication of Sawyer, et al. (2009), the scientific name for creeping rye grass, also commonly known as creeping wildrye, has been changed to *Elymus triticoides*. However, for purposes of determining its wetland indicator status, the previous name *Leymus triticoides* is used per Lichvar (2014).

Perennial Pepperweed Patches (each is discussed below) sustained by surface stormwater runoff which flows northward from the outfall at Power Avenue.

Within the study area, the Creeping Rye Grass Turfs Alliance conforms to the Creeping Ryegrass Grassland (CA Vegetation code 61.41.080.00) and Valley Wildrye Grassland as described in Holland (1986; Holland code 42140). Areas dominated by creeping rye grass occur in uplands but may also be classified as palustrine emergent persistent seasonally flooded/saturated freshwater wetlands (P-EM1-E0) following Cowardin et al. (1979). Creeping rye grass is listed as a "facultative" (FAC) wetland indicator species (Lichvar et al., 2014). Impacts to this plant community qualifying as wetlands are regulated under federal, State or local laws and policies. Impacts to this plant community in upland settings may be regarded as significant under CEQA guidelines. For purposes of analysis under the HCP, the Creeping Rye Grass Turfs Alliance is lumped under the "Permanent Wetland" land cover type.

Salt Grass Flats

The Salt Grass Flats Alliance (*Distichlis spicata* Herbaceous Alliance) occurs on sites that are intermittently flooded and with deep, poorly drained alkaline or saline soils (Sawyer, et al. 2009). Along the length of California's Pacific coast, Salt Grass Flats Alliance is found along sheltered inland margins of bays, lagoons and estuaries subjected to tidal influence. Inland, it occurs on playas, swales, and terraces that accumulate salts near the surface; it can be found Great Valley and Great Basin, from the Imperial Valley to the Modoc Plateau and at elevations up to 1500 m (4920 ft).

Salt Grass Flats are dominated by salt grass, a perennial, rhizomatous native species, which often forms a complete herbaceous canopy up to 40 cm (16 in) high. Membership in this alliance requires that salt grass comprises over 50 percent relative cover in the herbaceus layer and that is greater than any other single grass species. Salt grass is listed as a "facultative" (FAC) wetland indicator species (Lichvar et al., 2014). The Salt Grass Flats community been assigned a rarity ranking of G5/S4, indicating that this alliance may or may not be endemic to California and that it is secure statewide (Sawyer, et al. 2009; CDFG, 2010).

Within the study area, small, scattered patches of salt grass occur at the edges of patches of creeping rye grass and Baltic rush, and are part of the same extensive perennial wetland mosaic sustained by surface stormwater runoff which flows northward from the outfall at Power Avenue. Although dominated by salt grass, these patches do not exhibit site or soils conditions typical of alkali grasslands; there is no obvious topographic distinction between these patches and the surrounding, more extensive patches of Baltic rush and Non-native annual grassland.

On site, Salt Grass Flat habitat conforms to the Saltgrass Alliance (CA vegetation code 41.200.00) and most closely conforms to the Northern Coastal Salt Marsh habitat as

described in Holland (1986; Holland code 52110). On site, stands are classified as palustrine emergent persistent seasonally flooded/saturated freshwater wetlands (P-EM1-E0) following Cowardin et al. (1979). Impacts to this plant community qualifying as wetlands may be regulated under federal, State or local laws and policies. Impacts to stands in upland settings would not typically be considered significant under CEQA guidelines. For purposes of analysis under the HCP, Salt Grass Flat habitat is lumped under the "Permanent Wetland" land cover type.

Baltic Rush Marshes

The Baltic Rush Marsh Alliance (*Juncus arcticus* var. *balticus*[11] Herbaceous Alliance) occurs on sites that poorly drained sites such as wet and mesic meadows; along the banks of streams, rivers, lakes, ponds and sloughs; and in freshwater, brackish and alkaline marshes. Ranging over the entire length of California and from the coast across the Central Valley, up the Sierra Nevada Mountains and into the Mono Basin and Modoc Plateau, Baltic rush occurs at elevations from 0-2200 m (0-7200 ft).

Baltic Rush Marshes are dominated by Baltic rush grass, a perennial native species that spreads by underground rhizomes and copious seed production. Stands are often mono-typic, forming a turf up to 1 m (3.3 ft) tall. Membership in this alliance requires that Baltic rush comprises over 50 percent relative cover in the herbaceous layer. Baltic rush is listed as a "facultative wet" (FACW) wetland indicator species (Lichvar et al., 2014). The Baltic Rush Marsh community been assigned a rarity ranking of G5/S4, indicating that this alliance may or may not be endemic to California and that it is secure statewide (Sawyer, et al., 2009; CDFG, 2010).

Within the study area, small, scattered patches of Baltic rush form dense turfs at the edges of patches of creeping rye grass and salt grass, and are part of the same extensive perennial wetland mosaic sustained by surface stormwater runoff which flows northward from the outfall at Power Avenue.

On site, Baltic Rush Marsh is characterized as a wet meadow, conforming to the Baltic Rush Alliance (CA vegetation code 45.562.02) and closely conforms to Cismontane Alkali Marsh as described in Holland (1986; Holland code 52310). On site, stands are classified as palustrine emergent persistent seasonally flooded/saturated freshwater wetlands (P-EM1-E0) following Cowardin et al. (1979). Impacts to this plant community qualifying as wetlands may be regulated under federal, State or local laws and policies. Impacts to stands in upland settings would not typically be considered significant under CEQA guidelines. For purposes of analysis under the HCP, Baltic Rush Marsh is lumped under the "Permanent Wetland" land cover type.

[11] Since publication of Sawyer, et al. (2009), the scientific name for Baltic rush has been changed to *Juncus balticus* ssp. *ater*. For purposes of determining its wetland indicator status, the new is used per Lichvar (2014).

Ruderal Wetland

Ruderal wetlands are comprised of annual and/or perennial native and non-native wetland indicator species that have become established on heavily disturbed low-lying sites. Typically, ruderal wetlands develop in road ditches, agricultural drainage ditches, and basins, pits, swales and depressions that have been excavated in dry ground. Ruderal wetlands can be wet year-round, supporting dense stands of emergent freshwater marsh species, or they may support annual wetland vegetation only during the wet season. During the dry season, such sites may not be readily recognizable as wetlands since the wetland species go to seed and typically upland grasses and forbs become established.

On site, ruderal wetlands habitat is found in the bottom of the Willow Creek channel. Commonly encountered wetland indicator species include the perennial species umbrella sedge (FACW), curly dock (FAC), perennial rye grass (FAC), CA aster (FAC), willowherb (FACW), and perennial pepperweed (FAC), among others.

Ruderal wetlands are not specifically described in Sawyer, et al. (2009). On site, ruderal wetlands would be classified as palustrine emergent persistent seasonally flooded/saturated freshwater wetlands (P-EM1-E0) following Cowardin et al. (1979). Although this plant association has no rarity ranking (Sawyer, et al., 2009; CDFG, 2010), areas meeting the federal definition of a wetland may be regulated under federal, State or local laws and policies. Impacts to stands in upland settings would not typically be considered significant under CEQA guidelines. For purposes of analysis under the HCP, ruderal wetland is classified as the "Perennial Wetland" land cover type.

3.2 Wildlife Habitats

The value of a site to wildlife is influenced by a combination of the physical and biological features of the immediate environment. Species diversity is a function of diversity of abiotic and biotic conditions and may be greatly affected by human use of the land. The wildlife habitat quality of an area, therefore, is ultimately determined by the type, size, and diversity of vegetation communities present and their degree of disturbance. For example, as a plant community is degraded by the loss of understory diversity, creation of openings, or reduction in area, a loss of structural diversity generally results. Degradation of the structural diversity of a community typically diminishes wildlife habitat quality and usually results in a reduced ability to support a diversity of animal species.

Despite the suburban context of the project vicinity, the study area can be regarded as having moderately high wildlife habitat values due to the presence of perennial water, stream channels, riparian trees, extensive grasslands for foraging and proximity to extensive open grasslands and marshy shoreline. Typically, woody riparian

vegetation is considered to have very high habitat value for wildlife. However, the value of the riparian canopy on site is degraded by its short length, narrowness, and proximity to activities and disturbances associated with human habitation.

While human activities such as noise, lighting, human movement, pets, and the expected increased presence of predators may affect the most sensitive of wildlife species, foraging, resting and breeding opportunities for a variety of wildlife species are still considered to be moderate. A brief discussion of the existing habitats on site as they relate to potential use by wildlife is presented below.

Grasslands

Grassland habitat, including native and non-native grasslands, may support a variety of reptiles and amphibians, including southern alligator lizard, western fence lizard, ring-necked snake, gopher snake, northern Pacific rattlesnake, and common kingsnake, among others. This habitat also attracts avian seed-eating and insect-eating species of birds and mammals. CA quail, mourning dove, and western meadowlark are a few seed-eaters that nest and forage in grasslands. Insect-eaters such as western scrub jay, barn swallow, and western bluebird commonly forage in grasslands. In the project region, burrowing owl is known to nest and forage in grasslands where the vegetation is kept low by grazing or regular mowing.

Grasslands are important foraging grounds for aerial and ground foraging insect-eating bat species such as myotis and pallid bat. A large number of other mammal species such as CA vole, deer mouse, Botta's pocket gopher, CA ground squirrel and black-tailed jackrabbit also forage and nest within grasslands. Small rodents attract raptors (birds of prey) such as owls that hunt at night, as well as day-hunting raptors such as red-tailed hawk and red-shouldered hawk, among others. Mule deer use grassland for grazing and, if the grass is tall enough, for nesting at night. Coyote will hunt in grasslands as well as dig dens for the rearing of pups and daytime refuge.

In terms of potential wildlife usage, Non-native Annual Grassland, Baltic Rush Marsh, Creeping Rye Grass Turfs, Salt Grass Flats and Ruderal Seasonal Wetlands found on site provide essentially the same type of cover habitat.

Central Coast Riparian Scrub

As described above Arroyo Willow Thickets may form open to impenetrable stands along streams and drainages as well as at springs and seeps. Because willows are typically are associated with water sources and due to the cool shelter their canopies provide, willows provide cover and nesting habitat for a variety of bird species, especially passerines. A variety of passerine species can be expected to occur and nest in this habitat such as black phoebe, white-crowned sparrow, song sparrow, yellow-rumped warbler, spotted towhee, and house finch, among others. Herons and egrets

such as great blue heron, great egret, snowy egret, black-crowned night heron, and green-backed heron may perch in willows near open water. Mammals expected to take cover among willows during foraging forays include raccoon, Virginia opossum, striped skunk and feral and house cats. Amphibians and reptiles that may be expected to occur in willow riparian habitats include Pacific treefrog, arboreal salamander, Pacific slender salamander, garter snake, and Pacific pond turtle.

Stream Channels and Seasonal Wetlands

Stream channels supporting herbaceous wetlands offer water, food and cover for a variety of wildlife species. Depending on the depth of ponding, channel gradient, type and degree of cover of bank vegetation, degree of connectivity to open habitat, and surrounding land uses, stream channels supporting only seasonal wetland vegetation and lacking a woody riparian overstory have somewhat limited wildlife habitat values. This can be due to the limited level of plant cover and ponded water that would provide protection for breeding or migrating aquatic wildlife species from predators.

During periods when water is present in such channels, wildlife species that might utilize such sites may include such reptiles and amphibians as western aquatic and terrestrial garter snakes, Pacific tree frog, Pacific pond turtle, western toad, and CA newt, among others. Foraging by a wide variety of bird may also be observed, including such species as red-winged blackbird, black phoebe, and any number of herons and egrets. Predators and opportunistic feeders such as raccoon, Virginia opossum, feral and house cats and coyotes may also frequent such sites.

During the summer months when these channels are dry and the vegetation is dying back, the values of these sites is comparable to those of grasslands, described above.

3.3 Wildlife Movement Corridors

Under CEQA, impacts are considered significant if a project would interfere substantially with the movement of 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. Wildlife corridors (i.e., linear habitats that naturally connect and provide passage between two or more large habitats or habitat fragments) are important for persistence of wildlife overtime. Wildlife must have access to adequate resources, and corridors are used to find suitable forage, nesting and resting sites, mates and new home ranges. In addition, corridors for dispersal within breeding populations will decrease the likelihood that subpopulations will go extinct or become locally extirpated. Even where patches of pristine habitat are fragmented, as commonly occurs with riparian vegetation, wildlife movement between populations is facilitated through habitat linkages, migration corridors and movement corridors.

Wildlife movement includes migration (i.e., usually one direction per season), inter-population movement (i.e., long-term genetic exchange) and small travel pathways (i.e., daily movement within an animal's home range). Daily movement patterns define an animal's home range where activities such as foraging, resting and conspecific (individuals of the same species) interactions occur. Generally, longer movements usually by dispersing individuals connect breeding populations, permitting gene flow between these subpopulations. Corridors generally provide adequate habitat for animals to disperse until reaching an area large enough to establish home ranges. Corridors are different depending on what type of organism may use it; a corridor for a butterfly or bird may be a series of "stepping stones" of suitable habitat, while a terrestrial vertebrate may need a continuous band of suitable habitat for successful movement. Habitat loss, fragmentation, and degradation resulting from a change in land use or habitat conversion can alter the use and viability of corridors.

The relatively wide but sparsely vegetated Willow Creek tributary on the eastern edge of the study area is unlikely to provide for any significant movement of wildlife species for several reasons. The channel and banks support few, scattered shrubs, being vegetated primarily with only herbaceous grasses and forbs which provide no cover for dispersing mammals or reptiles. The channel bottom is wetted only intermittently and lacks pools, riffles or features that would provide protection from predators for the movement of amphibians. Finally, although the utility corridor extends into the upper watershed and the mouth of Willow Creek as Suisun Bay, it is interrupted by SR4 and other heavily travelled surface streets; wildlife movements would be focused into lengthy culverts. For these reasons, the tributary to Willow Creek is not expected to function as a significant wildlife movement corridor.

Conversely, the stormwater channel on the western edge of the study area supports a dense canopy of native riparian trees with a complete understory of native herbs and shrubs. However, this channel does not connect two open areas of wildlife habitat. While vegetation associated with this channel provides excellent cover for wildlife and even breeding opportunities, it is not expected to serve as a significant wildlife movement corridor.

The proposed project is not expected to have a significant adverse effect on wildlife movements.

3.4 Jurisdictional Features

Certain habitat and site features fall under federal and State jurisdiction (see discussion of Special-Status Natural Communities in Section 4.1, below). Such features include stream and drainage courses, water bodies, tidal lands, wetlands, and riparian habitats. The extent of jurisdiction of a given agency varies and is defined by specific

guidelines issued by each agency. Important factors evaluated in making a preliminary assessment of agency jurisdiction include site hydrology, vegetation, and soils. A brief discussion of these parameters and site-specific conditions is presented below.

Wetlands belong to the broad category of waters of the U.S. and are defined 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 soil conditions".*[12]

Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands are areas of land which are permanently or seasonally wet and support vegetation specifically adapted to growing in saturated soils under conditions of low oxygen. Wetlands are considered valuable to humans because they provide flood protection, recharge ground water supplies, improve water quality by filtering out pollutants and sediments, protect shorelines and stream banks from erosion, serve as important spawning and nursery areas for invertebrates, fish, shellfish and birds, provide recreation, open space, and aesthetic values, provide water and sanctuaries for wildlife, and frequently support endangered, threatened, or rare species of wildlife and plants. The value of a particular wetland is assessed based on its size, proximity to open areas supporting a variety of other habitat types, its level of disturbance, the presence of invasive plant species, exposure to human activities that might disrupt wildlife movements or breeding, exposure to pollutants, or other conditions affecting the wetlands functions listed above.

To meet the legal definition of a wetland, a site must exhibit specific indicators of hydrologic, soil, and vegetation parameters. Indicators of all three wetlands parameters must be present for a site to be classified as a wetland (Environmental Laboratory, 1987; USACE 2008). Based on a wetland delineation performed on April 17, 2014, three separate wetland areas were found to be present within the study area. These are characterized as a woody riparian strip along the western storm channel; an extensive area of herbaceous perennial wetland plants on the western portion of the utility corridor; and herbaceous wetland habitat in the bottom of the tributary to Willow Creek channel. A total of seven wetland data point were sampled; wetland delineation forms are included as Appendix E. The location of wetland data points is shown in Appendix D.

[12] 33 CFR 328.3[b]; 40 CFR 230.3[t]

Hydrology

For the hydrology parameter to be satisfied a wetland site must be inundated or saturated to within 30 cm (12 in) of the soil surface for at least 12.5 percent of the growing season; areas that are inundated or saturated to within 30 cm (12 in) of the soil surface for 5-12.5 percent of the growing season might or might not meet the parameter. In this area, the growing season ranges from about March 1 and extends through mid-November (Zone 14; Sunset Publishing Corporation, 2001). Assuming a maximum growing season of 300 days, the soil surface at a given site would need to be saturated for at least 32.5 consecutive days after March 1 (0.125 x 260 frost free days) to meet the wetland hydrology criterion.

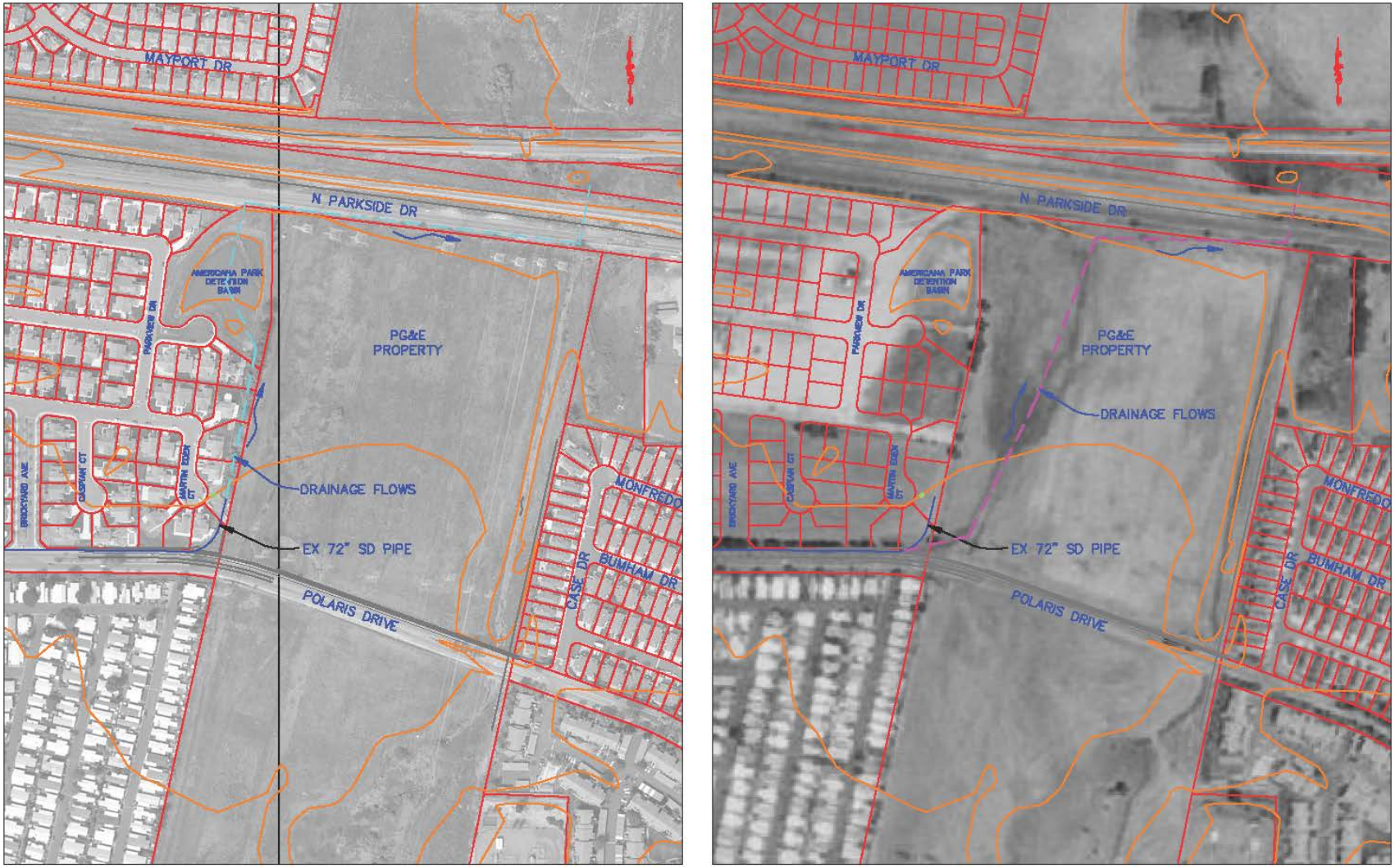
Primary wetland hydrology indicators detected in the two storm channels included water-stained leaves; secondary indicators detected included water marks, sediment deposits, drift deposits, and drainage patterns. On the terrace, primary indicators detected included oxidized rhizospheres along living roots; secondary indicators included drainage patterns and, in some cases, the FAC-neutral test. The wetland hydrology criterion was met at sample points 1-1, 2-1, 3-1, and 4-1.

Each of the three wetland areas on site has prominent hydrologic features. The eastern flood control channel is characterized as a deepened, straightened intermittent tributary to Willow Creek, the confluence of which is approximately 0.8 km (0.5 mi) downstream. The channel that appears as a "blue-line" stream[13] on the Diablo 7.5-minute USGS Honker Bay quadrangle. It is presumed to be a third order[14] stream. The excavated earthen channel is approximately 21 m (70 ft) wide at bankfull, 6 m (15 ft) wide at the Ordinary High Water Mark (OHWM), and approximately 4.3 m (14 ft) deep. A comparison of the current and historic drainage patterns on site are illustrated in Figure 5.

The western flood control channel is an artificial stormwater channel constructed in uplands to convey storm flows between the outlet of a 183 cm (72 in) diameter RCP storm drain and a stormwater detention basin. The earthen channel does not appear on the USGS topographic map. It is 122 m (400 ft) long channel is on average 3.7 m (12 ft) at bankfull, 1.5 m (5 ft) wide at the OHWM, and 0.6-1 m (2-3 ft) deep. Overflow from the detention basin flows eastern in a roadside ditch on the south side of North Parkside Drive for approximately 260 m (850 ft), where it converges with the tributary to Willow Creek.

[13] A "blue-line" stream is one which flows most or all of the year and is marked on USGS topographic maps with a solid blue line.

[14] See http://en.wikipedia.org/wiki/Strahler_Stream_Order for descriptions of stream orders.



Source: Harrison Engineering, Inc., 8/10/2009

Figure 5. Current and Historic Drainage Patterns

Hydrology supporting the wetlands on the western terrace consist of stormwater collected from the surrounding neighborhood and directed onto the field on the north side of Power Avenue via two 61 cm (24 in) RCPs set in a concrete headwall. Concentrated surface flows from the outfall are directed northward and confined to a short channel approximately 24 m (80 ft) long, 2.4 m (8 ft) wide and 48 cm (18 in) deep; from there, sheet flow fans out and across the field in a northerly direction for approximately 145 m (475 ft). There is no apparent outlet or surface connection to either the western storm channel or the tributary to Willow Creek. Collected storm flows are presumed to infiltrate into the ground and to be lost via evapotranspiration.

The eastern flood and western flood channels are presumed to qualify as a waters of the U.S.[15] As summarized by the USACE and U.S. Environmental Protection Agency (USEPA), both agencies assert jurisdiction over "non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months)" and "wetlands that abut such tributaries" (USEPA/USACE, 2008). The limits of USACE jurisdiction normally correspond to the OHWM. As such, the placement of fill below the OHWM[16] would be regulated pursuant to the CWA[17] and would fall under the jurisdiction of the USACE and the RWQCB.

Both channels are also expected to qualify as a waters of the State.[18] As such, any impacts below the tops of bank would be regulated pursuant to the California Fish and Game Code (CFGC)[19] and would fall under the jurisdiction of the CDFW.

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[15] As defined in 40 CFR 230.3(s), Waters of the U.S. include:

- All waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of tide;
- All interstate waters, including interstate wetlands;
- All other waters, such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, vernal pools, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce;
- Tributaries of the above;
- Territorial seas; and
- Wetlands adjacent to waters defined above.
- Although isolated wetlands no longer fall under USACE jurisdiction, impacts to isolated wetlands continue to be regulated under State law (see below).

[16] The OHWM is the line on the shores established by the fluctuations of water and indicated by physical characteristics such as: a clear natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas (USACE, 2006).

[17] CWA §404 and CWA §401

[18] As defined under California Water Code §13050(e), Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state". These

Vegetation

Hydrophytic vegetation is comprised of plant species that possess physiological features or reproductive adaptations that allow them to persist in soils subject to prolonged inundation and anaerobic soil conditions. The wetland status of plant species is based on their probability of being associated with wetlands or uplands. Obligate (OBL) species almost always (>99% of the time) occur in wetlands. Facultative Wetland (FACW) species occur in wetlands 67-99% of the time. Facultative (FAC) species have an equal probability 33-66% to occur in wetlands. Facultative Upland (FACU) and Obligate Upland (UPL) species occur in wetlands 1-33% and <1% of the time, respectively. For a sample point to meet this criterion, more than 50 percent of the dominant plant species in each of the strata must be OBL, FACW, or FAC indicator species. Wetland indicator species for our region are listed in Lichvar et al. (2014).

Hydrophytic vegetation is present within the study. The eastern channel bottom is dominated by the non-native wetland indicator species jungle rice (FAC) and English plantain (FAC). The native species willowherb (FACW), CA aster (FAC) and umbrella sedge (FACW) are also common here. The western channel supports a closed to nearly closed canopy comprised of the native riparian tree arroyo willow (FACW), with lesser amounts of Fremont cottonwood, Oregon ash (FACW) and black walnut (FAC). Non-native gum trees are also interspersed along the channel. The channel bottom is dominated by the native perennial rhizomatous wetland herb Santa Barbara sedge with scattered patches of tule (OBL), Baltic rush (FACW), cattail (OBL), and the non-native yellow nutgrass (FACW). Wet portions of the terrace support numerous discrete large patches of the native species creeping rye grass and Baltic rush, with a few small patches of salt grass. The specific plant associations are described in more detail in Section 3.1, above. The hydrophytic vegetation criterion was found to be met at sample points 1-1, 2-1, 3-1, and 4-1.

Typically, wetland and riparian habitats fall under the jurisdiction of the USACE, CDFW and RWQCB. Impacts on wetlands meeting the federal definition are regulated under the CWA. Impacts on wetland and riparian habitats not meeting the federal definition are often regulated under the LSAP. For projects regulated under the LSAP, the CDFW routinely extends its jurisdiction to include upland species when growing adjacent to water courses. The limits of the riparian zone, as currently recommended by the CDFW, extend to the outer edge of the dripline of native trees whose canopies extend over the tops of bank of a regulated stream course. A tree need not be rooted

include nearly every surface or ground water in California, or tributaries thereto, and include drainage features outside USACE jurisdiction (e.g., dry and ephemeral/seasonal stream beds and channels, etc.), isolated wetlands (e.g., vernal pools, seeps, springs and other groundwater-supplied wetlands, etc.), and storm drains and flood control channels.

[19] CFGC §1602

within a creek channel to be considered part of the riparian zone. For example, in areas where there is a continuous canopy of native trees extending beyond the top of bank, the CDFW may be expected to assume that they contribute to the habitat values for fish and wildlife species that occupy, or could occupy the channel. Thusly defined, such riparian trees provide shade and deposit downed wood and leaf debris on the channel banks, provide refuge sites and contribute nutrients to the stream, greatly enhancing wildlife habitat values. Therefore, the entire oak canopy covering the creek may be regarded as riparian by the CDFW and impacts can be expected to require mitigation pursuant to any LSAP permits issued.

Soils

Hydric soils are those that have formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA, 2006). Hydric soil indicators are formed as a result of the accumulation or loss of iron, manganese, sulfur, or carbon compounds. Some characteristic field indicators of hydric soils include the presence of histic epipedon, i.e., a thick organic layer at the surface, sulfidic odor, stratified layers of muck and mineral soils, muck, gleyed soils or soils with a low matrix chroma, redox depletions or concentrations, iron or manganese concretions, and soils listed as hydric by the USDA. Classified hydric soils for Contra Costa County are listed by the USDA (2007). The hydric soil criterion was found to be met at sample points 1-1, 1-2, 2-1, 3-1, and 4-1.

Two soil units are mapped as occurring within the study area (USDA, 2014). A description of each series and the mapped soil units is presented below. A map of the soil types in the project vicinity is presented in Figure 6.

Capay

The Capay series consists of moderately well-drained soils on lower edges of valley fill and on old benches that have been slowly dissected. These soils formed in alluvium from sedimentary rock. Slopes are 0 to 9 percent and elevation ranges from 3-153 m (10-500 ft) above sea level. The average annual temperature is 15°C (59°F), the average annual frost-free season is 250 to 300 days, and the average annual rainfall is 36-41 cm (14-16 in). Permeability and run-off are slow, and the hazard of erosion is slight. The series is classified as a typic chromoxerert (USDA, 1977). The natural vegetation consists of annual grasses and forbs with a few scattered oaks.

The specific mapping unit occurring in the study area is Capay clay, 0 to 2 percent slopes (CaA). Runoff is very slow, and there is no hazard of erosion where the soil is tilled and exposed. Included in this mapping unit are areas of Rincon clay loam, Brentwood clay loam, and Marcuse clay. Capay clay, 0 to 2 percent slopes is not

Source: USDA NRCS (2014)

Figure 6. Soil Types in the Project Vicinity

considered a hydric soil, but inclusions of Marcuse clay, which may be found in depressions within this soil unit, are listed as hydric (USDA, 2014). A majority of the study area is mapped as supporting this soil unit (see Figure 6).

Rincon

The Rincon series consists of well-drained soils mainly on benches. These soils formed in alluvial valley fill from sedimentary rock. Slopes are 0 to 15 percent and elevation ranges from 127-1270 m (50-500 ft) above sea level. The average annual temperature is 15°C (59°F), the average annual rainfall is 30-41 cm (12-16 in), and the average annual frost-free season is 260-300 days. Soils in the Rincon series are classified as mollic haploxeralfs (USDA, 1977). Vegetation consists of annual grasses, forbs and scattered oaks.

The specific mapping unit Rincon clay loam, 2-9 percent slopes (USDA code RbC), is found on benches with gently to moderate slopes. Soils have moderate and the hazard of erosion is slight where soils are tilled and exposed. Included with this soil are areas of Antioch loam and soils of alluvial fans. Rincon clay loam, 0-2 percent slopes, is not considered a hydric soil type (USDA, 2014). A small area of this soil unit is mapped as occurring in the southwestern portion of the study area.

4.0 SPECIAL-STATUS BIOLOGICAL RESOURCES

Existing and potentially occurring biological constraints at the subject parcel or potentially affected by the proposed action are discussed below.

4.1 Special-Status Natural Communities

Special-status natural communities are those that are considered rare in the region, support special-status plant or wildlife species, or receive regulatory protection under the CWA[20], LSAP[21], and/or the Porter-Cologne Water Quality Control Act.[22] A number of communities have been designated as rare and these communities are given the highest inventory priority (CNDDB, 2015; CDFG, 2010). Vegetation alliances given a rarity ranking of G1, G2 or G3 are considered to be of high inventory priority, impacts on which may regarded as significant under CEQA guidelines. Alliances ranked as G4 or G5 are generally considered common enough to not be of concern, impacts on

[20] CWA §401 and §404
[21] CFGC Division 2, Chapter 6, §§1600-1607
[22] Cal. Water Code §§13000-14920

which are not regarded as significant under CEQA guidelines (Sawyer et al., 2009; CDFG, 2010).[23]

Riparian habitats are considered by federal and State regulatory agencies to represent a sensitive and declining resource. Wetlands and riparian areas can serve significant biological functions by providing nesting, breeding, foraging, and spawning habitat for a wide variety of resident and migratory wildlife species. Impacts to stream channels with a defined bed and bank are addressed specifically by the CFGC[24] and may be regulated under the CWA. The USACE regulates dredging and placement of fill into waters of the U.S., including wetlands, with oversight of permitting decisions by the U.S. Environmental Protection Agency (USEPA). The USFWS and the National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries Service) have input on permitting decisions by the USACE when an activity could affect wetland-dependent federally listed species.

Two special-status plant associations occur within the study area; Arroyo Willow Thickets and Creeping Rye Grass Turfs. In addition, areas of Salt Grass Flats, Baltic Rush Marsh, and Ruderal Seasonal Wetlands qualifying as wetlands under the federal definition would also be regarded as having special status.

As discussed in Section 3.4, both the eastern and western stormwater channels are expected to qualify as waters of the U.S. and waters of the State; impacts below the tops of bank are regulated and fall under the jurisdiction of the USACE, RWQCB, and the CDFW. In addition, impacts to trees whose canopies overlap with the tops of bank along the western channel are considered riparian in nature; impacts to these trees would require mitigation under any LSAP permits issued.

Wetland areas on the terrace outside of the two stormwater channels are considered to be regulated under the CWA and fall under the jurisdiction of the USACE. The wetland habitats mapped at this location include Saltgrass Flats, Baltic Rush Marsh, and Creeping Rye Grass Turfs.

A discussed in Section 3.4, above, the study area supports habitats and landscape features that are regulated under federal and State law. The limits of federal and State jurisdiction are illustrated in Appendix D. A summary of these features is presented in Table 1. Impact avoidance, minimization and compensatory measures are warranted, as outlined in Section 5.1, below.

[23] For an explanation of global and State rarity rankings, see Appendix C.
[24] CFGC §1600 et seq.

Table 1. Jurisdictional Features in the Study Area*

Habitat Type or Feature		Feet	Meters
USACE and State Jurisdictional*			
Perennial Wetland (below OHWM, associated with a stream course or detention basin)	area	44,833	4,169
	linear	1,507	460
Perennial Wetland (adjacent)	area	43,292	4,026
Total USACE and State Jurisdictional	**area**	**88,125**	8,196
	linear	**1,507**	**460**
State Jurisdictional only**			
Willow Thicket (associated with a stream course)	area	20,135	1,873
Stream Bank (non-wetland, above OHWM)	area	50,682	4,713
Total State Jurisdictional only	**area**	**70,817**	**3,500**
Grand Total All Jurisdictional Features	**area**	**158,942**	**14,782**
	linear	**1,507**	**460**

* Features below the OHWM and/or meeting the federal wetland definition; regulated under federal and State law.

** Features above the OHWM and regulated under State law only.

4.2 Special-Status Plant Species

Special-status plant species include all plant species that meet one or more of the following criteria:[25]

- Listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (FESA) or candidates for possible future listing as threatened or endangered under the FESA.[26]
- Listed[27] or candidates for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA).[28] A species, subspecies, or variety of plant is **endangered** when the prospects of its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation,

[25] This definition is provided in CDFG (2009).

[26] 50 CFR §17.12

[27] Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

[28] CFGC §2050, et seq.

predation, competition, disease, or other factors.[29] A plant is **threatened** when it is likely to become endangered in the foreseeable future in the absence of special protection and management measures.[30]

- Listed as rare under the California Native Plant Protection Act (CNPPA).[31] A plant is **rare** when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small
- numbers throughout its range that it may be endangered if its environment worsens.[32]Meet the definition of rare or endangered under CEQA.[33] Species that may meet the definition of rare or endangered include the following:
- Species considered by the CNPS to be "rare, threatened or endangered in California" (Lists 1A, 1B and 2);
- Species that may warrant consideration on the basis of local significance or recent biological information;
- Some species included on the CNDDB's Special Plants, Bryophytes, and Lichens List.
- **Locally significant species,** that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region[34] or is so designated in local or regional plans, policies, or ordinances.[35] Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.

Impacts on special-status plants species, as thusly defined, may qualify as significant pursuant to the guidelines of the CEQA.

A total of 67 special-status plant species have been recorded from the nine 7.5-minute USGS Contra Costa County quadrangles including and surrounding the project site (CNPS, 2015); the CNDDB (2015) lists only 46 special-status plant species and the USFWS (2015) lists only nine.

Based on the altered nature of the subject parcel and surroundings, soil types, existing habitats, and geographic location, the potential for occurrence of a majority of these target species can be ruled out entirely. And although the study area was deemed to provide marginally suitable habitat for four of the target species, they are not considered to have any potential for occurrence on site due to the site's long history of

[29] CFGC §2062
[30] CFGC §2067
[31] CFGC §1900, et seq.
[32] CFGC §1901
[33] CEQA §15380[b] and [d]
[34] CEQA §15125 (c)
[35] CEQA Guidelines [Appendix G]

disturbance from farming practices and development. A summary of the target species that have been recorded from the project vicinity are summarized in Table 2; their locations are shown in Figure 7. A complete list of all special-status species evaluated as part of this analysis can be found in Appendix B. An explanation of all rarity status codes is provided in Appendix C.

One plant species of local interest, bugloss fiddleneck, was detected on site during the present survey. It is described below.

Bugloss Fiddleneck

Bugloss fiddleneck (*Amsinckia lycopsoides*) is a small, narrow, erect annual herb in the borage family (Boraginaceae). It produces small, tubular, yellow flowers from a coiled inflorescence. It occurs throughout California in open, often disturbed sites below 400 m (1312 ft) in elevation. Within the study area, Bugloss fiddleneck occurs in moderate numbers in the non-native grassland along the south-north access road.

In the East Bay, Bugloss fiddleneck is only known from 12 sites in the East Bay, but occurs in relatively small populations that are potentially declining. It is on the CNPS East Bay Chapter's rank "B" list, a high-priority watch list (Lake, 2010). Impacts to plant species on this list would not be regarded as significant under CEQA guidelines.

4.3 Special-Status Animal Species

Special-status animal species include listed as Endangered, Threatened, Rare, or as Candidates for listing under the FESA (USFWS, 2014) or CESA (CDFW, 2014d). Other species regarded as having special-status include special animals, as listed by the CDFW (2015c). Additional animal species receive protection under the Bald and Golden Eagle Protection Act (BGEPA)[36] and the Migratory Bird Treaty Act (MBTA).[37] The CFGC provides specific language protecting birds and raptors[38], "fully protected birds"[39], "fully protected mammals"[40], "fully protected reptiles and amphibians"[41] and "fully protected fish".[42] The California Code of Federal Regulations[43] prohibits the take of Protected Amphibians[44], Protected Reptiles[45] and Protected Furbearers.[46] Additional

[36] 16 USC 668, et seq.
[37] 16 USC. 703-711
[38] §§3503 and 3503.5
[39] CFGC §3511
[40] CFGC §4700
[41] CFGC §5050
[42] CFGC §5515
[43] Title 14
[44] Chapter 5 §41
[45] Chapter 5 §42
[46] Chapter 5 §460

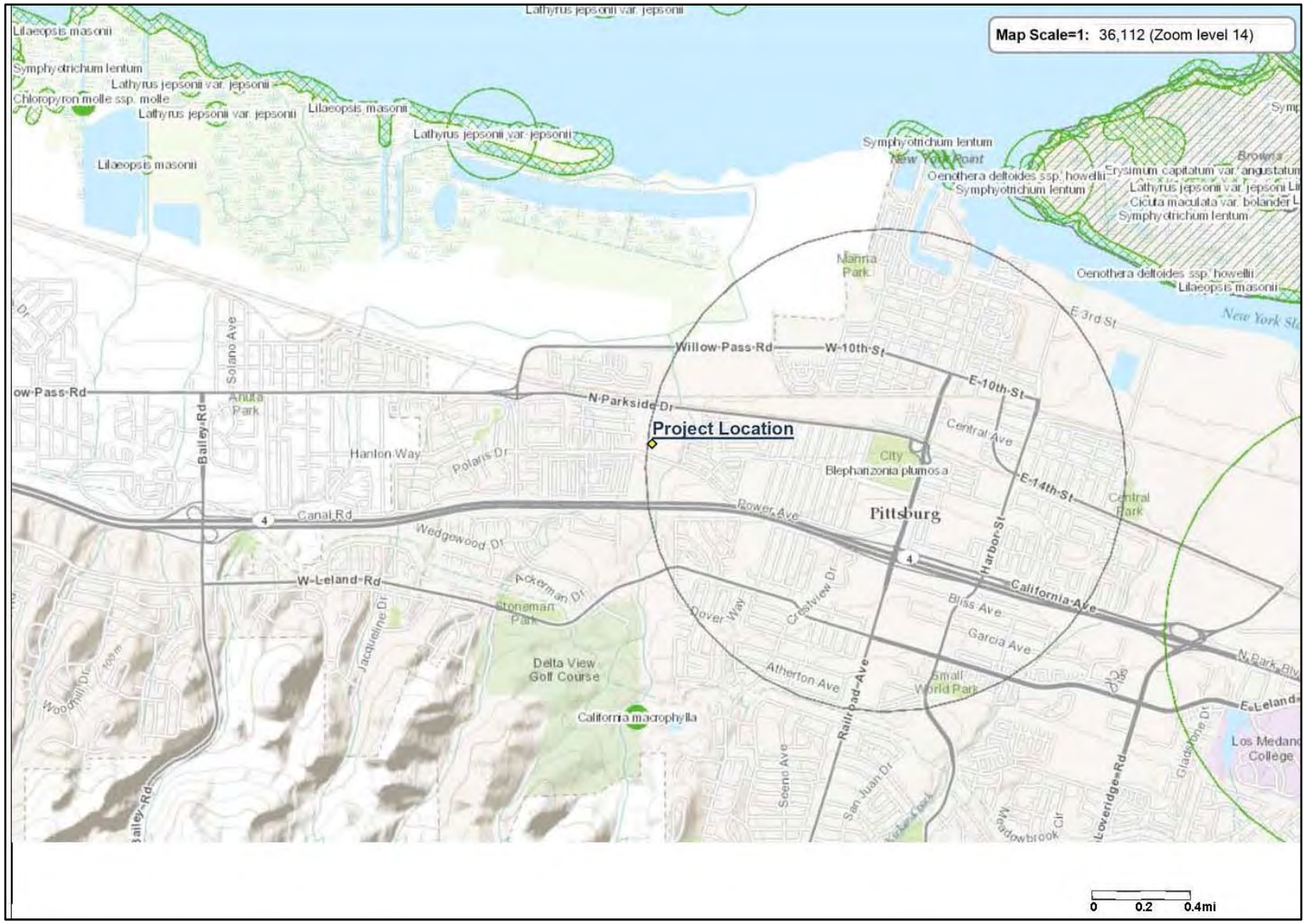
Table 2. Potentially Occurring Special-Status Plants from the Project Vicinity

Scientific Name	Common Name	Status**	Potential for Occurrence/Rationale
Federally and/or State Listed Species			
Amsinckia grandiflora	large-flowered fiddleneck	E/E/1B.1	None: marginally suitable habitat present; nearest locality is a 1993 record from Black Diamond Mines Regional Park 7.8 km SSE.
Erysimum capitatum var. *angustatum*	Contra Costa wallflower	E/E/1B.1	None: no suitable habitat present; nearest locality is a 1979 record from the W shoreline of Browns Isl. 2.6 km NE.
Lasthenia conjugens	Contra Costa goldfields	E/--/1B.1	None: no suitable habitat present; nearest locality is a 1895 record from Antioch 8.4 km ESE.
Lilaeopsis masonii	Mason's lilaeopsis	--/R/1B.1	None: no suitable habitat present; nearest locality is a 1999 record from the shoreline of Suisun Bay 2.6 km NE.
Oenothera deltoides ssp. *howellii*	Antioch Dunes evening primrose	E/E/1B.1	None: no suitable habitat present; nearest locality is a 1984 record from the W shoreline of Browns Isl. 2.6 km NE.
Other Special-Status Species			
Arctostaphylos auriculata	Mt. Diablo manzanita	--/--/1B.3	None: no suitable habitat present; would have been identifiable at time of survey. Nearest locality is a 1995 record from Black Diamond Mines Regional Park 8.0 km SE.
Atriplex depressa	brittlescale	--/--/1B.2	None: no suitable habitat present; nearest locality is a 1989 record from Deer Valley over 14 km to the SE.
Atriplex joaquinana	San Joaquin spearscale	--/--/1B.2	None: marginally suitable habitat present; nearest locality is a 1989 record from Deer Valley over 14 km to the SE.
Blepharizonia plumosa	big tarplant	--/--/1B.1	None: marginally suitable habitat present; nearest locality is a 1937 record from the center of Pittsburg 1.6 km ESE.
California macrophylla	round-leaved filaree	--/--/1B.1	None: no suitable undisturbed habitat present; nearest locality is a 2011 record from near the Delta View Golf Course 1.8 km to the S.
Cicuta maculate var. *bolanderi*	Bolander's water-hemlock	--/--/2B.1	None: no suitable habitat present; nearest locality is a 1999 record from W shoreline of Browns Isl. 2.6 km NE.
Cryptantha hooveri	Hoover's cryptantha	--/--/1A	None: no suitable habitat; presumed extinct. Nearest locality is a 1908 record from Antioch 9.3 km ESE.

Eriogonum truncatum	Mt. Diablo buckwheat	--/--/1B.1	None: no suitable habitat; presumed extinct. Nearest locality is a 1886 record from Antioch 9.3 km ESE.
Eschscholzia rhombipetala	diamond-petaled CA poppy	--/--/1B.1	None: no suitable habitat present; nearest locality is a 1889 record from Antioch 8.4 km ESE.
Helianthella castanea	Diablo helianthella	--/--/1B.2	None: no suitable habitat present; would have been identifiable during present survey. Nearest locality is a 2009 record from Black Diamond Mines Regional Park 8.5 km SSE.
Lathyrus jepsonii var. *jepsonii*	Delta tule pea	--/--/1B.2	None: no suitable habitat present; nearest locality is a 1978 record from the shoreline of Suisun Bay 2.3 km NW.
Madia radiata	showy golden madia	--/--/1B.1	None: marginally suitable habitat is present; nearest locality is a 1938 record from Markley Canyon 7.4 km SSE.
Malacothamnus hallii	Hall's bush-mallow	--/--/1B.2	None: no suitable habitat present; would have been identifiable at time of survey. Nearest locality is a 1931 record from Black Diamond Mines Regional Park 7.5 km SSE.
Navarretia nigelliformis ssp. *radians*	shining navarretia	--/--/1B.2	None: no suitable habitat present; nearest locality is a 2008 record from Contra Loma Regional Park 8.0 km SE.
Senecio aphanactis	chaparral ragwort	--/--/2B.2	None: no suitable habitat present; nearest locality is a 1933 record from Black Diamond Mines Regional Park 7.5 km SE.
Symphyotrichum lentum	Suisun Marsh aster	--/--/1B.2	None: no suitable habitat present; nearest locality is a 1991 record from the shoreline of Suisun Bay 2.6 km NE.

* Taxa recorded within 8 km (5 mi) of the project site, for which suitable habitat is present, or taxa of particular concern locally; see Appendix B for a complete list of all target species evaluated as part of this analysis

** Fed/State/CNPS - For an explanation of rarity codes, see Appendix C



Source: CNDB (2014)

Figure 7. Special-Status Plant Records in the Project Vicinity

definitions are given in CEQA.[47] Impacts on special-status animal species, as thusly defined, may qualify as significant pursuant to the guidelines of the CEQA.

A total of 49 special-status animal species have been recorded in the nine 7.5-minute USGS Contra Costa County quadrangles including and surrounding the project site USGS quadrangles surrounding the project site (CNDDB, 2015; USFWS, 2015). Based on the developed nature of the subject parcel and surroundings, soil types, existing habitats, and geographic location, the potential for occurrence of 32 of the target species can be ruled out entirely.

The potential exists for the occurrence on site of eight of the target species. These species, along with other target species that are of particular concern in the project vicinity are summarized in Table 3; the recorded locations for CTS and CRF are shown in Figure 8. In addition, the potential exists for migratory birds to nest on site in trees, shrubs and grasslands. A complete list of all special-status species evaluated as part of this analysis can be found in Appendix B. An explanation of all rarity status codes is provided in Appendix C. Special-status animal species which have a potential to occur on site are discussed in more detail below.

Federal/State-Listed, Proposed, Candidate, or Fully Protected Fish and Wildlife Species

California Red-Legged Frog

The California red-legged frog (hereafter referred to as CRF) was listed as Threatened by the USFWS on May 23, 1996 and is designated a California Species of Special Concern (CDFW, 2015c, d). A recovery plan was published for CRF on September 12, 2002 (USFWS, 2002).

The CRF is distributed throughout 26 counties in California, but is most abundant in the San Francisco Bay Area. Populations have become isolated in the Sierra Nevada, northern Coast, northern and southern Transverse and Peninsular Ranges (Jennings and Hayes 1994; Stebbins, 2003). The CRF predominately inhabits permanent water sources such as streams, lakes, marshes, natural and man-made ponds, and ephemeral drainages in valley bottoms and foothills up to 1500 m (4920 ft) in elevation (Jennings and Hayes, 1994; Bulger, et al., 2003; Stebbins, 2003). The species breeds between November and April in standing or slow moving water with emergent vegetation, such as cattails, tules or overhanging willows (Hayes and Jennings, 1988). Egg masses containing 2,000 to 5,000 eggs are attached to vegetation below the surface and hatch after 6 to 14 days (Storer, 1925; Jennings and Hayes, 1994). Larvae undergo metamorphosis 3½ to 7 months following hatching and reach sexual maturity two to three years of age (Jennings and Hayes, 1984 and 1994).

[47] §15380(d)

Table 3. Potentially Occurring Special-Status Animals from the Project Vicinity

Scientific Name	Common Name	Status**	Potential for Occurrence
Federally and/or State Listed Species			
Ambystoma californiense	CA tiger salamander	FT/ST/SSC	Possible but not expected: there are 17 records from within 8 km of the site. See text for discussion.
Apodemia mormo langei	Lange's metalmark butterfly	E/--/SA	None: no suitable habitat present. Nearest locality is a 2008 record from the Antioch Dunes, 7 km E.
Aquila chrysaetos	golden eagle	--/--/FP	Not expected: marginally suitable nesting opportunities in project vicinity; could forage on site. Nearest locality is a 2008 record from Mt. Diablo Creek, 7.4 km SW.
Branchinecta lynchi	vernal pool fairy shrimp	FT/--/SA	None: no suitable habitat present. Nearest locality is a 2003 record from South Antioch, 12 km SW.
Buteo swainsoni	Swainson's hawk	--/ST/SA	Nesting not expected – could forage on site. Nearest nesting locality is a 2012 record 12.9 km ESE.
Elanus leucurus	white-tailed kite	--/--/FP	Possible: suitable nesting habitat present on site and nearby. Nearest locality is a 1985 record from North Antioch, 6.6 km ESE. See text for discussion.
Laterallus jamaicensis coturniculus	California black rail	--/ST/FP	None: no suitable habitat present.
Masticophis lateralis euryxanthus	Alameda whipsnake	FT/ST/--	None: no suitable habitat present.
Oncorhynchus mykiss irideus	steelhead - Central Valley DPS	FT/--/SA	None: no suitable habitat present.
Rallus longirostris obsoletus	CA clapper rail	E/E/FP	None: no suitable habitat present.
Rana draytonii	CA red-legged frog	FT/--/SSC	Possible but not expected: there are nine records from within 8 km of the site. Potential movement corridor only. See text for discussion.
Reithrodontomys raviventris	salt-marsh harvest mouse	E/E/FP	None: no suitable habitat present.
Sternula antillarum browni	CA least tern	E/E/FP	None: no suitable habitat present.
Spirinchus thaleichthys	longfin smelt	FC/ST/SSC	None: no suitable habitat present.
Vulpes macrotis mutica	San Joaquin kit fox	FE/ST/--	None: no suitable habitat present.

Other Special-Status Species			
Agelaius tricolor	tricolored blackbird	--/--/SSC	None: no suitable habitat present. Known locally from a 1980 record near Martinez.
Antrozous pallidus	pallid bat	--/--/SSC	None: no suitable roosting habitat present. Known locally from five historic records between 1907 and 1942.
Athene cunicularia	burrowing owl	--/--/SSC	Possible: suitable habitat present along tributary to Willow Creek. Known locally from 17 records. Nearest locality is a 2005 record 4.2 km WSW. Not detected during present survey. See text for discussion.
Buteo regalis	ferruginous hawk	--/--/WL	None: does not breed in CA, but could forage on site. There is a 2006 winter foraging record 5.6 km SW.
Circus cyaneus	northern harrier	--/--/SSC	Possible: marginally suitable nesting habitat in grasslands on site. There are no nearby records in CNDDB. See text for discussion.
Emys marmorata	Pacific pond turtle	--/--/SSC	Possible but not expected: tributary to Willow Creek could facilitate movements between occupied habitat and the upper watershed. Nearest locality is a 2007 sighting from Willow Creek 1.0 km NE (Wood, pers. obs.) See text for discussion.
Geothlypis trichas sinuosa	saltmarsh common yellowthroat	--/--/SSC	None: no suitable habitat present. Nearest locality is a 2004 record 5.0 km NE.
Lasiurus blossevillii	western red bat	--/--/SSC	Possible: marginally suitable roost sites present. Known locally from a single non-specific 1998 record near Antioch. See text for discussion.
Lasiurus cinereus	hoary bat	--/--/SA	Possible: marginally suitable roost sites present. Known locally only from two non-specific 2001 records near Concord. See text for discussion.
Linderiella occidentalis	CA linderiella	--/--/SA	None: no suitable habitat present.
Melospiza melodia maxillaris	Suisun song sparrow	--/--/SSC	None: no suitable habitat present. Project site is situated within the area of a non-specific 1924 record (Occ. #39).
Nyctinomops macrotis	big free-tailed bat	--/--/SSC	None: no suitable maternal roost sites present. Known locally from a single 1979 record near Martinez.

Phrynosoma blainvillii	coast horned lizard	--/--/SSC	None: no suitable habitat present.
Taxidea taxus	American badger	--/--/SSC	None: site is too altered and heavily influenced by human activities. Known locally from three recent records in Deer Valley.

* Taxa recorded within 8 km (5 mi) of the project site, for which suitable habitat is present, or taxa of particular concern locally; see Appendix B for a complete list of all target species evaluated as part of this analysis

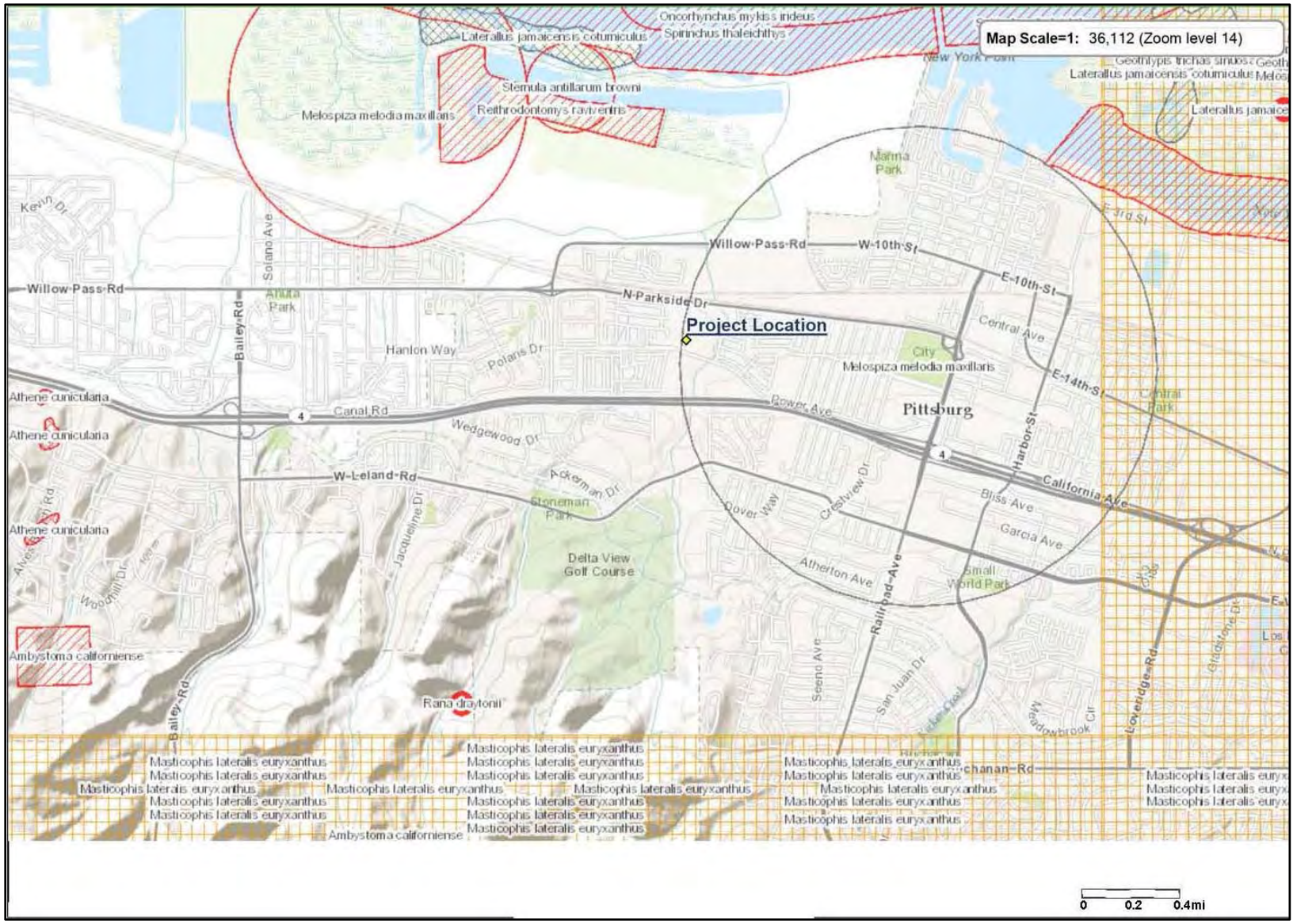
** Fed/State/CDFW - For an explanation of rarity codes, see Appendix C

Tatarian (2008) noted that a 57 percent of CRF fitted with radio transmitters in her Round Valley study area in eastern Contra Costa County stayed at their breeding pools, whereas 43% moved into adjacent upland habitat or to other aquatic sites. This study reported a peak of seasonal terrestrial movement in the fall months corresponding to 0.5 cm (0.2 in) of precipitation that tapered off into spring. Upland movement activities ranged from 1-71 m (3-233 ft), averaging 24.38 m (80 ft), and were associated with a variety of refugia including ground squirrel burrows at the bases of trees or rocks, logs, grass thatch, crevices, cow hoof prints, and a downed barn door; others were associated with upland sites lacking refugia (Tatarian, 2008). The majority of terrestrial movements lasted from 1 to 4 day; however, one female was reported to remain in upland habitat for 50 days (Tatarian, 2008). Uplands closer to aquatic sites were more often used and were more commonly associated with areas exhibiting higher object cover, e.g., small woody debris, rocks, and vegetative cover.

Critical Habitat: Critical Habitat was designated for CRF on April 13, 2006 and revisions to the critical habitat designation were proposed on September 16, 2008 and again on March 17, 2010 (USFWS, 2010). The project site is not located within designated or proposed critical habitat (USFWS, 2010) nor does it lie within the South and East San Francisco Bay Core Area (USFWS, 2002). The project would not impact habitat located within designated critical habitat.

Habitat Suitability and Occurrence Data: The project site is located north of the East San Francisco Bay Core Area but is in the larger Diablo Range and Salinas Valley Recovery Unit (USFWS, 2002). The adjacent PG&E right-of-way is mapped as suitable migration and aestivation habitat, as modeled in the East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan (HCP; Jones & Stokes, 2006).

Nine occurrences of CRF have been reported within 8 km (5 mi) of the project site (CNDDB, 2015). The nearest occurrence (Occ. #255) reported in 2000 from Keller Canyon approximately 3.4 km (2.1 mi) south-southwest of the site, comprised a single individual in created wetlands; two adult frogs were observed in 1998 (CNDDB,



Source: CNDB (2014)

Figure 8. Special-Status Animal Records in the Project Vicinity

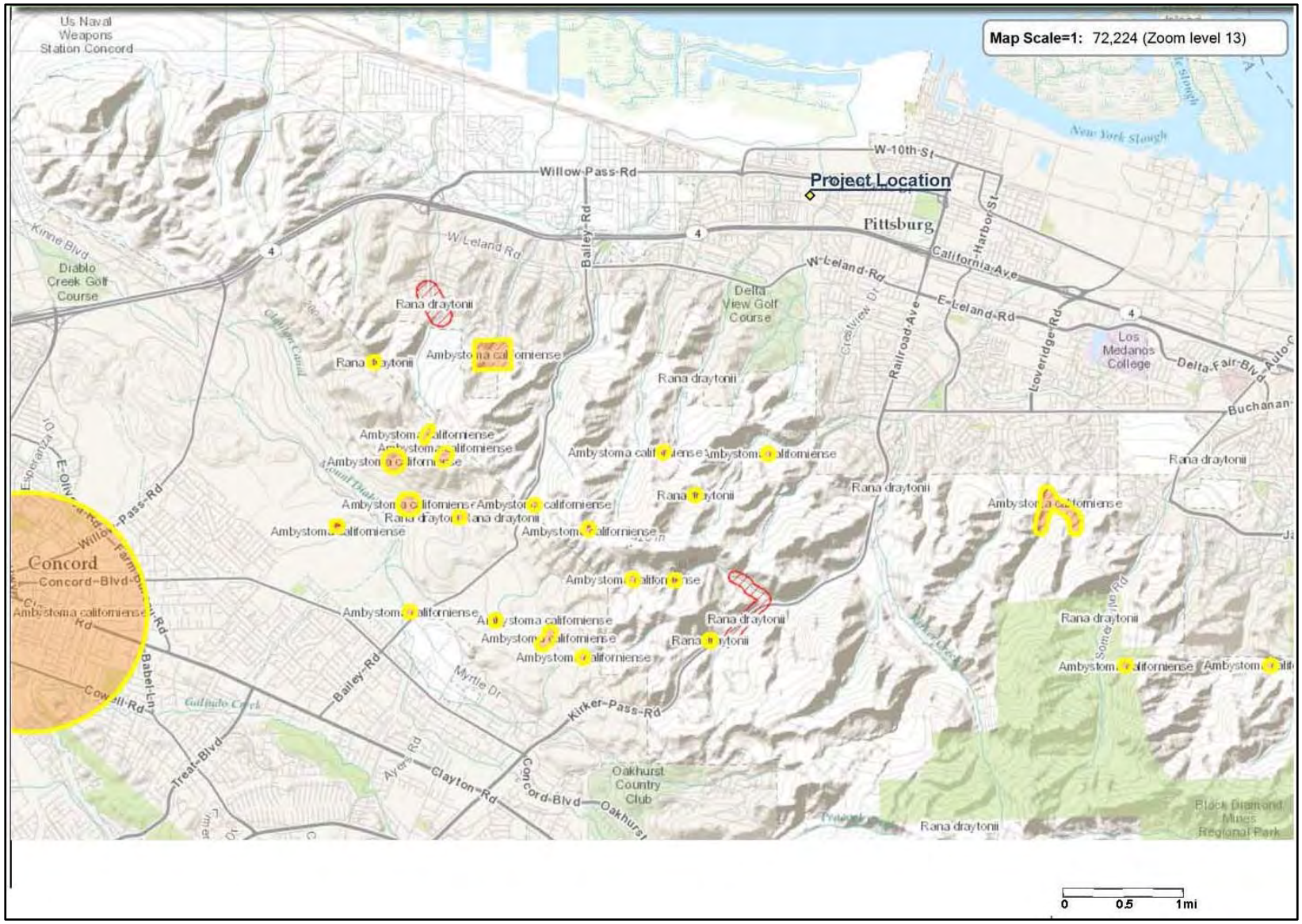
2015). Three additional recorded locations for CRF (Occ. #434, 42, 675) from the slopes south of State Route 4, 3.2-4.8 km (2-3 mi) to the west of Occ. #255. The species has not been recorded from the immediate vicinity of the project site and there is no suitable breeding habitat nearby. The nearest potential breeding habitat is approximately 1.6 km (1 mi) south of the project site (Figure 9).

The unnamed tributary to Willow Creek does not provide suitable cover to facilitate the movement of CRF. However, the tributary and surrounding seasonal wetlands and grasslands do provide potential cover and upland refugia for CRF. The storm channel at the western edge of the site does support a small amount of standing water, but it is not of sufficient depth to provide for the escape from predators or for breeding. The detention basin beyond the northwestern corner of the study area does not support ponded water outside of the rainy season.

The tributary to Willow Creek could function as a movement corridor for dispersing or migrating CRF from known breeding and non-breeding aquatic habitat located in the upper reaches of the watershed. However, given the lack of cover and plunge pools, and the presumed presence of an abundance of potential predators along the channel, such dispersals would be fraught with hazards for CRF individuals.

Despite the presence of a source population of CRF within 3.2 km (2 mi) of the project site, the likelihood of CRF moving across the project site is greatly reduced by the following conditions: 1) the lack of deep water ponds to provide refuge for migrating frog, 2) the highly developed nature of the surrounding area, 3) aquatic habitats downstream soon become saline and are therefore unsuitable for CRF, 4) the prevalence of homes and businesses adjacent to the stream channel which are expected to host and attract a variety of predators such as house and feral cats, raccoons, and Virginia possums.

Potential Project-Related Effects: Although the potential for occurrence of CRF on site at the time of construction is considered low, the potential nonetheless exists for the occurrence of transient CRF on site. If present during construction, direct mortality, injury and/or harassment of individuals could result. The CRF is a covered species under the HCP/NCCP. Impact avoidance, minimization and compensatory measures are warranted, as outlined in Section 5.3, below.



Source: CNDB (2014)

Figure 9. CRF and CTS Records in the Project Vicinity

California Tiger Salamander

Statewide populations of California tiger salamanders (hereafter referred to as CTS) were listed as Threatened by the USFWS on August 4, 2004.[50] There are three Distinct Population Segments (DPS) that receive protection under FESA. The Santa Barbara County and Sonoma County DPS, which are geographically isolated from the Central California DPS, were subsequently listed as Endangered by the USFWS on January 1, 2000 and July 22, 2002, respectively. [51] The Central California DPS is listed as Threatened. All populations of CTS statewide were listed as Threatened under CESA by the CDFW on March 20, 2010 (CDFW, 2015c, d).

The CTS is a large, stocky, terrestrial salamander with a broad, rounded snout. Adults are about 20.3 cm (8 in) long; females are usually shorter than 17.8 cm (7 in) long. The species has a black body and white to yellow spots and bars on a black background on the back and sides. The belly varies from almost uniform white or pale yellow to a variegated pattern of white or pale yellow and black. The CTS has small eyes, with black irises, protrude from their heads.

The Central California DPS is found in four regions of the State; (1) the Bay Area (central and southern Alameda, Santa Clara, western Stanislaus, western Merced, and the majority of San Benito counties); (2) the Central Valley (Yolo, Sacramento, Solano, eastern Contra Costa, northeast Alameda, San Joaquin, Stanislaus, Merced, and northwestern Madera counties); (3) the southern San Joaquin Valley (portions of Madera, central Fresno, and northern Tulare and Kings counties); and (4) the Central Coast Range (southern Santa Cruz, Monterey, northern San Luis Obispo, and portions of western San Benito, Fresno, and Kern counties. Most populations occur at elevations below 458 m (1,500 ft), but CTS has been recorded at elevations up to 1,373 m (4,500 ft).

The CTS inhabits lowland grasslands, oak savannah, and mixed woodland habitats, and requires vernal pools, seasonal ponds, or semi-permanent calm waters that pond water for a minimum of three to four months in duration for breeding and larval maturation, and adjacent upland habitat with small mammal burrows for aestivation (Storer, 1925; Barry and Shaffer, 1994; Stebbins, 2003).

Salamanders begin migrating to breeding sites following the onset of autumn rains typically in November, and have been documented traveling distances up to 1.6 km (1 mi) (Austin and Shaffer, 1992). Eggs are laid singly or in small clusters on the pond bottom or attached to individual strands of vegetation (Storer, 1925; Shaffer and Fisher, 1991; Barry and Shaffer, 1994; Jennings and Hayes, 1994). Metamorphosis occurs a minimum of ten weeks following hatching and young migrate in mass when

[50] 69 FR 47212 and USFWS (2004).

[51] 65 FR 3096, 67 FR 47726, and USFWS (2000, 2002).

temporary pools begin to dry in late spring or early summer (Anderson, 1968; Feaver, 1971; Jennings and Hayes, 1994; Stebbins, 2003). Juveniles and adults aestivate through the summer and fall typically in small mammal burrows, e. g., CA ground squirrels and pocket gopher (Shaffer, et al., 1993; Barry and Shaffer, 1994; Jennings and Hayes, 1994; Stebbins, 2003). The CTS is at risk due to loss of habitat from development of agriculture and grazing lands, habitat fragmentation, and introduction of predatory exotic species such as mosquitofish, bullfrogs, and Louisiana red swamp crayfish (Zeiner, et al., 1988; Shaffer, et al., 1993; and Jennings and Hayes, 1994).

Critical Habitat: Critical habitat for the central California population of CTS was designated on August 23, 2005[52]; no Recovery Unit has been developed for the species. The project would not impact habitat located within designated critical habitat.

Habitat Suitability and Occurrence Data: Although there is no suitable breeding habitat for CTS within or near the project site, the adjacent PG&E right-of-way is mapped as suitable migration and aestivation habitat, as modeled in the HCP (Jones & Stokes, 2006).
A total of 17 occurrences of CTS have been reported within 8 km (5 mi) of the project site (CNDDB, 2015). The nearest occurrence (Occ. #700) reported in 2000 from Keller Canyon approximately 3.7 km (2.3 mi) south of the site, comprised two larvae collected in a stock pond (CNDDB, 2015). Two additional locations for CTS (Occ. #382, 383) are recorded from the upper watershed draining directly through the project site. The species has not been recorded from the immediate vicinity of the project site and there is no suitable breeding habitat nearby. The nearest potential breeding habitat is approximately 1.6 km (1mi) south of the project site (Figure 9).

The unnamed tributary and adjacent wetlands and grasslands provide potential cover and upland refugia for CTS. The intermittent channel also functions as a potential movement corridor for dispersing or migrating CTS from known breeding and non-breeding aquatic habitat located in the upper reaches of the watershed.

Despite the fact that seven sightings of CTS population have been recorded within 6 km (3.7 mi) of the project site, the likelihood of CTS moving across the project site is virtually eliminated by scheduling construction during the dry season, a period when CTS would not be moving above ground. Although burrows for fossorial (i.e., burrowing) mammals are present within the study area; such burrows may be used by CTS during summer aestivation. However, the highly developed nature of the project vicinity, the fact that aquatic habitats downstream soon become saline and are therefore unsuitable for CTS, and the prevalence of homes and businesses adjacent to

[52] FR 70 49380 and USFWS (2005).

the stream channel which are expected to host and attract a variety of predators such as house and feral cats, raccoons, and Virginia possums diminish the likelihood that CTS would occur at the construction site.

Potential Project-Related Effects: Although the potential for occurrence of CTS on site at the time of construction is considered low, the potential nonetheless exists for the occurrence of transient CTS on site. If present during construction, direct mortality, injury and/or harassment of individuals could result. The CTS is a covered species under the HCP/NCCP. Impact avoidance, minimization and compensatory measures are warranted, as outlined in Section 5.3, below.

White-Tailed Kite

White-tailed kite (*Elanus leucurus*) is listed by the CDFW as a Fully Protected bird species; it is also protected under the MBTA and CFGC and is considered a migratory nongame bird of management concern by the USFWS (CDFW, 2015c). In the United States this species occurs in California, Texas and a disjunct group in Florida and has expanded its range into Washington and Oregon (Dunk, 1995). Generally, white-tailed kites are observed in low elevation grasslands, agricultural, wetland, oak-woodland or savannah habitats. The majority of their diet is made up of small mammals. This species nests in a wide variety of trees up to 50 m (164 ft) high, and, in some cases, shrubs as little as 3 m (9.8 ft) above the ground. Nests usually consist of platforms of small sticks, leaves, weed stalks, and similar materials lined with grass, hay or leaves. This species nests from February through August, with a peak in breeding occurring from late March through July.

Critical Habitat: White-tailed kite is not listed under FESA; as such, no critical habitat has been designated.

Habitat Suitability and Occurrence Data: Marginally suitable nesting habitat is present within the study area in the form of the riparian and eucalyptus trees along the western project boundary. Only a single record of nesting by the species has been reported from the nine USGS quadrangles surrounding the project site (CNDDB, 2015); this occurrence was a nest reported in 1985 from Antioch, approximately 6.6 km (4.1 mi) east southeast of the site.

Potential Project-Related Effects: Due to the potential for occurrence of white-tailed kite in or near the study area, the potential also exists for direct mortality, injury and/or harassment of individuals during construction. Impact avoidance, minimization and compensatory measures are warranted, as outlined in Section 5.3, below.

Other Sensitive and Locally Rare Wildlife Species

Pacific Pond Turtle

The Pacific pond turtle (hereafter referred to as PPT; formerly known as western pond turtle) is a California Species of Special Concern (CDFW, 2015c). It is the only fresh-water turtle native to greater California and is distributed along much of the western coast from the Puget Sound in Washington south to the Baja Peninsula, Mexico (Storer, 1925). The literature describes two subspecies of PPT; the northwestern pond turtle (*E. m. marmorata*) and the southwestern pond turtle (*E. m. pallida*). Overall, Pacific pond turtles are habitat generalists, and have been observed in slow-moving rivers and streams (e.g., in oxbows), lakes, reservoirs, permanent and ephemeral wetlands, stock ponds, and sewage treatment plants. They prefer aquatic habitat with refugia such as undercut banks and submerged vegetation (Holland, 1994), and require emergent basking sites such as mud banks, rocks, logs, and root wads to thermoregulate their body temperature (Holland, 1994; Bash, 1999). Pond turtles are omnivorous and feed on a variety of aquatic and terrestrial invertebrates, fish, amphibians and aquatic plants.

The PPT regularly utilizes upland terrestrial habitats, most often during the summer and winter, especially for oviposition (females), overwintering, seasonal terrestrial habitat use, and overland dispersal (Reese, 1996; Holland, 1994). Females have been reported ranging as far as 500 m (1640 ft) from a watercourse to find suitable nesting habitat (Reese and Welsh, 1997). Nest sites are most often situated on south or west-facing slopes, are sparsely vegetated with short grasses or forbs, and are scraped in sands or hard-packed, dry, silt or clay soils (Holland, 1994; Rathbun et al., 1992; Holte, 1998; Reese and Welsh, 1997). Pacific pond turtles exhibit high site fidelity, returning in sequential years to the same terrestrial site to nest or overwinter (Reese, 1996).

Females lay their clutch as early as late April in southern and central California to late July, although they predominantly lay in June and July. In the early morning or late afternoon, gravid females leave the water and move upland to nest (Holland, 1994). Natural incubation times vary, ranging from 80 to 100 days in California. In northern California and Oregon, hatchlings remaining the nest after hatching and overwinter, emerging in the spring. In southern and central California, those that don't overwinter emerge from the nest in the early fall (Holland, 1994).

Critical Habitat: No critical habitat has been designated for Pacific pond turtle.

Habitat Suitability and Occurrence Data: Pacific pond turtle has been observed in Willow Creek approximately 0.8 km (0.5 mi) north east of the project site (Wood, pers. obs., 2007). Two additional records (Occ. #144 and 145) have been reported from the shoreline of the San Joaquin River, less than 4.8 km (3 mi) east of the project (CNDDB, 2015. Marginally suitable breeding aquatic habitat is present on the banks of the

tributary to Willow Creek. Although not expected, the potential exists for PPT to disperse through the project site along the tributary to Willow Creek, as well as to lay eggs in burrows excavated in the channel banks.

Potential Project-Related Effects: Due to the potential for occurrence of PPT in the study area, the potential also exists for direct mortality, injury and/or harassment of individuals during construction. The PPT is a covered species under the HCP/NCCP. Impact avoidance, minimization and compensatory measures are warranted, as outlined in Section 5.3, below.

Burrowing Owl

The burrowing owl is a California Species of Special Concern and it is considered a bird species of conservation concern by the USFWS (CDFW 2015c). Like other passerines, it is also protected under the MBTA and CFGC, which prohibit the taking or destroying of any egg, bird or nest.

Burrowing owls range throughout the Central Valley, the inner and outer Coastal regions, portions of the San Francisco Bay Area, the southern California Coast from southern California to the Mexican Border, the Imperial Valley, and in portions of the desert and high desert habitats in southeastern and northeastern California. They require habitat with three basic attributes: open, well drained terrain; short, sparse vegetation; and underground burrows or burrow facsimiles. Throughout their range burrowing owls occupy grasslands, deserts, sagebrush scrub, agricultural areas (including pastures and untilled margins of cropland), earthen levees and berms, coastal uplands, urban vacant lots, and the margins of airports, golf courses, and roads (Haug, et al., 1993).

Burrowing owls rely on burrows excavated by fossorial (i.e., burrowing) mammals or reptiles, including prairie dogs, ground squirrels, badgers, skunks, armadillos, woodchucks, foxes, coyotes, and gopher tortoises (Karalus and Eckert, 1987). Where the number and availability of natural burrows is limited (for example, where burrows have been destroyed or ground squirrels eradicated), owls will occupy drainage culverts, cavities under piles of rubble, discarded pipe, and other tunnel like structures (Haug, et al., 1993). Like other owls, burrowing owls breed once each year in an extended reproductive period, during which most adults mate monogamously. Both sexes reach sexual maturity at one year of age. Clutch sizes vary, and the number of eggs laid is proportionate to prey abundance. The breeding season occurs from February 1 to August 31, but peaks between late April and July in most years.

Critical Habitat: Burrowing owl is not listed under FESA; as such, no critical habitat has been designated.

Habitat Suitability and Occurrence Data: Suitable nesting habitat is present in the grasslands on site as well as on the banks of the tributary to Willow Creek. Although no burrowing owls or their sign were observed, the presence of fossorial mammals in these areas indicates that suitable nesting habitat is present on site and nearby. Still, the high level human activity and limited foraging habitat nearby diminishes the likelihood of breeding by burrowing owl here. Four records of nesting by the species have been reported from within 8 km (5 mi) of the project site (CNDDB, 2015); the nearest record (Occ. #1153) was made in 2008 from along the railroad tracks, approximately 5 km (3.1 mi) to the east. The PG&E right-of-way is modeled as suitable habitat in the HCP (Jones & Stokes, 2006).

Potential Project-Related Effects: Although presence of burrowing owls was not noted during the present survey, suitable nesting habitat is present on site and the species could take up residence prior to the initiation of construction. If burrowing owls are present on site or in the immediate vicinity, direct mortality, injury and/or harassment of individuals during construction. Burrowing owl is a covered species under the HCP/NCCP. Impact avoidance, minimization and compensatory measures are warranted, as outlined in Section 5.3, below.

Northern Harrier

The northern harrier (*Circus cyaneus*) is a California Species of Special Concern (CDFW, 2015C) and like other raptors, it is also protected under the MBTA and CFGC, which prohibit the taking or destroying of any egg, bird or nest.

This species inhabits grasslands, scrub habitats and marshes. Breeding typically occurs in shrubby vegetation near marshes from March to July, although nesting in grassland areas undisturbed by cattle grazing has been documented at various locations, some of which are several miles from water. It feeds primarily on voles and other small mammals, birds, frogs and insects. The species can be locally abundant where appropriate habitat exists but has decreased in numbers due to conversion of marsh habitat for human uses. Populations in the San Francisco Bay Area include migrants and wintering individuals from approximately September through March.

Critical Habitat: Northern harrier is not listed under FESA; as such, no critical habitat has been designated.

Habitat Suitability and Occurrence Data: Marginally suitable breeding habitat is present in the PG&E right-of-way through which the project crosses. The species has not been recorded from within 8 km (5 mi) of the project (CNDDB, 2015).

Potential Project-Related Effects: Although presence of northern harrier was not noted during the present survey, suitable nesting habitat is present on site and the species could take up residence prior to the initiation of construction. If northern harriers are

nesting on site or in the immediate vicinity, direct mortality, injury and/or harassment of individuals during construction. Impact avoidance and minimization measures are warranted, as outlined in Section 5.3, below.

Special-Status Bat Species

Two special-status bat species are considered to have a potential to occur within the project site.

Western red bat (*Lasiurus blossevillii*) is a California Species of Special Concern (CDFW, 2015c). It is also listed as Sensitive by the U.S. Forest Service (USFS), and is considered by the WBWG to be a high priority for research and conservation actions. The western red bat highly migratory and has a broad distribution across western North America, and ranging through Mexico, Central America, to Argentina and Chile. It is a mostly solitary species, although they migrate in groups and forage in close association with one another in the summer. Western red bats are typically roost in the foliage of trees or shrubs, although roosting in caves has been observed. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores). Roost sites are generally hidden from view from all directions except below; lack obstruction beneath, allowing the bat to drop downward for flight; lack lower perches that would allow visibility by predators; have dark ground cover to minimize solar reflection; have nearby vegetation to reduce wind and dust; and are generally located on the south or southwest side of a tree. Western red bats mate in late summer and early fall; females are pregnant in the spring.

Hoary bat (*Lasiurus cinereus*) is included on California's list of Special Animals (CDFW, 2015C) and is considered by the WBWG to be of medium priority for research and conservation actions. The hoary bat is thought to be highly migratory, although migration routes have not been determined. The species occurs from northern Canada southward to at least Guatemala, and from Brazil to Argentina and Chile. It is a mostly solitary species, roosting in the foliage of conifers and deciduous trees in forested habitats; roosting in caves has also been reported. Hoary bats typically roost in trees at the edge of a clearing, near the ends of branches, 3-12 m (9.8-39 ft) above the ground (Bolster, 2005). The species probably mate in the fall; birth of young occurs May through July.

Critical Habitat: Neither of these bat species is listed under FESA; as such, no critical habitat has been designated.

Habitat Suitability and Occurrence Data: Marginally suitable roosting habitat is present within the study area in the form of the riparian and eucalyptus trees along the western edge of the site. The likelihood of these species occurring within or near the

project boundaries is low. There are no recent records of these species from the project vicinity other than a non-specific sighting of western red bat from Antioch in 1998 (CNDDB, 2015).

Potential Project-Related Effects: Although presence of western red bat and hoary bat is considered unlikely, suitable roosting habitat is present on site. If special-status bats were present on site or in the immediate vicinity at the time of construction, direct mortality, injury and/or harassment of individuals during construction. Impact avoidance and minimization measures are warranted, as outlined in Section 5.3, below.

Migratory Birds

In addition to the specific target species evaluated above, the study area supports suitable nesting habitat for migratory raptors (i.e., birds of prey) and passerines (i.e., perching birds). Migratory birds are protected under the MBTA and MBTRA. Under the MBTA it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Bird species covered under the MBTA are summarized by the USFWS (2013). Certain other migratory birds receive protection under the BGEPA and CFGC.

The project site supports suitable nesting habitat for numerous species of migratory birds. Based on the amount of vegetative cover on site, including grasslands, wetlands, and riparian habitats, there is a high potential for the utilization of these habitat for breeding by such birds. Site clearing activities could result in a take of migratory birds. In addition, construction-related disturbances during the nesting season could result in nest abandonment and mortality of young, which would be a significant adverse effect pursuant to CEQA.

Impact avoidance and minimization measures are warranted, as outlined in Section 5.3, below.

5.0 DISCUSSION

Although highly modified from its natural condition as a result of historic land uses and development, the subject parcel supports an intermittent stream course, an artificial stormwater channel, riparian woodland, and a mosaic of perennial herbaceous wetlands. Impacts to these features are regulated under federal, State, and County laws and policies.

As outlined in Section 1.1, the proposed activity would require construction within two drainage courses, the removal of native riparian trees, and the excavation of a

new channel across a perennial wetland on a nearly level field. Permanent direct and indirect impacts on special-status plant associations would result.

Project implementation is not expected to result in any significant adverse impacts on special-status plant species. No further studies are warranted.

Although no special-status animal species were detected within the study area and none have been recorded on site, considering the site's proximity to known records of special-status species, the potential exists for numerous such species to occur on site. As summarized in Table 3, two federally or State-listed animal species (CA red-legged frog and CA tiger salamander) are known to occur in the project vicinity, and there is a low potential for dispersing individuals to occur on site. In addition, and six other special-status animal species (white-tailed kite, Pacific pond turtle, burrowing owl, northern harrier, western red bat, and hoary bat) and numerous species of migratory birds could occur on site at the time of construction.

Pursuant to CEQA guidelines, potentially significant adverse effects on regulated biological resources would result from project implementation. These impacts, along with measures to avoid, minimize or compensate for unavoidable or potential impacts are discussed below.

5.1 Special-status Natural Communities

Two special-status natural communities are present within the study area. These include Arroyo Willow Thicket Alliance and Creeping Rye Grass Turfs. Although not classified as special-status natural communities, *per se*, three additional plant associations would be regarded as having special-status because they meet the federal definition of wetlands. These include Salt Grass Flat, Baltic Rush Marsh, and Ruderal Seasonal Wetland. Impacts to these habitats would be regarded as significant under CEQA guidelines.

In addition, the unnamed tributary to Willow Creek and the stormwater channel on the western edge of the study area are presumed to fall under federal and State jurisdiction. Pursuant to the CWA, the USACE would exert regulatory authority over wetlands and that portion of both channels falling between the limits of the OHWM. Pursuant to the CFGC, the CDFW would exert regulatory authority that portion of both channels between the tops of bank as well as the outward limits of the associated riparian habitat. Impacts to these features are regulated under the CWA and CFGC.

A map showing the expected limits of jurisdiction is provided in Appendix D.

Implications for Proposed Project: Waters of the U.S./Waters of the State

The proposed activity would result in significant impacts on waters of the U.S. and waters of the State, including wetlands and riparian habitat. Significant impacts include the placement of temporary and permanent fill into the water course to facilitate its rerouting into a buried culvert and open channel segment, temporary dewatering of the western storm channel, the construction of bank armoring, excavation in wetlands, and removal of riparian habitat. Such impacts would be regulated under federal and State law and would require prior authorization from federal, State and local regulatory agencies. Impacts on the water courses would be considered significant under CEQA guidelines.

Avoidance/Minimization/Mitigation Measures: In order to avoid, minimize and compensate for unavoidable impacts on wetlands, riparian habitat and other waters of the U.S./waters of the State, the following measures should be implemented:

1) The project has been designed in such a way as to minimize direct and indirect impacts on regulated aquatic features. The preliminary concept was to cut an open channel across the utility corridor permitting direct diversion of storm flows from the storm drain to the tributary to Willow Creek. Such a design would truncate the stormwater sheet flow directed onto the field and which sustains the perennial wetlands there. The hydrologic connection to as much as 0.3 ha (0.75 ac) of wetlands would be have been severed, leading to their conversion to upland grasslands. The redesigned project avoids these wetlands entirely.

2) Prior to construction, the project proponent will need to secure authorization from the USACE, CDFW and RWQCB in conformance to the CWA and LSAP.

3) A copy of this report should be submitted to the USACE, CDFW and RWQCB in support of the permit application process. Work may not proceed until authorization has been received from these agencies.

4) Coordination with the East Contra Costa County Habitat Conservancy is also required. Participation in the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP; Jones and Stokes, 2006) is expected to satisfy the requirements of the regulatory agencies for compensatory mitigation for unavoidable impacts on stream channels, wetlands and riparian habitat. A copy of the HCP/NCCP Planning Survey Report should be included with the submittals to each agency.

5) Per the terms of the adopted HCP/NCCP, a wetland mitigation fee may be paid in-lieu of habitat restoration *in situ*. If accepted by the regulatory agencies, no additional mitigation for wetland impacts is required. The payment of in-lieu fees must be made prior to issuance of a grading permit. If a grading permit is not required, fees must be paid prior to issuance of the first construction permit.

6) For all work within and adjacent to stream channels and ditches, best management practices (BMPs) must be incorporated into the project design to prevent erosion, sedimentation, and the release of other contaminants into the water way.

Additional measures may be outlined in the conditions of the permits issued by the USACE, CDFW and RWQCB. All permit conditions must be conformed to.

5.2 Special-Status Plant Species

No federally listed, State-listed, or other special-status plant species were detected and none is expected to occur within the project site. Project implementation would not result in any significant impacts to special-status species. No further surveys, mitigation measures, or impact avoidance/minimization measures are required.

5.3 Special-Status Animal Species

No special-status animal species have been detected within the study area, or have been recorded on site (CNDDB, 2015). However, based on an evaluation of existing habitats on site, connectivity to suitable habitat, and proximity to recorded localities, the potential exists for construction activities to adversely affect as many as eight special-status wildlife species, as well as migratory birds.

Construction could result in direct and indirect effects to special-status wildlife species through direct mortality, injury or harassment of individuals and the loss of suitable breeding, non-breeding aquatic, roosting, foraging, and dispersal habitat and/or daily/seasonal movement corridors.
Impacts to special-status species and migratory birds would be deemed significant pursuant to CEQA guidelines. Impacts to these species can be appropriately mitigated or avoided with the implementation of the following measures. These measures should serve to reduce impacts to a less-than-significant level, in conformance with CEQA.

Implications for Future Development: Impacts on Special-Status Amphibians and Reptiles

The presence of known populations of CA tiger salamander (CTS), CA red-legged frog (CRF), and Pacific pond turtle (PPT) has been recorded within 6 km (3.7 mi), 1.6 km (1 mi), and 0.8 km (0.5 mi) respectively. Although the occurrence of these species is considered unlikely, the lack of significant barriers to movement between known source populations and the project site means that the potential exists for these species to move into harm's way prior to or during construction.

Direct and indirect impacts to the CTS, CRF and PPT would be considered significant under CEQA guidelines.

Avoidance/Minimization/Mitigation Measures: Although the occurrence on site of CTS, CRF, and PPT is considered unlikely, construction activities in and adjacent to the channels could result in a take. The following measures should be implemented:

1) Participation in the HCP/NCCP. The City should participate in the HCP/NCCP. Participation in the HCP/NCCP would provide the City with incidental take coverage for CTS, CRF, and PPT. Under the HCP/NCCP, no preconstruction surveys are required.

2) Seasonal Avoidance. Work should be limited to the dry season, from April 15 to October 15.

3) Minimize Nighttime Work. Nighttime construction should be restricted to avoid effects on nocturnally active species such as CRF.

4) Onsite Construction Personnel Education Program. Before commencement of construction activities, a qualified biologist should conduct an environmental awareness program for all construction personnel. At a minimum the training should include a description of special-status species that could be encountered, their habitats, regulatory status, protective measures, work boundaries, lines of communication, reporting requirements, and the implications of violations of applicable laws.

5) Wildlife Exclusion Fencing. Prior to the start of construction, wildlife exclusion fencing (WEF)[53] should be installed to isolate the work area from any habitats potentially supporting special-status animals or through which such species may move. The final project plans should indicate where and how the WEF is to be installed. The bid solicitation package special provisions should provide further instructions to the contractor about acceptable fencing material. The fencing should remain throughout the duration of the work activities, be regularly inspected and properly maintained by the contractor. Fencing and stakes shall be completely removed following project completion.

6) Preconstruction Surveys. Under the HCP/NCCP, preconstruction survey for CTS and CRF are not required. A preconstruction survey for PPT will be conducted immediately prior to vegetation clearing and construction activities within the both channels.

7) Best Management Practices (BMPs). Prior to the initiation of work Best Management Practices (BMPs) should be in place to prevent the release of any pollutants or sediment into the creek, storm drains, or tributaries; all BMPs

[53] Wildlife Exclusion Fencing should provide a barrier for terrestrial wildlife gaining access to the project work areas. The fencing may vary to meet the needs of a particular species, but should be buried and/or backfilled to prevent animals passing under the fence and should be high enough to deter reptiles and amphibian or small mammals from climbing or jumping over the fence. Acceptable fencing materials including Animex® wildlife exclusion fencing, ERTEC E-Fence™ (Ertec Environmental Systems LLC), plywood, corrugated metal, and silt fencing .

should be properly maintained. Leaks, drips, and spills of hydraulic fluid, oil, or fuel from construction equipment should be promptly cleaned up to prevent contamination of water ways. All workers should be properly trained regarding the importance of preventing and cleaning up spills of contaminants. Protective measures should include, at a minimum:

a) No discharge of pollutants from vehicle and equipment cleaning should be allowed into any storm drains or watercourses.
b) Spill containment kits should be maintained onsite at all times during construction operations and/or staging or fueling of equipment.
c) Coir rolls or straw wattles should be installed along or at the base of slopes during construction to capture sediment.

8) Erosion Control. Protection of graded areas from erosion using a combination of silt fences, fiber rolls along toes of slopes or along edges of designated staging areas, and erosion control netting (such as jute or coir) as appropriate on sloped areas.

9) Construction Site Restrictions. The following site restrictions should be implemented to avoid adversely affecting sensitive habitats and harm or harassment to listed species:

a) Any fill material should be certified to be non-toxic and weed free.
b) All food and food-related trash items should be enclosed in sealed trash containers and removed completely from the site at the end of each day.
c) No pets from project personnel should be allowed anywhere on the project site during construction.
d) No firearms should be allowed on the project site except for those carried by authorized security personnel, or local, State or Federal law enforcement officials.
e) All equipment should be maintained such that there are no leaks of automotive fluids such as gasoline, oils or solvents and a Spill Response Plan should be prepared. Hazardous materials such as fuels, oils, solvents, *etc.* should be stored in sealable containers in a designated location that is isolated from wetlands and aquatic habitats.
f) Servicing of vehicles and construction equipment including fueling, cleaning, and maintenance should occur only at sites isolated from any aquatic habitat unless separated by topographic or drainage barrier or unless it is an already existing gas station. Staging areas may occur closer to the project activities as required.

10. Proper Use of Erosion Control Devices. Plastic mono-filament netting (e.g., that used with erosion control matting) or similar material should not be used within the action area; wildlife can become entangled or trapped such non-biodegradable materials. Acceptable substitutes include coconut coir matting, tackified hydroseeding, blown straw, or other organic mulching material.

Implications for Future Development: Impacts on Special-Status and Migratory Bird Species

Within the study area, trees, shrubs, vines, and grasslands provide suitable nesting habitat for three special-status bird species (white-tailed kite, burrowing owl, and northern harrier) as well as many other migratory bird species. Ground disturbing activities (e.g., grubbing, grading, trenching, and tree removal or pruning) could result in direct or indirect impacts to nesting birds by causing the destruction or abandonment of occupied nests. Direct and indirect impacts to special-status and migratory bird species would be considered significant under CEQA guidelines.

Avoidance/Minimization/Mitigation Measures – Western Burrowing Owl: In order to avoid impacts to western burrowing owl during project implementation, the measures outlined below should be implemented.

1) Prior to the initation of any ground-disturbing activities (i.e., site clearing, disking, grading, etc.), an assessment of habitats on site for burrowing owl should be performed by a qualified biologist. The preconstruction survey should be conducted at least 30 days prior to the beginning of work and should conform to the most recent survey protocol (e.g., CBOC 1997).
2) If there are no suitable burrowing sites on site or within 153 m (500 ft) of the limits of work, site clearing or grading may proceed.
3) If suitable burrows are detected during the breeding season (February 1 through August 31), focused surveys, conforming to published protocol (CBOC, 1997), should be conducted to determine the presence or absence of burrowing owl. To avoid added costs of having to repeat survey work, focused surveys should be delayed until the project is closer to implementation, generally no more than 30 days prior to grading or site clearing. Focused surveys consist of four separate surveys to observe each burrow, conducted over four days.
4) If occupied burrowing owl nest sites are detected, work may not proceed. The taking of burrowing owls or occupied nests is prohibited under CFGC.[54] Nest sites must be flagged and protected by a designated disturbance-free buffer zone of at least 76 m (250 ft). Relocation (i.e., passive exclusion) of burrowing owls is only permitted during the non-breeding season (September 1 through January 31), and in consultation with CDFW. Owls should be excluded from burrows in the immediate impact zone and within a 160-foot buffer zone by installing one-way doors in burrow entrances. Burrow doors should be in place for 48 hours prior to the initiation of grading.

[54] CFGC §§3503, 3503.5 and 3800

Avoidance/Minimization/Mitigation Measures – White-tailed Kite, Northern Harrier and Other Migratory Birds: In order to avoid impacts to special-status and other migratory bird species during project implementation, the measures outlined below should be implemented.

1) The removal of trees and shrubs should be minimized to the extent practicable.
2) If ground-disturbing activities (i.e., site clearing, disking, grading, etc.) can be performed outside of the nesting season (i.e., between September 1 and January 31), no surveys additional surveys are warranted.
3) If ground disturbing activities are scheduled to commence during the breeding season (i.e., between February 1 and August 31), preconstruction surveys should be conducted by a qualified biologist within the 76 m (250 ft) radius of the project footprint no more than two weeks prior to commencing with ground-disturbing activities.
4) If no active nests are found, no further measures are necessary.
5) If active nests (i.e. nests with eggs or young birds present) are found, a no-disturbance buffer zone should be established at a distance sufficient to minimize disruption of breeding based on the nest location, topography, cover, the specie's tolerance to disturbance, and the type/duration of potential disturbance. No work should occur within the non-disturbance buffers until the young birds have fledged. The size of the buffer zone should be determined by the project biologist; typically non-disturbance buffer zones are 15 m (50 ft) for passerines and 92 m (300 ft) for raptors.
6) If work must be performed during the breeding season and within the designated buffer zone, a qualified biologist should monitor the work site and the nest to determine if work activities are causing substantial stress on the breeding pair. If it is determined that project activities threaten the successful breeding of the pair, work should cease immediately.
7) If project activities result in the abandonment of the occupied nest of a migratory or special-status bird, the CDFW and/or the USFWS Division of Migratory Bird Management should be contacted for further guidance.

Implications for Future Development: Impacts on Special-Status Bat Species

Although not observed during any surveys, suitable roosting habitat is present within the study area for two special-status bat species the western red bat and hoary bat. Roosting opportunities for bats are somewhat limited and maternity roosts are not likely to be present within the study area. Nonetheless, the mature native riparian and ornamental trees could support roosting by bats.

The proposed project would require the removal and/or pruning of mature trees. If present, the bat roosts could be inadvertently destroyed. In addition, construction

activities in the vicinity of a maternity roost could result in roost abandonment and mortality of young. The destruction of the roosts of special-status bat species or disturbance of maternity roosting would be a violation of the CFGC and would be considered a significant impact pursuant to CEQA.

Avoidance/Minimization/Mitigation Measures – Special-status Bat Species: In order to avoid impacts to special-status bat species during project implementation, the measures outlined below should be implemented.

1) No more than two weeks prior to the cutting or pruning of any trees, or the initiation of site clearing, a preconstruction survey should be performed by a qualified biologist. The biologist should inspect all suitable bat roosting habitat, including snags, rotten stumps, mature trees with broken limbs, exfoliating bark, and dense foliage, within and adjacent to the limits of work. If no sign of occupation by bats is observed, work may proceed. If site clearing or tree cutting is postponed for more than two weeks, the inspection should be repeated.
2) If evidence of potential roosting by bats is detected, the CDFW should be consulted regarding appropriate protective measures. At a minimum, to avoid direct impacts on special-status bats, the measures outlined below should be followed before removing or trimming any trees suspected of supporting an active roost:
    - If a tree provides potentially suitable roosting habitat, but bats are not present, the project biologist may exclude bats by sealing cavities, pruning limbs, or removing the entire tree. Trees and snags with cavities or loose bark that exhibit evidence of use by bats may be scheduled for humane bat exclusion and eviction, conducted during appropriate seasons and supervised by the bat biologist.
    - If the bat biologist determines or presumes bats are present, the bat biologist will exclude the bats from suitable tree cavities by installing one-way exclusion devices. After the bats vacate the cavities, the bat biologist will plug the cavities or remove the limbs. The construction contractor will only remove trees after the bat biologist verifies that the exclusion methods have successfully prevented bats from returning, usually in seven to 10 days. To avoid impacts on non-volant bats, the biologist will only conduct bat exclusion and eviction.

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APPENDIX A. SITE PHOTOGRAPHS

Site photographs, April 17, 2014, November 17, 2014, and January 20-21, 2015

View of tributary to Willow Creek, E end of alignment, looking S (1/20/15)

View of tributary to Willow Creek, E end of alignment, looking N (1/20/15)

View of channel bottom of tributary to Willow Creek, looking S (1/20/15)

View from E end of alignment, looking W (1/20/15)

View from middle end of alignment, looking W (1/20/15)

View from middle end of alignment, looking E(1/20/15)

View from W end of alignment, looking E(1/21/15)

View of future basin outfall location, looking N (1/21/15)

View of future basin outfall location, looking W (1/21/15)

View of drainage inlet into detention basin from future outfall, looking S (1/21/15)

Culvert outfall at S end of study area, looking S (4/17/14)

Surface drainage below culverts, looking N (11/17/14)

Baltic rush marsh, S end of wetland area, looking N (4/17/14)

Baltic rush marsh, N end of wetland area, looking S (4/17/14)

Creeping rye grass turf, spring growth (4/17/14)

Creeping rye grass turf, fall growth (11/17/14)

APPENDIX B. DATABASE PRINT-OUTS FOR SPECIAL-STATUS SPECIES

California Natural Diversity Database (2015)
USFWS Database (2015)
California Native Plant Society (2015)

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: County is (Contra Costa) and Quad is (Antioch North (3812117) or Antioch South (3712187) or Birds Landing (3812127) or Clayton (3712188) or Denverton (3812128) or Fairfield South (3812221) or Honker Bay (3812118) or Vine Hill (3812211) or Walnut Creek (3712281))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	None	G2G3	S1S2	SSC
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	SSC
Amsinckia grandiflora large-flowered fiddleneck	PDBOR01050	Endangered	Endangered	G1	S1	1B.1
Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S2	
Anniella pulchra pulchra silvery legless lizard	ARACC01012	None	None	G3G4T3T4Q	S3	SSC
Anomobryum julaceum slender silver moss	NBMUS80010	None	None	G4G5	S2	4.2
Anthicus antiochensis Antioch Dunes anthicid beetle	IICOL49020	None	None	G1	S1	
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Apodemia mormo langei Lange's metalmark butterfly	IILEPH7012	Endangered	None	G5T1	S1	
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G2G3	S1	SSC
Arctostaphylos auriculata Mt. Diablo manzanita	PDERI04040	None	None	G2	S2	1B.3
Arctostaphylos manzanita ssp. laevigata Contra Costa manzanita	PDERI04273	None	None	G5T2	S2	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
Blepharizonia plumosa big tarplant	PDAST1C011	None	None	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
California macrophylla round-leaved filaree	PDGER01070	None	None	G3?	S3?	1B.2
Callophrys mossii bayensis San Bruno elfin butterfly	IILEPE2202	Endangered	None	G4T1	S1	
Calochortus pulchellus Mt. Diablo fairy-lantern	PMLIL0D160	None	None	G2	S2	1B.2
Campanula exigua chaparral harebell	PDCAM020A0	None	None	G2	S2	1B.2
Centromadia parryi ssp. congdonii Congdon's tarplant	PDAST4R0P1	None	None	G3T2	S2	1B.1
Chloropyron molle ssp. molle soft salty bird's-beak	PDSCR0J0D2	Endangered	Rare	G2T1	S1	1B.2
Cicuta maculata var. bolanderi Bolander's water-hemlock	PDAPI0M051	None	None	G5T3T4	S2	2B.1
Coastal Brackish Marsh Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
Coelus gracilis San Joaquin dune beetle	IICOL4A020	None	None	G1	S1	
Cordylanthus nidularius Mt. Diablo bird's-beak	PDSCR0J0F0	None	Rare	G1	S1	1B.1
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	Candidate Threatened	G3G4	S2	SSC
Cryptantha hooveri Hoover's cryptantha	PDBOR0A190	None	None	GH	SH	1A
Delphinium californicum ssp. interius Hospital Canyon larkspur	PDRAN0B0A2	None	None	G3T3	S3	1B.2
Dipodomys heermanni berkeleyensis Berkeley kangaroo rat	AMAFD03061	None	None	G3G4T1	S1	
Efferia antiochi Antioch efferian robberfly	IIDIP07010	None	None	G1G2	S1S2	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eriastrum ertterae Lime Ridge eriastrum	PDPLM030F0	None	None	G1	S1	1B.1
Eriogonum nudum var. psychicola Antioch Dunes buckwheat	PDPGN0849Q	None	None	G5T1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Eriogonum truncatum Mt. Diablo buckwheat	PDPGN085Z0	None	None	G2	S2	1B.1
Erysimum capitatum var. angustatum Contra Costa wallflower	PDBRA16052	Endangered	Endangered	G5T1	S1	1B.1
Eschscholzia rhombipetala diamond-petaled California poppy	PDPAP0A0D0	None	None	G1	S1	1B.1
Eucerceris ruficeps redheaded sphecid wasp	IIHYM18010	None	None	G1G3	S1S2	
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Geothlypis trichas sinuosa saltmarsh common yellowthroat	ABPBX1201A	None	None	G5T3	S3	SSC
Grimmia torenii Toren's grimmia	NBMUS32330	None	None	G2	S2	1B.3
Helianthella castanea Diablo helianthella	PDAST4M020	None	None	G2	S2	1B.2
Helminthoglypta nickliniana bridgesi Bridges' coast range shoulderband	IMGASC2362	None	None	G3T1	S1	
Hesperolinon breweri Brewer's western flax	PDLIN01030	None	None	G2?	S2?	1B.2
Idiostatus middlekauffi Middlekauff's shieldback katydid	IIORT31010	None	None	G1G2	S1	
Isocoma arguta Carquinez goldenbush	PDAST57050	None	None	G1	S1	1B.1
Lasiurus blossevillii western red bat	AMACC05060	None	None	G5	S3	SSC
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Lathyrus jepsonii var. jepsonii Delta tule pea	PDFAB250D2	None	None	G5T2	S2	1B.2
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G3	S2S3	
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Limosella australis Delta mudwort	PDSCR10050	None	None	G4G5	S2	2B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Lytta molesta molestan blister beetle	IICOL4C030	None	None	G2	S2	
Madia radiata showy golden madia	PDAST650E0	None	None	G2	S2	1B.1
Malacothamnus hallii Hall's bush-mallow	PDMAL0Q0F0	None	None	G2	S2	1B.2
Masticophis lateralis euryxanthus Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
Melospiza melodia song sparrow ("Modesto" population)	ABPBXA3010	None	None	G5	S3?	SSC
Melospiza melodia maxillaris Suisun song sparrow	ABPBXA301K	None	None	G5T3	S3	SSC
Metapogon hurdi Hurd's metapogon robberfly	IIDIP08010	None	None	G1G3	S1S3	
Monolopia gracilens woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2
Myrmosula pacifica Antioch multilid wasp	IIHYM15010	None	None	GH	SH	
Navarretia gowenii Lime Ridge navarretia	PDPLM0C120	None	None	G1	S1	1B.1
Navarretia nigelliformis ssp. radians shining navarretia	PDPLM0C0J2	None	None	G4T2	S2	1B.2
Nyctinomops macrotis big free-tailed bat	AMACD04020	None	None	G5	S3	SSC
Oenothera deltoides ssp. howellii Antioch Dunes evening-primrose	PDONA0C0B4	Endangered	Endangered	G5T1	S1	1B.1
Oncorhynchus mykiss irideus steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Perdita scitula antiochensis Antioch andrenid bee	IIHYM01031	None	None	G1T1	S1	
Perognathus inornatus San Joaquin Pocket Mouse	AMAFD01060	None	None	G2G3	S2S3	
Phacelia phacelioides Mt. Diablo phacelia	PDHYD0C3Q0	None	None	G1	S1	1B.2
Philanthus nasalis Antioch specid wasp	IIHYM20010	None	None	G1	S1	
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Rallus longirostris obsoletus California clapper rail	ABNME05016	Endangered	Endangered	G5T1	S1	FP

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
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Reithrodontomys raviventris salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S1S2	FP
Sanicula saxatilis rock sanicle	PDAPI1Z0H0	None	Rare	G2	S2	1B.2
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3?	S2	2B.2
Serpentine Bunchgrass Serpentine Bunchgrass	CTT42130CA	None	None	G2	S2.2	
Sphecodogastra antiochensis Antioch Dunes halcitid bee	IIHYM78010	None	None	G1	S1	
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Stabilized Interior Dunes Stabilized Interior Dunes	CTT23100CA	None	None	G1	S1.1	
Sternula antillarum browni California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
Streptanthus albidus ssp. peramoenus most beautiful jewelflower	PDBRA2G012	None	None	G2T2	S2	1B.2
Streptanthus hispidus Mt. Diablo jewelflower	PDBRA2G0M0	None	None	G1	S1	1B.3
Stuckenia filiformis ssp. alpina slender-leaved pondweed	PMPOT03091	None	None	G5T5	S3	2B.2
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis gigas giant garter snake	ARADB36150	Threatened	Threatened	G2	S2	
Triquetrella californica coastal triquetrella	NBMUS7S010	None	None	G2	S2	1B.2
Tropidocarpum capparideum caper-fruited tropidocarpum	PDBRA2R010	None	None	G1	S1	1B.1
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3
Vulpes macrotis mutica San Joaquin kit fox	AMAJA03041	Endangered	Threatened	G4T2	S2	

Record Count: 101

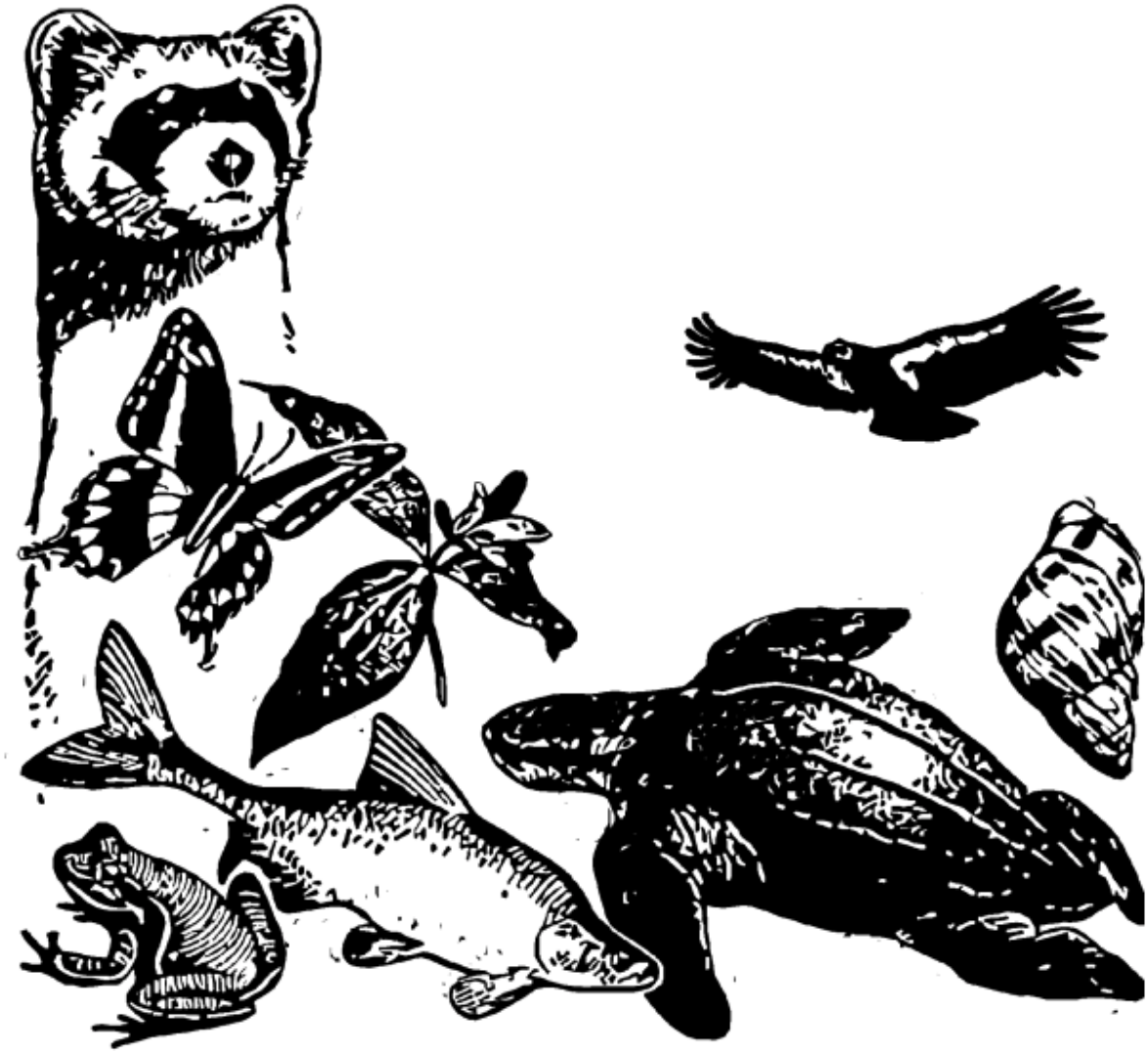
U.S. Fish & Wildlife Service

Americana Park Bypass

IPaC Trust Resource Report

Generated November 11, 2015 01:56 PM MST

This report is for informational purposes only and should not be used for planning or analyzing project-level impacts. For projects that require FWS review, please return to this project on the IPaC website and request an official species list from the Regulatory Documents page.



US Fish & Wildlife Service

IPaC Trust Resource Report

Project Description

NAME

Americana Park Bypass

PROJECT CODE

5V2YN-W3VFV-DRRDG-TVJOA-IZJ7UY

LOCATION

Contra Costa County, California

DESCRIPTION

No description provided

U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

Sacramento Fish And Wildlife Office
Federal Building
2800 COTTAGE WAY, ROOM W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the Endangered Species Program and should be considered as part of an effect analysis for this project.

This unofficial species list is for informational purposes only and does not fulfill the requirements under Section 7 of the Endangered Species Act, which states that Federal agencies are required to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action." This requirement applies to projects which are conducted, permitted or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can be obtained by returning to this project on the IPaC website and requesting an official species list on the Regulatory Documents page.

Amphibians

California Red-legged Frog Rana draytonii — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=D02D

California Tiger Salamander Ambystoma californiense — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=D01T

Birds

California Clapper Rail Rallus longirostris obsoletus — Endangered

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B04A

California Least Tern Sterna antillarum browni — Endangered

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B03X

Crustaceans

Vernal Pool Fairy Shrimp Branchinecta lynchi — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=K03G

Vernal Pool Tadpole Shrimp Lepidurus packardi — Endangered

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=K048

Fishes

Delta Smelt Hypomesus transpacificus — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E070

Flowering Plants

Antioch Dunes Evening-primrose Oenothera deltoides ssp. howellii — Endangered

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q1ZN

Soft Bird's-beak Cordylanthus mollis ssp. mollis — Endangered

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q0GT

Insects

Delta Green Ground Beetle Elaphrus viridis — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=I01G

San Bruno Elfin Butterfly Callophrys mossii bayensis — Endangered

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=I00Q

Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=I01L

Mammals

Salt Marsh Harvest Mouse Reithrodontomys raviventris — Endangered

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A03Y

Reptiles

Alameda Whipsnake (=striped Racer) Masticophis lateralis euryxanthus — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=C04A

Giant Garter Snake Thamnophis gigas — Threatened

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=C057

Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

Delta Smelt Critical Habitat Final designated
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E070#crithab

Migratory Birds

Birds are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

Bald Eagle Haliaeetus leucocephalus — Bird of conservation concern
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008

Bell's Sparrow Amphispiza belli — Bird of conservation concern
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HE

Black Oystercatcher Haematopus bachmani — Bird of conservation concern
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0KJ

Black Rail Laterallus jamaicensis — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B09A

Burrowing Owl Athene cunicularia — Bird of conservation concern
Year-round

Common Yellowthroat Geothlypis trichas sinuosa — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B080

Costa's Hummingbird Calypte costae — Bird of conservation concern
Season: Breeding

Fox Sparrow Passerella iliaca — Bird of conservation concern
Season: Wintering

Lawrence's Goldfinch Carduelis lawrencei — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0J8

Least Bittern Ixobrychus exilis — Bird of conservation concern
Season: Breeding

Lesser Yellowlegs Tringa flavipes — Bird of conservation concern
Season: Wintering

Lewis's Woodpecker Melanerpes lewis — Bird of conservation concern
Season: Wintering

Loggerhead Shrike Lanius ludovicianus — Bird of conservation concern
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FY

Long-billed Curlew Numenius americanus — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06S

Marbled Godwit Limosa fedoa — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0JL

Mountain Plover Charadrius montanus — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B078

Nuttall's Woodpecker Picoides nuttallii — Bird of conservation concern
Year-round

Oak Titmouse Baeolophus inornatus — Bird of conservation concern
Year-round

Peregrine Falcon Falco peregrinus — Bird of conservation concern
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FU

Short-billed Dowitcher Limnodromus griseus — Bird of conservation concern
Season: Wintering

Short-eared Owl Asio flammeus — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HD

Song Sparrow Melospiza melodia maxillaris — Bird of conservation concern
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B08R

Swainson's Hawk Buteo swainsoni — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B070

Tricolored Blackbird Agelaius tricolor — Bird of conservation concern
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06P

Yellow Rail Coturnicops noveboracensis — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0JG

Yellow-billed Magpie Pica nuttalli — Bird of conservation concern
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0N8

Refuges

Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

There are no refuges within this project area

Wetlands

Impacts to NWI wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Freshwater Emergent Wetland

PEM1Ch 0.713 acre

Riverine

R4SBC 5.14 acres

CNPS California Native Plant Society Rare and Endangered Plant Inventory

Plant List

67 matches found. *Click on scientific name for details*

Search Criteria

Found in Contra Costa County, Found in 9 Quads around 38121A8

Scientific Name	Common Name	Family	Lifeform	Rare Plant Rank	State Rank	Global Rank
Amsinckia grandiflora	large-flowered fiddleneck	Boraginaceae	annual herb	1B.1	S1	G1
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	annual herb	1B.2	S2?	G2?
Androsace elongata ssp. acuta	California androsace	Primulaceae	annual herb	4.2	S3S4	G5? T3T4
Anomobryum julaceum	slender silver moss	Bryaceae	moss	4.2	S2	G4G5
Arabis blepharophylla	coast rockcress	Brassicaceae	perennial herb	4.3	S4	G4
Arctostaphylos auriculata	Mt. Diablo manzanita	Ericaceae	perennial evergreen shrub	1B.3	S2	G2
Arctostaphylos manzanita ssp. laevigata	Contra Costa manzanita	Ericaceae	perennial evergreen shrub	1B.2	S2	G5T2
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	1B.2	S2	G2T2
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	1B.2	S2	G3T2
Atriplex coronata var. coronata	crownscale	Chenopodiaceae	annual herb	4.2	S3	G4T3
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	1B.2	S2	G2
Blepharizonia plumosa	big tarplant	Asteraceae	annual herb	1B.1	S2	G2
Calandrinia breweri	Brewer's calandrinia	Montiaceae	annual herb	4.2	S34	G4
California macrophylla	round-leaved filaree	Geraniaceae	annual herb	1B.2	S3?	G3?
Calochortus pulchellus	Mt. Diablo fairy-lantern	Liliaceae	perennial bulbiferous herb	1B.2	S2	G2
Calochortus umbellatus	Oakland star-tulip	Liliaceae	perennial bulbiferous herb	4.2	S4	G4
Campanula exigua	chaparral harebell	Campanulaceae	annual herb	1B.2	S2	G2
Castilleja ambigua var. ambigua	johnny-nip	Orobanchaceae	annual herb (hemiparasitic)	4.2	S4	G4T5
Centromadia parryi ssp. congdonii	Congdon's tarplant	Asteraceae	annual herb	1B.1	S2	G3T2
Chloropyron molle ssp. molle	soft bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	1B.2	S1	G2T1
Cicuta maculata var. bolanderi	Bolander's water-hemlock	Apiaceae	perennial herb	2B.1	S2	G5T3T4

Collomia diversifolia	serpentine collomia	Polemoniaceae	annual herb	4.3	S4	G4
Convolvulus simulans	small-flowered morning-glory	Convolvulaceae	annual herb	4.2	S4	G4
Cordylanthus nidularius	Mt. Diablo bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	1B.1	S1	G1
Cryptantha hooveri	Hoover's cryptantha	Boraginaceae	annual herb	1A	SH	GH
Delphinium californicum ssp. interius	Hospital Canyon larkspur	Ranunculaceae	perennial herb	1B.2	S3	G3T3
Eleocharis parvula	small spikerush	Cyperaceae	perennial herb	4.3	S4	G5
Eriastrum ertterae	Lime Ridge eriastrum	Polemoniaceae	annual herb	1B.1	S1	G1
Eriogonum nudum var. psychicola	Antioch Dunes buckwheat	Polygonaceae	perennial herb	1B.1	S1	G5T1
Eriogonum truncatum	Mt. Diablo buckwheat	Polygonaceae	annual herb	1B.1	S2	G2
Eriophyllum jepsonii	Jepson's woolly sunflower	Asteraceae	perennial herb	4.3	S3	G3
Erysimum capitatum var. angustatum	Contra Costa wallflower	Brassicaceae	perennial herb	1B.1	S1	G5T1
Eschscholzia rhombipetala	diamond-petaled California poppy	Papaveraceae	annual herb	1B.1	S1	G1
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	1B.2	S2	G2
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	4.2	S3	G3
Fritillaria liliacea	fragrant fritillary	Liliaceae	perennial bulbiferous herb	1B.2	S2	G2
Galium andrewsii ssp. gatense	phlox-leaf serpentine bedstraw	Rubiaceae	perennial herb	4.2	S3	G5T3
Grimmia torenii	Toren's grimmia	Grimmiaceae	moss	1B.3	S2	G2
Helianthella castanea	Diablo helianthella	Asteraceae	perennial herb	1B.2	S2	G2
Hesperolinon breweri	Brewer's western flax	Linaceae	annual herb	1B.2	S2?	G2?
Lasthenia conjugens	Contra Costa goldfields	Asteraceae	annual herb	1B.1	S1	G1
Lasthenia ferrisiae	Ferris' goldfields	Asteraceae	annual herb	4.2	S3	G3
Lathyrus jepsonii var. jepsonii	Delta tule pea	Fabaceae	perennial herb	1B.2	S2	G5T2
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	1B.1	S2	G2
Limosella australis	Delta mudwort	Scrophulariaceae	perennial stoloniferous herb	2B.1	S2	G4G5
Madia radiata	showy golden madia	Asteraceae	annual herb	1B.1	S2	G2
Malacothamnus hallii	Hall's bush-mallow	Malvaceae	perennial evergreen shrub	1B.2	S2	G2
Micropus amphibolus	Mt. Diablo cottonweed	Asteraceae	annual herb	3.2	S3S4	G3G4
Monolopia gracilens	woodland woolythreads	Asteraceae	annual herb	1B.2	S3	G3
Myosurus minimus ssp. apus	little mousetail	Ranunculaceae	annual herb	3.1	S2	G5T2Q
Navarretia gowenii	Lime Ridge navarretia	Polemoniaceae	annual herb	1B.1	S1	G1
Navarretia nigelliformis ssp. nigelliformis	adobe navarretia	Polemoniaceae	annual herb	4.2	S3	G4T3
Navarretia nigelliformis ssp.						

radians	shining navarretia	Polemoniaceae	annual herb	1B.2	S2	G4T2
Oenothera deltoides ssp. howellii	Antioch Dunes evening-primrose	Onagraceae	perennial herb	1B.1	S1	G5T1
Phacelia phacelioides	Mt. Diablo phacelia	Boraginaceae	annual herb	1B.2	S1	G1
Puccinellia simplex	California alkali grass	Poaceae	annual herb	1B.2	S2S3	G2G3
Ranunculus lobbii	Lobb's aquatic buttercup	Ranunculaceae	annual herb	4.2	S3	G4
Sanicula saxatilis	rock sanicle	Apiaceae	perennial herb	1B.2	S2	G2
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	2B.2	S2	G3?
Streptanthus albidus ssp. peramoenus	most beautiful jewel-flower	Brassicaceae	annual herb	1B.2	S2	G2T2
Streptanthus hispidus	Mt. Diablo jewel-flower	Brassicaceae	annual herb	1B.3	S1	G1
Stuckenia filiformis ssp. alpina	slender-leaved pondweed	Potamogetonaceae	perennial rhizomatous herb	2B.2	S3	G5T5
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	1B.2	S2	G2
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	1B.2	S2	G2
Triquetrella californica	coastal triquetrella	Pottiaceae	moss	1B.2	S2	G2
Tropidocarpum capparideum	caper-fruited tropidocarpum	Brassicaceae	annual herb	1B.1	S1	G1
Viburnum ellipticum	oval-leaved viburnum	Adoxaceae	perennial deciduous shrub	2B.3	S3?	G4G5

Suggested Citation

CNPS, Rare Plant Program. 2015. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, CA. Website http://www.rareplants.cnps.org [accessed 11 November 2015].

APPENDIX C. EXPLANATION OF RARITY STATUS CODES

EXPLANATION OF RARITY STATUS CODES

ENDANGERED SPECIES ACT (ESA) LISTING CODES

FE = federally listed as Endangered
FT = federally listed as Threatened
FPE = proposed for listing Endangered
FPT = proposed for listing Threatened
FC = federal candidate; former Category 1 candidates
FD/FPD = delisted/proposed for delisting
BCC = Bird Species of Conservation Concern
SC = species of concern; established by NMFS, effective April 15, 2004.

CALIFORNIA ENDANGERED SPECIES ACT (CESA) LISTING CODES

SE = state-listed as Endangered
ST = state-listed as Threatened
SR = state-listed as Rare
SCE = state candidate for listing as Endangered
SCT = state candidate for listing as Threatened
SD/SCD = delisted/State candidate for delisting

GLOBAL AND STATE RANKINGS

G1/S1 = Critically imperiled: at high risk of extinction, extremely rare.
G2/S2 = Imperiled: at high risk of extinction, restricted range, very few populations.
G3/S3 = Vulnerable: moderate risk of extinction, restricted range, few populations.
G4/S4 = Apparently secure: uncommon, not rare, possible long-term declines.
G5/S5 = Secure: common, widespread, abundant.
T = Rank assigned to a sub-specific taxon.

CALIFORNIA NATIVE PLANT SOCIETY DESIGNATIONS

List 1: Plants of highest priority.
List 1A: Plants presumed extinct in CA.
List 1B: Plants rare and endangered in CA and elsewhere.
List 2A: Plants presumed extirpated in CA but common elsewhere.
List 2B: Plants rare, threatened or endangered in CA but common elsewhere.
List 3: Plants for which additional data are needed – Review List.
List 4: Plants of limited distribution – Watch List.

CNPS Threat Code Extensions

.1 - Seriously endangered in CA
.2 – Fairly endangered in CA
.3 – Not very endangered in CA

OTHER CODES

ABC: WL - American Bird Conservancy Watch List of Birds of Conservation Concern.

AFS - American Fisheries Society categories of risk for marine, estuarine and diadromous fish stocks. Codes: **E**=endangered; **T**=threatened; **V**=vulnerable

AUD: WL - Audubon: Watch List 2007. Bird species facing population decline and/or threats such as loss of breeding and wintering grounds, or species with limited geographic ranges. **R** – Red List, global conservation concern; **Y** – Yellow List, national conservation concern.

BLM: S - Bureau of Land Mgt: Sensitive. Includes species under review by USFWS or NMFS, species whose numbers are declining so rapidly that federal listing may become necessary, species with small and widely dispersed populations, or species inhabiting refugia or other unique habitats.

CDF: S – CA Dept. of Forestry and Fire Protection: Sensitive. Includes species that warrant special protection during timber operations.

DFW: FP - CA Dept. of Fish and Wildlife: Fully Protected. Species protected under §§3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California Fish and Game Code.

DFW: SA - CA. Dept. of Fish and Wildlife: Special Animal. Species included on the CDFW's lists of special animals.

DFW: SP - CA Dept. of Fish and Wildlife: Special Plant. Species included on the CDFW's lists of special plants.

DFW: SSC - CA Dept. of Fish and Wildlife: California Species of Special Concern.

DFW: WL - CA Dept. of Fish and Wildlife: (Watch List): taxa that don't meet SSC criteria but about which there is concern and additional information is needed to clarify status.

FS: S - USDA Forest Service: Sensitive. Species whose population viability is a concern, as evidenced by significant current or predicted downward trends in numbers or density, or in habitat capability that would reduce a species' existing distribution.

FWS: BCC - U.S. Fish and Wildlife Service: Birds of Conservation Concern. Migratory and non-migratory bird species that represent the USFWS's highest conservation priorities.

FWS: BEPA - U.S. Fish and Wildlife Service: Bald Eagle Protection Act.

FWS: MBTA U.S. Fish and Wildlife Service: International Migratory Bird Treaty Act.

FWS: MNB - U.S. Fish and Wildlife Service: Migratory Nongame Birds of Management Concern. Species of concern in the U.S. due to documented or apparent population declines, small or restricted populations, or dependence on restricted or vulnerable habitats.

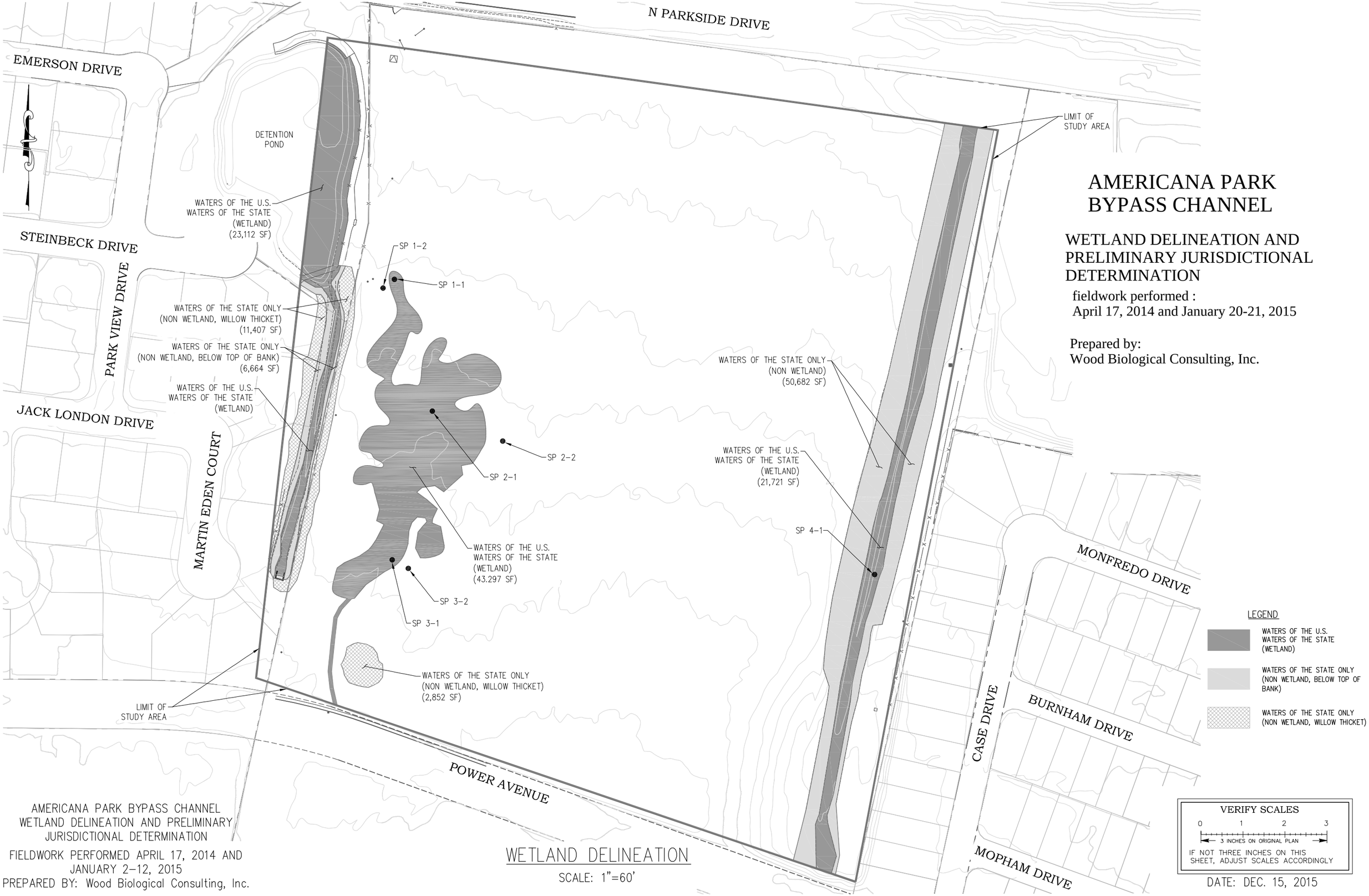
MMPA – Marin Mammal Protection Act

NMFS: SC - National Marine Fisheries Service: Species of Concern.

WBWG - Western Bat Working Group. Priority for funding, planning or conservation actions. Codes: **H**=high; **MH**=medium-high; **M**=medium; **LM**=low-medium

Xerces - Xerces Society Red List.
Codes: **C**=critically imperiled; **I**=imperiled; **V**=vulnerable; **D**=data deficient

APPENDIX D. WETLAND DELINEATION AND PRELIMINARY JURISDICTIONAL DETERMINATION



AMERICANA PARK BYPASS CHANNEL

WETLAND DELINEATION AND PRELIMINARY JURISDICTIONAL DETERMINATION

fieldwork performed :
April 17, 2014 and January 20-21, 2015

Prepared by:
Wood Biological Consulting, Inc.

VERIFY SCALES
0 1 2 3
3 INCHES ON ORIGINAL PLAN
IF NOT THREE INCHES ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DATE: DEC. 15, 2015

AMERICANA PARK BYPASS CHANNEL
WETLAND DELINEATION AND PRELIMINARY JURISDICTIONAL DETERMINATION

FIELDWORK PERFORMED APRIL 17, 2014 AND JANUARY 2–12, 2015
PREPARED BY: Wood Biological Consulting, Inc.

WETLAND DELINEATION

SCALE: 1"=60'

APPENDIX E. WETLAND DELINEATION FIELD DATA FORMS

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Americana Park Bypass | City /County: Pittsburg | Contra Costa | Sampling Date: Apr 17, 2014

Applicant / Owner: City of Pittsburg | State: CA | Sampling Point: 1-1

Investigator(s): Mike Wood | Section Township Range: M 02N 01E 18

Landform (hillslope, terrace, etc.): terrace | Local Relief (concave, convex, none): level | Slope(%) 0

Subregion (LRR): LRR C | Lat: N38.02488 | Long: W121.90829 | Datum: NAD 83

Soil Map Unit Name: Capay clay, 0-2% slopes | NWI Classification: P EM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks)

Are Vegetation No, Soil No, or Hydrology No, significantly disturbed? Are "Normal Circumstances" present? Yes

Are Vegetation No, Soil No, or Hydrology No, naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, imortant features, etc.

Hydrophytic Vegetation Present? Yes	**Is the Sampled Area within a Wetland?** Yes
Hydric Soil Present? Yes	
Wetland Hydrology Present? Yes	

Remarks:
Historically plowed field, pre-colonial flood terrace, subject to sheet flow, with distinctive hydrophytic vegetation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Juncus balticus*	85	Yes	FACW
2. *Bromus diandrus*	15	No	none
3. *Carduus pycnocephalus*	10	No	none
4.			
5.			
6.			
7.			
8.			
Total Cover:	110		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 | % Cover of Biotic Crust 0

Dominance Test worksheet

Number of Dominant Species That are OBI, FACW or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That are OBI, FACW or FAC: 100.0% (A/B)

Prevalence Index worksheet

Total % Cover of:		Multipy by:	
OBL species		x 1 =	
FACW species	1	x 2 =	2
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals	1 (A)		2 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:

- Yes — Dominance Test is > 50%
- Yes — Prevalence Index is ≤3.0[1]
- unkno — Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- No — Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present

Hydrophytic Vegetation Present? Yes

Remarks:
Vegetation is clearly distinct from surrounding non-native annual grassland.
Note: Juncus balticus = J. arcticus in Lichvar et al 2012.

SOIL

Sampling Point: 1-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 3/1	40	none	--	--	--	Clay loam	Mixed, plowed soil of old flood terrace, earthworms present in upper layer.
	2.5Y 4/3	60	10YR 5/8	2	C	M	sandy loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced matrix. [2] Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to al LRR's, 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[3]

- ☐ 1 cm Muck (A9) (**LLR C**)
- ☐ 2 cm Muck (A10) (**LLR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive layer (if present)

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes

Remarks:
Abundant, prominent mottles in matrix.
Note: Capay clay, 0-2% slopes classified as hydric soil type (depressions where a water table is present at a depth of 1.0 ft or less during the growing season if permeability is <6.0 in/hr in any layer within 20 in. of the surface).

HYDROLOGY

Wetland hydrology Indicators Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves
- ☐ Salt Crust (B1
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidixed Rhizospheres along living roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Depsits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present	No	Depth (inches)	_____
Water Table Present?	No	Depth (inches)	_____
Saturation Present (includes capillary fringe)	No	Depth (inches)	_____

Wetlands Hydrology Present? Yes

Describe Recorded Data (stream gauge, monitoring well, aerial photos, prevous inspections) if available

Remarks:
Sample point receives overland surface flow. Strongly distinct vegetation and brightly mottled soil are strong indicators that wetland hydrology is present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Americana Park Bypass | City /County: Pittsburg | Contra Costa | Sampling Date: Apr 17, 2014

Applicant / Owner: City of Pittsburg | State: CA | Sampling Point: 1-2

Investigator(s): Mike Wood | Section Township Range: M 02N 01E 18

Landform (hillslope, terrace, etc.): terrace | Local Relief (concave, convex, none): level | Slope(%) 0

Subregion (LRR): LRR C | Lat: N38.02484 | Long: W121.90835 | Datum: NAD 83

Soil Map Unit Name: Capay clay, 0-2% slopes | NWI Classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks)

Are Vegetation No, Soil No, or Hydrology No, significantly disturbed? Are "Normal Circumstances" present? Yes

Are Vegetation No, Soil No, or Hydrology No, naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, imortant features, etc.

Hydrophytic Vegetation Present? No	**Is the Sampled Area within a Wetland?** No
Hydric Soil Present? Yes	
Wetland Hydrology Present? No	

Remarks:
Historically plowed field, pre-colonial flood terrace, subject to some subsurface saturation, but completley lacking distinctive hydrophytic vegetation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Brassica nigra*	35	Yes	none
2. *Avena fatua*	25	Yes	none
3. *Bromus diandrus*	20	Yes	none
4. *Geranium dissectum*	12	No	none
5.			
6.			
7.			
8.			
Total Cover:	92		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 | % Cover of Biotic Crust 0

Dominance Test worksheet

Number of Dominant Species That are OBI, FACW or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That are OBI, FACW or FAC: 0.0% (A/B)

Prevalence Index worksheet

Total % Cover of:	Multipy 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 =

Hydrophytic Vegetation Indicators:

- No — Dominance Test is > 50%
- No — Prevalence Index is ≤3.0[1]
- No — Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- No — Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present

Hydrophytic Vegetation Present? No

Remarks:
Vegetation is dominated by non-wetland indicator species characteristic of uplands

SOIL

Sampling Point: 1-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 3/14	70	none	--	--	--	Clay loam	Mixed, plowed soil of old flood
	2.5Y 4/3	30	10YR 5/8	1	C	M	sandy loam	terrace.

[1] Type: C=Concentration, D=Depletion, RM=Reduced matrix. [2] Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to al LRR's, 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[3]

- ☐ 1 cm Muck (A9) (**LLR C**)
- ☐ 2 cm Muck (A10) (**LLR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive layer (if present)

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes

Remarks:
Abundant, prominent mottles in matrix.
Note: Capay clay, 0-2% slopes classified as hydric soil type (depressions where a water table is present at a depth of 1.0 ft or less during the growing season if permeability is <6.0 in/hr in any layer within 20 in. of the surface).

HYDROLOGY

Wetland hydrology Indicators Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves
- ☐ Salt Crust (B1
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidixed Rhizospheres along living roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Depsits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present	No	Depth (inches)	_____
Water Table Present?	No	Depth (inches)	_____
Saturation Present (includes capillary fringe)	No	Depth (inches)	_____

Wetlands Hydrology Present? No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, prevous inspections) if available

Remarks:
Sample point is about level with 1-1, but vegetation is distinct and clearly dominated by upland species. Soils, however are similar and subsurface moisture is present, presumably accounting for the hydric soil indicators observed. The lack of hydrophytic vegetation indicates a lack of sufficient inundation or saturation for wetlands to have evolved at this location where there is no evidence of recent disturbance.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Americana Park Bypass | City /County: Pittsburg | Contra Costa | Sampling Date: Apr 17, 2014

Applicant / Owner: City of Pittsburg | State: CA | Sampling Point: 2-1

Investigator(s): Mike Wood | Section Township Range: M 02N 01E 18

Landform (hillslope, terrace, etc.): terrace | Local Relief (concave, convex, none): level | Slope(%) 0

Subregion (LRR): LRR C | Lat: N38.02435 | Long: W121.90812 | Datum: NAD 83

Soil Map Unit Name: Capay clay, 0-2% slopes | NWI Classification: P EM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks)

Are Vegetation No, Soil No, or Hydrology No, significantly disturbed? Are "Normal Circumstances" present? Yes

Are Vegetation No, Soil No, or Hydrology No, naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, imortant features, etc.

Hydrophytic Vegetation Present? Yes	**Is the Sampled Area within a Wetland?** Yes
Hydric Soil Present? Yes	
Wetland Hydrology Present? Yes	

Remarks:
Historically plowed field, pre-colonial flood terrace, subject to sheet flow, with distinctive hydrophytic vegetation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Leymus triticoides*	100	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	100		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 | % Cover of Biotic Crust 0

Dominance Test worksheet

Number of Dominant Species That are OBI, FACW or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That are OBI, FACW or FAC: 100.0% (A/B)

Prevalence Index worksheet

Total % Cover of:		Multipy by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	1	x 3 =	3
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals	1 (A)		3 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

- Yes — Dominance Test is > 50%
- Yes — Prevalence Index is ≤3.0[1]
- unkno — Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- No — Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present

Hydrophytic Vegetation Present? Yes

Remarks:
Vegetation is dominated by a single weak wetland indicator species and is clearly distinct from surrounding non-native annual grassland.

SOIL

Sampling Point: 2-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 4/1	60	none	--	--	--	Clay loam	Mixed, plowed soil of old flood terrace.
	2.5Y 4/3	40	10YR 5/8	1	C	M	sandy loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced matrix. [2] Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to al LRR's, 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[3]

- ☐ 1 cm Muck (A9) (**LLR C**)
- ☐ 2 cm Muck (A10) (**LLR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive layer (if present)

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes

Remarks:
Abundant, prominent mottles in matrix.
Note: Capay clay, 0-2% slopes classified as hydric soil type (depressions where a water table is present at a depth of 1.0 ft or less during the growing season if permeability is <6.0 in/hr in any layer within 20 in. of the surface).

HYDROLOGY

Wetland hydrology Indicators Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves
- ☐ Salt Crust (B1
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidixed Rhizospheres along living roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Depsits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present: No — Depth (inches): _____

Water Table Present?: No — Depth (inches): _____

Saturation Present (includes capillary fringe): No — Depth (inches): _____

Wetlands Hydrology Present? Yes

Describe Recorded Data (stream gauge, monitoring well, aerial photos, prevous inspections) if available

Remarks:
Sample point receives overland surface flow. Strongly distinct vegetation and brightly mottled soil are strong indicators that wetland hydrology is present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Americana Park Bypass | City /County: Pittsburg | Contra Costa | Sampling Date: Apr 17, 2014

Applicant / Owner: City of Pittsburg | State: CA | Sampling Point: 2-2

Investigator(s): Mike Wood | Section Township Range: M 02N 01E 18

Landform (hillslope, terrace, etc.): terrace | Local Relief (concave, convex, none): level | Slope(%) 0

Subregion (LRR): LRR C | Lat: N38.02424 | Long: W121.90777 | Datum: NAD 83

Soil Map Unit Name: Capay clay, 0-2% slopes | NWI Classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks)

Are Vegetation No, Soil No, or Hydrology No, significantly disturbed? Are "Normal Circumstances" present? Yes

Are Vegetation No, Soil No, or Hydrology No, naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, imortant features, etc.

Hydrophytic Vegetation Present? No	**Is the Sampled Area within a Wetland?** No
Hydric Soil Present? No	
Wetland Hydrology Present? No	

Remarks:
Historically plowed field, pre-colonial flood terrace, subject to some subsurface saturation, but completley lacking distinctive hydrophytic vegetation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Bromus diandrus*	30	Yes	none
2. *Hordeum murinum ssp. leporinum*	25	Yes	NI
3. *Carduus pycnocephalus*	20	Yes	none
4. *Avena fatua*	18	No	none
5. *Amsinckia lycopsoides*	12	No	none
6. *Hordeum marinum ssp. gussoneanum*	8	No	FAC
7. *Geranium dissectum*	5	No	none
8.			
Total Cover:	118		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 8 | % Cover of Biotic Crust 0

Dominance Test worksheet

Number of Dominant Species That are OBI, FACW or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That are OBI, FACW or FAC: 0.0% (A/B)

Prevalence Index worksheet

Total % Cover of:		Multipy by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	1	x 3 =	3
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals	1 (A)		3 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

- No — Dominance Test is > 50%
- No — Prevalence Index is ≤3.0[1]
- No — Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- No — Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present

Hydrophytic Vegetation Present? No

Remarks:
Historically plowed site but with no recent disturbance. Site is clearly dominated by upland species.
Note: prevalence test does not consider species with no indicator status designation.

SOIL

Sampling Point: 2-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 3/1	85	none				Silty clay	plowed
	10YR 3/2	15						

[1] Type: C=Concentration, D=Depletion, RM=Reduced matrix. [2] Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to al LRR's, 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[3]

- ☐ 1 cm Muck (A9) (**LLR C**)
- ☐ 2 cm Muck (A10) (**LLR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive layer (if present)

Type: _____

Depth (inches): _____

Hydric Soil Present? No

Remarks:
No field indicators of hydric soils evident.
Note: Capay clay, 0-2% slopes classified as hydric soil type (depressions where a water table is present at a depth of 1.0 ft or less during the growing season if permeability is <6.0 in/hr in any layer within 20 in. of the surface).

HYDROLOGY

Wetland hydrology Indicators Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves
- ☐ Salt Crust (B1
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidixed Rhizospheres along living roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Depsits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present: No — Depth (inches): _____

Water Table Present?: No — Depth (inches): _____

Saturation Present (includes capillary fringe): No — Depth (inches): _____

Wetlands Hydrology Present? No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, prevous inspections) if available

Remarks:
Low field with tire ruts. Very slightly elevated above 2-1. No evidence of drainage patterns that might contribute to surface inundation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Americana Park Bypass | City /County: Pittsburg | Contra Costa | Sampling Date: Apr 17, 2014

Applicant / Owner: City of Pittsburg | State: CA | Sampling Point: 3-1

Investigator(s): Mike Wood | Section Township Range: M 02N 01E 18

Landform (hillslope, terrace, etc.): terrace | Local Relief (concave, convex, none): level | Slope(%) 0

Subregion (LRR): LRR C | Lat: N38.02376 | Long: W121.90830 | Datum: NAD 83

Soil Map Unit Name: Capay clay, 0-2% slopes | NWI Classification: P EM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks)

Are Vegetation No, Soil No, or Hydrology No, significantly disturbed? Are "Normal Circumstances" present? Yes

Are Vegetation No, Soil No, or Hydrology No, naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, imortant features, etc.

Hydrophytic Vegetation Present? Yes	**Is the Sampled Area within a Wetland?** Yes
Hydric Soil Present? Yes	
Wetland Hydrology Present? Yes	

Remarks:
Historically plowed field, pre-colonial flood terrace, subject to sheet flow, with distinctive hydrophytic vegetation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Juncus balticus*	90	Yes	FACW
2. *Foeniculum vulgare*	5	No	FACU
3. *Bromus diandrus*	2	No	none
4. *Rumex crispus*	2	No	FACW-
5.			
6.			
7.			
8.			
Total Cover:	99		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 5 | % Cover of Biotic Crust 0

Dominance Test worksheet

Number of Dominant Species That are OBI, FACW or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That are OBI, FACW or FAC: 100.0% (A/B)

Prevalence Index worksheet

Total % Cover of:		Multipy by:	
OBL species		x 1 =	
FACW species	2	x 2 =	4
FAC species		x 3 =	
FACU species	1	x 4 =	4
UPL species		x 5 =	
Column Totals	3 (A)		8 (B)

Prevalence Index = B/A = 2.7

Hydrophytic Vegetation Indicators:

- Yes — Dominance Test is > 50%
- Yes — Prevalence Index is ≤3.0[1]
- unkno — Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- No — Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present

Hydrophytic Vegetation Present? Yes

Remarks:
Vegetation is clearly distinct from surrounding non-native annual grassland.
Note: Juncus balticus = J. arcticus in Lichvar et al 2012.

SOIL

Sampling Point: 3-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 4/1	30	none	--	--	--	Clay loam	Mixed, plowed soil of old flood terrace.
	2.5Y 5/3	70	10YR 5/8	1	C	M	sandy loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced matrix. [2] Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to al LRR's, 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[3]

- ☐ 1 cm Muck (A9) (**LLR C**)
- ☐ 2 cm Muck (A10) (**LLR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive layer (if present)

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes

Remarks:
Abundant, prominent mottles in matrix.
Note: Capay clay, 0-2% slopes classified as hydric soil type (depressions where a water table is present at a depth of 1.0 ft or less during the growing season if permeability is <6.0 in/hr in any layer within 20 in. of the surface).

HYDROLOGY

Wetland hydrology Indicators Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves
- ☐ Salt Crust (B1
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidixed Rhizospheres along living roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Depsits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present	No	Depth (inches)	
Water Table Present?	No	Depth (inches)	
Saturation Present (includes capillary fringe)	No	Depth (inches)	

Wetlands Hydrology Present? Yes

Describe Recorded Data (stream gauge, monitoring well, aerial photos, prevous inspections) if available

Remarks:
Sample point receives overland surface flow. Strongly distinct vegetation and brightly mottled soil are strong indicators that wetland hydrology is present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Americana Park Bypass | City /County: Pittsburg | Contra Costa | Sampling Date: Apr 17, 2014

Applicant / Owner: City of Pittsburg | State: CA | Sampling Point: 3-2

Investigator(s): Mike Wood | Section Township Range: M 02N 01E 18

Landform (hillslope, terrace, etc.): terrace | Local Relief (concave, convex, none): level | Slope(%) 0

Subregion (LRR): LRR C | Lat: N38.02370 | Long: W121.90819 | Datum: NAD 83

Soil Map Unit Name: Capay clay, 0-2% slopes | NWI Classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks)

Are Vegetation No, Soil No, or Hydrology No, significantly disturbed? Are "Normal Circumstances" present? Yes

Are Vegetation No, Soil No, or Hydrology No, naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, imortant features, etc.

Hydrophytic Vegetation Present? No	**Is the Sampled Area within a Wetland?** No
Hydric Soil Present? No	
Wetland Hydrology Present? No	

Remarks:
Historically plowed field, pre-colonial flood terrace, subject to some subsurface saturation, but completley lacking distinctive hydrophytic vegetation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Bromus hordeaceus*	55	Yes	FACU
2. *Bromus diandrus*	30	Yes	none
3. *Carduus pycnocephalus*	15	No	none
4. *Avena fatua*	12	No	none
5.			
6.			
7.			
8.			
Total Cover:	112		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 10 | % Cover of Biotic Crust 0

Dominance Test worksheet

Number of Dominant Species That are OBI, FACW or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That are OBI, FACW or FAC: 0.0% (A/B)

Prevalence Index worksheet

Total % Cover of:		Multipy by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species	1	x 4 =	4
UPL species		x 5 =	
Column Totals	1 (A)		4 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

- No — Dominance Test is > 50%
- No — Prevalence Index is ≤3.0[1]
- No — Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- No — Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present

Hydrophytic Vegetation Present? No

Remarks:
Historically plowed site but with no recent disturbance. Site is clearly dominated by upland species.
Note: prevalence test does not consider species with no indicator status designation.

SOIL

Sampling Point: 3-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/1	100	none				Silty clay loam	plowed

[1] Type: C=Concentration, D=Depletion, RM=Reduced matrix. [2] Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to al LRR's, 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[3]

- ☐ 1 cm Muck (A9) (**LLR C**)
- ☐ 2 cm Muck (A10) (**LLR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive layer (if present)

Type: _____

Depth (inches): _____

Hydric Soil Present? No

Remarks:
No field indicators of hydric soils evident.
Note: Capay clay, 0-2% slopes classified as hydric soil type (depressions where a water table is present at a depth of 1.0 ft or less during the growing season if permeability is <6.0 in/hr in any layer within 20 in. of the surface).

HYDROLOGY

Wetland hydrology Indicators Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves
- ☐ Salt Crust (B1
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidixed Rhizospheres along living roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Depsits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present: No — Depth (inches): _____

Water Table Present?: No — Depth (inches): _____

Saturation Present (includes capillary fringe): No — Depth (inches): _____

Wetlands Hydrology Present? No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, prevous inspections) if available

Remarks:
Sample point is slightly elevated above 3-1. No drainage patterns or other evidence of inundation present.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Americana Park Bypass | City /County: Pittsburg | Contra Costa | Sampling Date: Apr 17, 2014

Applicant / Owner: City of Pittsburg | State: CA | Sampling Point: 4-1

Investigator(s): Mike Wood | Section Township Range: M 02N 01E 18

Landform (hillslope, terrace, etc.): active channel | Local Relief (concave, convex, none): concave | Slope(%) 0.5

Subregion (LRR): LRR C | Lat: N38.02395 | Long: W121.90591 | Datum: NAD 83

Soil Map Unit Name: Capay clay, 0-2% slopes | NWI Classification: P EM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks)

Are Vegetation No, Soil No, or Hydrology No, significantly disturbed? Are "Normal Circumstances" present? Yes

Are Vegetation No, Soil No, or Hydrology No, naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, imortant features, etc.

Hydrophytic Vegetation Present? Yes	**Is the Sampled Area within a Wetland?** Yes
Hydric Soil Present? Yes	
Wetland Hydrology Present? Yes	

Remarks:
Sample point is situated in an obvious surface channel with distinctive vegetation and soils characteristic of wetlands.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Echinochloa colona*	45	Yes	FAC
2. *Plantago lanceolata*	20	Yes	FAC
3. *Epilobium ciliatum*	18	No	FACW
4. *Symphyotrichum chilense*	12	No	FAC
5. *Cyperus eragrostis*	8	No	FACW
6.			
7.			
8.			
Total Cover:	103		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 8 | % Cover of Biotic Crust 0

Dominance Test worksheet

Number of Dominant Species That are OBI, FACW or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That are OBI, FACW or FAC: 100.0% (A/B)

Prevalence Index worksheet

Total % Cover of:		Multipy by:	
OBL species		x 1 =	
FACW species	2	x 2 =	4
FAC species	3	x 3 =	9
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals	5 (A)		13 (B)

Prevalence Index = B/A = 2.6

Hydrophytic Vegetation Indicators:

- Yes — Dominance Test is > 50%
- Yes — Prevalence Index is ≤3.0[1]
- unkno — Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- No — Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present

Hydrophytic Vegetation Present? Yes

Remarks:
Sample point is situated in an excavated, earthen trapezoidal flood channel. Vegetation in the channel bottom is clearly distinct from that on the banks and is dominated by weak wetland indicator species.

SOIL

Sampling Point: 4-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	5Y 2.5/1	100					Clay loam	Channel soils influenced by
4-12	10YR 5/6	100	10YR 5/8	2	C	M	sandy loam	water-borne sediments.

[1] Type: C=Concentration, D=Depletion, RM=Reduced matrix. [2] Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to al LRR's, 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[3]

- ☐ 1 cm Muck (A9) (**LLR C**)
- ☐ 2 cm Muck (A10) (**LLR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive layer (if present)

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes

Remarks:
Brightly colored redox features at interface between clay loam and sandy loam horizons.
Note: Capay clay, 0-2% slopes classified as hydric soil type (depressions where a water table is present at a depth of 1.0 ft or less during the growing season if permeability is <6.0 in/hr in any layer within 20 in. of the surface).

HYDROLOGY

Wetland hydrology Indicators Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves
- ☐ Salt Crust (B1
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidixed Rhizospheres along living roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (**Riverine**)
- ☒ Sediment Depsits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present	No	Depth (inches)	_____
Water Table Present?	No	Depth (inches)	_____
Saturation Present (includes capillary fringe)	No	Depth (inches)	_____

Wetlands Hydrology Present? Yes

Describe Recorded Data (stream gauge, monitoring well, aerial photos, prevous inspections) if available

Remarks:
Sample point is situated within a flood channel. Site is presumed to be inundated or saturated to within 12 inches of the surface for a significant portion of the growing season based on the dominant vegetation of wetland indicator species and presence of brightyl colored mottles in the soil profile.

ATTACHMENT 3

GOOD HOUSEKEEPING
ACTIVITY SPECIFIC EROSION AND SEDIMENT CONTROL PLAN

PG&E STORM WATER PROGRAM GROUP
JANUARY 2011

Good Housekeeping

Activity Specific Erosion and Sediment Control Plan
(A-ESCP)

If Cumulative Soil Disturbance Changes,
Contact PG&E Environmental Operations - Environmental Field Specialists (EFS)
For Re-Evaluation of Storm Water Protection Needs

Prepared by

PG&E Storm Water Program Group

January 2011

TABLE OF CONTENTS

Attachments

1.0 WHAT IS COVERED UNDER THIS A-ESCP?

1.1 Good Housekeeping

This Activity Specific Erosion and Sediment Control Plan (A-ESCP) is applicable to small construction activities that are not near sensitive habitat, surface waters or wetlands, or located along steep slopes. If you encounter one of those conditions, contact your local Environmental Field Specialist (EFS). This A-ESCP sets forth minimum Best Management Practices (BMPs) for Good Housekeeping at all small PG&E construction projects.

Additional erosion and sediment control measures are outlined in Pacific Gas and Electric Company's (PG&E) A-ESCPs for the following routine activities:

- Rural Pole Installation or Replacement Projects
- Urban Pole Installation or Replacement Projects
- Small Rural Access Road Construction and Maintenance Projects
- Rural Fence Installation Construction Projects
- Small Urban Excavation Projects
- Paving and Sawcutting Projects
- Laydown/Staging Area Construction
- Heliport Pad Area Construction
- Small Area Substation Construction

1.2 Project Activities

Typical activities performed might include the following:

- Establish clear work area
- Establish lay down, staging, or vehicle parking areas
- Construct a stabilized construction entrance/exit
- Protect all inlets within or near to, the construction area
- Install dumpsters and other waste management facilities at least 50 feet from an inlet
- Provide for removable dumpster covers
- Procure covers for stockpiles from trenches or excavations
- Construct a concrete waste washout if concrete will be used during construction
- Make sure spill control kits are onsite and available

- Check equipment and vehicles daily for signs of drips/leaks and provide drip pans as necessary
- Store all soluble materials under cover or in clearly marked containers on pallets
- Establish proper locations for temporary or portable sanitary/septic waste systems, if necessary
- Demobilize after removing all temporary BMPs

1.3 Site Conditions Not Covered in this A-ESCP

This document is applicable to small projects that should not include nearby site conditions such as:

- Nearby water bodies
- Wetlands/vernal pools
- Environmentally sensitive areas or protectable vegetation
- Steep slopes

Should any of these conditions be visible or become apparent in the near vicinity during mobilization activity, contact your local EFS for further direction.

1.4 Scheduling BMP Installation

Planning for storm water pollution prevention is required for all PG&E construction and maintenance projects throughout the year. However during the dryer summer months between June and September, for short duration projects (projects less than one week in duration), erosion and sediment control BMPs may not have to be implemented unless there is a possibility of precipitation. Storm water pollution prevention planning must be done prior to starting the project and erosion and sediment control BMPs must be on hand in the event there is a sudden rain event, but only need to be deployed if precipitation occurs. Good housekeeping and tracking control BMPs must be implemented on all projects, regardless of time of year.

For longer duration projects, and all small construction projects from October to May, BMPs shall be installed prior to the soil disturbing activities, maintained during soil disturbing activities and removed at the conclusion of soil disturbing activities.

2.0 BEST MANAGEMENT PRACTICES

The purpose of this A-ESCP is to specify appropriate Good Housekeeping BMPs for all small maintenance or expansion projects. It is recommended that construction activities are scheduled to minimize soil disturbing activities during rain events.

The BMPs for the project should be installed in areas similar to those shown on the Typical BMP Installation Map, Attachment A.

Detailed cut-sheets on each BMP are provided in Attachment B.

Good Housekeeping BMPs should be followed to protect storm water runoff from construction associated chemicals and to maintain a clean construction site.

2.1 Where to Obtain BMP Materials

BMP products in Table 1 can be obtained through PG&E materials warehouses using project order numbers and established materials codes.

TABLE 1
BMP PRODUCTS INFORMATION

Category	Supplier	Product Name	Units
Certified Weed-Free Straw Mulch (EC-6)	Reed & Graham	Weed-Free Straw	Bales
Geotextiles and Mats (EC-7) Geotextile Fabric	Reed & Graham	Mirafi 600	Rolls: 12.5' x 360' 17.5' x 238'
Geotextiles and Mats (EC-7) Jute Mat	Reed & Graham	Eco-Jute	Rolls: 4' x 225'
Geotextiles and Mats (EC-7) Plastic Sheeting	Reed & Graham	Visqueen	Rolls: 20 or 40'x 100'; 10ml thick
Silt Fence (SE-1)	Reed & Graham	Caltrans Grade Silt Fence	100 feet with 36-inch wood posts at 6 foot spacing
Fiber Roll (SE-5)	Curlex	Sediment Log Type II	25 foot rolls x 6 or 9" diameter
Gravel Bags (SE-6)	Reed & Graham	Roc Soc	mono filament
Inlet Protection (SE-10) Gravel Bag	Reed & Graham	Same as SE-6	
Inlet Protection (SE-10)	Curlex	Same as SE-5	

2.2 Erosion Control

Erosion control practices consist of source control measures designed to prevent soil particles from becoming dislodged and transported in storm water runoff.

Soil-disturbing activities will be addressed as follows:

TABLE 2

BMP Number	BMP Name
EC-16	Non-Vegetative Stabilization

For BMP installation procedures refer to the cut-sheets in Attachment B.

EC-16 Non-Vegetative Stabilization:

Non-vegetative stabilization methods are used for temporary or permanent stabilization of areas where vegetative options are not feasible due to proposed use, soil/climate conditions, time constraints, or other factors. There are many methods of non-vegetative stabilization. This section covers gravel mulch.

Gravel mulch is a non-degradable erosion control product, as opposed to degradable straw and wood mulch, composed of washed and screened coarse to very coarse gravel. Details of installation and practices are provided on the cut-sheets in Attachment B. Key points are:

- Gravel should be sized based on slope, rainfall, and upgradient run-on conditions. Inadequately sized gravel mulch may wash away with runoff
- Gravel should be installed at a minimum 2" depth
- If permanent, a weed control fabric should be placed prior to installation

2.3 Sediment Controls

Sediment controls filter storm water and trap soil particles before they move offsite. Table 3 has a selection of BMPs used to filter storm water.

TABLE 3

BMP Number	BMP Name
SE-1	Silt Fence
SE-6	Gravel Bag Berm

For BMP installation procedures refer to the cut-sheets in Attachment B.

SE-1 Silt Fence

Silt fence is one of the most commonly used BMPs. It traps sediment by intercepting and detaining small amounts of sediment laden sheet flow runoff from disturbed areas to promote sedimentation behind the fence. It can be used in the following applications:

- Along the perimeter of a project
- Below the toe or down-slope of exposed erodible slopes
- Along drainage ways and channels to prevent sediment from entering these areas
- Around stockpiles

Details for installation of this product are in the cut-sheets found in Attachment B. Key points are:

- Used principally in areas where sheet flow occurs
- Install along a level contour, perpendicular to slope, so water does not flow along fence causing a concentrated flow
- Provide room for runoff to pond behind fence
- Bury bottom of fencing material to prevent water from running underneath
- Overlap ends of fence so flow is not concentrated in gaps between adjacent sections
- Stakes should be on the down-slope side of the fence
- Turn the ends of the fence uphill to prevent storm water from flowing around fence

Silt fence may be used as a good housekeeping BMP to protect small maintenance or expansion projects from run-on, to protect inlets, swales, and channels in unpaved areas, or to protect downgradient drainages from runoff from the work area. Silt fence is installed in unpaved areas. To protect paved areas, refer to SE-6 Gravel Bag Berm.

Silt fence reinforced with gravel bags, protecting a drainage channel.

SE-6 Gravel Bag Berms

Gravel bags are a good option for use in concentrated flow areas because their weight will keep them in place. Gravel bags can be formed into berms or check dams in channels. The picture below shows gravel bags used as both a berm and check dams. They may be suitable for:

- Diverting water running onto or off of the project site
- Slowing water on disturbed slopes
- Below the toe of slopes
- As sediment traps in channels
- Around temporary stockpiles including those on paved areas

The details for installation of this product are in the cut-sheets found in Attachment B. Key points are:

- Installation can be labor intensive
- Degraded gravel bags may rupture when removed, spilling contents
- Easily damaged by construction equipment
- Must be removed at end of project

For small maintenance or expansion projects, gravel bag berms may be used in paved areas for similar applications to silt fence.

Gravel bags used to slow sheet flow run-on into the lined swale, and as check dams to slow flow within the swale.

2.4 Tracking Controls

Tracking of mud and dirt onto public roads must always be controlled at construction sites. Access roads, parking lots, and other onsite vehicle transportation routes should be stabilized after they are graded if they will be used during or after periods of rain. The tracking control measures are:

TABLE 4

BMP Number	BMP Name
TC-1/2	Tracking Control

For BMP installation procedures refer to the cut-sheets in Attachment B.

TC-1/TC-2 Tracking Control:

Tracking controls consist of preventing or reducing the tracking of sediment off-site by vehicles leaving the construction area. Tracking control BMPs include TC-1 Stabilized Construction Entrance/Exit and TC-2 Stabilized Construction Roadway. Details of tracking control BMPs are in the cut-sheets found in Attachment B.

Tracking control is important for any construction project large or small. Track-out of mud, rock, or dirt onto paved streets is visible to the public and any city or county staff will identify this as a storm water violation. Pictured below is an example of a construction entrance/exit that is well maintained in which no muddy wheel tracks are visible on the pavement.

Clean and well maintained construction entrance/exit.

Depending on the size of your project, tracking control can be accomplished in various ways. If you are working on a very small, short duration project, tracking control can be

as simple as sweeping during and at the end of the day. Sites that have a construction entrance/exit that transitions from dirt to pavement may require more attention. Pictured here is an example of a construction entrance before and after stabilization:

Construction entrance/exit before and after installation of gravel over geotextile fabric tracking control.

Larger sites may require the use of temporary construction roadways. Temporary roads should follow the contours of the natural terrain to the maximum extent possible. Roadways should be graded to prevent runoff from leaving the construction site. Drainage should flow across the roadway width to one or both sides of the roadway, where a trench may be dug and stabilized to direct concentrated flow or a gravel bag berm may be installed along the perimeter of the road.

Make the tracking control fit the size of the project.

2.5 Good Housekeeping BMPs

Good housekeeping covers general practices that keep a construction site clean and neat. It also designates specific areas where such things as refueling can be done safely so that any incidental spills will not end up in storm water runoff from the site. The good housekeeping practices covered in this plan are:

TABLE 5

BMP Number	BMP Name
NS-9	Vehicle and Equipment Fueling
WM-1	Material Delivery and Storage
WM-2	Material Use
WM-3	Stockpile Management
WM-4	Spill Prevention and Control
WM-5	Solid Waste Management
WM-6	Hazardous Materials and Waste Management
WM-7	Contaminated Soil Management
WM-8	Concrete Waste Management
WM-9	Sanitary/Septic Waste Management
WM-10	Liquid Waste Management

NS-9 Vehicle and Equipment Fueling:

Construction projects must implement vehicle and equipment fueling procedures that minimize spills and leaks, and reduce or eliminate contamination of storm water. Details of implementing NS-9 Vehicle and Equipment Fueling are provided in the cut-sheets found in Attachment B. Practices that must be followed include:

- Use offsite fueling stations as much as possible
- Fueling operations must be attended to at all times
- Do not top-off fuel tanks
- Absorbent spill cleanup kits should be in fueling areas and on fueling trucks and should be disposed of properly after use
- Drip pans or absorbent pads should be used during vehicle and equipment fueling unless fueling is done on a paved surface in a dedicated area
- Portable fueling containers should be kept securely closed in secondary containment when not in use

WM-1 Material Delivery and Storage:

Proper material delivery and storage practices are necessary to control the discharge of pollutants to storm water runoff.

- Store materials in a designated area, on plastic sheeting or an impervious surface, and cover all chemicals and biodegradable materials
- Locate material storage areas away from storm drains and watercourses
- Store only the minimum amount of material that is required for the job

Details of WM-1 Material Delivery and Storage are on the cut-sheets provided in Attachment B.

WM-2 Material Use

Prevent or reduce the discharge of pollutants to the storm drain system or watercourses from material use by minimizing hazardous materials used on-site. Hazardous materials include but are not limited to herbicides, pesticides, fertilizers, detergents, fuel, oil, asphalt, and other concrete compounds. Details for implementing WM-2 Material Use are in the cut-sheets provided in Attachment B. Key methods are:

- Do not over-apply herbicides, pesticides, fertilizers, soil stabilizers, etc.
- Proper management of paint-related wastes

WM-3 Stockpile Management

Stockpile management procedures are designed to reduce or eliminate air and storm water pollution from soil, paving and construction materials stockpiles. Details for implementing stockpile management practices are on the cut-sheets provided in Attachment B. Stockpile management requirements include:

- Protection of stockpiles must be implemented during the entire year, not just during the rainy season
- All stockpiles should be covered prior to the onset of rain and in windy conditions
- Protect the perimeter of stockpiles from storm water run-on
- Inspect frequently because plastic degrades quickly and is easily damaged by wind
- Keep secure so fragments will not be blown into electrical equipment

Proper securing of plastic sheeting.

WM-4 Spill Control

At all work sites, prevent and reduce the discharge of pollutants to drainage systems or watercourses by reducing the chance for spills, containing and cleaning up spills, and properly disposing of spill materials. Details for implementing spill control are provided in the cut-sheets in Attachment B. Key points are:

- Handle and store all materials and wastes in accordance with appropriate BMPs
- Ensure an ample supply of spill clean-up materials is available wherever chemicals are used and stored
- Protect stormwater drains and conveyances, watercourses, and site run-on/runoff from spilled materials. Do not bury and wash away spills
- Clean up spills immediately and dispose of materials appropriately

WM-5 Solid Waste Management

Solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers and by arranging for regular disposal of wastes. Solid wastes include everything from tree and shrub clippings to construction debris to food containers and coffee cups. Details for implementation of WM-5 Solid Waste Management are in the cut-sheets found in Attachment B. Key points are:

- Provide a designated waste collection area on-site or on construction vehicles
- Prevent contact between solid wastes and stormwater
- Ensure regular collection and disposal of solid wastes

WM-6 Hazardous Materials and Waste Management

Hazardous materials and waste including but not limited to petroleum products, asphalt products, pesticides, herbicides, solvents, and paint products may be used on small construction sites. Sites involving demolition or renovations to existing facilities may

produce hazardous waste from older building materials and equipment such as lead paint, asbestos, and PCB containing equipment. Hazardous materials should be stored and handled in such a way as to protect stormwater from potential contamination. Details of storage and use of hazardous materials and waste are provided on the cut-sheets in Attachment B. Key points are:

- Store hazardous materials in appropriate containers. During the rainy season, provide cover on non-working days and prior to storm events
- Handle paint and painting wastes in accordance with the details provided on the cut-sheets and PG&E Environmental Practices
- Do not store more material than necessary on-site. Follow manufacture's recommendations for usage and application rates

WM-7 Contaminated Soil Management

Contaminated soil may be encountered on project sites, particularly where soil contamination may have occurred in past use, or due to spills, illicit discharges, or leaks from underground storage tanks. Details for implementing WM-7 Contaminated Soil Management are on the cut-sheets found in Attachment B. Key points are:

- Soil discoloration, odors, abandoned underground tanks or pipes, and buried debris are signs of potentially contaminated soil
- If contaminated soil is encountered, discontinue construction activities and contact the project Environmental Representative
- Manage contaminated soil according to PG&E Environmental Practices

WM-8 Concrete Waste Management

Concrete waste can alter the chemical properties of storm water; therefore it's important to manage concrete washout and cutting operations to minimize contact with site run-on and runoff. Where offsite washout of concrete wastes is not possible, designated on-site washouts should be provided. Details for implementing WM-8 Concrete Waste Management are provided on the cut-sheets found in Attachment B. Key points are:

- Contain wash out of concrete wastes to evaporate and properly dispose of solids
- Washout areas should be lined to protect the ground and constructed with sufficient volume to contain wastes, washout, and rainwater
- Do not allow excess concrete to be dumped onsite, except in designated areas
- Must have adequate volume so rain events do not overfill containment


Two alternatives for containing concrete washout water.

Adequate volume and maintenance are essential to prevent a release of high pH water from temporary concrete washout containments.

WM-9 Sanitary/Septic Waste Management

Proper sanitary and septic waste management prevent the discharge of pollutants to storm water from sanitary and septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal. Details on implementation of WM-9 are provided in Attachment B. Key points are:

- Locate temporary facilities away from drainage conveyances, watercourses, and traffic
- Ensure facilities are maintained in good working order and serviced regularly by a licensed service

- When there is a risk of high winds, secure facilities to prevent overturning

Locate sanitary facilities away from sensitive areas and secure to prevent overturning in high winds.

WM-10 Liquid Waste Management

Liquid waste management includes procedures and practices to prevent discharge of pollutants to the storm drain system or to watercourses. For details on hazardous liquid waste management see WM-6 Hazardous Waste Management. Non-hazardous liquid wastes include drilling fluids and slurries, grease-free and oil-free wastewater and rinse water, and other non-storm water liquid discharges not permitted by separate permits. Details for implementing WM-10 Liquid Waste Management are on the cut-sheets provided in Attachment B. Key points are:

- Instruct employees, subcontractors, and suppliers that it is unacceptable for any liquid waste to enter any storm drainage device, waterway, or receiving water
- Do not allow liquid wastes to flow or discharge uncontrolled. Use temporary dikes or berms to intercept and direct flows to containment areas/devices
- Liquid wastes should be contained in a controlled area such as a holding pit, sediment basin, roll-off bin, or portable tank
- Liquid wastes may require treatment prior to disposal. Contact the project Environmental Representative for more information

3.0 BMP INSPECTION AND MAINTENANCE

BMP installation, inspection and maintenance will be performed by the PG&E construction crew. BMPs should be inspected daily during construction activities. In the

event that BMPs appear to require maintenance or are not functioning as expected, the BMP will be repaired or replaced to correct the deficiency.

4.0 WHOM TO CALL

If the project receives a written notice or order from any regulatory agency, contact your local EFS for further direction immediately.

Contact the local EFS if any of the following conditions occur:

- Visually cloudy/muddy water is observed leaving the work area
- Discharge or spill of hazardous substance

After hours or if the local EFS are unavailable, call the following 800 number:
800-874-4043.

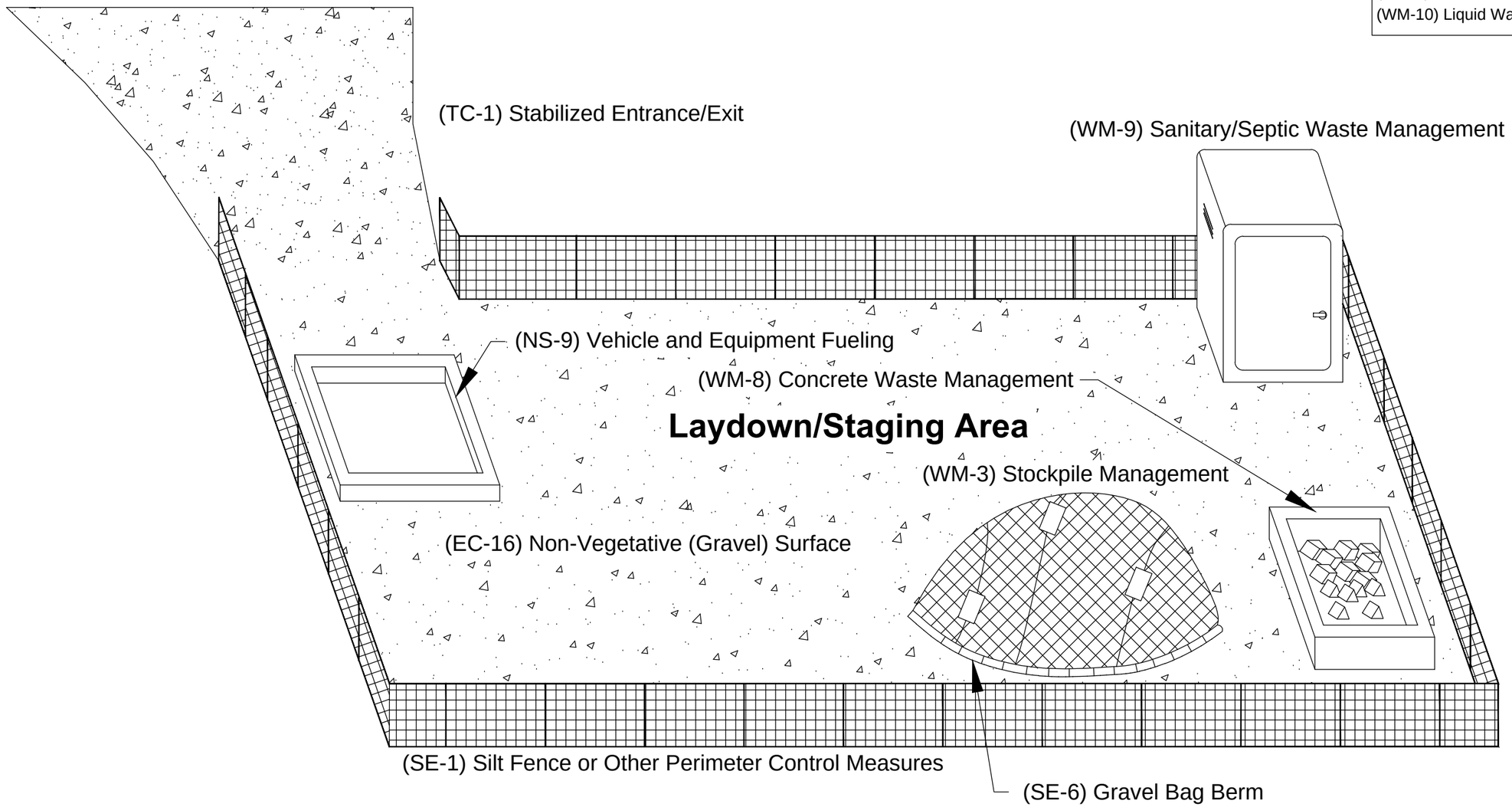
5.0 POST-CONSTRUCTION

Upon completion of construction within the project area, all temporary, non-biodegradable BMPs will be removed. All construction equipment will be demobilized and removed from the site.

Attachment A Typical BMP Installation Map

Additional BMPs to be utilized:

(WM-1) Material Delivery and Storage
(WM-2) Material Use
(WM-4) Spill Prevention and Control
(WM-5) Solid Waste Management
(WM-6) Hazardous Waste Management
(WM-7) Contaminated Soil Management
(WM-10) Liquid Waste Management



ETIC ENGINEERING

A-ESCP GOOD HOUSEKEEPING TYPICAL BMP USE MAP
PACIFIC GAS AND ELECTRIC COMPANY

FIGURE:
1

Attachment B PG&E Best Management Practice (BMP) Cut-sheets

Cut-sheets for BMPs described in this A-ESCP are included in this attachment, as follows:

SE-1 Silt Fence
SE-6 Gravel Bag Berm
NS-9 Vehicle and Equipment Fueling
TC-1 Stabilized Construction Entrance/Exit
TC-2 Stabilized Construction Roadway
WM-1 Material Delivery and Storage
WM-2 Material Use
WM-3 Stockpile Management
WM-4 Spill Prevention and Control
WM-5 Solid Waste Management
WM-6 Hazardous Materials and Waste Management
WM-7 Contaminated Soil Management
WM-8 Concrete Waste Management
WM-9 Sanitary/Septic Waste Management
WM-10 Liquid Waste Management

When

Silt fences are temporary linear sediment barriers of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fences allow sediment to settle from runoff before water leaves the construction site.

Silt fences are placed:

- Below the toe of exposed and erodible slopes
- Down slope of exposed soil areas
- Around temporary stockpiles
- Along streams and channels
- Along the perimeter of a project

How

Construct silt fences with a setback of at least 3 feet from the toe of a slope in areas suitable for temporary ponding or deposition of sediment. Where a 3-foot setback is not practicable, construct as far from the toe of the slope as practicable.

- Generally, use silt fences in conjunction with erosion controls up slope to provide effective control, particularly for slopes adjacent to water bodies or Environmentally Sensitive Areas
- Construct the length of each reach (length of fence) so that the change in base elevation along the reach does not exceed 1/3 the height of the barrier; each reach should not exceed 500 feet. The last 6 feet of the reach should be turned up slope
- The maximum length of slope draining to the silt fence should be 200 feet or fewer
- Excavate a trench for the bottom of the silt fence that is not wider or deeper than necessary
- Key in, or bury the bottom of silt fence fabric at least 12 inches deep in trench and tamp into place. If it is not feasible to trench along the slope contour, use sand bags or backfilling to key in the bottom of the fabric
- Install fence post at least 12 inches below grade on down slope side of trench
- Silt fences should not be considered for installation below slopes steeper than 1:1 (horizontal:vertical) or that contain a high number of rocks or loose dirt clods

Maintenance and Inspection

- Repair or replace split, torn, slumping, undercut, or weathered fabric
- Inspect silt fences before and after each storm event and routinely throughout the rainy season
- Remove accumulated sediment when it reaches 1/3 of the barrier height. Incorporate removed sediment into the project at appropriate locations or dispose of at a PG&E-approved site

- Remove and dispose of silt fences that are damaged and become unsuitable for the intended purpose and replace with new silt fence barriers
- Remove silt fence when the upgradient area is stabilized. Fill and compact post-holes and anchorage trench, remove sediment accumulation, and grade fence alignment to blend with adjacent ground

Silt fence installed at the toe of an erodible slope for perimeter control.

Silt fence needs to be properly keyed in 12 inches below the ground surface.

When

A gravel bag berm consists of a single row of gravel bags that are installed end-to-end to form a barrier across a slope to intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide some sediment removal. Gravel bags can also be used where flows are moderately concentrated, such as ditches, swales, and storm drain inlets (Storm Drain Inlet Protection to divert and/or detain flows). Gravel bag berms are appropriate for perimeter site control or along streams, channels, storm drain inlets, or around stockpiles to intercept sediment laden storm water and non-storm water runoff.

- Where it is desirable to filter sediment in runoff. Note that gravel bag berms are generally more permeable than sand bags. Sand bag barriers should be used where it is desirable to block and pond flows (e.g., for containment of non-storm water flows)
- Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow
- On a project-by-project basis to maximize effectiveness
- With other BMPs to maximize sediment containment

How

When used as a linear control for sediment removal:

- Install along a level contour
- Space rows 8 to 20 feet apart
- Turn ends of gravel bag row up slope to prevent flow around the ends
- Use in conjunction with temporary soil stabilization controls up slope to provide effective control

- When used for concentrated flows:
  - Stack gravel bags to required height. When the height requires 3 rows or more, use a pyramid approach
  - Overlap upper rows of gravel bags with overlap joints in lower rows
- Construct gravel bag barriers with a setback of at least 3 feet from the toe of a slope. Where a 3-foot setback is not practicable, construct as far from the toe of the slope as practicable

Maintenance and Inspection

- Inspect gravel bag berms before and after each storm event and routinely throughout the rainy season
- Reshape or replace gravel bags as needed
- Repair washouts or other damages as needed
- Inspect gravel bag berms for sediment accumulation and remove sediments when accumulation reaches 1/3 of the berm height. Incorporate removed sediment into the project at appropriate locations or dispose of it at a PG&E-approved site
- Remove gravel bag berms when no longer needed. Remove

sediment accumulation, and clean, re-grade, and stabilize the area. Incorporate removed sediment into the project at appropriate locations or dispose of it at a PG&E-approved site

Gravel bag berm used for perimeter control.

Gravel bag check dams installed to slow the water down and encourage sediments to drop out.

When

Use this BMP for projects where onsite fueling of vehicles and equipment, including handheld equipment, is planned.

Vehicle and equipment fueling, except for handheld equipment, is typically not done on the construction site. Onsite fueling of vehicles and equipment may be planned if it is impractical to send vehicles and equipment offsite for fueling.

Handheld equipment is treated separately from other equipment. Handheld equipment includes those smaller, manually operated pieces of equipment such as trenchers, mowers, chainsaws, generators, and other equipment that need fueling during regular daily operation.

How

Use the following measures, as applicable:

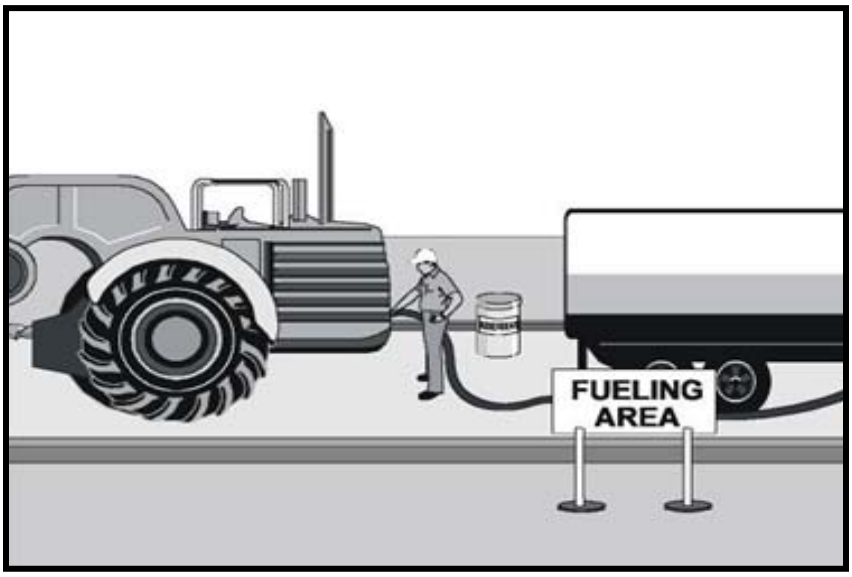
Fueling Vehicles and Handheld Equipment:

- If practical, fuel vehicles and equipment offsite
- Mobile fueling equipment is the preferred equipment used for onsite fueling
- Locate fuel storage and fueling areas away from storm drain inlets, drainage systems, and watercourses
- Conduct all fueling with the fueling operator in attendance at all times, even if fuel nozzles are equipped with automatic shutoff features
- Do not top off fuel tanks
- All fueling operators should have readily available spill containment and cleanup equipment and materials
- Immediately clean up any spills and properly dispose of contaminated materials. Do not hose down or bury spills
- Properly store and dispose of rags and absorbent material used to clean up any spilled fuel
- Mobile fueling trucks and operators must have all necessary permits, licenses, and training

Maintenance and Inspection

Check to ensure adequate supply of spill cleanup materials is available. Routinely inspect designated fueling areas.

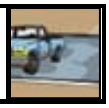
- Immediately report all spills to the project Supervisor or the Environmental Representative
- Vehicles and equipment should be inspected each day of use for leaks



Fuel vehicles and equipment within a designated fueling area.

TRACKING CONTROLS
Stabilized Construction Entrance/Exit

TC-1



When

Tracking controls reduce offsite tracking of sediment and other pollutants by providing a stabilized entrance at defined construction site entrances and exits and/or providing methods to clean up sediment or other materials to prevent them from entering a storm drain by sweeping or vacuuming.

- Stabilize entrances on a project-by-project basis in addition to other BMPs
- Implement sweeping or vacuuming when sediment is tracked from the project site onto public or private paved roads, typically at points of site exit
- Use stabilized entrances and/or sweeping at construction sites:
    - Where dirt or mud is tracked onto public roads adjacent to water bodies
    - Where poor soils are encountered, such as soils containing clay
    - Where dust is a problem during dry weather conditions

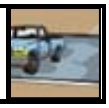
How

Stabilized Construction Entrances

- Limit the points of entrance/exit to the construction site by designating combination or single-purpose entrances and exits. Require all employees, subcontractors, and others to use them. Limit speed of vehicles to control dust
- Grade each construction entrance/exit to prevent runoff from leaving the construction site
- Route runoff from stabilized entrances/exits through a sediment-trapping device before discharge
- Design stabilized entrance/exit to support the heaviest vehicles and equipment that will use it
- Select construction access stabilization (aggregate, asphaltic concrete, and concrete) based on longevity, required performance, and site conditions
- Use of constructed or constructed/manufactured steel plates with ribs for entrance/exit access is permitted
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 inches deep, or place aggregate to a depth recommended by a geotechnical engineer. Use crushed aggregate of more than 3 inches but fewer than 6 inches
- If possible, construct aggregate area with a minimum length of 50 feet and width of 30 feet

Street Sweeping and Vacuuming

- Routinely inspect potential sediment tracking locations, at least daily
- Sweep or vacuum visible sediment tracking as needed
- Manual sweeping is appropriate for small projects. For larger



projects, use sweeping methods that collect removed sediment and material

- If not mixed with debris or trash, incorporate the removed sediment into the project or dispose of it at a PG&E-approved disposal site

Maintenance and Inspection

Stabilized Construction Entrance

- Inspect routinely for damage and assess effectiveness. Repair if access is clogged with sediment
- Sweep where tracking has occurred on roadways, on the same day. Do not use water to wash sediment off the streets. If water must be used, it should be captured to prevent sediment-laden water from running off the site
- Keep all temporary roadway ditches clear

Street Sweeping and Vacuuming

- Inspect inlet and outlet access points routinely and sweep tracked sediment as needed
- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous
- After sweeping, properly dispose of sweeper wastes

Depending on the project area soil types, these metal plates may be sufficient enough to prevent track out onto paved roads.

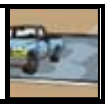
Regularly clean the plates to prevent buildup of sediments, mud, or construction debris from being tracked onto the paved road.

Manufactured metal plates knock dirt off vehicles before exiting a site.

One way to prevent bypassing would be to install a barrier such as safety cones or K-rails.

For rocked construction entrances/exits, use crushed aggregate of more than 3 inches but fewer than 6 inches.

Traditional rocked construction entrance/exit.



When

Access roads, subdivision roads, parking areas, and other onsite vehicle transportation routes should be stabilized immediately after grading, and frequently maintained to prevent erosion and control dust.

This BMP should be applied for the following conditions:

- Temporary Construction Traffic:
  - Phased construction projects and offsite road access
  - Construction during wet weather
- Construction roadways and detour roads:
  - Where mud tracking is a problem during wet weather
  - Where dust is a problem during dry weather
  - Adjacent to water bodies
  - Where poor soils are encountered

How

Areas that are graded for construction vehicle transport and parking purposes are especially susceptible to erosion and dust. The exposed soil surface is continually disturbed, leaving no opportunity for vegetative stabilization. Such areas also tend to collect and transport runoff waters along their surface. During wet weather, they often become muddy and can generate significant quantities of sediment that may pollute nearby streams or be transported offsite on the wheels of construction vehicles. Dirt roads can become so unstable during wet weather that they are virtually unusable.

Efficient construction road stabilization not only reduces onsite erosion but also can significantly speed onsite work, avoid instances of immobilized machinery and delivery vehicles, and generally improve site efficiency and working conditions during adverse weather.

Permanent roads and parking areas should be paved as soon as possible after grading. As an alternative where construction will be phased, the early application of gravel or chemical stabilization may solve potential erosion and stability problems. Temporary gravel roadway should be considered during the rainy season and on slopes greater than 5 percent.

Temporary roads should follow the contour of the natural terrain to the maximum extent possible. Slope should not exceed 15 percent. Roadways should be carefully graded to drain transversely. Provide drainage swales on each side of the roadway in the case of the crowned section or one side in the case of the super elevated section. Simple gravel berms without a trench can also be used.

Installed inlets should be protected to prevent sediment laden water from entering the storm sewer system (see SE-10, Storm Drain Inlet Protection). In addition, the following criteria should be considered:

- Road should follow topographic contours to reduce erosion of the roadway

- The roadway slope should not exceed 15 percent
- Chemical stabilizers or water are usually required on gravel or dirt roads to prevent dust
- Properly grade roadway to prevent runoff from leaving the construction site
- Design stabilized access to support heaviest vehicles and equipment that will use it
- Stabilized roadway using aggregate, asphalt concrete, or concrete based on longevity, required performance, and site conditions. The use of cold mix asphalt or asphalt concrete grindings for stabilized construction roadway is not allowed
- Coordinate materials with those used for stabilized construction entrance/exit points
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 inch depth

Maintenance and Inspection

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, impact weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation
- Keep all temporary roadway ditches clear
- When no longer required, removed stabilized construction roadway and re-grade and repair slopes
- Periodically apply additional aggregate on gravel roads
- Active dirt construction roads are commonly watered three or more times per day during the dry season

Install filter fabric, place stabilization materials and compact.

In areas where run-on onto the road may be an issue install BMPs such as fiber rolls or silt fence to protect the road.

Stabilized construction road.

When

Use this BMP if it is necessary to store materials at a construction site. This BMP does not apply to materials and supplies stored on trucks that are driven onsite and offsite daily.

How

Use the following measures as appropriate:

- Store only the minimum amount of material that is needed for the job
- Locate storage areas away from storm drain inlets, drainage systems, and watercourses to prevent storm water run-on from reaching the materials
- If practical, store materials in enclosed storage containers such as cargo containers
- Store materials on impervious surfaces or use plastic groundcovers to prevent spills or leakage from contaminating the ground
- For known hazardous materials, keep materials covered with plastic or other waterproof materials. See WM-6 Hazardous Material and Waste Management
- If necessary, provide secondary containment systems around material storage areas to prevent contaminated runoff/run-on from leaving storage area(s)
- Keep an adequate supply of spill kit materials nearby
- Ensure that qualified personnel are available when hazardous materials are delivered to guarantee proper delivery and storage in designated area
- When the storage area is no longer needed, return it to original condition
- Place bagged materials with the potential to pollute runoff, such as cold patch, concrete mix, and other materials, on pallets and under cover
- Stack erodible landscape material on pallets and cover when not in use
- Chemicals must be stored in water tight containers with appropriate secondary containment or in a storage shed

Maintenance and Inspection

Repair or replace covers, containment structures, or perimeter controls as needed to ensure proper functioning. Routinely inspect designated delivery and storage areas.

Materials are stored on pallets and covered to prevent contact with precipitation.

Spill kits are readily available.

Materials are covered and neatly stored within a curbed area.

Containers are another way to effectively store materials to prevent contact with sheet flow or precipitation.

Make sure materials are returned to the storage containers after use.

When

Apply this BMP when the following materials are used or prepared onsite:

- Pesticides and herbicides
- Fertilizers and soil amendments
- Detergents
- Petroleum products such as fuel, oil, and grease
- Asphalt and other concrete components
- Hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Mastic, pipe wrap, primers, and paint
- Concrete compounds
- Welding material
- Other materials that may be detrimental if released to the environment

How

Reduce or eliminate use of hazardous materials onsite when practical.

- Follow manufacturer instructions for use and handling of each of the hazardous materials used
- Dispose of latex paint and paint cans, used brushes, paint rags, absorbent materials, and drop cloths when thoroughly dry and no longer hazardous, and dispose of them with other construction debris
- Do not remove the original product label; it contains important safety and disposal information. Use the entire product before disposing of the container
- When possible, mix paint indoors; otherwise use secondary containment structures. Do not clean paintbrushes or rinse paint containers into a street, gutter, storm drain, sanitary sewer, or watercourse
- Dispose of as hazardous waste those paint thinners, residue, and sludge(s) that cannot be recycled. For water-based paint, clean brushes to the extent practical, and rinse into a concrete washout pit or temporary sediment trap. For oil-based paints, clean brushes to the extent practical and filter and reuse thinners and solvents
- If possible, recycle residual paints, solvents, non-treated lumber, and other materials
- **Do not over apply fertilizers, pesticides, and soil amendments. Prepare only the amount needed. Strictly follow the recommended usage instructions**
- Keep an ample supply of spill cleanup material near use areas. Instruct employees in spill cleanup procedures
- Avoid exposing applied materials to rainfall unless they have had sufficient time to dry or cure

- Manage hazardous materials in accordance with WM-6 Hazardous Materials/Waste Management
- Contact your Environmental Representative for additional information

Maintenance and Inspection

Spot check employees and contractors regularly throughout the job duration to ensure that appropriate practices are employed.

When utilizing materials, be sure to have secondary containment to prevent spills from having direct contact with soil.

Keep spill kit nearby and have readily available when using materials.

Example of improper use of materials. Missing secondary containment and spill kit.

Fencing provides security to prevent unauthorized personnel from gaining access to materials.

Store drums on secondary containment pallets.

Example of how to store materials within a structure.

When

Use this BMP when projects require stockpiled soil and paving materials. The stockpile management practices differ based on forecasted weather or terrain.

- Protection of stockpiles must be implemented whenever there is a potential for transport of materials by a water source (forecast precipitation, windy conditions, or any non-storm water runoff)

How

Use one or more of the following options to manage stockpiles and prevent stockpile erosion and sediment discharges for storm water and non-storm water runoff/run-on:

  - Return stockpile to the excavation if precipitation is forecast
  - Protect stockpiles from storm water run-on with temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, or straw bale barriers, as appropriate
  - Remove or temporarily store stockpiles in a protected location offsite

- **Stockpiles should be covered, stabilized, or protected with a perimeter sediment barrier before the onset of precipitation**
- Secure plastic coverings tightly. Ensure no plastic is blown into electrical equipment
- Keep stockpiles organized and surrounding areas clean
- Protect storm drain inlets, watercourses, and water bodies from stockpiles, as appropriate
- Implement dust control practices as appropriate on all stockpiled material

Maintenance and Inspection

Repair and/or replace covers and perimeter containment structures as needed. Plastic sheeting requires frequent inspection for sun and wind damage.

This stockpile should have perimeter control around it. Such as, fiber rolls, a gravel bag berm, or silt fencing.

Stockpile covered with plastic and secured with large rocks. Where more than one sheet of covering is required, overlap sheets and secure at seam.

This stockpile should be covered even though it has perimeter control.

Silt fence as stockpile perimeter control.

When

This BMP applies to all construction sites at all times. Implement spill control procedures any time chemicals and/or hazardous substances are stored. Substances may include, but are not limited to, fuels, lubricants, solvents, fertilizers, pesticides, herbicides, soil binders, coolants, paints, and sewage.

To the extent that work can be accomplished safely, contain spills of materials or chemicals and clean up immediately.

How

Stop the spillage of material if it can be done safely. Clean the contaminated area, and properly dispose of contaminated materials. For all spills, notify the project foreman and/or the Environmental Representative. Use the following spill prevention and controls when applicable:

- To the extent that it does not compromise cleanup activities, cover and protect spills from storm water run-on during rainfall
- Keep spill cleanup kits in areas where any materials are used and stored
- Clean up leaks and spills immediately
- Do not bury or dilute spills with wash water
- Use absorbent materials to clean up spills. Do not hose down a spill with water
- Collect and dispose of appropriately all water used for cleaning and decontamination of a spill. Do not wash it into storm drain inlets or watercourses. Coordinate disposal of these wastes with the Environmental Representative
- Store and dispose of used cleanup materials, contaminated materials, and recovered spill material in accordance with federal, state, and local regulations

Maintenance and Inspection

Routinely confirm that an ample supply of spill control cleanup materials is available near material storage, unloading, and use areas.

Keep a spill kit in or near work areas.

Be sure to wear appropriate personal protective equipment (PPE).

Use absorbent materials to soak up spilled liquids.

Store and dispose of spill cleanup materials and waste.

When

These BMPs should be used on all construction projects that generate solid waste. Solid wastes may include, but are not limited to, concrete, cement, asphalt rubble, masonry brick/block, vegetation debris, steel and scrap metals, pipe and electrical cuttings, non-hazardous equipment parts, Styrofoam, general trash, and other materials used to transport and package construction materials. BMP materials, like sand bags, gravel bags, and silt fence stock, should be separated for reuse or disposal.

Additional waste management and materials control BMPs may apply.

How

Practice good housekeeping and keep site clean.

- Use dry methods for site cleanup such as sweeping, vacuuming, and hand pick-up
- Designate a waste storage area onsite. If a designated waste storage area is not feasible, remove wastes from the site regularly
- Prohibit littering by employees, contractors, and visitors
- Keep trash receptacles available onsite and/or on construction vehicles
- Protect wastes from being washed away by rainfall, storm water run-on, or other waters (irrigation, water line breaks, etc.) or from being carried away by wind
- To prevent storm water run-on from contacting stored solid waste (stockpiled materials) use berms, secondary containment, covered dumpsters/roll-offs, or other temporary diversion structures or measures
- For materials with the potential for spills or leaks, stockpile on impervious surfaces or use plastic groundcovers to prevent spills or leaks from infiltrating the ground
- Prevent solid waste and trash from entering and clogging storm drain inlets
- As practical, incorporate any removed clean sediment and soil back into the project

Maintenance and Inspection

- Do not hose out or clean out dumpsters or containers at the construction site
- Collect site trash regularly, especially before rainy or windy conditions
- Perform routine inspections of site, including storage areas, dumpsters, stockpiles, and other areas where trash and debris are collected
- Close trashcan lids and dumpster covers before rainy or windy conditions
- Ensure waste collection is sufficiently frequent to avoid container overflow

At the end of each workday or prior to a rain event, solid waste bins are to be covered.

Covers are to be securely fastened.

Waste bin with a tarp cover.

Inspect the waste storage areas daily.

Service (empty) waste storage bins regularly.

Avoid microtrash or waste materials from overflowing or being blown onto the ground and surrounding area.

Improperly managed waste receptacle.

When

Use this BMP when projects involve the storage and use of hazardous materials and the generation of waste byproducts from the following:

- Petroleum products such as oils, fuels, grease, cold mix, and tars
- Glues, adhesives, and solvents
- Herbicides, pesticides, and fertilizers
- Paints, stains, and curing compounds
- Other hazardous or toxic substances

Projects at existing sites may contain hazardous wastes in construction debris such as lead paints, asbestos, and PCBs (particularly in older transformers).

Other BMPs regarding materials and waste management and handling may also apply.

How

Manage hazardous materials and wastes in accordance with the following procedures:

General

- Minimize the amount of hazardous materials stored at the construction site, and the production and generation of hazardous waste at the construction site
- Cover or containerize and protect from vandalism any hazardous materials and wastes
- During the rainy season, temporary containment facilities should be covered during non-working days and prior to storm events
- Clearly mark all hazardous materials and wastes. Place hazardous waste containers in secondary containment systems if stored at the construction site
- Place on and cover with plastic all stockpiled cold mix
- Do not mix waste materials, because this complicates or inhibits disposal and recycling options and can result in dangerous chemical reactions
- Segregate hazardous waste from other solid waste and dispose of it properly
- In addition to following this BMP, employees or contractors are responsible for compliance with federal, state, and local laws regarding storage, handling, transportation, and disposal of hazardous waste

Painting Operations

- Paint brushes and equipment for water and oil based paints should be cleaned within a contained area and should not be allowed to contaminate site soils, watercourses, or drainage systems. Rinse water-based paints to the sanitary sewer. Dispose of excess oil-based paints and sludge as hazardous waste
- Filter and reuse thinners and solvents. Waste thinners, solvents,

residues, and sludges that cannot be recycled or reused should be disposed of as hazardous waste

- When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop clothes should be disposed of as solid (non-hazardous) waste

Herbicides/Pesticides/Soil Amendments

- Follow the manufacturer's recommended usage instructions, prepare only the amount needed, and do not over apply
- Apply surface dressings in several smaller applications as opposed to one large application. Allow time for infiltration. Do not apply when rain is forecasted

Maintenance and Inspection

- Routinely inspect the covers on hazardous material storage areas for tears or flaws, and repair as necessary
- Ensure that all secondary containment systems can hold the volume of the largest container in the storage area; provide sufficient additional capacity for storm events
- Routinely inspect to ensure that no hazardous materials or waste are improperly exposed to storm water
- Inspect storm water that collects within secondary containment structures before discharging to ensure that no pollutants are present. Contaminated storm water must be managed according to PG&E Environmental Practices (EPs), including Vault Dewatering and SPCC pond drainage
- Do not discharge spills from a secondary containment system. See WM-4 Spill Prevention and Control

When

This contaminated soil management BMP should be used whenever soil contamination is suspected or contaminated soil is encountered. Construction crews should be extra vigilant on projects located in highly urbanized or industrial areas, where soil contamination may have occurred because of spills, illicit discharges, and leaks from underground storage tanks.

Contaminated soils may also be encountered during digging and trenching activities on highways and roadways.

How

Contaminated soil wastes should be managed in accordance with the following procedures:

- Identify contaminated soil; look for the following:
  - Soil that is discolored, black, gray, white
  - Soil that has an unusual odor, such as petroleum, acid, alkaline, sewage, solvent, or any other chemical smell
- If potentially contaminated soil is detected, discontinue the activity and contact the project's Environmental Representative
- Manage contaminated soils properly, according to PG&E Environmental Practices (EPs)

Maintenance and Inspection

Perform routine inspections of digging and trenching operations to look for contaminated soils.

- Manage all contaminated soils as hazardous substances, if applicable, in accordance with applicable federal, state, and local laws

If potentially contaminated soils are encountered:

- **Stop work!**
- Contact the project's Environmental Representative.

When

Use for projects where concrete, mortar, cement, and stucco are used or where slurry or concrete wastes are generated by construction activities, including:

- Sawcutting
- Coring/drilling
- Grinding, re-finishing, or patching
- Encasing conduit in concrete
- Tower footings

For managing concrete curing compounds, see the BMPs on Material Use (WM-2) and Hazardous Waste Management (WM-6). For managing paving, grinding, and sawcutting operations, see NS-3 Paving and Grinding Operations.

How

Install storm drain protection at any down gradient inlets that the activity might impact. See SE-10 Storm Drain Inlet Protection.

- Avoid mixing excess amounts of concrete
- **Do not wash residue or particulate matter into a storm drain inlet or watercourse**
- The following options should be used for concrete truck chute and/or pump and hose washout:
  - If available, arrange to use an existing concrete washout station. Upon entering the site, concrete truck drivers should be instructed about onsite practices
  - **Concrete Washouts:** Washout stations can be plastic lined temporary bermed areas designed with sufficient volume to completely contain all liquid and waste concrete materials plus enough capacity for rainwater. The designated area must be located away from storm drain inlets or watercourses
  - **Bucket Washout:** Manually rinse the chute into a wheelbarrow, plastic bucket, or pail, and then empty the bucket into the concrete truck barrel or on top of the placed concrete
- Locate washout at least 50 feet from storm drains, open ditches, or water bodies if possible
- Stockpile concrete demolition waste in accordance with WM-3 Stockpile Management

Maintenance and Inspection

- Responsible personnel should ensure that all concrete truck drivers are instructed about project practices when the trucks arrive onsite
- Clean designated washout areas as needed, or minimally when the washout is 75 percent full, to maintain sufficient capacity throughout the project duration
- Clean any designated onsite washout areas and remove all debris upon project completion. Dispose of concrete waste according to WM-5 Solid Waste Management

- Inspect routinely, when applicable activities are underway, to ensure that concrete washout does not overflow

Portable self contained concrete washouts are easy to maintain.

Cover during rain events.

Service the washout when approximately 75% full.

Self contained concrete washout.

Construct a concrete washout by placing a support structure (such as hay bales) to form a basin and line with a thick (minimum 6 mil) plastic.

Service the washout when approximately 75% full.

Make sure the washout doesn't become a waste bin for other construction debris.

Inspect concrete washout regularly for holes and integrity of the hay bales or support features.

Replace plastic after each servicing and replace hay bales as needed.

Lined concrete washout.

When

Use this BMP on all construction sites that use temporary or portable sanitary/septic waste systems.

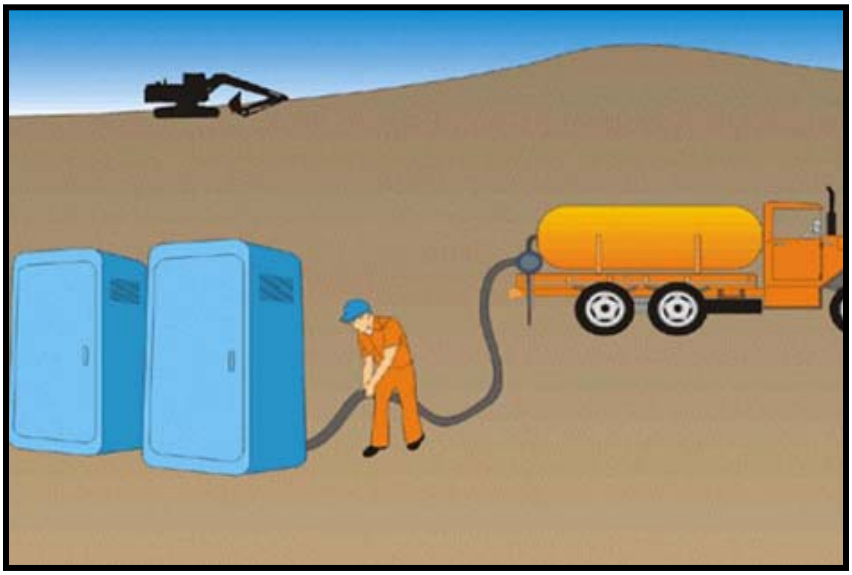
How

Manage sanitary/septic wastes in accordance with the following procedures:

- Incorporate into regular safety meetings the education of employees, contractors, and suppliers on:
  - Potential dangers to humans and the environment from sanitary/septic wastes
  - Approved sanitary/septic waste storage and disposal procedures
- When possible, locate temporary sanitary facilities at least 50 feet away from drainage facilities, watercourses, and traffic circulation. When subjected to high winds or risk of high winds, secure temporary sanitary facilities to prevent overturning
- Do not bury or discharge sanitary wastewater, except to a properly permitted sanitary sewer discharge facility. The local Sanitation District might require a permit
- Use only reputable, licensed sanitary/septic waste haulers
- Empty temporary sanitary facility's holding tanks before transport

Maintenance and Inspection

- Routinely inspect onsite sanitary/septic waste storage and disposal
- Ensure that sanitary/septic facilities are maintained in good working order and are routinely serviced by a licensed service



Good septic waste management.

When

Liquid waste management is applicable to construction projects that generate any of the following non-hazardous byproducts, residuals, or wastes, such as:

- Drilling slurries and drilling fluids
- Grease-free and oil-free wastewater and rinse water
- Dredging spoils
- Other non-storm water liquid discharges not permitted by separate permits

These separate BMPs should also be referenced for the following onsite liquid wastes:

- Dewatering operations (NS-2)
- Liquid hazardous wastes (WM-6)
- Concrete slurry residue (WM-8)

How

- Instruct employees, subcontractors, and suppliers that it is unacceptable for any liquid waste to enter any storm drainage device, waterway, or receiving water
- **If dewatering needs to be performed for the construction activities, contact your Environmental Representative for further support as dewatering may require a permit**
- Do not use water to clean vehicles and equipment onsite
- Dispose of drilling residue and drilling fluids in accordance with PG&E procedures at an approved disposal site. Do not allow them to enter storm drains or watercourses. Coordinate the disposal of these wastes with your Environmental Representative
- Contain wastes generated as part of an operational procedure, such as water-laden dredged material and drilling mud, so that they cannot flow into drainage channels or receiving waters
- Contain non-hazardous liquid wastes in a controlled area, such as a lined holding pit, lined sediment basin, roll-off bin, or portable tank. Ensure containment devices are structurally sound and leak free
- Capture liquid wastes using temporary dikes or berms to direct flow to a containment area
- Ensure that containment devices are of sufficient quantity or volume to completely contain the liquid wastes generated and any additional volume based on anticipated rainfall
- **Do not locate containment areas or devices where accidental release of the contained liquid can threaten health or safety or discharge to watercourses or the storm drain system**
- Capture all liquid wastes running off a surface that has the potential to affect the storm drainage system (for example, wash water and rinse water from cleaning walls or pavement)

- If the liquid waste is sediment-laden, use a sediment trap or capture in a containment device and allow sediment to settle
- Disposal of liquid wastes is subject to specific laws and regulations, or to requirements of other permits secured for the construction project. Contact your Environmental Representative for further information

Maintenance and Inspection

- Remove deposited solids from containment areas and containment systems as needed, and at the completion of the project
- Inspect containment areas and containment systems routinely for damage, and repair as needed

ATTACHMENT 4

HYDRAULIC STUDY
AMERICANA PARK BYPASS CHANNEL
CITY OF PITTSBURG

HARRISON ENGINEERING INC.
MARCH 24, 2016

Hydraulic Study

Americana Park Bypass Channel

City of Pittsburg
March 24, 2016

Prepared by: Harrison Engineering Inc.
1987 Bonifacio Street
Concord, CA 94520

Hydraulics Study: Americana Park Bypass Channel
City of Pittsburg
March 24, 2016

PROJECT BACKGROUND

The existing Americana Park detention basin has insufficient capacity, which results in the flooding of North Parkside Drive on a nearly annual basis. The purpose of the project is to divert high stormwater flows from the detention basin, to the east across the PG&E property in an open earth channel, to a Tributary to Willow Creek that runs along the easterly boundary of the PG&E parcel. The channel will be constructed on the east side of the detention basin in an upland area where there will be no impact to existing wetlands or wetland hydrology, with the exception of the connection with the Willow Creek Tributary.

Four alternative east-west alignments were reviewed through the progress of this project as follows:

1. Adjacent and parallel to Polaris Drive/Power Avenue
2. 200 feet north of Polaris Drive/Power Avenue
3. 570 feet north of Polaris Drive/Power Avenue
4. 190 feet south of N. Parkside Drive (Preferred Alignment)

Alternative 1-3 were discovered to impact seasonal wetlands, which resulted in a high mitigation cost. Alternative 4 resulted in a minimal impact to wetlands.

HYDRAULICS ANALYSIS

A. Background Data

In 1998, the City of Pittsburg commissioned Govers Engineers to make sewer, water, and storm drain calculations for the initial design of the Americana Park detention basin. In this report, Govers Engineers referenced a 1995 Contra Costa County Flood Control District analysis of a nearby tributary point (point #841), for which the 25-year flood design flow was 385 cubic feet per second (cfs). The flow developed by the County Flood Control District assumed buildout of the watershed and should be considered a conservative flow to use for the channel design in this project.

B. Manning's Roughness Coefficient

Based on the attached table, the Manning's roughness coefficient was assumed to be 0.030 for the majority of the channel, and 0.040 for the portions of the channel with rock slope protection. For the concrete pipe culvert, a Manning's roughness coefficient of 0.013 was assumed, as the culvert will likely collect debris over time.

C. Method of Analysis

HEC-RAS (Version 5.0.0) was used to analyze the hydraulics of the earth channel and culverts.

D. Starting WSEL

As a result of FEMA's digitization of the Flood Insurance Rate Maps (FIRMs), many homes adjacent to the Willow Creek Tributary suddenly found themselves within a mapped 100-year floodplain, which resulted in additional insurance requirements from lenders. To help residents, the City of Pittsburg hired Balance Hydrologics to perform a LOMR (Letter of Map Revision) study. This study represents the most comprehensive and approved study to date for the Willow Creek Tributary. The datum was verified as being the same as our project datum by reviewing the elevations of North Parkside Drive used in their modeling. Our tie in location is at HEC-RAS section 11in the Balance Hydrologics study, which has a water surface elevation (WSEL) of 20.6 feet. This is a 100-year WSEL, which was used as the Starting WSEL for our 25-year storm channel design.

FINDINGS AND SUMMARY

A. Channel Geometry

The proposed earth channel generally has a trapezoidal shape with 12-ft base and 3-ft horizontal to 1-ft vertical side slopes. The channel depth varies from approximately 4 feet to 6 feet. The earth channel cross sectional geometry and profile is provided in Attachment 1.

B. Erosion Control

In general, the channel banks will be vegetated to lower the velocity, stabilize the banks, increase water absorption, and minimize erosion.

The allowable water velocity in a vegetated earth channel is 6 feet per second (fps). The design of this channel resulted in velocities ranging from 1.6 to 5.6 fps, within the acceptable range for a stable earthen channel. Rock slope protection was used for transition areas to maintain channel stability. Rock slope protection is only provided below the 25-design flood water surface elevation. Rock slope protection was sized using the California Bank and Shore Protection Manual.

Attachments

1. HEC-RAS Hydraulics Calculations
2. Channel Plan and Profile

References

1. McCuen, Richard H. "Hydrologic Analysis and Design." 3rd Edition. Pearson Prentice Hall, 2005. (pp. 134-140, 790-791).
2. "California Bank and Shore Protection Design". California Department of Transportation, 2000.
3. Brater, Ernest F. and King, Horace Williams. "Handbook of Hydraulics." 6th Edition. McGraw-Hill Book Company, 1982. (p. 7-22).

Appendix 1:

Hydraulics Calculations

-HEC-RAS Calculations

- Starting WSEL (Balance Hyrdologics)

HEC-RAS HEC-RAS 5.0.0 February 2016
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Northalignment
Project File : Northalignment.prj
Run Date and Time: 3/24/2016 3:11:01 PM

Project in English units

PLAN DATA

Plan Title: Plan 02
Plan File : z:\Data\Projects\Pittsburg - Americana Basin Bypass\Hydraulics\HEC RAS\2016 Alignment\Northalignment.p02

Geometry Title: Design 2-added-sections
Geometry File : z:\Data\Projects\Pittsburg - Americana Basin Bypass\Hydraulics\HEC RAS\2016

Alignment\Northalignment.g02

Flow Title : Flow 01
Flow File : z:\Data\Projects\Pittsburg - Americana Basin Bypass\Hydraulics\HEC RAS\2016 Alignment\Northalignment.f01

Plan Summary Information:
Number of: Cross Sections = 11 Multiple Openings = 0
Culverts = 1 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: Flow 01
Flow File : z:\Data\Projects\Pittsburg - Americana Basin Bypass\Hydraulics\HEC RAS\2016 Alignment\Northalignment.f01

Flow Data (cfs)

River	Reach	RS	PF 1

Americana BypassSite 1	1850	385	

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Americana BypassSite 1		PF 1	Critical	Known WS = 20.6

GEOMETRY DATA

Geometry Title: Design 2-added-sections
Geometry File : z:\Data\Projects\Pittsburg - Americana Basin Bypass\Hydraulics\HEC RAS\2016 Alignment\Northalignment.g02

CROSS SECTION

RIVER: Americana Bypass
REACH: Site 1 RS: 1850

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-86	25	-26	21	26	21	86	25

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-86	.05	-86	.03	86	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-86	86	125	125	125	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	23.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.030	
W.S. Elev (ft)	23.44	Reach Len. (ft)	125.00	125.00	125.00
Crit W.S. (ft)	22.07	Flow Area (sq ft)		216.77	
E.G. Slope (ft/ft)	0.000620	Area (sq ft)		216.77	
Q Total (cfs)	385.00	Flow (cfs)		385.00	
Top Width (ft)	125.34	Top Width (ft)		125.34	
Vel Total (ft/s)	1.78	Avg. Vel. (ft/s)		1.78	
Max Chl Dpth (ft)	2.44	Hydr. Depth (ft)		1.73	
Conv. Total (cfs)	15456.5	Conv. (cfs)		15456.5	
Length Wtd. (ft)	125.00	Wetted Per. (ft)		125.50	
Min Ch El (ft)	21.00	Shear (lb/sq ft)		0.07	
Alpha	1.00	Stream Power (lb/ft s)		0.12	
Frctn Loss (ft)	0.17	Cum Volume (acre-ft)	0.00	2.16	0.00
C & E Loss (ft)	0.04	Cum SA (acres)	0.00	0.82	0.00

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than
1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Americana Bypass
REACH: Site 1 RS: 1725

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-19.2	24	-6	19.6	6	19.6	19.2	24

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-19.2	.05	-19.2	.03	19.2	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-19.2	19.2	100	100	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	23.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.		0.030	
W.S. Elev (ft)	22.81	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)		Flow Area (sq ft)		69.29	
E.G. Slope (ft/ft)	0.004543	Area (sq ft)		69.29	
Q Total (cfs)	385.00	Flow (cfs)		385.00	
Top Width (ft)	31.23	Top Width (ft)		31.23	
Vel Total (ft/s)	5.56	Avg. Vel. (ft/s)		5.56	
Max Chl Dpth (ft)	3.21	Hydr. Depth (ft)		2.22	
Conv. Total (cfs)	5712.1	Conv. (cfs)		5712.1	
Length Wtd. (ft)	100.00	Wetted Per. (ft)		32.27	
Min Ch El (ft)	19.60	Shear (lb/sq ft)		0.61	
Alpha	1.00	Stream Power (lb/ft s)		3.38	
Frctn Loss (ft)	0.38	Cum Volume (acre-ft)	0.00	1.75	0.00
C & E Loss (ft)	0.03	Cum SA (acres)	0.00	0.59	0.00

CROSS SECTION

RIVER: Americana Bypass
REACH: Site 1 RS: 1625.00*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
  -19.98   23.67      -6   19.01       6   19.01   19.98   23.67

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  -19.98     .05  -19.98     .03   19.98

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -19.98   19.98              100     100     100             .1       .3

CROSS SECTION


RIVER: Americana Bypass
REACH: Site 1             RS: 1525.00*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  -20.76   23.35      -6   18.43       6   18.43   20.76   23.35

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  -20.76     .05  -20.76     .03   20.76     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -20.76   20.76              100     100     100             .1       .3

CROSS SECTION


RIVER: Americana Bypass
REACH: Site 1             RS: 1425.00*

INPUT
Description:
```

```
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  -21.54   23.02      -6   17.84       6   17.84   21.54   23.02

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  -21.54     .05  -21.54     .03   21.54     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -21.54   21.54              100     100     100             .1       .3

CROSS SECTION


RIVER: Americana Bypass
REACH: Site 1             RS: 1325.00*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  -22.32    22.7      -6   17.26       6   17.26   22.32    22.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  -22.32     .05  -22.32     .03   22.32     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -22.32   22.32              100     100     100             .1       .3

CROSS SECTION


RIVER: Americana Bypass
REACH: Site 1             RS: 1225.00*
```

```
INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -23.1   22.37      -6   16.67       6   16.67    23.1   22.37

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -23.1     .05   -23.1     .03    23.1     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -23.1    23.1              100     100     100             .1       .3

CROSS SECTION


RIVER: Americana Bypass
REACH: Site 1             RS: 1125.00*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  -23.88   22.05      -6   16.09       6   16.09   23.88   22.05

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  -23.88     .05  -23.88     .03   23.88     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -23.88   23.88              15      15      15             .1       .3

CROSS SECTION


RIVER: Americana Bypass
```

REACH: Site 1 RS: 1110

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	22	-6	16	6	16	24	22

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.05	-24	.04	24	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	20	20	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	22.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.040	
W.S. Elev (ft)	22.08	Reach Len. (ft)	20.00	20.00	20.00
Crit W.S. (ft)	18.54	Flow Area (sq ft)		183.70	
E.G. Slope (ft/ft)	0.000563	Area (sq ft)		183.70	
Q Total (cfs)	385.00	Flow (cfs)		385.00	
Top Width (ft)	48.00	Top Width (ft)		48.00	
Vel Total (ft/s)	2.10	Avg. Vel. (ft/s)		2.10	
Max Chl Dpth (ft)	6.08	Hydr. Depth (ft)		3.83	
Conv. Total (cfs)	16226.3	Conv. (cfs)		16226.3	
Length Wtd. (ft)	20.00	Wetted Per. (ft)		50.10	
Min Ch El (ft)	16.00	Shear (lb/sq ft)		0.13	
Alpha	1.00	Stream Power (lb/ft s)		0.27	
Frctn Loss (ft)		Cum Volume (acre-ft)	0.00	0.11	0.00
C & E Loss (ft)		Cum SA (acres)	0.00	0.04	0.00

CULVERT

RIVER: Americana Bypass
REACH: Site 1 RS: 1109

INPUT
Description: Dbl 72-inch Culvert
Distance from Upstream XS = 6
Deck/Roadway Width = 12
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
-50	25	15.5	50	25	15.5

Upstream Bridge Cross Section Data
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	22	-6	16	6	16	24	22

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.05	-24	.04	24	.05

Bank Sta: Left	Right	Coeff Contr.	Expan.
-24	24	.1	.3

Downstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
-50	25	15.5	50	25	15.5

Downstream Bridge Cross Section Data
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-29	22	-10	15.65	10	15.65	29	22

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -29     .04     -29     .04      29     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
           -29      29             .1       .3

Upstream Embankment side slope              =       2 horiz. to 1.0 vertical
Downstream Embankment side slope            =       2 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .98
Elevation at which weir flow begins         =   25.25
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular       6
FHWA Chart # 1 - Concrete Pipe Culvert
FHWA Scale # 1 - Square edge entrance with headwall
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                  0      20     .013     .013        0                   .5                1
Number of Barrels =  2
Upstream   Elevation =  16
Centerline Stations
    Sta.    Sta.
      -5       5
Downstream Elevation =  15.65
Centerline Stations
    Sta.    Sta.
      -5       5

CULVERT OUTPUT  Profile #PF 1  Culv Group:  Culvert #1
```

Q Culv Group (cfs)	385.00	Culv Full Len (ft)	
# Barrels	2	Culv Vel US (ft/s)	8.71
Q Barrel (cfs)	192.50	Culv Vel DS (ft/s)	7.75
E.G. US. (ft)	22.15	Culv Inv El Up (ft)	16.00
W.S. US. (ft)	22.08	Culv Inv El Dn (ft)	15.65
E.G. DS (ft)	20.66	Culv Frctn Ls (ft)	0.00
W.S. DS (ft)	20.58	Culv Exit Loss (ft)	0.85
Delta EG (ft)	1.49	Culv Entr Loss (ft)	0.59
Delta WS (ft)	1.50	Q Weir (cfs)	
E.G. IC (ft)	21.82	Weir Sta Lft (ft)	
E.G. OC (ft)	22.15	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	20.38	Weir Max Depth (ft)	
Culv WS Outlet (ft)	20.58	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	2.43	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	3.79	Min El Weir Flow (ft)	25.25

CROSS SECTION

RIVER: Americana Bypass
REACH: Site 1 RS: 1090

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-29	22	-10	15.65	10	15.65	29	22

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-29	.04	-29	.04	29	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-29	29	20	20	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	20.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.040	
W.S. Elev (ft)	20.58	Reach Len. (ft)	20.00	20.00	20.00
Crit W.S. (ft)		Flow Area (sq ft)		171.25	
E.G. Slope (ft/ft)	0.000730	Area (sq ft)		171.25	
Q Total (cfs)	385.00	Flow (cfs)		385.00	
Top Width (ft)	49.49	Top Width (ft)		49.49	
Vel Total (ft/s)	2.25	Avg. Vel. (ft/s)		2.25	
Max Chl Dpth (ft)	4.93	Hydr. Depth (ft)		3.46	
Conv. Total (cfs)	14246.5	Conv. (cfs)		14246.5	
Length Wtd. (ft)	20.00	Wetted Per. (ft)		51.10	
Min Ch El (ft)	15.65	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.34	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	0.00	0.09	0.00
C & E Loss (ft)	0.01	Cum SA (acres)	0.00	0.02	0.00

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than
1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Americana Bypass
REACH: Site 1 RS: 974

INPUT
Description:
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-38	22	-27	18.25	-13	14.5	7	14.5	21	18.25
35	22								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-38	.05	-27	.04	21	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-27	21	1	1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	20.64	Element			
Vel Head (ft)	0.04	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	20.60	Reach Len. (ft)			
Crit W.S. (ft)	16.47	Flow Area (sq ft)	8.10	240.30	10.31
E.G. Slope (ft/ft)	0.000213	Area (sq ft)	8.10	240.30	10.31
Q Total (cfs)	385.00	Flow (cfs)	3.77	376.36	4.87
Top Width (ft)	63.67	Top Width (ft)	6.89	48.00	8.77
Vel Total (ft/s)	1.49	Avg. Vel. (ft/s)	0.47	1.57	0.47
Max Chl Dpth (ft)	6.10	Hydr. Depth (ft)	1.18	5.01	1.18
Conv. Total (cfs)	26363.1	Conv. (cfs)	258.4	25771.4	333.3
Length Wtd. (ft)		Wetted Per. (ft)	7.28	48.99	9.08
Min Ch El (ft)	14.50	Shear (lb/sq ft)	0.01	0.07	0.02
Alpha	1.09	Stream Power (lb/ft s)	0.01	0.10	0.01
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

River:Americana Bypass

Reach	River Sta.	n1	n2	n3
Site 1	1850	.05	.03	.05

Site 1	1725	.05	.03	.05
Site 1	1625.00*	.05	.03	
Site 1	1525.00*	.05	.03	.05
Site 1	1425.00*	.05	.03	.05
Site 1	1325.00*	.05	.03	.05
Site 1	1225.00*	.05	.03	.05
Site 1	1125.00*	.05	.03	.05
Site 1	1110	.05	.04	.05
Site 1	1109	Culvert		
Site 1	1090	.04	.04	.04
Site 1	974	.05	.04	.05

SUMMARY OF REACH LENGTHS

River: Americana Bypass

Reach	River Sta.	Left	Channel	Right
Site 1	1850	125	125	125
Site 1	1725	100	100	100
Site 1	1625.00*	100	100	100
Site 1	1525.00*	100	100	100
Site 1	1425.00*	100	100	100
Site 1	1325.00*	100	100	100
Site 1	1225.00*	100	100	100
Site 1	1125.00*	15	15	15
Site 1	1110	20	20	20
Site 1	1109	Culvert		
Site 1	1090	20	20	20
Site 1	974	1	1	1

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Americana Bypass

Reach	River Sta.	Contr.	Expan.
Site 1	1850	.1	.3
Site 1	1725	.1	.3
Site 1	1625.00*	.1	.3
Site 1	1525.00*	.1	.3
Site 1	1425.00*	.1	.3
Site 1	1325.00*	.1	.3
Site 1	1225.00*	.1	.3
Site 1	1125.00*	.1	.3
Site 1	1110	.1	.3
Site 1	1109	Culvert	
Site 1	1090	.1	.3
Site 1	974	.1	.3

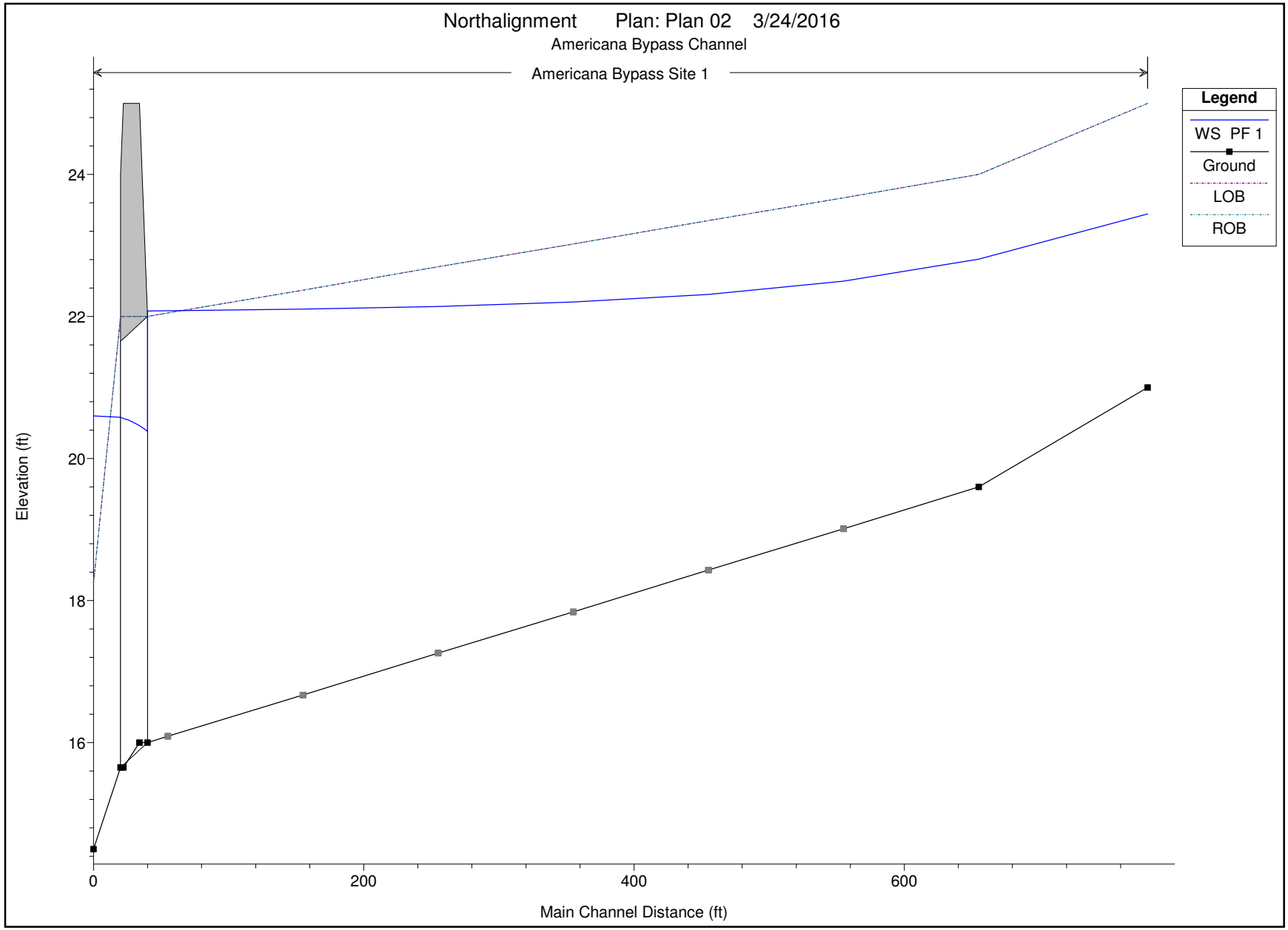
Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Site 1	1850	PF 1	385.00	21.00	23.44	22.07	23.49	0.000620	1.78	216.77	125.34	0.24
Site 1	1725	PF 1	385.00	19.60	22.81		23.29	0.004543	5.56	69.29	31.23	0.66
Site 1	1110	PF 1	385.00	16.00	22.08	18.54	22.15	0.000563	2.10	183.70	48.00	0.19

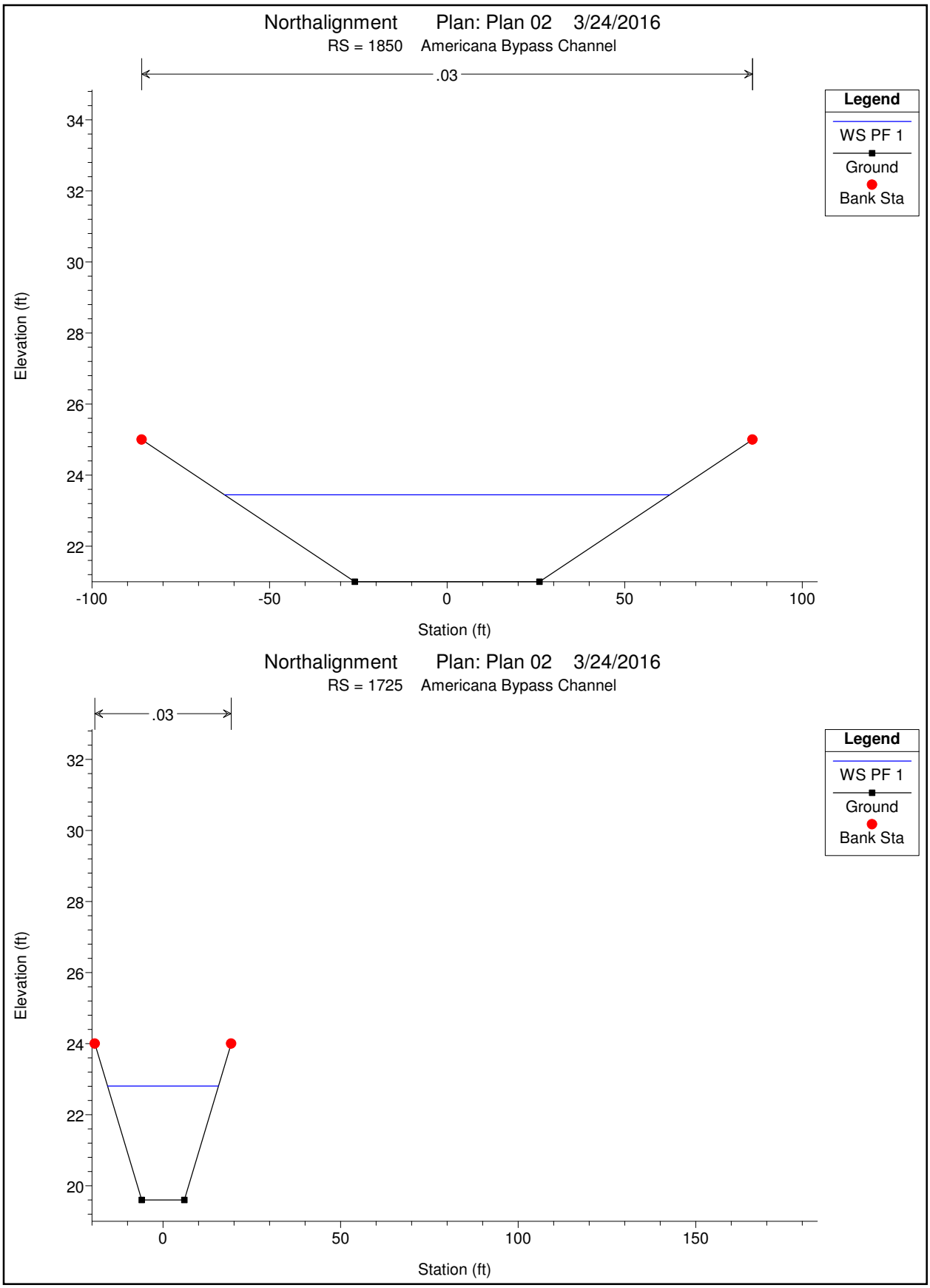
Site 1	1109		Culvert					
Site 1	1090	PF 1	385.00	15.65	20.58		20.66	0.000730
2.25	171.25	49.49	0.21					
Site 1	974	PF 1	385.00	14.50	20.60	16.47	20.64	0.000213
1.57	258.71	63.67	0.12					

Profile Output Table - Culvert Only

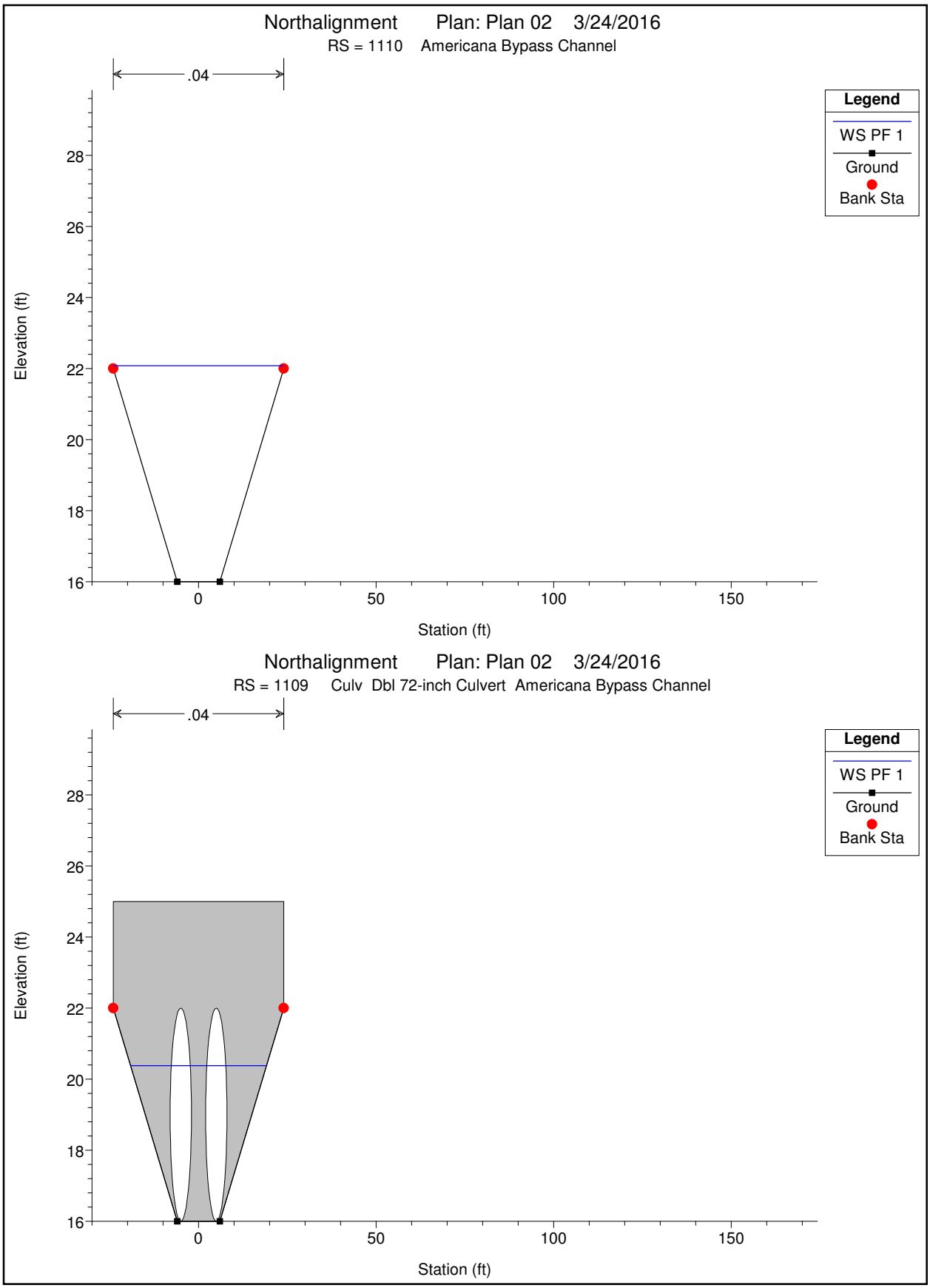
Reach	River Sta		Profile	E.G. US.	W.S. US.	E.G. IC	E.G. OC	Min El Weir Flow
Q Culv Group	Q Weir	Delta WS	Culv Vel US	Culv Vel DS				
				(ft)	(ft)	(ft)	(ft)	(ft)
(cfs)	(cfs)	(ft)	(ft/s)	(ft/s)				
Site 1	1109	Culvert #1	PF 1	22.15	22.08	21.82	22.15	25.25
385.00		1.50	8.71	7.75				



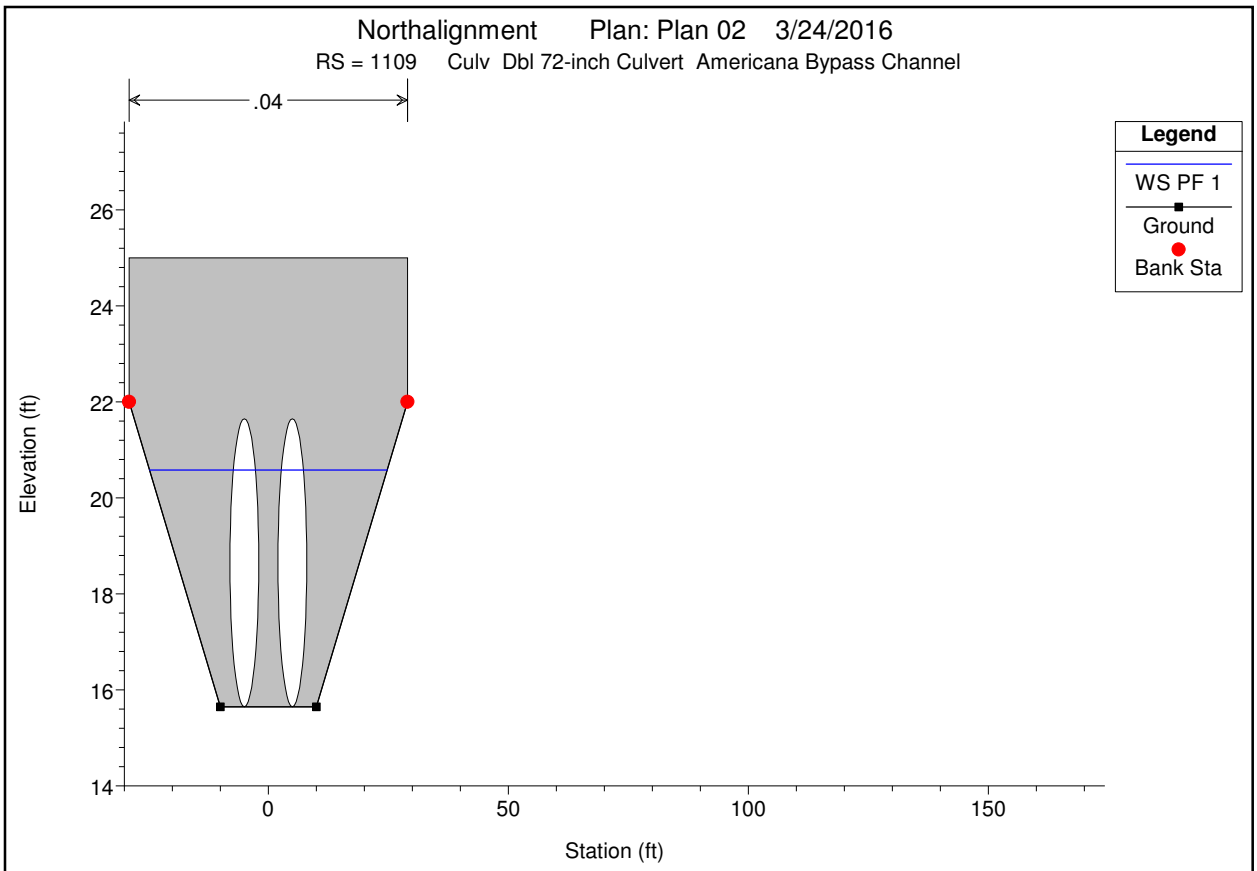
1 in Horiz. = 105.1709 ft 1 in Vert. = 2 ft

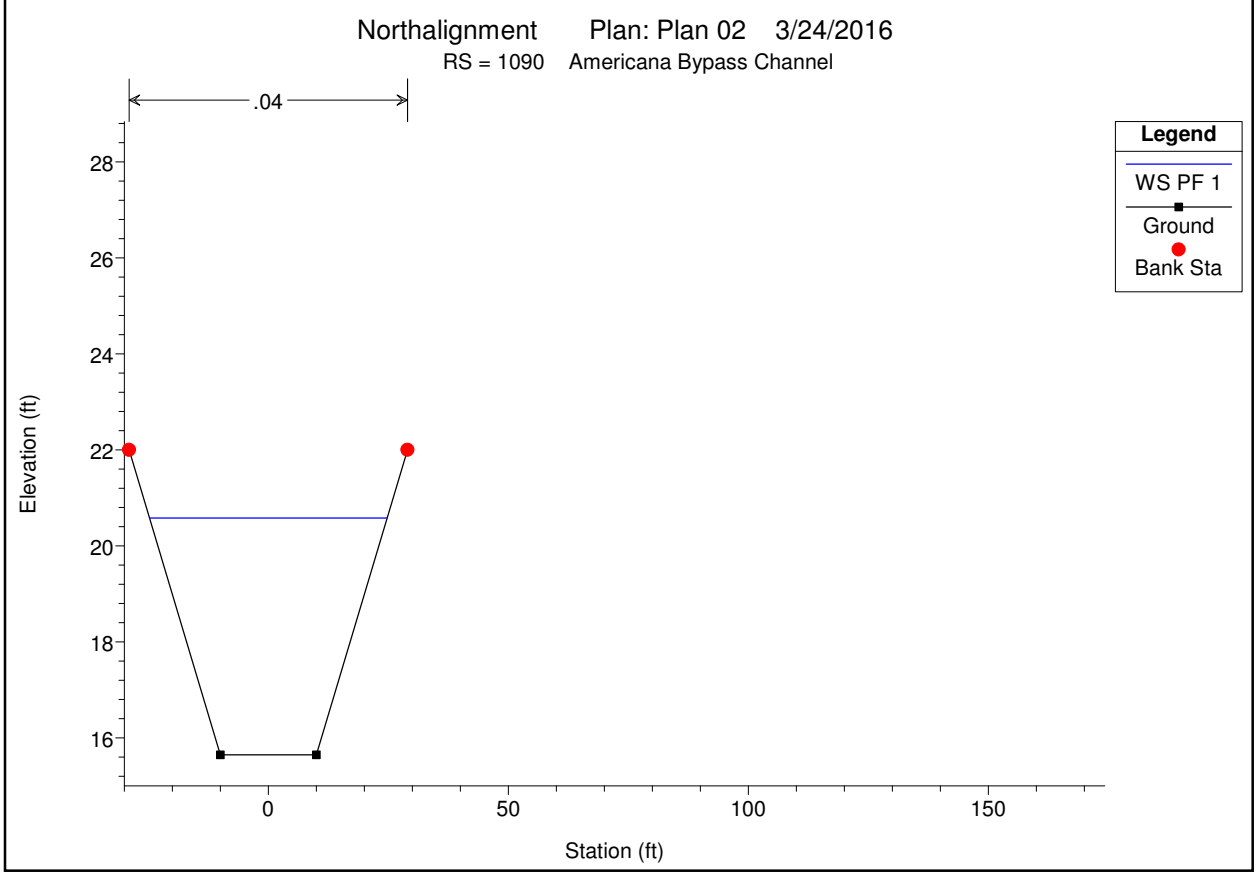


1 in Horiz. = 40 ft 1 in Vert. = 4 ft

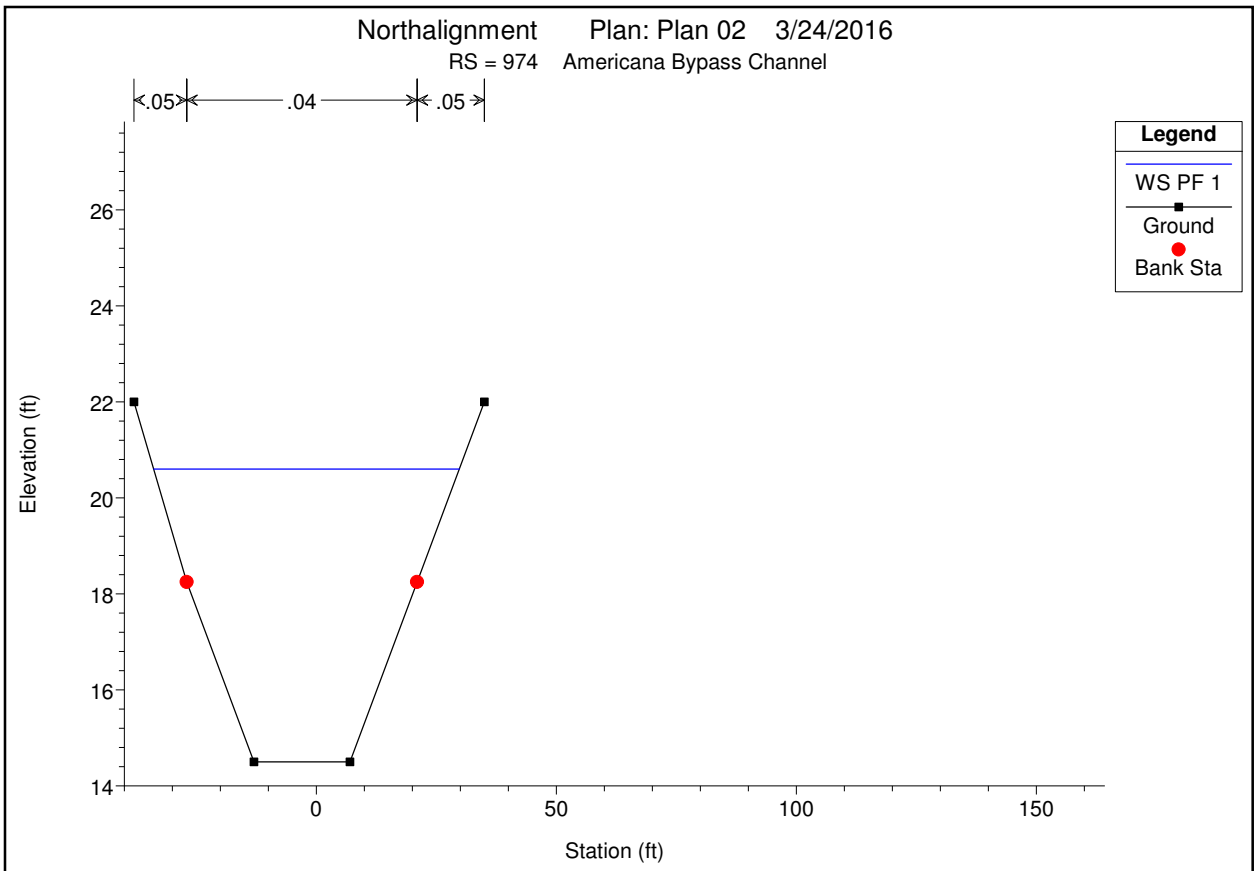


1 in Horiz. = 40 ft 1 in Vert. = 4 ft



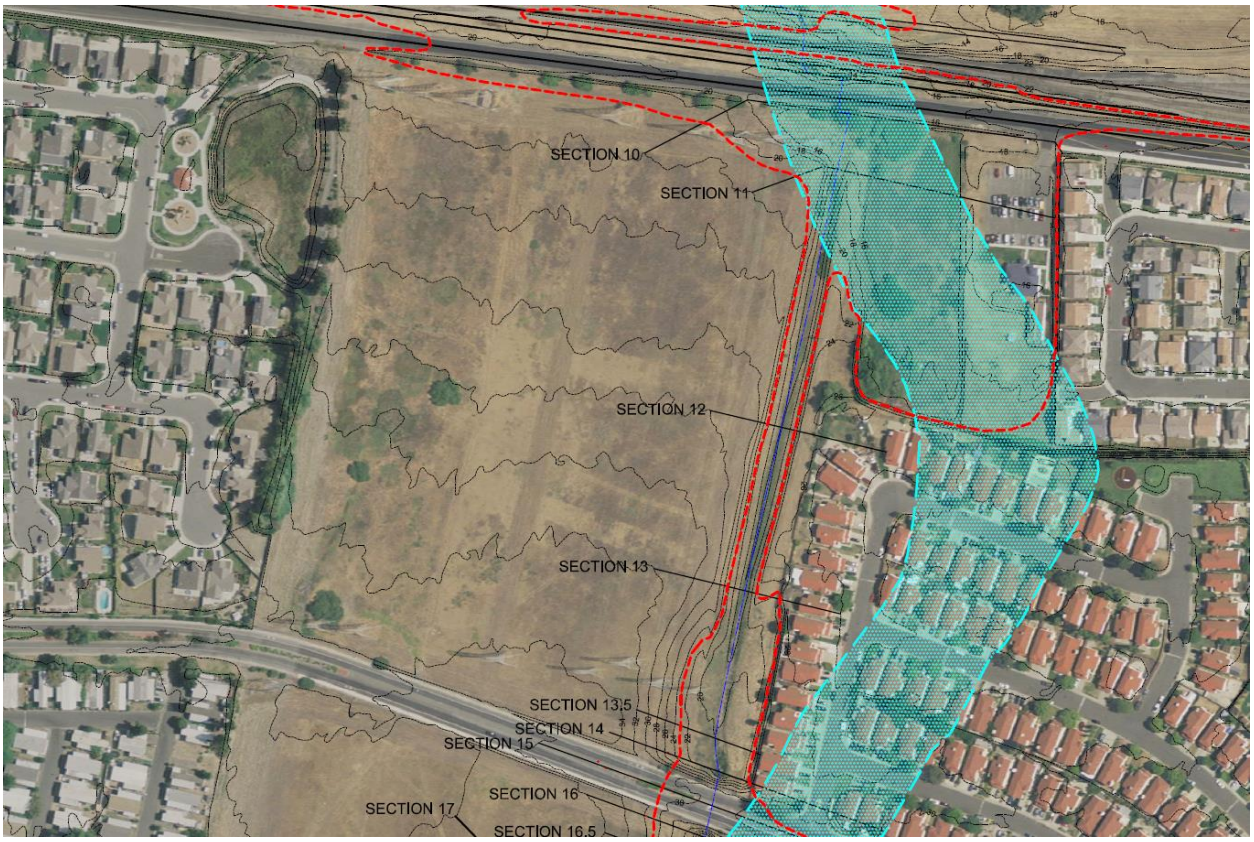


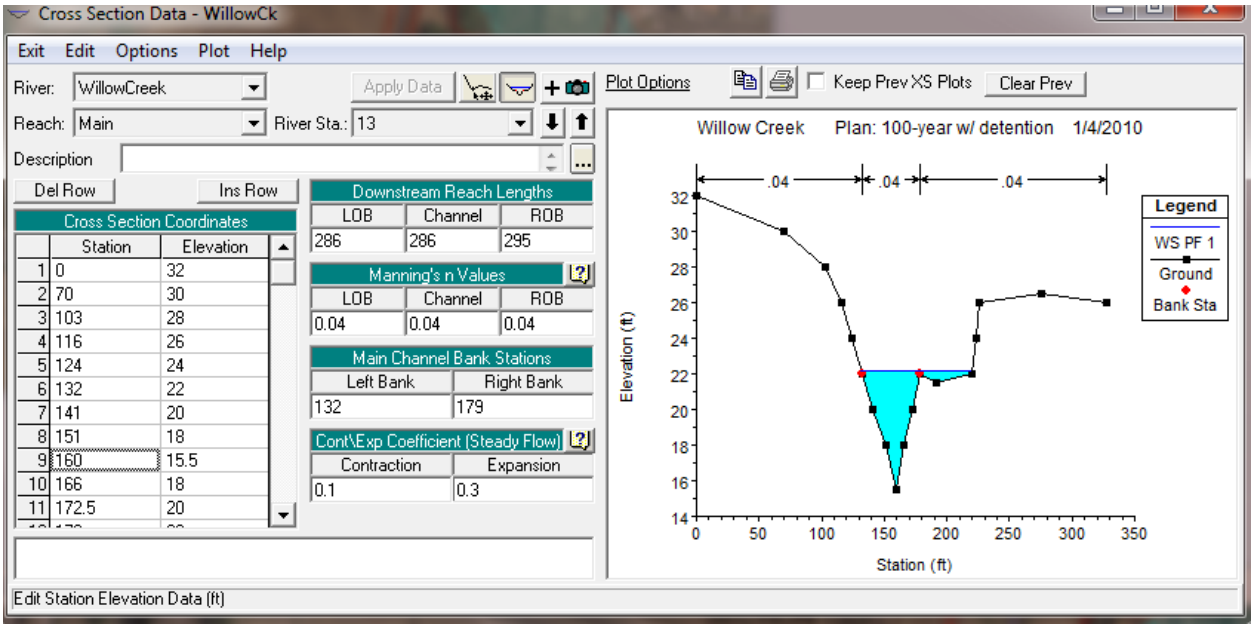
1 in Horiz. = 40 ft 1 in Vert. = 4 ft



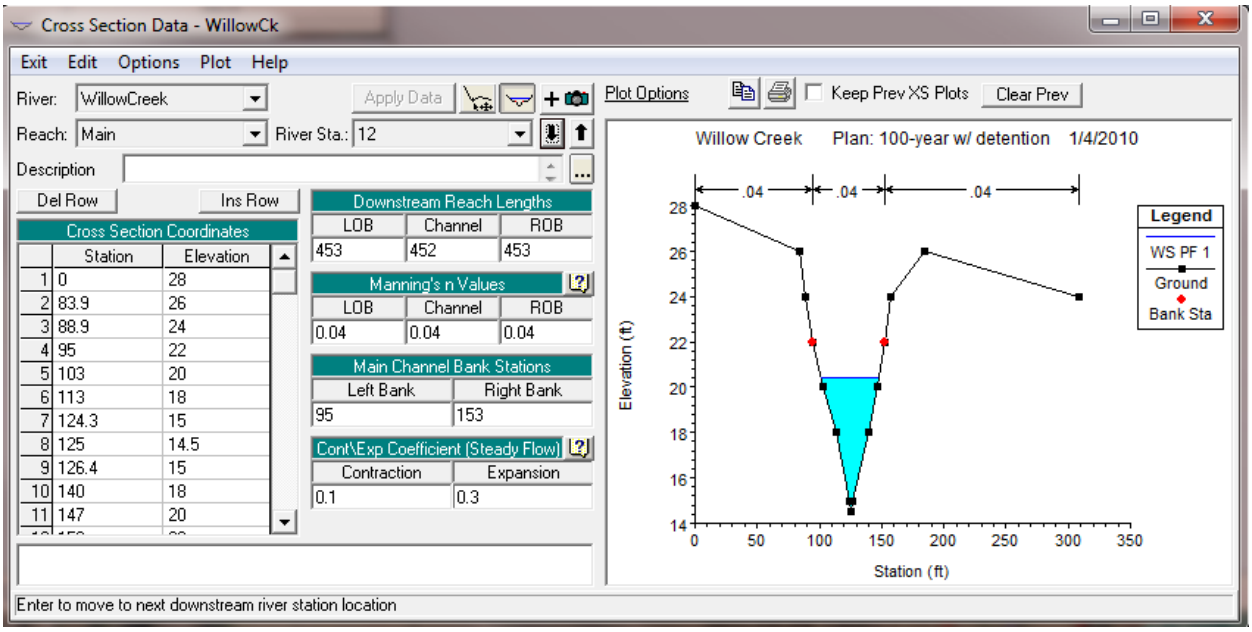
1 in Horiz. = 40 ft 1 in Vert. = 4 ft

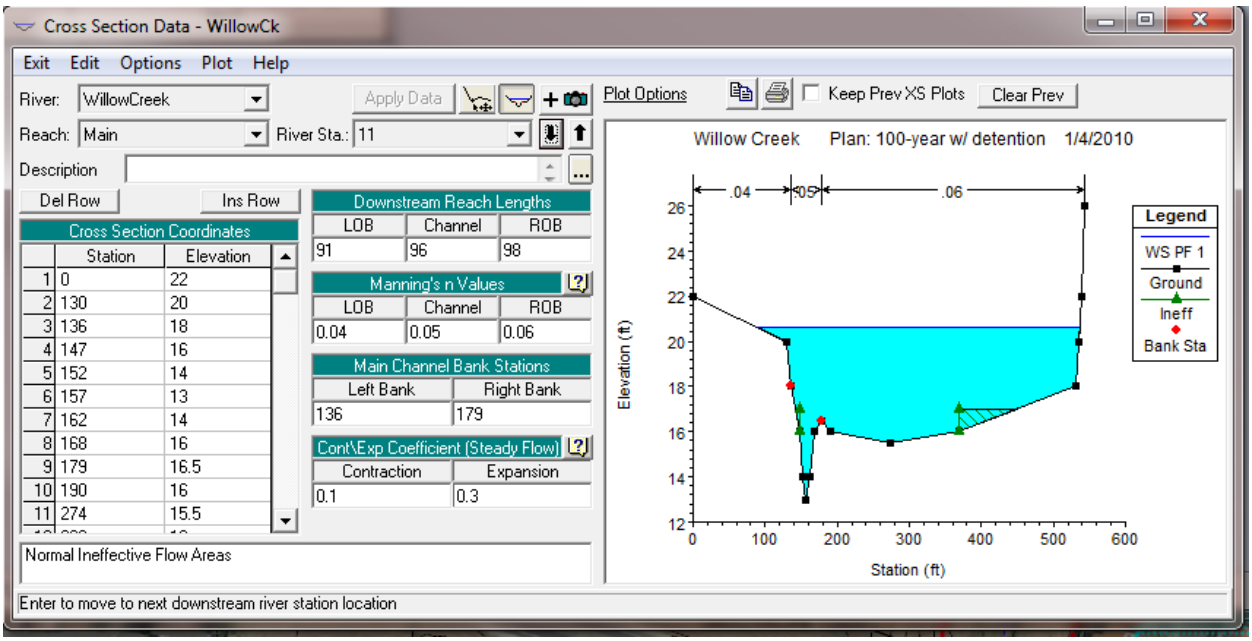
DATA FROM BALANCE HYDROLOGICS LOMR FOR WILLOW CRK TRIBUTARY





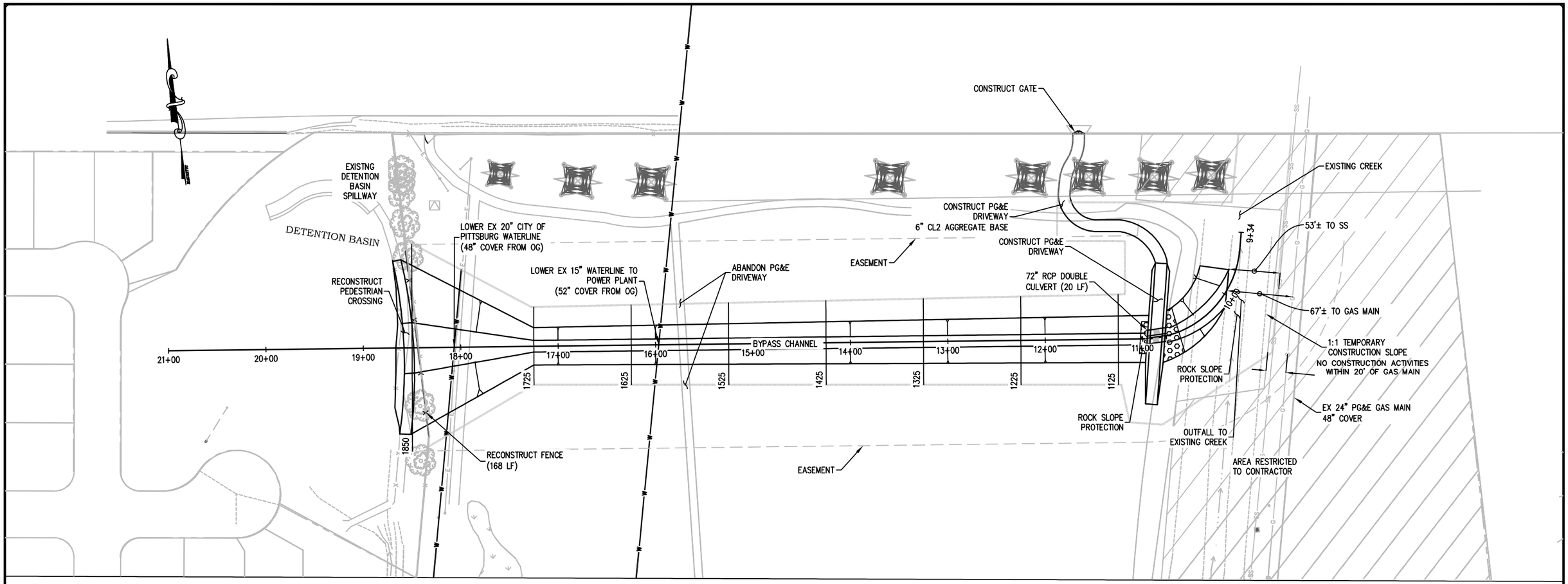
DATA FROM BALANCE HYDROLOGICS LOMR FOR WILLOW CRK TRIBUTARY



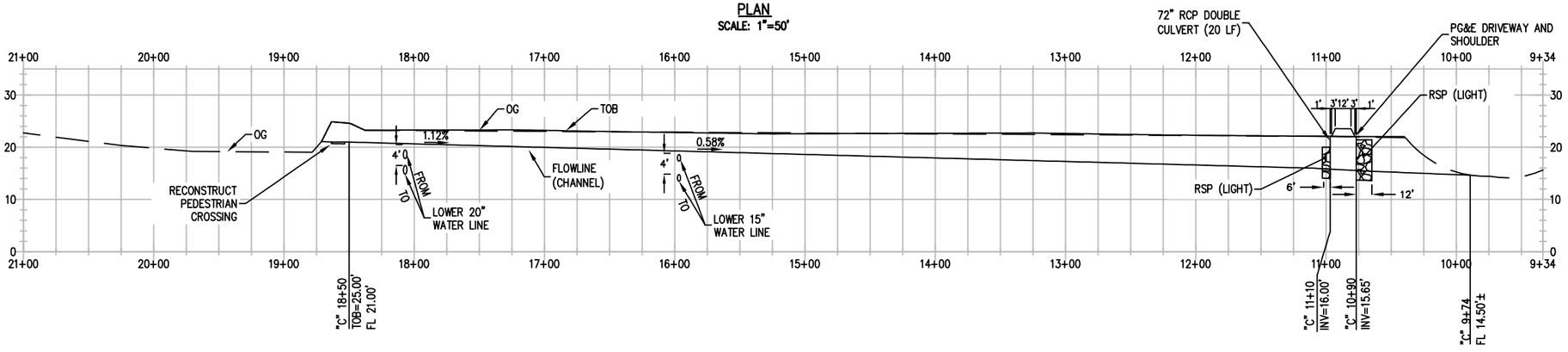


Appendix 2:

Channel Plan and Profile



PLAN
SCALE: 1"=50'



BYPASS CHANNEL PROFILE
SCALE: 1"=50'
V:H = 4:1

LEGEND

1725	HECRAS SECTION NO.
	RSP (LIGHT)
RSP	ROCK SLOPE PROTECTION
TOB	TOP OF BANK

VERIFY SCALES
0 1 2 3
3 INCHES ON ORIGINAL PLAN
IF NOT THREE INCHES ON THIS SHEET, ADJUST SCALES ACCORDINGLY

ALL DIMENSIONS ARE IN FEET UNLESS NOTED OTHERWISE

PRELIMINARY

NO.	DATE	APPROV.	REVISION

DESIGNED: RO
DRAWN: MS
CHECKED: RTH
REVIEWED: RTH
DATE: 03-25-2016

APPROVED BY:

City Engineer
Date:

NOT FOR CONSTRUCTION

HEI HARRISON ENGINEERING INC.
1987 BONIFACIO STREET • CONCORD, CA 94520
PHONE (925) 691-0450 • FAX (925) 691-0460

City of Pittsburg

CITY OF PITTSBURG

AMERICANA PARK BYPASS CHANNEL

BYPASS CHANNEL OPTIONS

SHEET

SCALE: AS SHOWN
SHEET: 1 OF 1