CEQA Addendum
Supplemental Information

Panoche Valley Solar Project
Temporary Jumper Bridge

Project No. 89044

11/18/2016

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prepared for

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prepared by

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INTRODUCTION AND BACKGROUND

In order to facilitate construction of the Panoche Valley Solar Project, Panoche Valley Solar, LLC (PVS or Applicant) proposes to install a temporary "jumper" bridge at the location of the existing Little Panoche Road Bridge at Little Panoche Creek ("Little Panoche Creek Bridge") in Fresno County. The work associated with installation and eventual removal (or decommissioning) of the jumper bridge is referred to as the "Bridge Project" throughout this document.

In 2010, San Benito County (County), acting as the Lead Agency pursuant to the California Environmental Quality Act (CEQA) Guidelines Section 15367, certified a Final Environmental Impact Report (2010 FEIR; State Clearinghouse # 2010031008) to analyze the potential environmental impacts of a solar photovoltaic project (2010 Approved Project) in Panoche Valley, an unincorporated area of eastern San Benito County. On May 19, 2015, the County certified a Final Supplemental EIR (2015 FSEIR) to analyze the environmental impacts that would result from proposed changes to the 2010 Approved Project (PVS Project).

Subsequent to the 2015 FSEIR, installation of a jumper bridge at Little Panoche Creek was identified as an upgrade that would improve access to the PVS Project, while protecting the Little Panoche Creek Bridge. The Applicant is seeking an encroachment and improvement permit from Fresno County for this work. The 2010 FEIR and the 2015 FSEIR contemplated potential impacts to roadways and bridges during construction and included Mitigation Measure (MM) TR-1.2 Rehabilitate and Monitor Roadway Pavement, Bridges, and Culverts, which requires monitoring and, if necessary, implementation of load distribution management over bridges and culverts, as well as culvert monitoring and repair. During implementation of MM TR-1.2, the Applicant determined that load distribution management was required for the Little Panoche Creek Bridge. The Bridge Project is a temporary load distribution management measure, resulting from implementation of MM TR-1.2. To the extent that the Applicant has provided greater detail on the specific means to implement this MM with respect to the Little Panoche Creek Bridge, this activity is a minor modification to the PVS Project, and a CEQA Addendum to the 2015 FSEIR is the appropriate CEQA document to review any minor changes or new information. This CEQA Addendum analyzes whether any of the conditions in CEQA Guidelines Section 15162 will occur as a result of the Bridge Project.

CEQA Standard for Addendum

CEQA Guidelines Section 15164, subdivision (a), provides that a public agency shall "prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the

conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred." (CEQA Guidelines, § 15164, subd. (a); also see Pub. Resources Code, § 21166, providing that no new EIR is required unless "[s]ubstantial changes are proposed in the project which will require major revisions of the [EIR]".)

According to Section 15162 and 15164 of the CEQA Guidelines, a public agency shall prepare an addendum when a subsequent EIR or Negative Declaration is not required:

> *When an EIR has been certified or negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:*
>
> *(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;*
>
> *(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or*
>
> *(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:*
>
> *(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;*
>
> *(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;*
>
> *(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or*
>
> *(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.*

If none of the conditions described above have occurred, but some changes or additions to the previous environmental analysis are necessary, then an SEIR is not required. Instead, the lead agency shall prepare an addendum to the previously certified EIR (CEQA Guidelines, § 15164).

This Addendum considers the project modifications in light of the certified FSEIR previously prepared for the PVS Project. Preparation of an Addendum is not intended to re-examine the prior certified EIRs; the analysis is limited to whether the proposed modifications related to the Bridge Project would result in new or substantially more severe impacts.

Environmental Findings

Chapter 14 (Transportation and Circulation) of the 2010 FEIR addresses the adequacy of the roadways, bridges, and culverts to support the transport of project equipment to the Panoche Valley Solar Site.

Appendix 8b to the 2010 FEIR contains a detailed roadway analysis of Little Panoche Road between I-5 and the Project Site, assessing its suitability to withstand construction traffic, including heavy hauls, throughout the life of construction of the Project.[1] This included analyzing the structural integrity of culverts and bridges to withstand heavy haul trips. The culvert and bridge analysis reviewed the condition of all structures on Little Panoche Road between Interstate 5 (I-5) and Panoche Road, including a review of California Department of Transportation (CalTrans) and Fresno County Bridge Inspection Reports. That analysis identified that none of the bridges have a load rating high enough to withstand a 200,000 pound load, but noted that with proper load distribution, it may be possible to transport heavy loads. This analysis was then carried forward into the EIR. *See* Draft EIR at C.14-11.[2] The CalTrans load rating analysis was based on the most recent bridge survey performed in 2007, and therefore could not take into account changes in the bridge structure since then. *See* CalTrans Bridge Inspection Report for Bridge Number 42C0138, attached to Appendix 8b.

Applicant Proposed Measures and Mitigation Measures

A number of applicant proposed measures (APMs) and mitigation measures (MMs) were adopted by the County in 2010 and 2015 when the prior EIRs were certified. The Bridge Project will be required to comply with all MMs and APMs adopted by the County, regardless of whether such measures are mentioned in this analysis specifically. The list of APMs and MMs that were adopted with the 2015 FSEIR are available at the following link:

http://cosb.us/wp-content/uploads/PVSP_FSEIR1504_i_mmcrp.pdf

A list of APMs and MMs that were previously adopted with the 2010 FEIR and remain unchanged are available at: http://cosb.us/wp-content/uploads/PVSP_FSEIR1504_app03.pdf

To address issues relating to highway safety and impacts to the roadway infrastructure, the 2010 FEIR imposed a series of mitigation measures, which were readopted with certain modifications in connection with the 2015 FSEIR.

- MM TR-1.1 Prepare and implement Traffic Control Plan

[1] Available at http://www.cosb.us/Solargen/feir/apps/app08b.pdf.
[2] Available at http://www.cosb.us/Solargen/feir/c14_traffic.pdf.

- MM TR-1.2 Rehabilitate, protect and monitor roadway pavement, bridges and culverts
- MM TR-1.3 Repair roadway damage
- MM TR-1.4 Ensure Traffic Safety

The full text of each of these measures is set forth on the San Benito County website as part of the 2015 FSEIR[3]. This Addendum considers modifications and components specifically associated with the Bridge Project and concludes that the Bridge Project would not result in new impacts or substantially more severe impacts than previously identified in the 2015 FSEIR. The Bridge Project would not change the findings of the 2015 FSEIR for the PVS Project, and the analysis in this supplemental information report confirms that the level of significance of impacts identified in the 2015 FSEIR would not change.

[3] 2015 FSEIR traffic-related measures available at: http://cosb.us/wp-content/uploads/PVSP_FSEIR1504_c14_transportation.pdf.
The full 2015 FSEIR is available at: http://www.cosb.us/county-departments/building-planning/planning-land-use-division/panoche-valley-solar-project-final-supplemental-environmental-impact-report/.
2010 FEIR measures are available at: http://www.cosb.us/Solargen/feir.htm

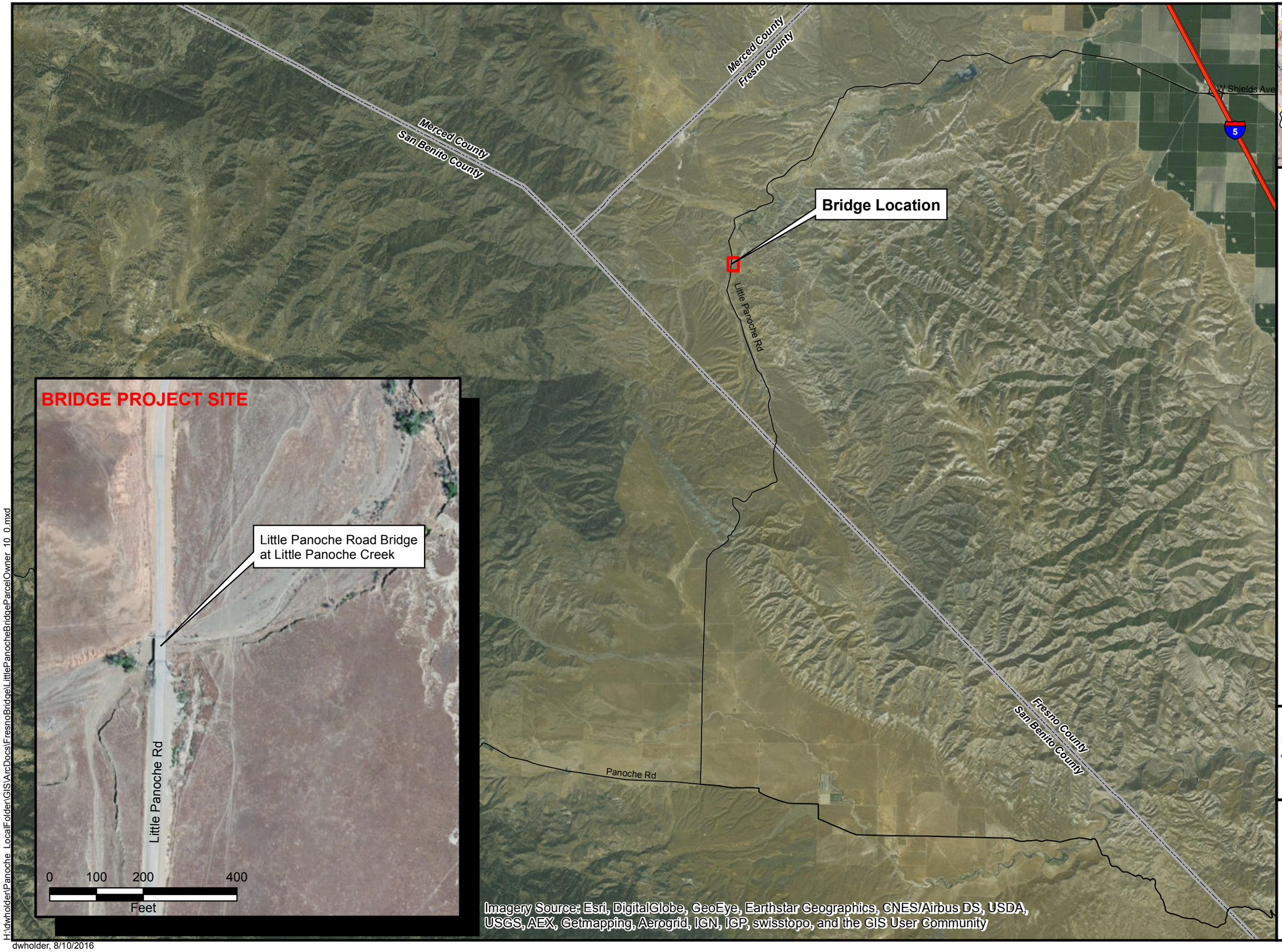
PROJECT DESCRIPTION

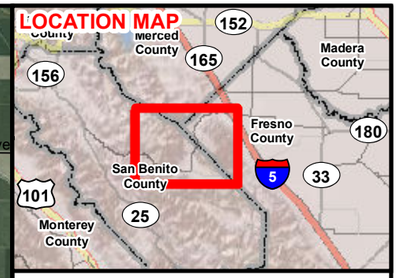
TEMPORARY BRIDGE PROJECT DESCRIPTION

The Applicant proposes to construct a temporary bridge on Little Panoche Road at Little Panoche Creek in Fresno County (Figure 1), to accommodate heavier loads for construction of the PVS Project, while protecting the existing Little Panoche Creek Bridge (Caltrans Bridge Number 42C0138). The Applicant has examined the existing pavement, culverts, and infrastructure along Little Panoche Road through the implementation of MM TR-1.2 and identified repairs and improvements that would need to be completed to accommodate PVS Project construction traffic during the project construction period. This supplemental information report addresses the modification to the PVS Project to account for work planned at the Little Panoche Creek Bridge. This section provides details on the proposed modifications, the site plan, and construction.

Project Location

The site of the Bridge Project is the bridge on Little Panoche Road over Panoche Creek (existing Caltrans Bridge No. 42C0138). This is approximately 12 miles west of I-5 in unincorporated Fresno County. All work would be performed in the Fresno County right-of-way (ROW). The Bridge Project is located approximately two miles north of Mercey Hot Springs, and approximately 2.8 west of the Bureau of Land Management (BLM) Panoche Hills Land Management Area, which is accessible via Panoche Road from I-5.





Legend

County Boundary

NORTH

3 1.5 0

Miles

BURNS McDONNELL

Panoche Valley Solar, LLC

FIGURE 1

PROPOSED BRIDGE PROJECT LOCATION MAP

H:\dwholden\Panoche_LocalFolder\GIS\ArcDocs\FresnoBridgeLittlePanocheBridgeParcelOwner_10_0.mxd

dwholder, 8/10/2016

Description of Project Modifications

A temporary bridge would be constructed over the existing 48-foot-long by 24-foot-wide Little Panoche Creek Bridge. Construction of the temporary bridge project would involve the installation of an Acrow 700XS Panel Bridge over the top of the existing Little Panoche Creek Bridge to serve as a temporary bridge for the approximately two-year duration of the construction of the PVS Project. The proposed bridge would span approximately 100 feet and will be approximately 24 feet wide, and would be installed on concrete foundations with a riding surface approximately 4' 2" above the top of the existing bridge to protect the existing bridge from heavy Project truck loads. Earthen and asphalt ramps would be constructed leading to the bridge atop the existing Little Panoche Road. The design speed of the approaches would be 55 mph to match the existing speed limit. All work would be conducted within the existing Fresno County right-of-way. By completing multiple project elements in parallel, such as bridge assembly and installation of foundations, temporary bridge installation will be sequenced to minimize the duration of road closure. The proposed bridge installation would occur during one single period, resulting in a road closure of no longer than seven (7) consecutive days to minimize the number of roadway closures required to install the bridge. At the request of Fresno County Planning and Public Works personnel, Bridge Project construction would occur up to 24 hours a day to minimize the period of road closure to the greatest extent feasible. Detailed design plans are provided as Appendix A.

Bridge removal, or decommissioning, is expected to occur approximately two years after installation, and would utilize methods similar to bridge installation. Namely, bridge removal would occur during one single period, resulting in a road closure of no longer than seven (7) consecutive days.

During the approximate seven-day road closure during construction, local traffic from I-5 that would otherwise need to travel across Little Panoche Road Bridge would be routed through Hollister via State Highways 152, 156, 25, and Panoche Road. The route from I-5 to Mercey Hot Springs is approximately 13 miles along Little Panoche Road. According to the detour route depicted in the Traffic Control Plan (Appendix B), the route from the intersection of I-5 and Little Panoche Road is approximately 108 miles, although the placement of changeable message boards along I-5 at the Highway 152 exit would divert drivers traveling south along I-5 through the Hollister route, resulting in a detour of approximately 84 miles. It is also anticipated that some local traffic may travel south on I-5 and west on Panoche Road before detouring north on Little Panoche Road (approximately 13 miles to Mercey Hot Springs, just south of Little Panoche Creek). The 2015 FSEIR included an analysis of roadways based on a 2010 traffic study and a 2014 follow-up traffic study for the PVS Project[4]. Traffic Volumes on Little Panoche Road (north

[4] Traffic Section of the 2015 FSEIR available here: http://cosb.us/wp-content/uploads/PVSP_FSEIR1504_c14_transportation.pdf

of Panoche Road) include a total of 66 Average Daily Trips (ADT); 32 ADT northbound and 34 ADT southbound. Notice of the proposed road closure would be provided a minimum of 7 days in advance, or such longer time as may be required by the County, by mailing notices to property owners within five miles of the bridge, as well as residents and businesses along Little Panoche Road. PVS will post notice of the Project construction and detour at the Project work sites and public locations (i.e., Panoche Inn, and Panoche Valley Elementary School). PVS will place CMS boards at the onramps and offramps from I-5 located north of Little Panoche Road and south of Panoche Road to notify drivers.

No vehicle trips associated with PVS Project construction would be authorized to use Panoche Road during the period of bridge closure, per MM TR-1.1. A Traffic Control Plan is provided as Appendix B.

All construction activities would be performed from behind the delineated top of banks within the 60' wide County ROW, avoiding impacts to the Little Panoche Creek bed, bank, and channel. No dredge/fill impacts would occur, and concrete foundations would be located along the existing roadway, located behind the delineated top of banks. Equipment and materials are proposed to be staged in the existing road ROW. The temporary staging area would extend approximately 1,500 linear feet north of the Bridge Project site and would be contained within the total area subject to road closure. The equipment will be staged within the ROW, primarily within disturbed roadside shoulders, in order to avoid impacts to potential environmental resources in the adjacent open space areas. Equipment would not be staged in areas where vehicles are travelling, and would remain safely staged behind road blocks. Equipment to be staged in the ROW would include a crane, bulldozer, back hoe, forklifts, graders, dump trucks, paving equipment, and a tamping and vibratory roller for compaction, cement/concrete mixer, water trucks, assorted steel beams associated with the temporary jumper bridge framework, roadbase stone, and asphalt. Any temporary staging within the temporary work area would be subject to approval from Fresno County.

ENVIRONMENTAL ANALYSIS

This section analyzes the potential environmental impacts associated with the proposed Bridge Project and addresses whether the proposed Bridge Project would result in significant new impacts or substantially more severe impacts than previously analyzed in the 2010 FEIR and 2015 FSEIR. Within each environmental issue area, setting and regulatory information is presented only to the extent that it is different from the information presented in the 2015 FSEIR.

Aesthetics

The proposed Bridge Project would add a temporary bridge structure on top of the existing bridge facility and would not cause new visual impacts to the local landscape. Construction work associated with the Bridge Project would be of limited duration (resulting in a road closure of no more than seven consecutive days), with only localized use of construction equipment, occurring at times when other construction activities associated with the PVS Project are occurring. These activities would not result in any significant environmental effects that are new or substantially more adverse than the aesthetic impacts analyzed in the 2010 FEIR and 2015 FSEIR. Although the temporary bridge would introduce a new visual element, Little Panoche Road is not a designated scenic highway and no scenic vistas would be impacted.

Agriculture

Little Panoche Road is lined by privately owned open grazing lands, but the Bridge Project would not encroach on or otherwise disturb grazing uses. Existing agricultural operations, such as truck traffic associated with grazing uses in the Panoche Valley would be routed in accordance with the detour as depicted in the Traffic Control Plan (Appendix B). Closures of Little Panoche Creek Bridge could lead to certain trips being directed to utilize a detour; however, the existing traffic volume using Little Panoche Road is already low. As mentioned above, the 2015 FSEIR included an analysis of roadways based on a 2010 traffic study and a 2014 follow-up traffic study for the PVS Project[5]. Traffic Volumes on Little Panoche Road (north of Panoche Road) include a total of 66 Average Daily Trips (ADT); 32 ADT northbound and 34 ADT southbound. Of these trips, it is logical to assume that only a portion would likely need to travel from south of Little Panoche Creek Bridge to I-5. The detour would therefore affect a fairly small number of vehicle trips and would occur only during the two temporary periods of jumper bridge installation and decommissioning. The 2015 FSEIR identified and analyzed several potential impacts on surrounding agricultural land, listed in the Impact AG-3 discussion of Section C.3.3.4 of the 2015 FSEIR. The following mitigation measures would apply to the Bridge Project: MM AQ-1.1: Reduce fugitive dust, MM BR-1.1: Prepare and implement a weed control plan, MM WR-6.1: Accidental spill control and environmental training, MM WR-6.2 Store fuels and hazardous materials away from sensitive water sources, and MM WR-6.3 Maintain vehicles and equipment. With implementation of these measures, the Bridge Project would not result in any significant environmental effects that are new or substantially more adverse than the agricultural impacts analyzed in the 2010 FEIR and 2015 FSEIR.

[5] Traffic Section of the 2015 FSEIR available here: http://cosb.us/wp-content/uploads/PVSP_FSEIR1504_c14_transportation.pdf

Air Quality

Fresno County is in the San Joaquin Valley Air Basin and is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). With respect to California Ambient Air Quality Standards, Fresno County is designated as nonattainment for ozone, particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and particulate matter less than 10 microns in diameter (PM_{10}), and designated as being in attainment or as unclassified for all other pollutants. The proposed detour would occur on the paved portion of Panoche Road from Hollister, as described above; therefore, control measures for fugitive dust emissions would not be required. Under National Ambient Air Quality Standards, Fresno County is designated as nonattainment for 8-hour ozone and $PM_{2.5}$, and designated as being in attainment or as unclassified for all other pollutants. Overall, the air quality impacts of the Bridge Project would result in a *de minimis* increase in emissions above emissions associated with the approved PVS Project during the temporary construction period and would not increase emissions during Project operation. Specifically, construction traffic for the PVS Project would be prohibited from using Panoche Road as a detour during bridge closure, per existing MM TR-1.1 and the PVS Project Traffic Control Plan. Local traffic would be directed to use the detour via State Highways 152, 156, 25, and Panoche Road. This is anticipated to result in no more than 66 such detour trips per day, entirely on paved roads. These minor emissions would not result in any new significant impact or substantially more severe air quality impacts from the Bridge Project.

Like the overall PVS Project, construction of the Bridge Project would cause emissions of fugitive dust, reactive organic gases (ROGs), nitrogen oxides (NO_x), carbon monoxide (CO), PM_{10}, $PM_{2.5}$, sulfur oxides, and diesel particulate matter during the construction phase, and these emissions would contribute to regional and localized degradation of air quality. Emissions from construction would result from fuel combustion and exhaust from construction equipment, grading, and use of materials that contain volatile and/or toxic compounds (e.g., paints and lubricants). During the two temporary road closures during construction and eventual decommissioning, a minor amount of traffic may be diverted to longer routes, resulting in a minor increase in [vehicle] emissions. Emissions of pollutants such as fugitive dust and heavy equipment exhaust would be generated during construction and decommissioning, and would be concentrated in the immediate vicinity of the Bridge Project site. No additional emissions would result from project operations following construction and decommissioning of the Bridge Project.

The Bridge Project would incorporate relevant APMs from Section C.4.3.4 of the 2015 FSEIR, namely APM AQ-2: Implement BMPs to reduce construction vehicle emissions, and APM AQ-3: Reduce fugitive dust emissions during construction through implementation of BMPs. These APMs will be implemented for the Bridge Project. Due to the minor scope of the Bridge Project construction and

decommissioning activities and implementation of these measures, the Bridge Project would not result in any significant environmental effects that are new or substantially more adverse than the air quality impacts analyzed in the 2010 FEIR and 2015 FSEIR.

Climate Change/Greenhouse Gas

Overall, the climate change/greenhouse gas impacts of the Bridge Project would increase emissions over those analyzed for the PVS Project slightly during the temporary construction and decommissioning periods due to the use of construction equipment and additional vehicle miles that may need to be traveled to access the PVS Project site via Hollister and State Route 25 instead of Little Panoche Road during the road closure (no longer than seven consecutive days) across the Little Panoche Creek Bridge for construction and during decommissioning. However, the construction equipment emissions are minor and short in duration. The increased emissions associated with diverted trips is also minor given the very low traffic volumes on Little Panoche Road and short duration of the road closure. These emissions would not exceed significance thresholds, and impacts from greenhouse gas emissions would not be substantially more significant than the impacts of the overall PVS Project. No additional emissions would occur during operations following construction of the Bridge Project. No new significant impact or substantially more severe climate change impacts would occur from the Bridge Project than were analyzed in the 2010 FEIR and 2015 FSEIR.

Biological Resources

The California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (2016), and the California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants (2016) were queried to obtain comprehensive information regarding state and federally listed species, as well as other special-status species considered to have potential to occur within five miles of the Bridge Project. Additionally, a review of the following sources was also conducted:

- Aerial photographs of the study area and vicinity
- USFWS Critical Habitat Portal (U.S. Fish and Wildlife Service, 2016a)
- USFWS National Wetland Inventory (NWI) Mapper (U.S. Fish and Wildlife Service, 2016b)

Based on a review of database and literature records, the following plant species have the potential to occur within five miles of the Bridge Project Site:

- Arburua Ranch jewelflower (*Streptanthus insignis ssp. lyonii*) (RPR[6] 1B.2)
- chaparral ragwort (*Senecio aphanactis*) (RPR 2B.2)

[66] RPR: CNPS Rare Plant Rank

- Lemmon's jewelflower (*Caulanthus lemmonii*) (RPR 1B.2)
- Munz's tidy-tips (*Layai munzii*) (RPR 1B.2)
- Panoche pepper-grass (*Lepridium jaredii ssp. album*) (RPR 1B.2)

These are all CNPS Rare Plant Rank 1B.1 or 1B.2 and none are state or federally listed as endangered or threatened.

The following wildlife species have the potential to occur at the Bridge Project Site:

- blunt-nosed leopard lizard (*Gambelia sila*) (ST[7], FT, SFP)
- burrowing owl (*Athene cunicularia*) (SSC)
- California tiger salamander (*Ambystoma californiense*) (ST, FT)
- giant kangaroo rat (*Dipodomys ingens*) (SE, FE)
- Nelson's antelope squirrel (*Ammospermophilus nelsoni*) (ST)
- northern harrier (*Circus cyaneus*) (SSC)
- pallid bat (*Antrozous pallidus*) (SSC)
- San Joaquin kit fox (*Vulpes macrotis mutica*) (ST, FE)
- San Joaquin Pocket Mouse (*Perognathus inornatus*) (BLMS)
- San Joaquin whipsnake (*Masticophis flagellum ruddocki*) (SSC)
- Tulare grasshopper mouse (*Onychomys torridus tularensis*) (SSC)

A jurisdictional delineation was conducted by Rincon Consultants, Inc. (Appendix C) on April 29, 2016. This delineation was conducted to determine the location and extent of jurisdictional features to inform the design and support avoidance of resources. The installation of a temporary jumper bridge would avoid all potential work in the waterways and surrounding habitat.

All ground-disturbing work associated with the Bridge Project would be performed within the existing ROW of Fresno County. All construction and decommissioning activity would be limited to the existing footprint of Little Panoche Road and adjacent ruderal (i.e., barren dirt or gravel) areas. Therefore, no direct impacts to natural habitat (i.e., non-native annual grassland) and special-status plant species are anticipated. Additionally, due to the highly disturbed nature of the ruderal road shoulder, it is unlikely to support suitable habitat for any sensitive wildlife species.

[7] ST: State Threatened; SE: State Endangered; SFP: State Fully Protected; FT: Federally Threatened; FE: Federally Endangered; SSC: CDFW Species of Special Concern; BLMS: Bureau of Land Management Sensitive Species.

With respect to the installation and later decommissioning of a temporary jumper bridge, all construction activities would also be performed from behind the delineated top of bank of jurisdictional waters. Temporary effects from Bridge Project construction would result from vehicle and equipment movement, placement of materials, and construction equipment noise.

The Applicant would implement APMs and MMs relating to biological resources to ensure that impacts relating to the Bridge Project would remain less than significant, including MMs BR-G.1: Implement a Worker Environmental Education Program, BR-G.2: Implement BMPs, BR-G.4: Implement biological construction monitoring, MM BR-1.1: Prepare and implement a Weed Control Plan. With respect to BR-G.4 (Biological Monitoring), a qualified biologist would be present at the Bridge Project site during all ground-disturbing activities to avoid potential direct and indirect impacts to biological resources. The Applicant shall conduct preconstruction surveys and clearly delineate work areas prior to ground disturbing activities to better protect environmental resources. With respect to MM BR-G.2, the BMPs include restrictions on construction activities after dusk and before dawn. Although Bridge Project construction would require certain construction activities to occur during nighttime in order to minimize the period of Little Panoche Road closure, the short duration of nighttime activity and the limited geographic area affected within the existing Fresno County ROW, coupled with preconstruction surveys, biological monitoring, and clear delineation of work areas will result in less than significant impacts. H.T. Harvey & Associates prepared a Supplemental Biological Resources Information report addressing this nighttime work and concluded that it will not result in any new or substantially more severe significant impacts on biological resources (Appendix F). Additional MMs included in the EIR require pre-construction surveys for particular species that may have potential to occur within the vicinity, including giant kangaroo rat, San Joaquin kit fox, and blunt-nosed leopard lizards. Pre-construction surveys within 50 feet of the Bridge Project site or any construction or staging areas would be conducted prior to the initiation of construction and decommissioning activities.

Resources within the creek would be protected from indirect impacts through implementation of BMPs to avoid sedimentation and unanticipated releases of hazardous materials into the waterway. These measures are discussed further below. Lists of relevant BMPs are provided in the Bridge Project Water Pollution Control Drawings (Appendix D) and PVS Project Spill Prevention Plan (Appendix E).

With incorporation of these measures, the Bridge Project would not result in any significant environmental effects that are new or substantially more adverse than the impacts to biological resources analyzed in the 2010 FEIR and 2015 FSEIR.

Cultural and Paleontological Resources

The Bridge Project would not include any ground disturbing activities in areas not previously disturbed as a result of the construction of the original Little Panoche Road or Little Panoche Creek Bridge. No impacts to known historical or unique archaeological resources would occur as a result of the Bridge Project, and no adverse changes to buried prehistoric and historic archaeological sites or buried Native American human remains would be anticipated. Because the Bridge Project would not include excavation or ground disturbance in previously undisturbed areas, the possibility of accidental discovery and disturbance of unknown archaeological resources or Native American human remains would be remote. The jumper bridge would be set on top of footings within the ROW shoulder, no new bridge abutments would be constructed outside the existing previously disturbed roadway and shoulders, and the existing abutments would not be removed. Excavation would be approximately 2-3 feet deep and would be confined to the roadway and shoulder within the Fresno County ROW. If an unanticipated discovery were to occur, any such impact would remain less than significant with implementation of previously adopted MMs CR-2.1 through CR-2.4. Similarly, potential impacts relating to destruction or disturbance of significant paleontological resources would remain less than significant with the implementation of previously adopted MM PA-1.1 and PA-1.2. Due to the nature of work adjacent to a creek, a qualified cultural resources monitor and Native American monitor would be present at the Bridge Project Site during all ground disturbing activities. With incorporation of these measures, the Bridge Project would not result in any significant environmental effects that are new or substantially more adverse than the impacts to cultural resources analyzed in the 2010 FEIR and 2015 FSEIR.

Geology, Mineral Resources, and Soils

Ground disturbance associated with the Bridge Project is limited to previously disturbed areas within the Fresno County ROW. All work areas are within disturbed or developed areas of the ROW. No new faults or liquefaction zones have been identified in the vicinity of the Bridge Project, no new structures would be placed on an earthquake fault zone, and no people or structures would be exposed to potential substantial adverse effects as a result of surface fault rupture. Moreover, work within the ROW would not interfere with access to mineral resources. Erosion would be addressed through implementation of Temporary Bridge Construction Stormwater and Erosion Control BMPs. These BMPs would be an addition to the Stormwater Pollution Prevention Plan (SWPPP) prepared for the PVS Project. Temporary Bridge Construction Stormwater and Erosion Control BMPs are provided in Appendix D. With incorporation of APMs and BMPs, the Bridge Project would not result in any significant environmental effects that are new or substantially more adverse than the impacts relating to geology, mineral resources, and soils analyzed in the 2010 FEIR and 2015 FSEIR.

Hazards and Hazardous Materials

Hazardous or flammable materials used during construction would be consistent with the types and quantities of such materials addressed in the 2010 FEIR and 2015 FSEIR. The potential risks of a leak or accidental spill of these hazardous materials would be the same for the Bridge Project as for the overall PVS Project and are described in the 2010 FEIR. The Bridge Project would comply with existing laws and regulations governing hazardous materials, as well as MM WR-6.3: Maintain vehicles and equipment and APM HAZ-1, impacts related to the transport, use, storage, or accidental release of hazardous materials. The PVS Project's Spill Prevention Plan (Appendix E), which details the methods for spill prevention and response for accidental releases of hazardous materials, would be adhered to as part of the Bridge Project. In the event of accidental release of hazardous materials, the response procedures detailed in the PVS Project Spill Prevention Plan would be carried out. Additionally, storage, handling, and transportation of flammable and combustible liquids, including gasoline, diesel fuel, and gas cylinders would be performed in accordance with rules developed under state and federal regulations (Title 8 California Code of Regulations [CCR] Section 1740 and 29 Code of Federal Regulations [CFR] Section 1910.106, respectively).

No additional impacts would result due to proximity to an airstrip or risk of wildland fire. Little Panoche Road is one of three public roads leading into the Panoche Valley. During the time of potential road closures, County coordination would be required, as established in the Traffic Control Plan (Appendix B). With incorporation of these measures, the Bridge Project would not result in any significant environmental effects that are new or substantially more adverse than the impacts relating to hazards or hazardous materials analyzed in the 2010 FEIR and 2015 FSEIR.

Land Use and Recreation

The Bridge Project does not propose any changes to land use or recreational facilities and would not have any impacts relating to land use or recreation beyond those analyzed in the 2010 FEIR and 2015 FSEIR. Public noticing, in accordance with 2010 FEIR Mitigation Measure MM LU-1.2, was conducted for the current phase of construction for the PVS Project and separate notification would not be required for road and bridge repairs related to implementation of mitigation for that phase of construction (i.e., MM TR-1.2). However, all property owners along Little Panoche Road, and all owners, residents, and agricultural operators in the Panoche Valley would be notified in writing of upcoming road closures at least seven days prior to initiation of Bridge Project construction and decommissioning activities. Notification would include use of CMS boards and direct mailers (or personally delivered notices) to all owners, residents, and agricultural operators in the Panoche Valley, as well as residents along little Panoche Road. As described above, PVS will post notice of the Project construction and detour at the Project work sites and

public locations (i.e., Panoche Inn, and Panoche Valley Elementary School). PVS will place CMS boards at the onramps and offramps from I-5 located north of Little Panoche Road and south of Panoche Road to notify drivers.

Additionally, access to recreational areas at Mercey Hot Springs and on BLM lands would remain available during temporary road closure through implementation of a detour (Appendix B).

Noise

During the seven consecutive day road closure associated with jumper bridge installation, the Bridge Project would generate temporary construction noise from heavy equipment operation. The type of equipment proposed includes a crane, bulldozer, back hoe, graders, dump trucks, paving equipment, and a tamping and vibratory roller for compaction. No pile driving is proposed. The nearest sensitive receptor to the Little Panoche Creek Bridge (a residence) is located 1.9 miles away. Noise during construction would not impact the nearest receptor because it is located nearly two miles from the proposed work area. The peak traffic volumes for the Bridge Project would not be substantially increased over volumes for the overall PVS Project due to the relatively small disturbance area and the short duration of construction. Furthermore, noise impacts would be reduced through implementation of several mitigation measures, as applicable, including: MM NS-1.1: Shield construction staging areas, MM NS-1.2: Implement noise-reducing features and practices for construction noise, MM NS-1.3: Provide advance notice of construction, and MM TR-1.1: Prepare and implement Traffic Control Plan. Additionally, any work within Fresno County would be required to comply with Chapter 8.40 of the Fresno County Code regarding noise standards. No sensitive receptors occur in the vicinity of the Bridge Project. Therefore, the Bridge Project would not result in any significant environmental effects that are new or substantially more adverse than the noise impacts analyzed in the 2010 FEIR and 2015 FSEIR.

Population and Housing

The Bridge Project would not result in the displacement of housing, nor would it necessitate the construction of replacement housing. The 2010 FEIR and the 2015 FSEIR identified growth inducement potential for the entire PVS Project and concluded that impacts would not be significant. The Bridge Project would not change these conclusions.

Public Services, Utilities, and Service Systems

No occupied structures would be constructed, and the Bridge Project would not place any additional demands on public utilities or services. There are no utilities in the area of the Bridge Project that would be disturbed by project construction. Emergency services would continue to be provided in the same

manner as the PVS Project. PVS has entered into contracts with the San Benito County Sheriff's Department, the California Highway Patrol (CHP), and the City of Hollister Fire Department to provide safety services throughout construction of the PVS Solar Project including construction and demolition of the Bridge Project.

Sheriff's Department personnel, CHP personnel and City of Hollister Fire Department personnel access the site from Hollister, therefore closure of Little Panoche Road will not limit access of law enforcement or emergency services personnel to areas southwest of the bridge during road closure. The Bridge Project would not increase the severity of impacts on emergency services beyond those described for the project. The helicopter landing zone at the PVS Project Site would allow for medical evacuation capability for the Bridge Project as with the PVS Project (Refer to Section C.9 of the FSEIR). As stated in the 2010 Final EIR, worker commute traffic, and construction and operational activities at the project site would increase the potential for accidents, fire, or other medical emergencies. However, as under the Approved Project, funds to employ additional fire protection personnel would be required under Mitigation Measure PS-1.1. The Bridge Project would not result in any new or substantially more adverse significant impacts to public services, utilities, and service systems than were previously identified in the 2015 FSEIR.

Transportation and Circulation

Little Panoche Road is a rural road currently subject to infrequent highway legal truck use. As identified in the 2010 FEIR and 2015 FSEIR, Little Panoche Road requires improvements to ensure safe conditions associated with PVS Project construction traffic. Little Panoche Creek Bridge also needs additional support to sustain heavy truck travel associated with construction of the PVS Project. The Bridge Project is being implemented in order to comply with PVS Project Mitigation Measure TR-1.2 (Rehabilitate and monitor roadway pavement, bridges and culverts) and to facilitate construction traffic safety.

Traffic volume data collected in 2010 along Little Panoche Road showed volumes of existing traffic of approximately 66 trips per day that were well below capacities of the roadway, as documented in Section C.14.3.3 of the 2015 FSEIR. Though the Bridge Project traffic would result in a temporary increase in construction traffic, the increase would be well within roadway capacities. However, because the increase in daily and hourly vehicle traffic could increase the likelihood of vehicle collisions, MM TR-1.4 (Ensure Traffic Safety) would be incorporated. Because the Bridge Project would be implemented to comply with existing mitigation in the FSEIR and would provide for continued safe operations during future heavy construction for the PVS Project, the Bridge Project would improve road safety.

As with the overall PVS Project, the bridge work would require temporary closures of Little Panoche Road (up to seven consecutive days) and a separate road closure approximately two years later following PVS Project construction completion. During the approximate seven-day road closure the detour route depicted in the Traffic Control Plan (Appendix B) will be from the intersection of I-5 and Little Panoche Road resulting in a detour of approximately 108 miles. Placement of changeable message boards along I-5 at the Highway 152 exit would divert drivers traveling south along I-5 through the Hollister route, resulting in a detour of approximately 84 miles. It is also anticipated that some local traffic may travel south on I-5 and west on Panoche Road before detouring north on Little Panoche Road (approximately 13 miles to Mercey Hot Springs, just south of Little Panoche Creek). MM TR-1.1 (Temporary Traffic Control Plan) would be implemented to reduce congestion associated with temporary construction-related road closures.

As stated above, the 2015 FSEIR included an analysis of roadways based on a 2010 traffic study and a 2014 follow-up traffic study for the PVS Project[8]. Traffic Volumes on Little Panoche Road (north of Panoche Road) include a total of 66 Average Daily Trips (ADT); 32 ADT northbound and 34 ADT southbound. Though there would be roughly 66 trips a day from non-project related traffic along Little Panoche Road, and not all of these trips would be anticipated to travel across Little Panoche Creek Bridge, the Applicant would notify area land owners and members of the public seven (7) days in advance of Bridge Project initiation including with CMS boards. Furthermore, in accordance with MM TR-1.4 (Ensure Traffic Safety), if road closures and traffic delays more than 30 minutes are anticipated, the Applicant shall ensure that signs are posted at work sites and public locations at least one week in advance warning workers and the public to anticipate delays. Notice of the proposed road closure would be provided a minimum of 7 days in advance, by mailing notices to property owners within five miles of the bridge, as well as residents and businesses along Little Panoche Road. PVS will post notice of the Project construction and detour at the Project work sites and public locations (i.e., Panoche Inn, and Panoche Valley Elementary School). PVS will place CMS boards at the onramps and offramps from I-5 located north of Little Panoche Road and south of Panoche Road to notify drivers. PVS will be responsible for daily traffic control inspection in accordance with the Traffic Control Plan, which is attached as Appendix B.

Closures of Little Panoche Creek Bridge could lead to certain trips being diverted to detour routes, as described above, to access areas south of Little Panoche Creek Bridge (e.g., Mercey Hot Springs). However, the existing traffic volume using Little Panoche Road is already low, not all of those existing

[8] Traffic Section of the 2015 FSEIR available here: http://cosb.us/wp-content/uploads/PVSP_FSEIR1504_c14_transportation.pdf

trips would be likely to be diverted (i.e., trips that otherwise need to travel between the area south of Little Panoche Creek Bridge and I-5), and this detour would occur only during the temporary period of jumper bridge installation and decommissioning.

All property owners along Little Panoche Road, and all owners, residents, and agricultural operators in the Panoche Valley would be notified in writing of upcoming road closures at least seven days prior to initiation of Bridge Project construction and decommissioning activities. Notification would include use of CMS boards and direct mailers (or personally delivered notices) to all owners, residents, and agricultural operators in the Panoche Valley, as well as residents along little Panoche Road. As described above, PVS will post notice of the Project construction and detour at the Project work sites and public locations (i.e., Panoche Inn, and Panoche Valley Elementary School). PVS will place CMS boards at the onramps and offramps from I-5 located north of Little Panoche Road and south of Panoche Road to notify drivers.

Pursuant to MM TR-1.1, PVS Project construction deliveries (including heavy/combination trucks with more than two axles and single-unit trucks with two axles) are prohibited from traveling to and from the PVS Project site except via I-5 and Little Panoche Road, and therefore no construction deliveries would occur during any closures on Little Panoche Road. Because of the low volume of existing traffic on roadways that would be utilized by Project-related traffic and the traffic controls required by MM TR-1.1 and MM TR-1.4, impacts related to traffic congestion would continue to be less than significant with the incorporation of mitigation.

With incorporation of MMs TR-1.1 through TR-1.4, the Bridge Project would not result in any significant environmental effects that are new or substantially more adverse traffic or transportation impacts than the impacts analyzed in the 2010 FEIR and 2015 FSEIR.

Water Resources

The Bridge Project would not introduce new groundwater demands, and therefore groundwater resources would not be affected by the proposed Bridge Project. During construction and decommissioning, ground disturbance could cause and/or contribute to additional erosion and sedimentation in the area. Compliance with existing regulations, including implementation of BMPs would maintain potential impacts at less than significant levels. As mentioned above, Temporary Bridge Construction Stormwater and Erosion Control BMPs (Appendix C) would be implemented to protect waterways from sedimentation, and implementation of the PVS Project Spill Prevention Plan (Appendix D) would prevent hazardous materials from entering waterways. Construction and decommissioning of a temporary jumper bridge

over the existing Little Panoche Creek Bridge would not cause any impacts within the waterway and would not impact flooding, flood diversion, or erosion. Through compliance with existing regulations and implementation of BMPs, the Spill Prevention Plan, APMs and MM WR-6.1 through WR-6.3, impacts relating to potential releases of contaminants would remain less than significant. With incorporation of these measures, the Bridge Project would not result in any significant environmental effects that are new or substantially more adverse impacts relating to water resources than the impacts analyzed in the 2010 FEIR and 2015 FSEIR.

Cumulative Impacts

Cumulative impacts were fully considered in both the 2010 FEIR and in the 2015 FSEIR, and the PVS Project's overall contribution to cumulative effects was determined to be less than significant and not considerable. The Bridge Project would not change the 2010 FEIR and 2015 FSEIR conclusions regarding cumulative impacts.

As discussed herein, all of the potential impacts of the proposed Bridge Project would occur during construction and decommissioning only. Because construction and decommissioning-related impacts would be temporary and localized, they would only have the potential to combine with similar impacts of other projects if they were to occur at the same time and in close proximity. The MMs that are part of the PVS Project would limit the Bridge Project's contribution to cumulative construction-related impacts (including those related to biological resources, noise, and air quality) to less than considerable. Consequently, the PVS Project as a whole would not have a considerable contribution to cumulative impacts beyond those analyzed in the 2010 FEIR and the 2015 FSEIR.

REFERENCES

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California Native Plant Society. 2016. Inventory of Rare and Endangered Plants. Online Edition, v8-02. Available at www.rareplants.cnps.org.

Google. 2015. Google Earth Pro. Available at: http://earth.google.com/

United States Fish and Wildlife Service. 2016a. Critical Habitat Portal. Available at: http://criticalhabitat.fws.gov

United States Fish and Wildlife Service. 2016b. National Wetland Inventory. Available at: http://www.fws.gov/wetlands/Data/Mapper.html

Appendix A - JUMPER BRIDGE PLANS

BEGIN CONSTRUCTION
STA 5+20.00
N=2155204.7316
E=6013639.4263

℄ LITTLE PANOCHE ROAD

REMOVE EXISTING PAVEMENT
STA 5+20.00 TO STA 9+76.13

GRADING LIMITS (TYP)

STA 7+40.00
17.00' LT

STA 7+40.00
12.00' LT

R/W

4" WHITE EDGE
LINE PAVEMENT MARKING

REDI-ROCK WALL
SEE SHEET 13 FOR DETAIL.

CONCRETE SAFETY BARRIER (TYP)
SEE SHEET 14 FOR DETAILS

PT STA 9+47.16
N=2155631.6946
E=6013650.4542

PI STA 5+17.03

PC STA 5+96.54
N=2155281.1911
E=6013642.9103

N 2° 45' 59" E

N 2° 36' 32" E

SAWCUT

6 7 8 9

10+00
N 0° 08' 35" W

MATCH LINE STA 10+00

CURVE DATA
PI STA 7+71.88
R = 7300.00'
D = 0°47'06"
DELTA = 2°45'07" LT
L = 350.62'
T = 175.34'
E = 2.11'

STA 5+35.66
16.81' RT

STA 5+67.93
19.30' RT

STA 6+20.00
12.00' RT

STA 6+20.00
17.00' RT

R/W

4" DOUBLE YELLOW
CENTERLINE PAVEMENT MARKING

4" WHITE EDGE
LINE PAVEMENT MARKING

END ASPHALT PAVEMENT
STA 9+45.41

REDI-ROCK WALL
SEE SHEET 13 FOR DETAIL.

PROTECTED AREA TO BE
LOCATED AND STAKED
BY OTHERS

LEGEND

NEW PAVEMENT

PAVEMENT REMOVAL

NOTE:
ALL CALLOUTS ARE FROM
℄ LITTLE PANOCHE ROAD.

SCALE
PLAN: Lat. & Long. 20' 0 20' 40'
PROFILE: Horiz. same as above
Vert. 0 5'

SUPERELEVATION PROFILE

+20.00

+70.00

+95.00

+45.00

0% 0%

-2%

LEFT AND RIGHT
EDGE OF PAVEMENT

TRANSITION LEFT AND RIGHT
EDGE OF PAVEMENT
FROM EXISTING TO -2%

TRANSITION FROM -2% TO 0%

+20.00 P.I.
MATCH EXISTING

+95.00 V.P.C.
El. = 979.24

K = 119
150' V.C.

+45.00 V.P.T.
El. = 978.00

+95.00 P.I.
El. = 977.70

PROFILE GRADE

-1.46%

-1.46%

- 0.20%

- 0.20%

- 1.00%

- 1.00%

+70.00 P.I.
El. = 978.15

EXISTING GRADE

+45.00 V.P.C.
El. = 977.80

SSD = 1399'
K = 125
100' V.C.

+45.00 V.P.T.
El. = 977.20

MATCH LINE STA 10+00

1000 995 990 985 980 975 970 965 960 955

5+00 6+00 7+00 8+00 9+00 10+00

no.	date	by	ckd	description

REGISTERED PROFESSIONAL ENGINEER
JUGESH KAPUR
C 85770
CIVIL
STATE OF CALIFORNIA

BURNS McDONNELL

date	detailed
OCTOBER 26, 2016	S. MAUN
designed	checked
J. MEYERS	J. KAPUR

conEdison

LITTLE PANOCHE ROAD
TEMPORARY BRIDGE AT PANOCHE CREEK

LITTLE PANOCHE ROAD PLAN & PROFILE
STA. 6+00 TO STA. 10+00

project	contract

drawing rev.
- - -

sheet 3 of 38 sheets

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Millimeters
Inches
Scale For Microfilming

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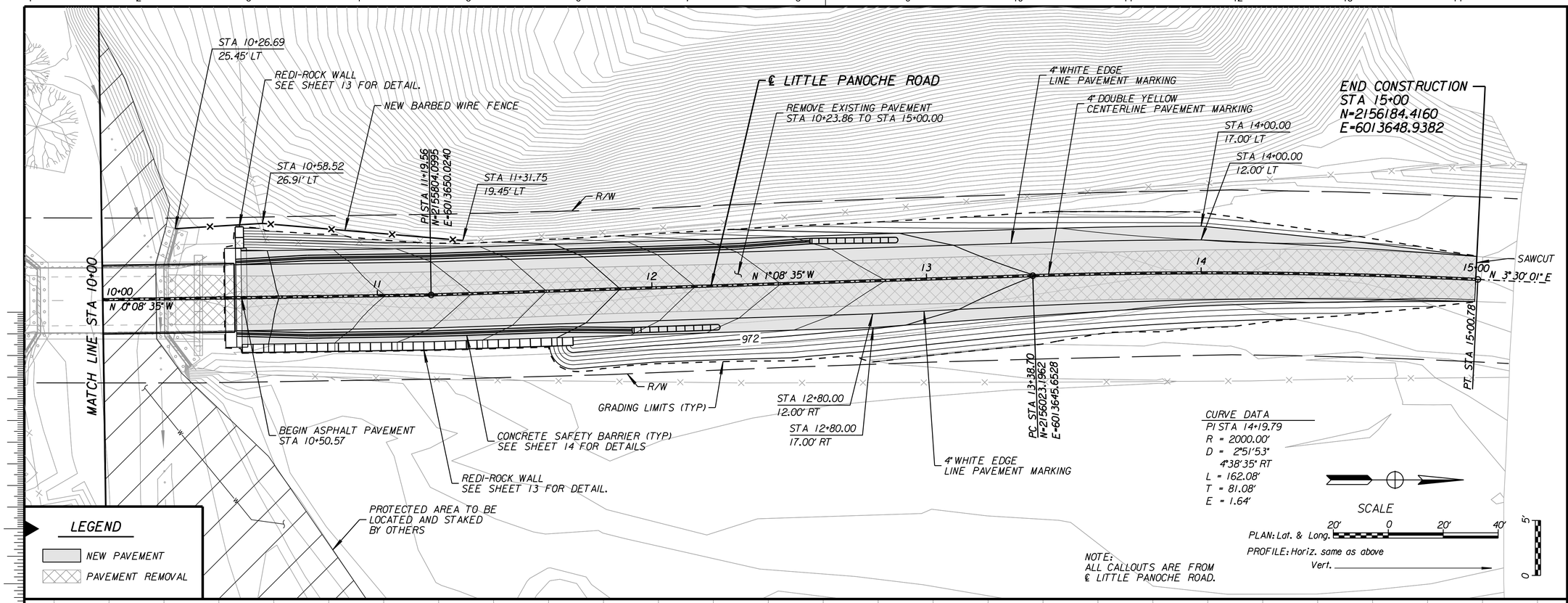

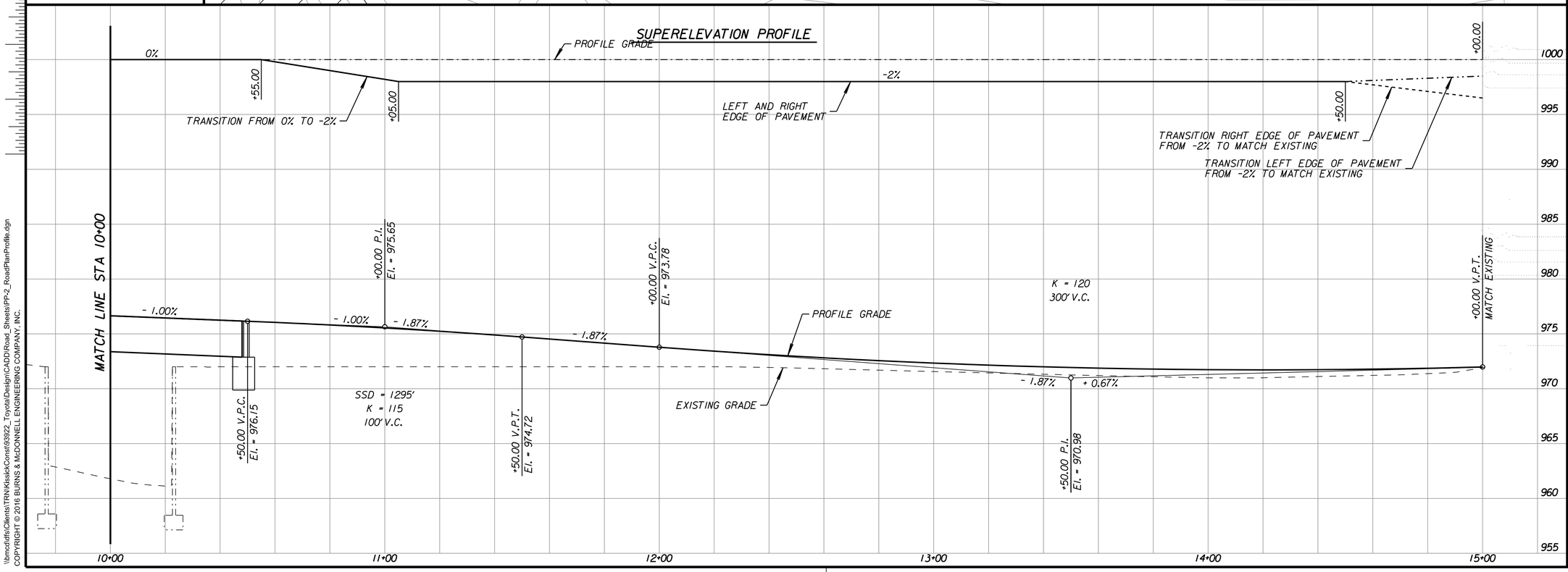

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BURNS McDONNELL

date	detailed
OCTOBER 26, 2016	S. MAUN
designed	checked
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LITTLE PANOCHE ROAD
TEMPORARY BRIDGE AT PANOCHE CREEK

LITTLE PANOCHE ROAD PLAN & PROFILE
STA. 10+00 TO STA. 15+00

project	contract

drawing — rev. —

sheet 4 of 38 sheets

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APPENDIX B - TRAFFIC CONTROL PLAN

GENERAL NOTES

1. MATERIALS, INSTALLATION, AND MAINTENANCE OF TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CA MUTCD) AND CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD DETAILS.
2. CHANGEABLE MESSAGE BOARDS SHALL BE PLACED AT LEAST ONE WEEK IN ADVANCE, WARNING WORKERS AND THE PUBLIC TO ANTICIPATE DELAYS.
3. THE NUMBER OF BARRICADES SHALL BE SUFFICIENT TO COVER THE ENTIRE WIDTH OF THE ROAD WITHOUT ANY GAPS.
4. DATE, TIME AND LOCATION INFORMATION SHALL BE COMMUNICATED TO THE COUNTY'S TRAFFIC ENGINEER FOR DISSEMINATION TO EMERGENCY SERVICE DISPATCH AND TO OTHER ENTITIES THAT MAY BE AFFECTED BY THE ROAD CLOSURE. THIS INFORMATION SHALL BE COMMUNICATED A MINIMUM OF 7 DAYS PRIOR TO THE ROAD CLOSURE.
5. SEE CALTRANS STANDARD DETAIL T-9 FOR ADDITIONAL DETAILS.
6. CONTRACTOR WILL ACQUIRE ALL NECESSARY PERMITS REQUIRED BY THE CALIFORNIA DEPARTMENT OF TRANSPORTATION.

TRAFFIC HANDLING

LITTLE PANOCHE ROAD WILL BE CLOSED AT THE WORK ZONE FOR THE DURATION OF CONSTRUCTION. VEHICULAR TRAFFIC WILL UTILIZE INTERSTATE 5 AS THE NORTHBOUND AND SOUTHBOUND ROUTE DURING CONSTRUCTION. TRAFFIC WILL USE STATE HIGHWAY 152 AND THE DETOUR PLAN DEPICTED ON THE LITTLE PANOCHE ROAD DETOUR PLAN.

LEGEND

- STAGING AREA
- SIGN (SINGLE SIDED)
- BARRICADE

SCALE

100' 0 100' 200'

no.	date	by	ckd	description

PRELIMINARY
NOT FOR CONSTRUCTION

BURNS McDONNELL

date	detailed
OCTOBER 17, 2016	S. MAUN
designed	checked
J. MEYERS	J. KAPUR

conEdison

LITTLE PANOCHE ROAD
TEMPORARY BRIDGE AT PANOCHE CREEK

WORK ZONE PLAN

project	contract

drawing	rev.
	-

sheet # of 28 sheets

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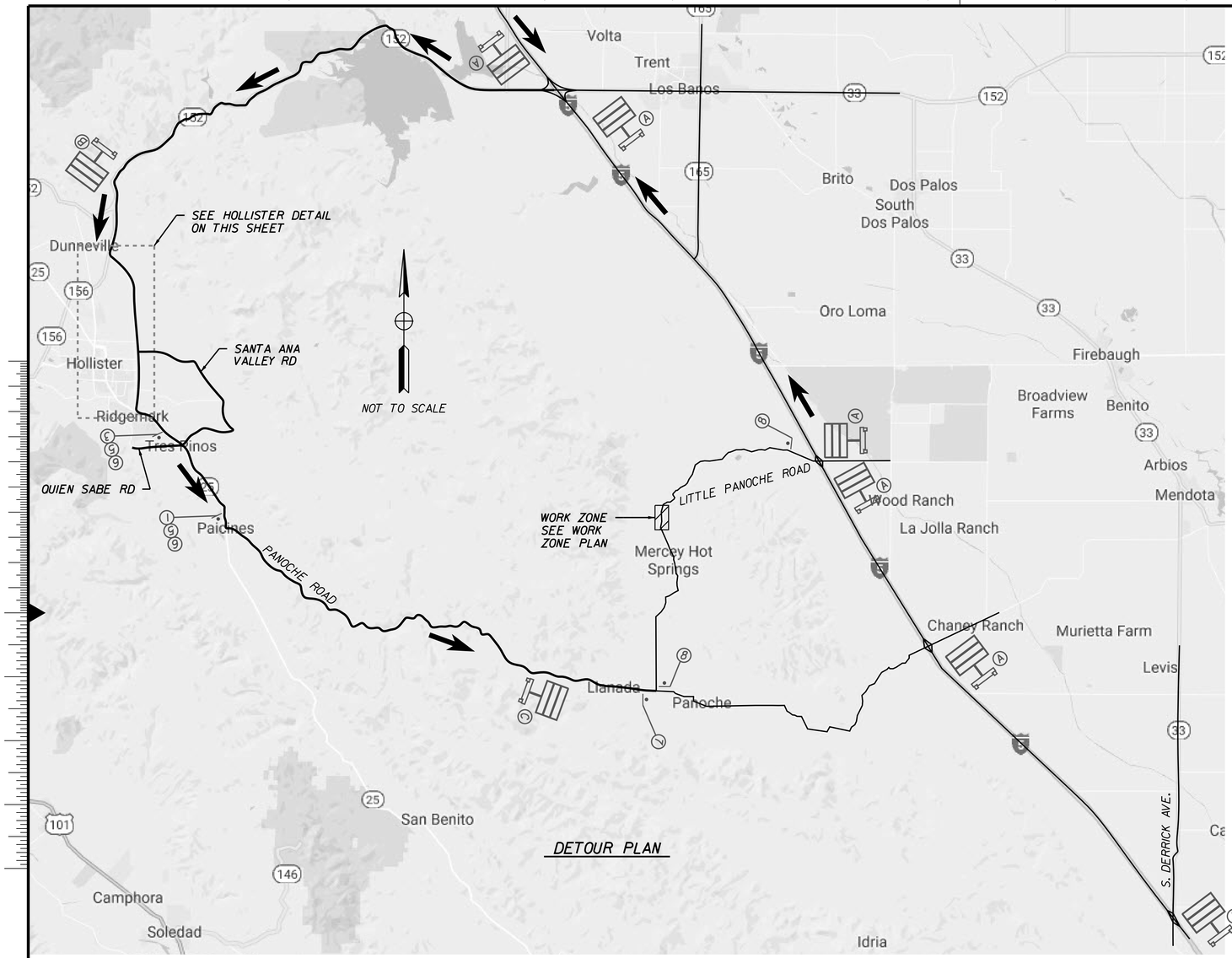
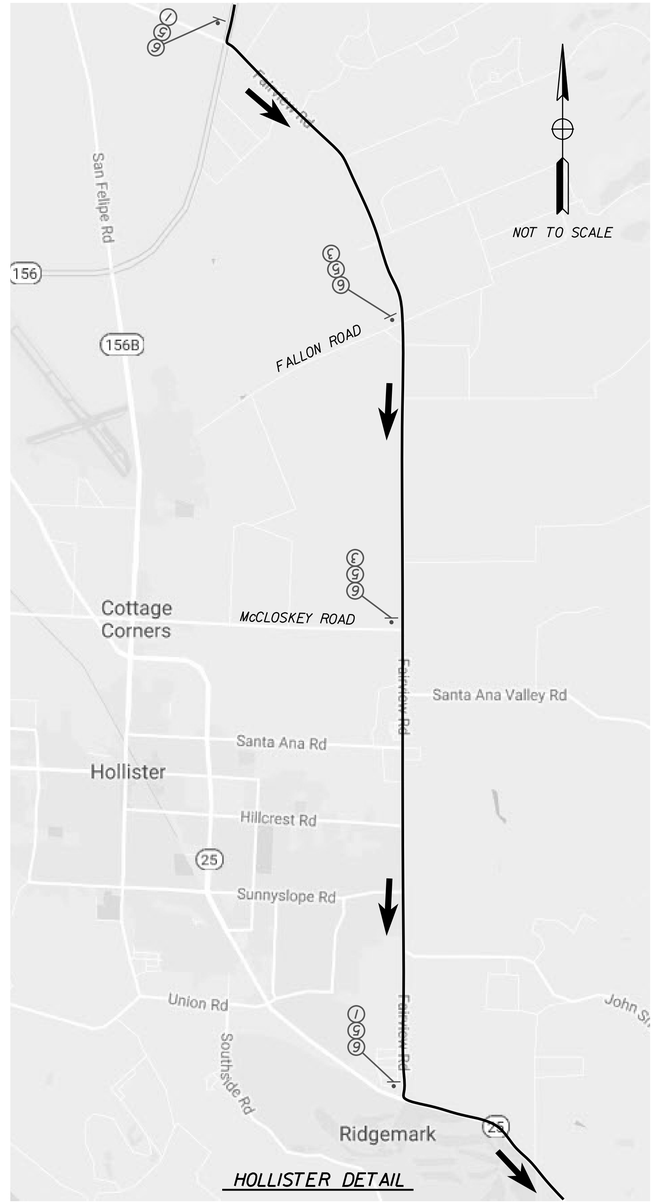


DETOUR PLAN

CHANGEABLE MESSAGE BOARD INFORMATION

	Ⓐ	Ⓑ	Ⓒ
MESSAGE 1	LITTLE PANOCHE CLOSED	LITTLE PANOCHE ROAD	LITTLE PANOCHE CLOSED
MESSAGE 2	10 MILES WEST OF I-5	SB DETOUR	10 MILES NORTH OF PANOCHE
MESSAGE 3	USE CA-152W EXIT	USE CA-156W	USE I-5 NORTH



HOLLISTER DETAIL

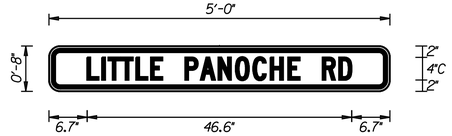
TRAFFIC CONTROL LEGEND

CHANGEABLE MESSAGE BOARD

SIGN (SINGLE-SIDED)

①	DETOUR ← M4-9L	⑤	SOUTH M3-3
②	DETOUR → M4-9R	⑥	LITTLE PANOCHE RD D-1
③	DETOUR ↑ M4-9S	⑦	END DETOUR M4-8a
④	NORTH M3-1	⑧	ROAD CLOSED 10 MILES AHEAD LOCAL TRAFFIC ONLY R11-3a

SIGN NUMBER	D-1
WIDTH x HGHT.	5'-0" x 0'-8"
BORDER WIDTH	0.63"
CORNER RADIUS	0"
MOUNTING	Overhead
BACKGROUND	TYPE: Reflective
	COLOR: Orange
LEGEND/BORDER	TYPE: Reflective
	COLOR: Black/Black



BORDER
R=1.5"
TH=0.63"
IN=0.47"

Panel Style: CONSTRUCTION GUIDE MOD.ssi
M.U.T.C.D.: 2009 Edition

LETTER POSITIONS (X)																	LENGTH	SERIES/SIZE
L	I	T	T	L	E		P	A	N	O	C	H	E		R	D		C 2000
6.7	6.7	10.4	12.7	12.7	17.9	20	24	12.7	12.7	12.7	17.9	39	42.1	42.1	42.1	51	12.7	P

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PRELIMINARY
NOT FOR CONSTRUCTION

BURNS McDONNELL

date	detailed
OCTOBER 17, 2016	S. MAUN
designed	checked
J. MEYERS	J. KAPUR

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LITTLE PANOCHE ROAD
TEMPORARY BRIDGE AT PANOCHE CREEK

LITTLE PANOCHE ROAD DETOUR PLAN

project	contract
drawing	rev.
-	- - -

sheet 8 of 28 sheets

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Millimeters
Scale For Microfilming
Inches

TABLE 1

TAPER LENGTH CRITERIA AND CHANNELIZING DEVICE SPACING							
SPEED (S)	MINIMUM TAPER LENGTH * FOR WIDTH OF OFFSET 12 FEET (W)				MAXIMUM CHANNELIZING DEVICE SPACING		
					X	Y	Z **
	TANGENT 2L	MERGING L	SHIFTING L/2	SHOULDER L/3	TAPER	TANGENT	CONFLICT
mph	ft	ft	ft	ft	ft	ft	ft
20	160	80	40	27	20	40	10
25	250	125	63	42	25	50	12
30	360	180	90	60	30	60	15
35	490	245	123	82	35	70	17
40	640	320	160	107	40	80	20
45	1080	540	270	180	45	90	22
50	1200	600	300	200	50	100	25
55	1320	660	330	220	55	110	27
60	1440	720	360	240	60	120	30
65	1560	780	390	260	65	130	32
70	1680	840	420	280	70	140	35

* - For other offsets, use the following merging taper length formula for L:
For speed of 40 mph or less, L = WS*/60
For speed of 45 mph or more, L = WS

Where: L = Taper length in feet
W = Width of offset in feet
S = Posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

** - Use for taper and tangent sections where there are no pavement markings or where there is a conflict between existing pavement markings and channelizers (CA).

TABLE 2

LONGITUDINAL BUFFER SPACE AND FLAGGER STATION SPACING				
SPEED *	Min D**	DOWNGRADE Min D ***		
		-3%	-6%	-9%
mph	ft	ft	ft	ft
20	115	116	120	126
25	155	158	165	173
30	200	205	215	227
35	250	257	271	287
40	305	315	333	354
45	360	378	400	427
50	425	446	474	507
55	495	520	553	593
60	570	598	638	686
65	645	682	728	785
70	730	771	825	891

* - Speed is posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

** - Longitudinal buffer space or flagger station spacing

*** - Use on sustained downgrade steeper than -3 percent and longer than 1 mile.

TABLE 3

ADVANCE WARNING SIGN SPACING			
ROAD TYPE	DISTANCE BETWEEN SIGNS*		
	A	B	C
	ft	ft	ft
URBAN - 25 mph OR LESS	100	100	100
URBAN - MORE THAN 25 mph TO 40 mph	250	250	250
URBAN - MORE THAN 40 mph	350	350	350
RURAL	500	500	500
EXPRESSWAY / FREEWAY	1000	1500	2640

* - The distances are approximate, are intended for guidance purposes only, and should be applied with engineering judgment. These distances should be adjusted by the Engineer for field conditions, if necessary, by increasing or decreasing the recommmended distances.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM TABLES FOR LANE AND RAMP CLOSURES

NO SCALE

T9

APPENDIX C - JURISDICTIONAL DELINEATION

Panoche Valley Solar, LLC

Jurisdictional Delineation Report

Little Panoche Road Bridge Project, Panoche Valley Solar Project

rincon

Environmental Scientists Planners Engineers

Little Panoche Road Bridge Project

Panoche Valley Solar Project
Fresno County, CA

Prepared for:

Panoche Valley Solar, LLC
and
Burns & McDonnell Engineering Co., Inc.

Contact: Brianna Pilkinton
(858) 320-2953

Prepared by:

Rincon Consultants, Inc.

Contact: David Daitch
(831) 333-0310

June 2016

This report prepared on 50% recycled paper with 50% post-consumer content.

Rincon Consultants, Inc.
2016 *Jurisdictional Delineation Report - Little Panoche Road Bridge Project, Panoche Valley Solar Project, Fresno County, CA*
Rincon Consultants Project No. 16-02605.

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TABLES

FIGURES

APPENDICES

SECTION 1 - INTRODUCTION

Rincon Consultants, Inc. (Rincon) has conducted a delineation of potential jurisdictional waters on behalf of Panoche Valley Solar, LLC, for the Little Panoche Road Bridge (Caltrans Bridge No. 42C0138) Project located in Fresno County, California (Figure 1). The delineation was conducted to determine the location and extent of jurisdictional features to inform the project design and support California Department of Fish and Wildlife (CDFW) permitting under California Fish and Game Code Section 1600 et seq. These features include the location and extent of waters of the State potentially subject to the jurisdiction of the CDFW, the Regional Water Quality Control Board (RWQCB) and the United States Army Corps of Engineers (USACE).

Any proposed development in areas identified as jurisdictional resources by CDFW or RWQCB may be subject to the notification/permit requirements of the RWQCB pursuant to Section 13263 of the Porter-Cologne Water Quality Control Act (Porter-Cologne) and/or CDFW pursuant to Section 1600 et seq. of the California Fish and Game Code. Similarly, proposed development in areas identified as jurisdictional by USACE may be subject to the notification/permit requirements of the USACE pursuant to Section 404 and the RWQCB pursuant to Section 401 of the federal Clean Water Act.

This report has been prepared for Panoche Valley Solar LLC ("Client"). This report may be used and relied upon by Client, any entity that has an ownership interest in the Client, any of the Client's subsidiaries and/or affiliates, and any successor in interest to Client's interests in the project.

1.1 PROJECT LOCATION

The Little Panoche Road Bridge Project Site is located north of Panoche Valley along Little Panoche Creek, approximately five miles southwest of Little Panoche Reservoir and roughly eight miles west of the western boundary of the San Joaquin Valley, in unincorporated Fresno County, California. The project site is situated in Section 3, Township (T) 14 South (S), Range (R) 10 East (E), and depicted on the U.S. Geological Survey (USGS) *Mercey Hot Springs, California*, 7.5-minute topographic quadrangle (Figure 2). The project site is surrounded by undeveloped valley and foothill lands under an active cattle grazing regime (Figure 1), within the eastern extent of the central Coast Range.

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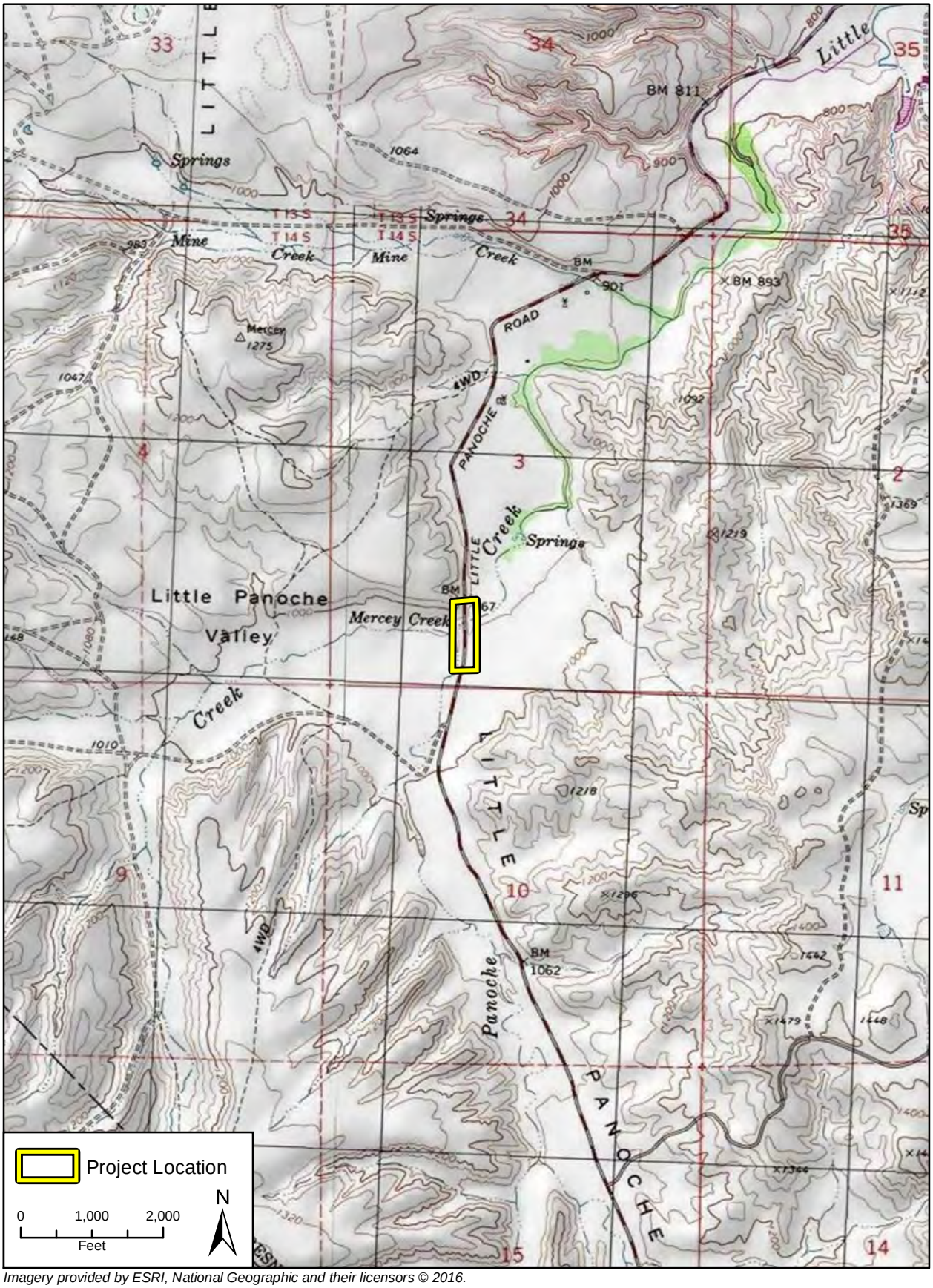
Additional data provided by USGS, 2016.

Project Location

Figure 1



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Project Location on Topo Figure 2

1.2 PROJECT DESCRIPTION

The proposed Project includes enhancement of the existing 48-feet-long by 24-feet-wide Little Panoche Road Bridge at Little Panoche Creek (Caltrans Bridge No. 42C0138). The existing structure is located on a rural road currently subject to infrequent highway legal truck use. The Applicant is investigating methods to reinforce and/or retrofit the existing bridge due to the increased number and frequency of highway legal trucks anticipated during construction of the Panoche Valley Solar (PVS) Project. Any enhancements to the bridge would be located on the same alignment as the existing bridge within the existing Fresno County right-of-way (ROW)

SECTION 2 - METHODOLOGY

This jurisdictional delineation was conducted in accordance with the most currently accepted regulatory guidelines. As noted in the Introduction above, no potentially jurisdictional features identified during this delineation are anticipated to be impacted by project development. However, federal guidelines for delineating jurisdictional limits are typically used to determine the limits of waters subject to both State and Federal jurisdictions. Waters potentially subject to RWQCB jurisdiction were evaluated in accordance with the following:

- USACE *Wetlands Delineation Manual* (1987)
- USACE *Guidelines for Jurisdictional Determinations for Waters of the United States in the Arid Southwest* (2001)
- USACE *Jurisdictional Determination Form Instructional Guidebook* (2007)
- USACE *Regional Supplement to the Corps Wetland Delineation Manual: Arid West Region* (2008)
- USACE *A Field Guide to the Identification of the Ordinary High Water mark (OHWM) in the Arid West Region of the Western United States* (2008)
- Porter-Cologne Water Quality Control Act

CDFW jurisdiction was determined pursuant to Section 1602(a) of the California Fish and Game Code.

Appendix A presents a discussion of regulations and definitions pertinent to this jurisdictional delineation. Specifically, the following guidelines were employed to determine the limits of areas within the study area that are potentially subject to regulatory jurisdiction.

The limits of the USACE jurisdiction in non-tidal waters extend to the ordinary high water mark (OHWM), which is defined as *". . . that line on the shore 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 soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas* (33 CFR §328.3(e))*."* An OHWM can be determined by the observation of a natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; presence of litter and debris; wracking; vegetation matted down, bent, or absent; sediment sorting; leaf litter disturbed or washed away; scour; deposition; multiple observed flow events; bed and banks; water staining; and/or change in plant community. Further, a feature as defined above must have a significant nexus to relatively permanent waters (RPW), and ultimately traditional navigable waters (TNW), to be classified as Federal waters of the U.S. The RWQCB shares USACE jurisdictional methodology, unless a feature is isolated from and lacks a significant nexus to a RPW.

The term "isolated waters" is generally applied to waters/wetlands that are not connected by surface water to a river, lake, ocean, or other relatively permanent body of water, and lack conditions that significantly affect the chemical, physical, and biological integrity of RPW. In this case regarding isolated features displaying an OHWM, RWQCB still considers such drainages to be jurisdictional as waters of the State pursuant to Porter-Cologne.

CDFW jurisdiction is defined to the top of the active bank of the stream/channel or to the limit (outer drip line) of the adjacent riparian vegetation, whichever is greater. CDFW jurisdictional features do not require a connection to RPW/TNW as well, nor are they determined by the above definition of "waters."

Therefore, RWQCB asserts jurisdiction in accordance with the OHWM methodology utilized by the USACE and the CDFW by the limits of the active streambed/banks and associated riparian vegetation (if present).

Swales or erosional features (e.g., gullies characterized by low volume, infrequent, or short duration flow) and ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water, are generally not considered jurisdictional waters, but may be considered within the limits of CDFW jurisdictional when directly connected to typical waters of the state. Note that the regulatory agencies make the final jurisdictional determination.

2.1 LITERATURE REVIEW

Prior to conducting the field survey, Rincon performed a desktop review of previous reports, historical and recent aerial photographs and topographic maps, and existing reports and information on jurisdictional waters and wetlands in the project area to inform the field survey effort.

2.2 FIELD SURVEY

On April 29, 2016, Rincon senior biologist David Daitch, Ph.D. completed a delineation of potentially jurisdictional features within the project site (including an approximately 150-foot buffer; the combined area is referred to as the study area). The survey focused on identification of potential "Waters of the United States" and wetlands subject to USACE jurisdiction (refer to definition in Appendix A), and potential "waters of the State" and/or ephemeral drainages that may be subject to CDFW and/or the Central Valley RWQCB jurisdiction(s) (refer to definition in Appendix A). The boundaries of potential waters of the State were delineated through field determination made in conjunction with aerial photograph interpretation. All potentially jurisdictional features within the study area were inspected to record existing conditions and determine jurisdictional limits. The dimensions of each drainage feature were mapped using a Garmin ® GPSMAP 64 unit with sub-meter accuracy and/or recent, high-resolution aerial photography. The potential jurisdictional boundaries were identified by measuring the length and average width of features as evidenced by active bed, bank, and other channel characteristics.

SECTION 3 - ENVIRONMENTAL SETTING

Elevation of the project site is approximately 292 meters (960 feet) above mean sea level. The site is located at the confluence of Little Panoche Creek and Mercey Creek, in a narrow drainage (Little Panoche Valley) flowing east from the southern Coast Range biogeographic region. Overall, the project site has evidence of past agricultural activities and human-related disturbance including the existing road and bridge, residential development, and livestock grazing.

Little Panoche Creek is one of a series of small, ephemeral washes that drain the eastern slope of the southern Coast Range into the San Joaquin Valley. Little Panoche Valley is bounded by the Diablo Range to the west and northwest and by the Panoche Hills to the east. Little Panoche Valley connects with Panoche Valley to the south, and empties to Little Panoche Reservoir, and ultimately the San Joaquin Velley to the northeast.

A discussion of local hydrology in the study area, major vegetation units observed, and soil types reviewed is presented below. No soil pits were warranted during the survey due to the lack of dominant hydrophytic vegetation on-site. Representative photographs are included in Appendix B of this report.

3.1 HYDROLOGY

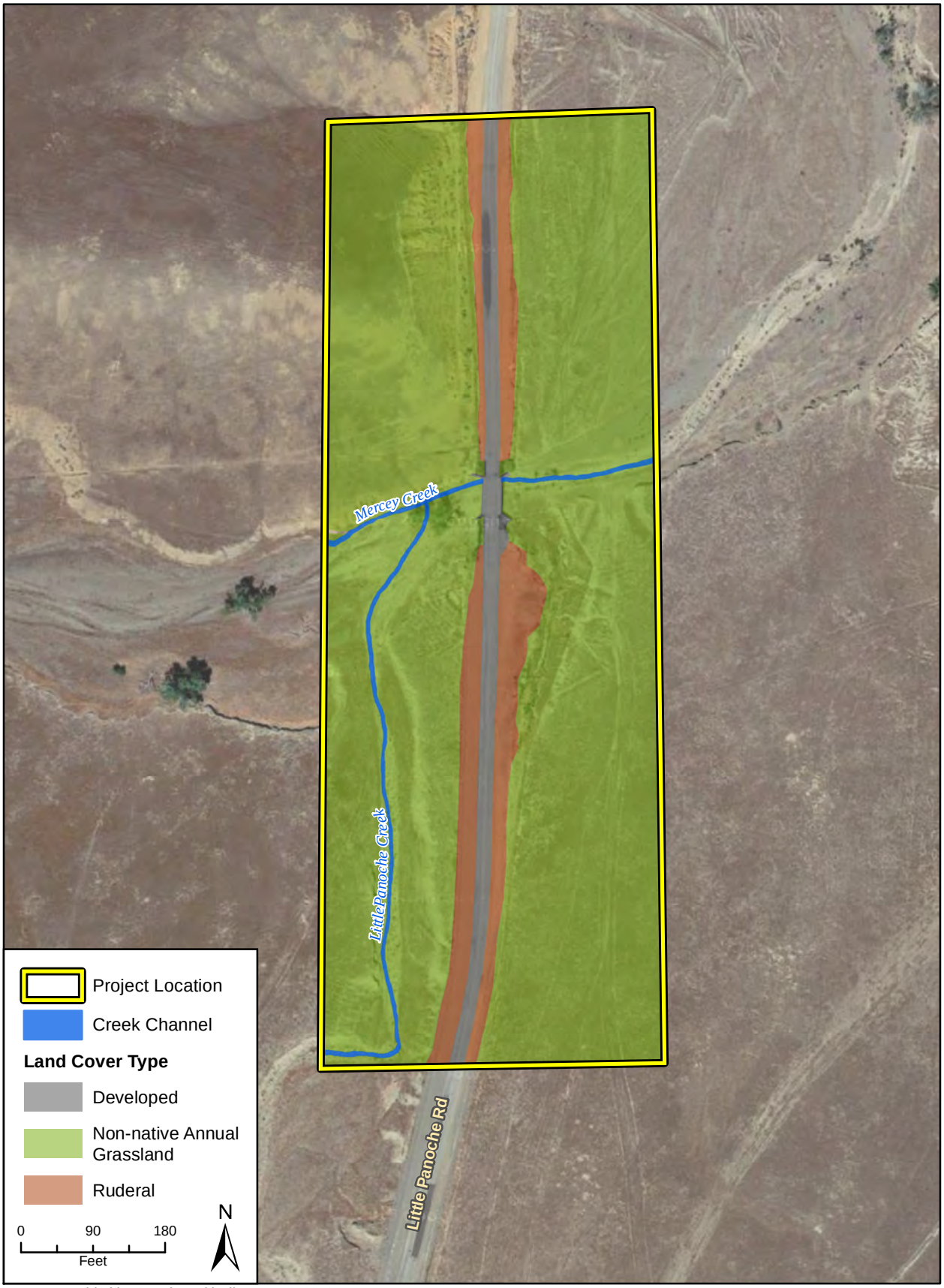
The project study area is located within the southwestern portion of the approximately 9,130-square-kilometer Middle San Joaquin-Lower Chowchilla Watershed (Hydrologic Unit Code: 18040001) and is located within the California RWQCB Central Valley Region. Average annual precipitation for Pinnacles National Park, California, located approximately 22 miles west-southwest of the project is approximately 16.55 inches (Western Regional Climate Center 2016).

The jurisdictional limits of Little Panoche Creek and Mercey Creek were assessed, mapped, and documented within the study area. The characteristics of these features are described in detail as follows (refer to Figure 5 discussed below in Section 4.0).

Little Panoche Creek and Mercey Creek function essentially as ephemeral drainages which typically only flow during and immediately following precipitation events, and which display an active bank and scoured or sediment-deposited channel bottom (bed). These features are potentially within the jurisdiction of the regulatory agencies.

3.2 VEGETATION

Vegetation was generally classified using the systems provided in *A Manual of California Vegetation, Second Edition* (MCV) (Sawyer et al. 2009) and *Preliminary Descriptions of the Terrestrial Communities of California* (Holland 1986), but has been modified to reflect the existing site conditions. Rincon mapped four (4) land-cover types, including a single vegetation community, within the project site (Figure 4): developed, ruderal, creek channel and non-native annual grassland. No stands of dominant hydrophytic vegetation were observed.



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Land Cover Types

Figure 3

Developed
This type of land use does not have a distinctive vegetation community, is typically graded, and at this project site consist of the existing, paved Little Panoche Road.

Ruderal
Ares along the boundary of the paved road consisted of barren dirt or gravel areas. These areas were completely devoid of vegetation.

Creek Channel
The channel of Little Panoche Creek and Mercey Creek consisted of barren area with cobbles, pebbles and sand, with typical channel flow and scour features. The channel contained no vegetation and is not included with the non-native grassland that occurs immediately adjacent to the channel.

Non-Native Annual Grassland
The study area consists predominantly of non-native annual grassland dominated by red brome (*Bromus rubens*) with hare barley (*Hordeum murinum*), ripgut brome (*Bromus diandrus*) and wild oat (*Avena fatua*). Native and non-native forbs occurred in various abundances within the understory of the grassland areas, including desiccated stork's bill (*Erodium* sp.), turkey-mullein (*Croton setiger*), black mustard (*Brassica nigra*), tarplant (*Deinandra* sp.) and vinegar weed (*Trichostema lanceolatum*). Isolated shrubs occurred in low abundance within the non-native annual grassland, including mule fat (*Baccharis salicifolia*), saltbush (*Atriplex* sp.) and golden bush (*Isocoma acradenia*). Two cottonwood trees (*Populus fremontii*) were present within the wash on the west side of Little Panoche Road.

3.3 SOILS

The soils in the Little Panoche Valley formed on underlying alluvial sediments (alluvial fans and flood plains) from various mixed rock sources in a dry subhumid mesothermal climate with warm dry summers and cool moist winters. According to data available from the USDA and National Cooperative Soil Survey [NCSS] SoilWeb, two (2) soils belonging to two soil series underlie the study area (however, only a single soil underlies the project footprint), and include the following:

- Vernalis loam, 0 to 2 percent slopes
- Narbaitz-Pleito association, 5 to 30 percent slopes

Soil distribution on the project sites are depicted below on Figure 4, and the soil series are described in more detail below.

Vernalis Series

The Vernalis series consists of very deep, well drained soils on alluvial fans and flood plains. These soils formed in alluvium from mixed rock sources with a slope of 0 to 5 percent. The mean annual precipitation is about 11 inches and the mean annual temperature is about 61 degrees Fahrenheit. The soil between depths of about 5 to 15 inches is usually dry all of the time from late April until late November or early December and is moist is some or all parts all the rest of the year. The clay content in the 10 to 40 inch particle-size control section is 18 to 32 percent. Fine sand and coarser particle size content is more than 15 percent. Depth to carbonates is 7 to 36 inches. The series is well drained with negligible to low runoff and moderate permeability; however, some surface soils have moderately slow permeability.

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Additional data provided by Natural Resources Conservation Service, United States Department of Agriculture, 2016.

Soil Classification

Figure 4

Narbaitz-Pleito Association

The Narbaitz series consists of very deep, moderately well drained soils on erosional fan remnants with gilgai microrelief and slopes of 5 to 15 percent at elevations of 920 to 1370 feet. These soils formed in alluvium from metasedimentary and/or sedimentary rocks. The mean annual precipitation is about 9 inches and the mean annual temperature is about 62 degrees Fahrenheit. Vegetation on these soils is annual grasses and forbs. The climate is arid with hot, dry summers and cool, somewhat moist winters. The mean annual precipitation is 8 to 10 inches. The frost-free season is 250 to 270 days. The series is moderately well drained with very high runoff and very slow permeability. The vegetation is mainly annual grasses and forbs.

SECTION 4 - JURISDICTIONAL DELINEATION RESULTS

Jurisdictional resources were delineated on-site according to the most recent regulatory agency protocols and guidelines (see Appendix A). The study area contains a streambed/bank potentially subject to jurisdiction of the USACE, CDFW and RWQCB. Table 1 below summarizes the total acreage of jurisdictional areas within the study area[1] per regulatory agency. The study area includes approximately 140 linear feet along Mercey Creek and approximately 1130 linear feet along Little Panoche Creek. Figure 5 depicts the location and extent of USACE, CDFW and RWQCB jurisdictional features reviewed using recent and historical aerial photography and evaluated on-the-ground during the delineation. Appendix B provides representative photographs of the potentially jurisdictional features on the project site.

Table 1: Resource Agency Jurisdiction

Resource Agency	Study Area Acreage
CDFW Streambed/Banks Waters of the State	2.42*
Potential USACE and RWCQB Waters of U.S.	1.61

*Inclusive of the (1.61 acres) Waters of the U.S.

4.1 POTENTIAL USACE JURISDICTION

The confluence of Little Panoche Creek and Mercey Creek occurs within the study area (i.e., the project site plus a 150-foot buffer) (see Photo 2) as depicted on Figure 5. Both of these creeks show evidence of an OHWM and defined bed, bank, and channel characteristics (see Photos 1-7; 10-13; 15). The channels and OHWM of these two creeks may comprise non-wetland waters of the U.S., and may be subject to jurisdiction of the USACE. Little Panoche Creek enters the study area from the south, on the west side of Little Panoche Road, and meets Mercey Creek just west of Little Panoche Road Bridge, where the channel crosses under Little Panoche Road to the east. Downstream of the confluence Little Panoche Creek continues to flow in a generally northeast direction toward Little Panoche Reservoir. The outfall from Little Panoche Reservoir extends east into the San Joaquin Valley where in connects to irrigation canals. At the project site, both creeks include a distinct channel with exposed sand, pebbles and cobbles (see Photos 1-3; 10; 11). The channel ranges in width from about two feet at its narrowest point (see Photo 2) in the study area (south of the bridge and west of the road), to approximately four feet on the east side of the bridge (see Photos 10-11). The limits of the channel and OHWM are depicted in Figure 5 and represent the full extent of potential USACE jurisdiction.

4.2 POTENTIAL CDFW JURISDICTION

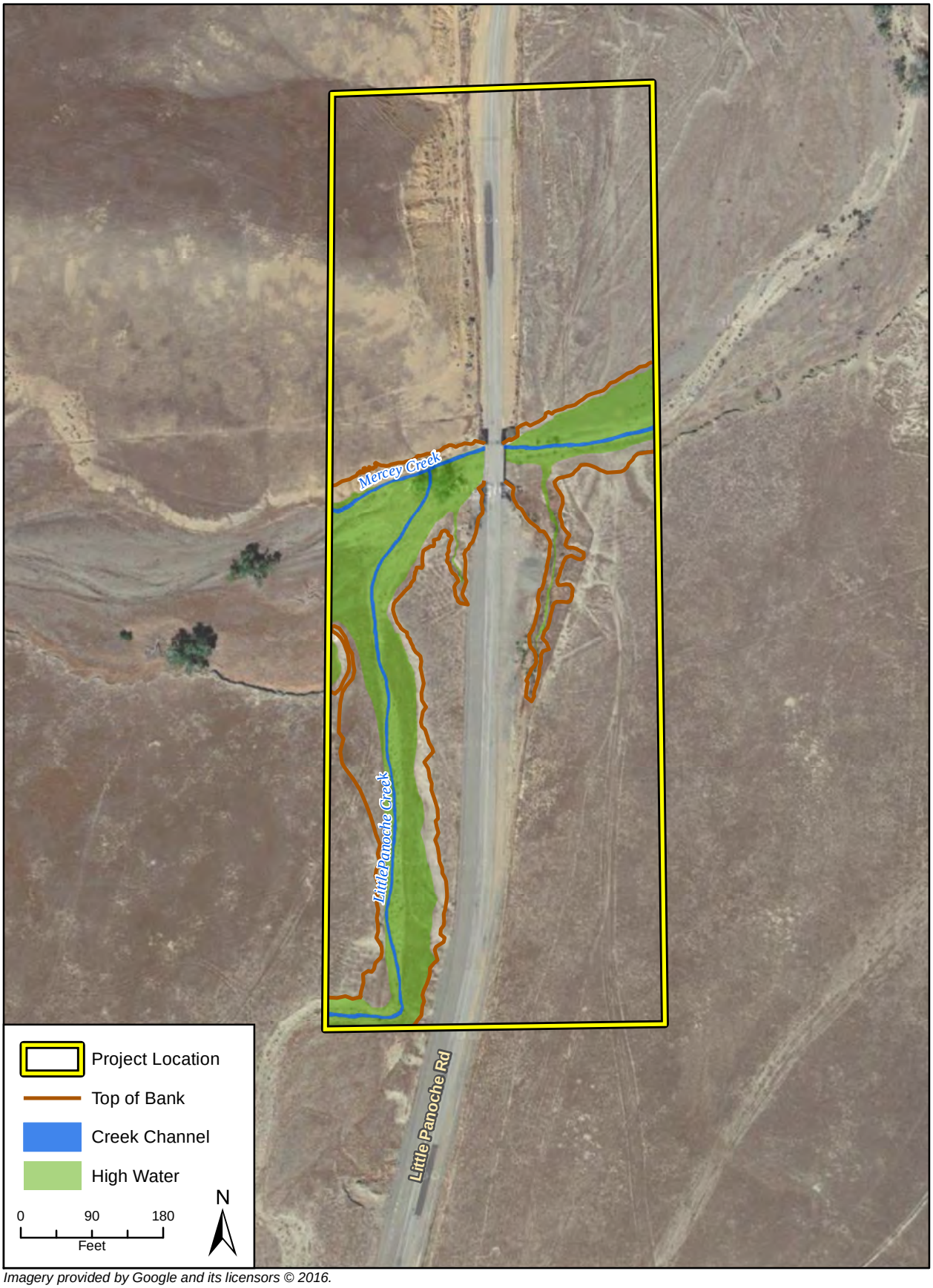
The active channel and OHWM of Little Panoche Creek and Mercey Creek are also potentially under the jurisdiction of CDFW. In addition to the area encompassed by the channel and OHWM of these two creeks, the CDFW also exerts jurisdiction out to the top of bank and encompasses any associated

[1] Total acres of CDFW and USACE jurisdiction in the Study Area exceed the acreage of jurisdictional areas within the actual project footprint; therefore, the acreage presented in Table 1 does not represent an estimate of impacts to Waters of the State or Waters of the U.S. from development of this project.

riparian vegetation. Vegetation mapping determined that riparian vegetation is absent in the study area. Within the study area, the channel and OHW of these creeks are bounded by a steep sloping bank (nearly vertical in many places) in the northwest, southwest and southeast quadrants of the study area (see Photos 3-5). Along the north side of the wash east of the bridge the top of bank is a low, gentle slope up from the terrace that forms the OHWM (see Photo 12). The limits of the channel, OHWM and top of bank are depicted in Figure 5 and represent the full extent of potential CDFW jurisdiction.

4.3 POTENTIAL RWQCB JURISDICTION

The portions of the drainages described above where an active bed, bank, and OHWM are evident can be described as Waters of the State and possibly Waters of the U.S (pending USACE concurrence). The area encompassed by some or all these features may also be subject to jurisdiction of the RWQCB (see Appendix A for definitions of jurisdictional limits).



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USACE, CDFW and RWQCB Jurisdiction Figure 5

SECTION 5 - LIMITATIONS, ASSUMPTIONS, AND USE RELIANCE

This Jurisdictional Delineation Report has been prepared in accordance with professionally accepted jurisdictional resources investigation practices conducted at this time and in this geographic area. The investigation is limited by the scope of work performed, and by the environmental conditions present at the time of the survey. Rincon's field studies were based on current industry practices, which change over time and may not be applicable in the future. No other guarantees or warranties, expressed or implied, are provided. The findings and opinions conveyed in this report are based on findings derived from site reconnaissance, jurisdictional delineation, and specified historical and literature sources. Although Rincon believes the data sources are reasonably reliable, Rincon cannot and does not guarantee the authenticity or reliability of the data sources it has used. Additionally, pursuant to our contract, the data sources reviewed included only those that are practically reviewable without the need for extraordinary research and analysis.

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Appendix A

Regulatory Overview and Definitions

USACE JURISDICTION

Federal wetlands and other Waters of the U.S. have legal protection in accordance with Section 404 of the Clean Water Act (33 U.S.C. Section 1344). The United States Army Corps of Engineers (USACE) generally requires the issuance of a permit, or coverage under an existing permit, for all actions that have the potential to degrade or modify these features.

WATERS OF THE U.S.

For purposes of the Clean Water Act, the USACE defines "Waters of the United States" as:

- All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the 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, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
    - Which are or could be used by interstate or foreign travelers for recreational or other purposes;
    - From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    - Which are used or could be used for industrial purposes by industries in interstate commerce;
- All impoundments of waters otherwise defined as waters of the United States under this definition;
- Tributaries of waters identified in paragraphs (a) through (d) of this definition;
- The territorial sea; and
- Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA are not waters of the United States (40 CFR 122.2).

WETLANDS

Under Section 404 of the Clean Water Act, wetlands are defined as 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. Wetlands generally include swamps, marshes, bogs, and similar areas (40 CFR 230.3 and CFR 328.3). As mentioned above, jurisdictional wetlands are a subset of Waters of the U.S., which include wetlands as defined above and areas subject to the ebb and flow of the tide and areas that are within the limits of ordinary high water. Although the term ordinary high water continues to be refined, it can be generally defined as the average annual level of high flows (not necessarily the highest flood level) within a system period over a 2-year return interval flow level.

The USACE definition of wetlands utilizes the "three-parameter test" for permitting and planning purposes. These three parameters are hydrology, hydrophytic vegetation, and hydric soils as described below. Under this definition an area is considered a wetland only if all three conditions are present.

Hydrology

Wetland hydrology is inundation or soil saturation with a frequency and duration long enough to cause the development of hydric soils and plant communities dominated by hydrophytic vegetation. If direct observation of wetland hydrology is not possible (as in seasonal wetlands), or records of wetland hydrology are not available (such as stream gauges), assessment of wetland hydrology is frequently supported by field indicators, such as water marks, drift lines, sediment deposits, or drainage patterns in wetlands.

Hydrophytic Vegetation

Hydrophytic vegetation dominates areas where frequency and duration of inundation or soil saturation exerts a controlling influence on the plant species present. Plant species are assigned wetland indicator status according to the probability of their occurring in wetlands. More than fifty percent of the dominant plant species must have a wetland indicator status to meet the hydrophytic vegetation criterion. The USFWS published the National List of Plant Species That Occur In Wetlands (Lichvar, 2013), which separates vascular plants into the following four basic categories based on plant species frequency of occurrence in wetlands:

- Obligate Wetland (OBL). Occur almost always (estimated probability >99%) under natural conditions in wetlands.
- Facultative Wetland (FACW). Usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.
- Facultative (FAC). Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
- Facultative Upland (FACU). Usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1%-33%).
- Obligate Upland (UPL). May occur in wetlands in another region, but occur almost always (estimated probability >99%) under natural conditions in non-wetlands in the region specified.

The USACE considers OBL, FACW and FAC species to be indicators of wetlands. An area is considered to have hydrophytic vegetation when greater than 50 percent of the dominant species in each vegetative stratum (tree, shrub, and herb) fall within these categories. Any species not appearing on the USACE list is assumed to be an upland species, almost never occurring in wetlands. In addition, an area needs to contain at least 5% vegetative cover to be considered as a vegetated wetland.

Hydric Soils

Hydric soils are saturated or inundated for a sufficient duration during the growing season to develop anaerobic or reducing conditions that favor the growth and regeneration of hydrophytic vegetation. Field indicators of wetland soils include observations of ponding, inundation, or saturation, dark (low chroma) soil colors, bright mottles (concentrations of oxidized minerals such as iron), gleying, which indicates reducing conditions by a blue-grey color, or accumulation of organic material. Additional supporting information includes documentation of soil as hydric or reference to wet conditions in the local soils survey, both of which must be verified in the field.

NON-JURISDICTIONAL AREAS

Areas not considered to be jurisdictional waters include non-tidal drainage and irrigation ditches excavated on dry land, artificially-irrigated areas, artificial lakes or ponds excavated on dry land used for irrigation or stock watering, small artificial water bodies such as swimming pools, and water filled depressions (51 Fed. Reg. 41, 217 1986). In addition, a Supreme Court ruling (Solid Waste Agency of Northern Cook Counties [SWANCC] vs. USACE, January 9, 2001) determined that the USACE exceeded its statutory authority by asserting Clean Water Act jurisdiction over "an abandoned sand and gravel pit in northern Illinois, which provides habitat for migratory birds." Based solely on the use of such waters by migratory birds, the Supreme Court's holding was strictly limited to waters that are "non-navigable, isolated, and intrastate."

The Supreme Court further addressed the extent of the USACE jurisdiction in Rapanos v. US (June 19, 2006). There, a sharply divided Court issued multiple opinions, none of which garnered the support of a majority of Justices. This created substantial uncertainty as to which jurisdictional test should be used. The Ninth Circuit Court of Appeal, which encompasses California, answered this in Northern California River Watch v. City of Healdsburg (August 11, 2006). There, the Court held that Justice Kennedy's opinion in Rapanos provides the controlling rule of law. Under that rule, wetlands or other waters which are not navigable in fact are subject to USACE jurisdiction if they have a "significant nexus" to a navigable-in-fact waterway. As Justice Kennedy explained, whether a significant nexus exists in any given situation will have to be decided on a case-by-case basis, depending on site-specific circumstances.

USACE Headquarters in Washington, D.C. issued substantive guidance on June 5, 2007, to its District Offices as to how to apply these rulings. Based on this guidance, additional quantitative, qualitative, and other physical data is required for the USACE to make a determination of jurisdictional authority. This determination is reviewed by the United States Environmental Protection Agency (USEPA).

In accordance with the Rapanos guidance, the USACE will assert jurisdiction over traditional navigable waters (TNWs), non-navigable tributaries of TNWs that are relatively permanent waters (RPWs), and wetlands that directly abut such tributaries. TNWs include all of the "navigable waters of the US," defined in 33 CFR Part 329 and by pertinent federal court decisions. RPWs convey water flow seasonally, typically for at least 3 months. In addition, non-navigable tributaries that are not relatively permanent (non-RPWs), wetlands adjacent to non-RPWs, and wetlands adjacent to but that do not directly abut a TNW will be found jurisdictional based on a fact-specific analysis that they have a significant nexus with a TNW. The significant nexus evaluation considers the volume, duration, and frequency of water flow in the tributary and the proximity of the tributary to a TNW, as well as the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands.

RWQCB JURISDICTION

The State Water Resources Control Board (SWRCB) and local Regional Water Quality Control Board (RWQCB) have jurisdiction over "waters of the State," which are defined as any surface water or groundwater, including saline waters, within the boundaries of the state. Section 401 of the Clean Water Act (33 U.S.C. Section 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into Waters of the U.S. to obtain certification from the State in which the discharge originates. As a result, fill proposed to be deposited in waters and wetlands

requires coordination with the appropriate RWQCB that administers Section 401 and provides certification. The RWQCB also plays a role in review of water quality and wetland issues, including avoidance and minimization of impacts. Section 401 certification is required prior to issuance of a Section 404 permit.

The SWRCB has issued general Waste Discharge Requirements (WDRs) regarding discharges to "isolated" waters of the State (Water Quality Order No. 2004-0004-DWQ, Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the USACE to be Outside of Federal Jurisdiction). The local RWQCB enforces actions under this general order.

The Porter-Cologne Act provides the State with very broad authority to regulate "waters of the State" (which are defined as any surface water or groundwater, including saline waters). The Porter-Cologne Act has become an important tool in the post-SWANCC and Rapanos era with respect to the State's authority over isolated waters. Generally, any person proposing to discharge waste into a water body that could affect its water quality must file a "Report of Waste Discharge" (ROWD) when there is no federal nexus, such as under Section 404(b)(1) of the CWA. Although "waste" is partially defined as any waste substance associated with human habitation, the RWQCB interprets this to include fill discharge into water bodies.

It should be noted that the RWQCB shares USACE jurisdiction unless isolated conditions are present. If isolated waters conditions are present, the RWQCB takes jurisdiction using the USACE' definition of the OHWM and/or the three-parameter wetlands methodology pursuant to the 1987 Wetlands Manual.

CDFW JURISDICTION

In addition to being responsible for the maintenance and protection of California's fish and wildlife, the Department of Fish and Wildlife (CDFW) has authorities under California's Public Resources Code, and the federal Fish and Wildlife Coordination Act to regulate or comment on activities in wetland and riparian areas. The CDFW also assumes primary responsibility for implementation of the California State Endangered Species Act, and the Streambed Alteration Agreement (Fish and Game Code Sections 1601–1603).

In conjunction with adopting a wetlands policy on March 9, 1987 the California Fish and Game Commission assigned the CDFW the task of recommending a wetlands definition. The CDFW found the U.S. Fish and Wildlife Service (USFWS) wetland definition and classification system to be the most biologically valid. The CDFW staff use this definition as a guide in identifying wetlands while conducting on-site inspections for the implementation of its Commission's wetlands policy. This definition states the following:

"Wetlands are lands transitional between terrestrial and an aquatic system where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports hydrophytes, (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year."

The USFWS definition includes, swamps; freshwater, brackish water, and saltwater marshes; bogs; vernal pools, periodically inundated saltflats; intertidal mudflats; wet meadows; wet pastures; springs and seeps; portions of lakes, ponds, rivers and streams; and all other areas which are periodically or permanently covered by shallow water, or dominated by hydrophytic vegetation, or in which the soils are predominantly hydric in nature.

Water features that are regulated by CDFW include those defined by USFWS as well as man-made watercourses with or without wetlands, if they contain a definable bed and bank and support a fish or wildlife resource. The CDFW's jurisdiction is defined as the top of the bank to the top of the bank of the stream, channel, or basin or to the outer limit of riparian vegetation located within or immediately adjacent to the river, stream, creek, pond, or lake or other impoundment, whichever is greater.

Appendix B

Site Photographs

Photograph 1. View facing north of Little Panoche Creek channel on west side of Little Panoche Road south of bridge.

Photograph 2. View facing northeast of confluence of Little Panoche Creek (foreground) and Mercey Creek (background) west of the bridge.

Photograph 3. View facing west of Mercey Creek channel and top of bank on west side of bridge.

Photograph 4. View facing northeast of OHWM (base of bank) and top of bank on west side of Little Panoche Road south of bridge.

Photograph 5. View facing northwest of top of bank on north side of bridge. (Mercey Creek is located at base of the bank in the background.

Photograph 6. View facing north of Little Panoche Creek on west side of Little Panoche Road.

Photograph 7. View facing southwest of SW quadrant bridge abutment and wash area on west side of Little Panoche Road south of bridge.

Photograph 8. View facing north of small accessory wash on west side of Little Panoche Road south of bridge.

Photograph 9. View facing south of small accessory wash on west side of Little Panoche Road south of bridge.

Photograph 10.View facing east of Little Panoche Creek channel east of bridge.

Photograph 11. View facing west of Little Panoche Creek channel east of bridge.

Photograph 12. View facing north at top of bank on west side of Little Panoche Creek, east of bridge.

Photograph 13. View facing southwest of Little Panoche Creek wash on east side of the bridge.

Photograph 14. View facing south of SE quadrant bridge abutment and wash area on east side of Little Panoche Road south of bridge.

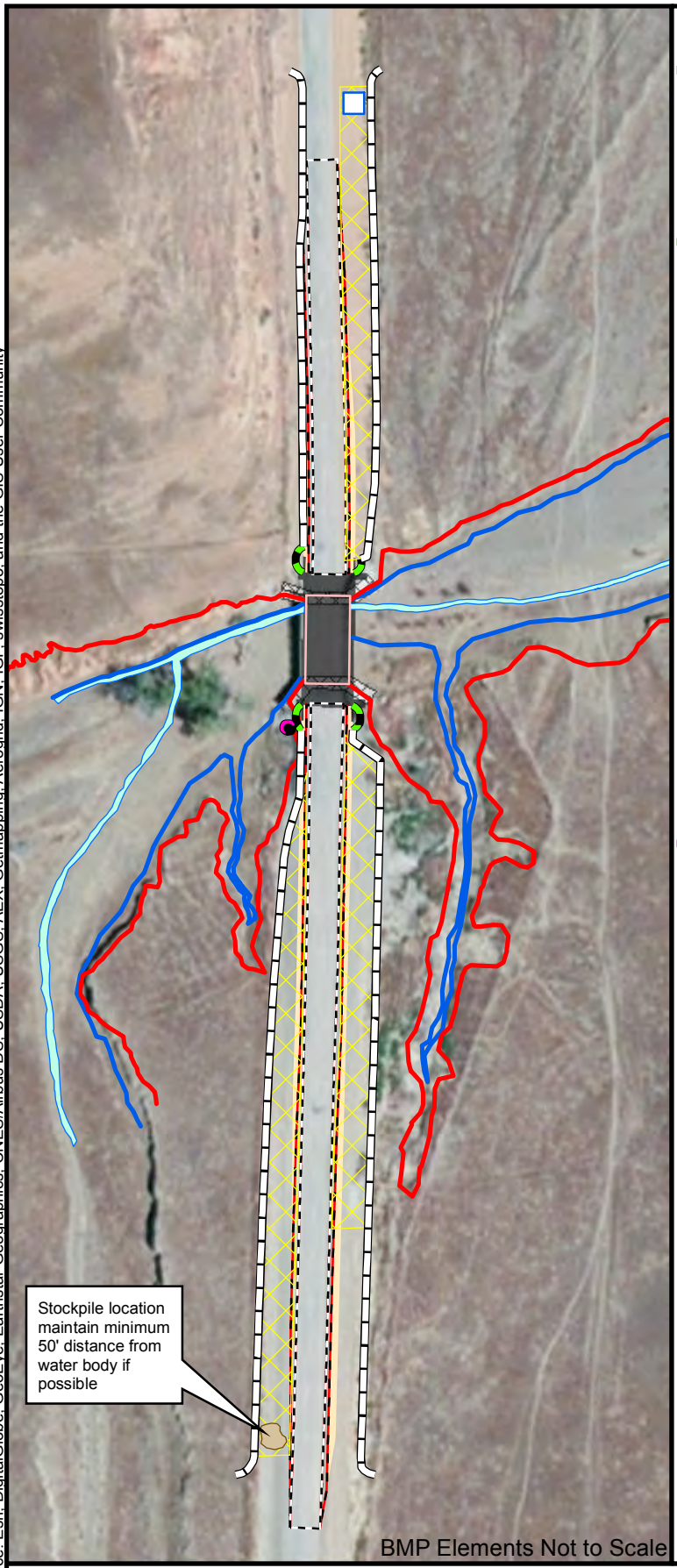
Photograph 15. View facing east of Little Panoche Creek wash east of bridge.

Photograph 16. View facing northeast of small accessory wash on east side of Little Panoche Road south of bridge.

Photograph 17. View facing south of small accessory wash on east side of Little Panoche Road south of bridge.

Photograph 18. Facing south along Little Panoche Road from north end of study area.

APPENDIX D - WATER POLLUTION CONTROL DRAWING



BMP Elements Not to Scale

SE-5: Fiber Rolls - Fiber rolls with monofilament plastic shall not be used on the Project. Fiber rolls with a natural fiber wrap shall be utilized instead. Sediment from all linear barriers shall be removed when it reaches approximately 1/3 of the barrier height. Install SE-5 in accordance with the detail in Attachment 1 and the Project SWPPP. Refer to CASQA BMP Factsheet SE-5 for additional information.

SE-6: Gravel Bag Berm - A gravel bag berm or barrier can be utilized to intercept and slow the flow of sediment laden sheet flow runoff in accordance with SE-6, Gravel Bag Berm. In a stream environment gravel bag barriers can allow sediment to settle from runoff before water leaves the construction site and can be used to isolate the work area from the live stream. Gavel Bag berm to be laid out generally on a catenary curve. The catenary is the shape of a perfectly flexible chain suspended by its ends and acted on by gravity. Gavel bags to be staked two (2) bags high for a total curve length of approximately 10 feet to 15 feet per berm. Install SE-6 in accordance with the detail in Attachment 1 and the Project SWPPP. Refer to and refer to CASQA BMP Factsheet SE-6 for additional information.

WM-3: Stockpile Management – Fiber rolls, gravel bags and sheeting to be used for stockpile containment. Note that the placement of WM-3 on this map is for planning purposes only and that the actual placement of the stockpiles will be determined by the construction crews in the field. Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil and paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called “cold mix” asphalt), and pressure treated wood. Install WM-3 in accordance with the Project SWPPP. Refer to Refer to CASQA BMP Factsheet SE-10 for additional information.

SE-10, Erosion Feature Inlet Protection – There is an erosion feature (blow-out) adjacent to the temporary bridge workspace. Install SE-10 in accordance with the detail in Attachment 1 and the Project SWPPP. Fiber rolls with a natural fiber wrap will be utilized and anchored with gravel bags. Refer to CASQA BMP Factsheet SE-10 for additional information.

WM-8: Concrete Waste Management - Concrete washout (roll-on style) to be provided for concrete pouring operations only if concrete delivery trucks are not already equipped with self-contained concrete recycling unit commonly referred to as a re-claimer unit. Refer to CASQA BMP Factsheet WM-8. Note that the placement of the concrete washout on this map is for planning purposes only and that the actual placement of the washout will be determined by the construction crews in the field. Install WM-8 in accordance with the Project SWPPP if required. Refer to CASQA BMP Factsheet WM-8 for additional information.

BMP NOTES

NS-3: Paving and Grinding Operations - Avoid paving during the wet season when feasible. Reschedule paving and grinding activities if rain is forecasted. Store materials away from drainage courses to prevent stormwater runon (see WM-1, Material Delivery and Storage). Implement NS-3 in accordance with the Project SWPPP. Refer to CASQA BMP Factsheet NS-3 for additional information.

WM-1: Material Delivery and Storage - Material delivery and storage areas should be located away from waterways, if possible. Avoid transport near drainage paths or waterways. Place in an area that will be paved if possible. Implement NS-3 in accordance with the Project SWPPP. Refer to CASQA BMP Factsheet WM-1 for additional information.

Legend

- Existing Bridge Deck
- Proposed Bridge Design
- Bridge Design - Existing Concrete
- Proposed Construction & Laydown Areas

Stream Bank Delineation

- High Water
- Top of Bank
- Stream Channel

Little Panoche Road Widening

- Existing Edge of Pavement
- New Edge of Pavement
- New Road Shoulder

NORTH

100 50 0 100

Scale in Feet

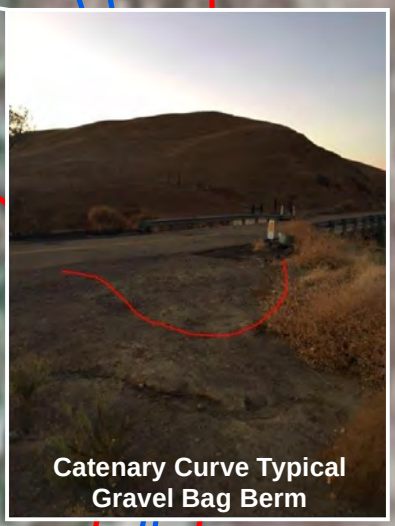
BURNS McDONNELL

WATER POLLUTION CONTROL DRAWING

PVS TEMPORARY BRIDGE AT LITTLE PANOCHE ROAD AND LITTLE PANOCHE CREEK

Source:

Issued: 10/7/2016



Legend

- Erosion Feature
- SE-5 Fiber Roll
- SE-6 Gravel Bag Berm
- SE-10 Erosion Feature Protection
- WM-3 Stockpile Location
- WM-8 Concrete Wash Basin

BMP Elements Not to Scale

Legend

- Existing Bridge Deck
- Proposed Bridge Design
- Bridge Design - Existing Concrete
- Proposed Construction & Laydown Areas

Stream Bank Delineation

- High Water
- Top of Bank
- Stream Channel

Little Panoche Road Widening

- Existing Edge of Pavement
- New Edge of Pavement
- New Road Shoulder

NORTH

40 20 0 40

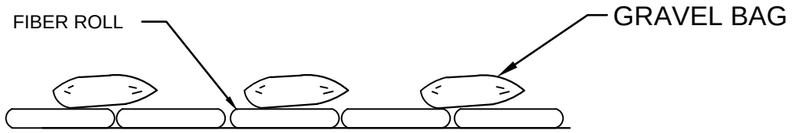
Scale in Feet

BURNS McDONNELL

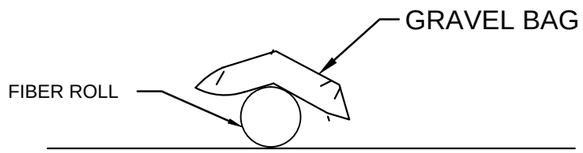
WATER POLLUTION CONTROL DRAWING

PVS TEMPORARY BRIDGE AT LITTLE PANOCHE ROAD AND LITTLE PANOCHE CREEK

Issued: 10/7/2016



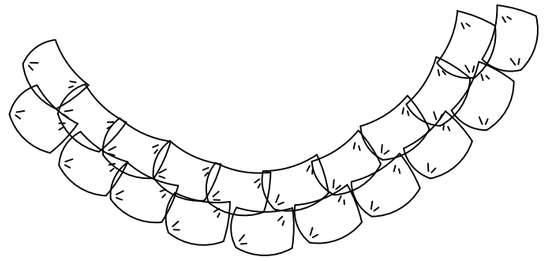
SECTION



SECTION

TYPICAL LINEAR SEDIMENT CONTROL INSTALLATION — SE-5 — - / -

NO SCALE

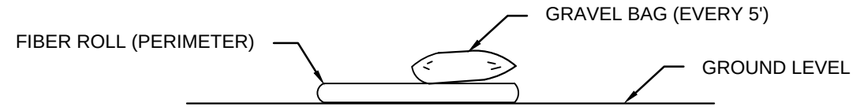


PLAN

NOTE: GRAVEL BAG BERM TO BE LAID OUT GENERALLY ON A CATENARY CURVE. THE CATENARY IS THE SHAPE OF A PERFECTLY FLEXIBLE CHAIN SUSPENDED BY ITS ENDS AND ACTED ON BY GRAVITY. GRAVEL BAGS TO BE STACKED TWO (2) BAGS HIGH.

GRAVEL BAG BERM ON CANTENARY CURVE — SE-6 — - / -

NO SCALE



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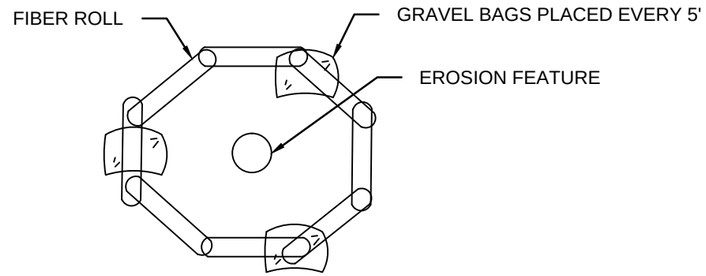


PLAN

EROSION FEATURE PROTECTION — SE-10 — - / -

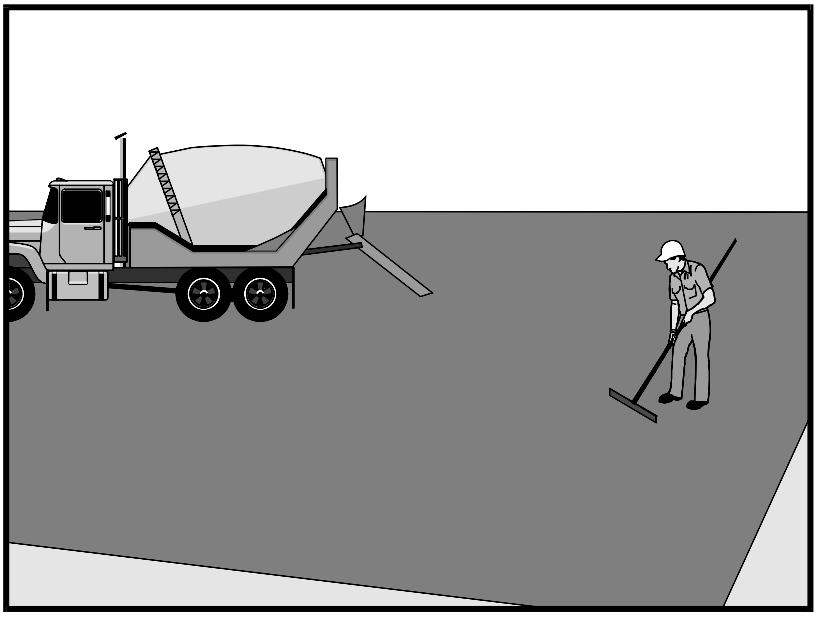
NO SCALE

BURNS McDONNELL

Attachment 1

SITE DETAILS
PVS PROJECT TEMPORARY
BRIDGE REINFORCEMENT AT
LITTLE PANOCHE RD. AND LITTLE
PANOCHE CREEK

Paving and Grinding Operations NS-3



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☒

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants from paving operations, using measures to prevent runon and runoff pollution, properly disposing of wastes, and training employees and subcontractors.

The General Permit incorporates Numeric Action Levels (NAL) for pH and turbidity (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Many types of construction materials associated with paving and grinding operations, including mortar, concrete, and cement and their associated wastes have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into contact with stormwater flows, which could lead to exceedances of the General Permit requirements.

Suitable Applications

These procedures are implemented where paving, surfacing, resurfacing, or sawcutting, may pollute stormwater runoff or discharge to the storm drain system or watercourses.

Limitations

- Paving opportunities may be limited during wet weather.

  Discharges of freshly paved surfaces may raise pH to environmentally harmful levels and trigger permit violations.

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

Implementation

General

- Avoid paving during the wet season when feasible.
- Reschedule paving and grinding activities if rain is forecasted.
- Train employees and sub-contractors in pollution prevention and reduction.
- Store materials away from drainage courses to prevent stormwater runon (see WM-1, Material Delivery and Storage).
- Protect drainage courses, particularly in areas with a grade, by employing BMPs to divert runoff or to trap and filter sediment.
- Stockpile material removed from roadways away from drain inlets, drainage ditches, and watercourses. These materials should be stored consistent with WM-3, Stockpile Management.
- Disposal of PCC (Portland cement concrete) and AC (asphalt concrete) waste should be in conformance with WM-8, Concrete Waste Management.

Saw Cutting, Grinding, and Pavement Removal

- Shovel or vacuum saw-cut slurry and remove from site. Cover or barricade storm drains during saw cutting to contain slurry.
- When paving involves AC, the following steps should be implemented to prevent the discharge of grinding residue, uncompacted or loose AC, tack coats, equipment cleaners, or unrelated paving materials:
  - AC grindings, pieces, or chunks used in embankments or shoulder backing should not be allowed to enter any storm drains or watercourses. Install inlet protection and perimeter controls until area is stabilized (i.e. cutting, grinding or other removal activities are complete and loose material has been properly removed and disposed of)or permanent controls are in place. Examples of temporary perimeter controls can be found in EC-9, Earth Dikes and Drainage Swales; SE-1, Silt Fence; SE-5, Fiber Rolls, or SE-13 Compost Socks and Berms
  - Collect and remove all broken asphalt and recycle when practical. Old or spilled asphalt should be recycled or disposed of properly.
- Do not allow saw-cut slurry to enter storm drains or watercourses. Residue from grinding operations should be picked up by a vacuum attachment to the grinding machine, or by sweeping, should not be allowed to flow across the pavement, and should not be left on the surface of the pavement. See also WM-8, Concrete Waste Management, and WM-10, Liquid Waste Management.
- Pavement removal activities should not be conducted in the rain.
- Collect removed pavement material by mechanical or manual methods. This material may be recycled for use as shoulder backing or base material.

- If removed pavement material cannot be recycled, transport the material back to an approved storage site.

Asphaltic Concrete Paving

- If paving involves asphaltic cement concrete, follow these steps:

  - Do not allow sand or gravel placed over new asphalt to wash into storm drains, streets, or creeks. Vacuum or sweep loose sand and gravel and properly dispose of this waste by referring to WM-5, Solid Waste Management.

  - Old asphalt should be disposed of properly. Collect and remove all broken asphalt from the site and recycle whenever possible.

Portland Cement Concrete Paving

- Do not wash sweepings from exposed aggregate concrete into a storm drain system. Collect waste materials by dry methods, such as sweeping or shoveling, and return to aggregate base stockpile or dispose of properly. Allow aggregate rinse to settle. Then, either allow rinse water to dry in a temporary pit as described in WM-8, Concrete Waste Management, or pump the water to the sanitary sewer if authorized by the local wastewater authority.

Sealing Operations

- During chip seal application and sweeping operations, petroleum or petroleum covered aggregate should not be allowed to enter any storm drain or water courses. Apply temporary perimeter controls until structure is stabilized (i.e. all sealing operations are complete and cured and loose materials have been properly removed and disposed).

- Inlet protection (SE-10, Storm Drain Inlet Protection) should be used during application of seal coat, tack coat, slurry seal, and fog seal.

- Seal coat, tack coat, slurry seal, or fog seal should not be applied if rainfall is predicted to occur during the application or curing period.

Paving Equipment

- Leaks and spills from paving equipment can contain toxic levels of heavy metals and oil and grease. Place drip pans or absorbent materials under paving equipment when not in use. Clean up spills with absorbent materials and dispose of in accordance with the applicable regulations. See NS-10, Vehicle and Equipment Maintenance, WM-4, Spill Prevention and Control, and WM-10, Liquid Waste Management.

- Substances used to coat asphalt transport trucks and asphalt spreading equipment should not contain soap and should be non-foaming and non-toxic.

- Paving equipment parked onsite should be parked over plastic to prevent soil contamination.

- Clean asphalt coated equipment offsite whenever possible. When cleaning dry, hardened asphalt from equipment, manage hardened asphalt debris as described in WM-5, Solid Waste Management. Any cleaning onsite should follow NS-8, Vehicle and Equipment Cleaning.

Thermoplastic Striping

- Thermoplastic striper and pre-heater equipment shutoff valves should be inspected to ensure that they are working properly to prevent leaking thermoplastic from entering drain inlets, the stormwater drainage system, or watercourses.
- Pre-heaters should be filled carefully to prevent splashing or spilling of hot thermoplastic. Leave six inches of space at the top of the pre-heater container when filling thermoplastic to allow room for material to move.
- Do not pre-heat, transfer, or load thermoplastic near drain inlets or watercourses.
- Clean truck beds daily of loose debris and melted thermoplastic. When possible, recycle thermoplastic material.

Raised/Recessed Pavement Marker Application and Removal

- Do not transfer or load bituminous material near drain inlets, the stormwater drainage system, or watercourses.
- Melting tanks should be loaded with care and not filled to beyond six inches from the top to leave room for splashing.
- When servicing or filling melting tanks, ensure all pressure is released before removing lids to avoid spills.
- On large-scale projects, use mechanical or manual methods to collect excess bituminous material from the roadway after removal of markers.

Costs

- All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of paving and grinding operations.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Sample stormwater runoff required by the General Permit.
- Keep ample supplies of drip pans or absorbent materials onsite.
- Inspect and maintain machinery regularly to minimize leaks and drips.

References

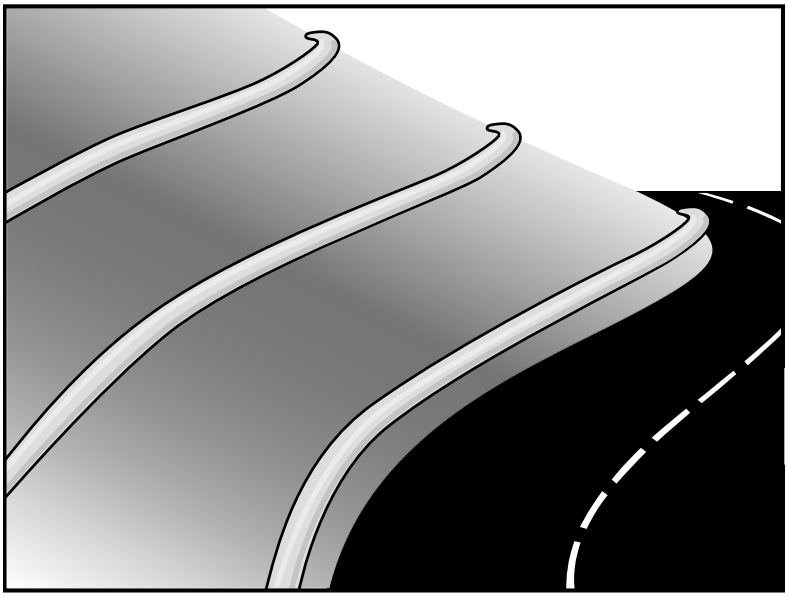
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Hot Mix Asphalt-Paving Handbook AC 150/5370-14, Appendix I, U.S. Army Corps of Engineers, July 1991.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

Fiber Rolls SE-5



Categories

EC	Erosion Control	☒
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Description and Purpose

A fiber roll consists of straw, coir, or other biodegradable materials bound into a tight tubular roll wrapped by netting, which can be photodegradable or natural. Additionally, gravel core fiber rolls are available, which contain an imbedded ballast material such as gravel or sand for additional weight when staking the rolls are not feasible (such as use as inlet protection). When fiber rolls are placed at the toe and on the face of slopes along the contours, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff (through sedimentation). By interrupting the length of a slope, fiber rolls can also reduce sheet and rill erosion until vegetation is established.

Suitable Applications

Fiber rolls may be suitable:

- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- At the end of a downward slope where it transitions to a steeper slope.
- Along the perimeter of a project.
- As check dams in unlined ditches with minimal grade.
- Down-slope of exposed soil areas.
- At operational storm drains as a form of inlet protection.

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-12 Manufactured Linear Sediment Controls

SE-14 Biofilter Bags

- Around temporary stockpiles.

Limitations

- Fiber rolls are not effective unless trenched in and staked.
- Not intended for use in high flow situations.
- Difficult to move once saturated.
- If not properly staked and trenched in, fiber rolls could be transported by high flows.
- Fiber rolls have a very limited sediment capture zone.
- Fiber rolls should not be used on slopes subject to creep, slumping, or landslide.
- Rolls typically function for 12-24 months depending upon local conditions.

Implementation

Fiber Roll Materials

- Fiber rolls should be prefabricated.
- Fiber rolls may come manufactured containing polyacrylamide (PAM), a flocculating agent within the roll. Fiber rolls impregnated with PAM provide additional sediment removal capabilities and should be used in areas with fine, clayey or silty soils to provide additional sediment removal capabilities. Monitoring may be required for these installations.
- Fiber rolls are made from weed free rice straw, flax, or a similar agricultural material bound into a tight tubular roll by netting.
- Typical fiber rolls vary in diameter from 9 in. to 20 in. Larger diameter rolls are available as well.

Installation

- Locate fiber rolls on level contours spaced as follows:
  - Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.
  - Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
  - Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
- Prepare the slope before beginning installation.
- Dig small trenches across the slope on the contour. The trench depth should be ¼ to 1/3 of the thickness of the roll, and the width should equal the roll diameter, in order to provide area to backfill the trench.

- It is critical that rolls are installed perpendicular to water movement, and parallel to the slope contour.
- Start building trenches and installing rolls from the bottom of the slope and work up.
- It is recommended that pilot holes be driven through the fiber roll. Use a straight bar to drive holes through the roll and into the soil for the wooden stakes.
- Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
- Stake fiber rolls into the trench.
  - Drive stakes at the end of each fiber roll and spaced 4 ft maximum on center.
  - Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
- If more than one fiber roll is placed in a row, the rolls should be overlapped, not abutted.
- See typical fiber roll installation details at the end of this fact sheet.

Removal

- Fiber rolls can be left in place or removed depending on the type of fiber roll and application (temporary vs. permanent installation). Typically, fiber rolls encased with plastic netting are used for a temporary application because the netting does not biodegrade. Fiber rolls used in a permanent application are typically encased with a biodegradeable material and are left in place. Removal of a fiber roll used in a permanent application can result in greater disturbance.
- Temporary installations should only be removed when up gradient areas are stabilized per General Permit requirements, and/or pollutant sources no longer present a hazard. But, they should also be removed before vegetation becomes too mature so that the removal process does not disturb more soil and vegetation than is necessary.

Costs

Material costs for regular fiber rolls range from $20 - $30 per 25 ft roll.

Material costs for PAM impregnated fiber rolls range between 7.00-$9.00 per linear foot, based upon vendor research.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates in the BMP should be periodically removed

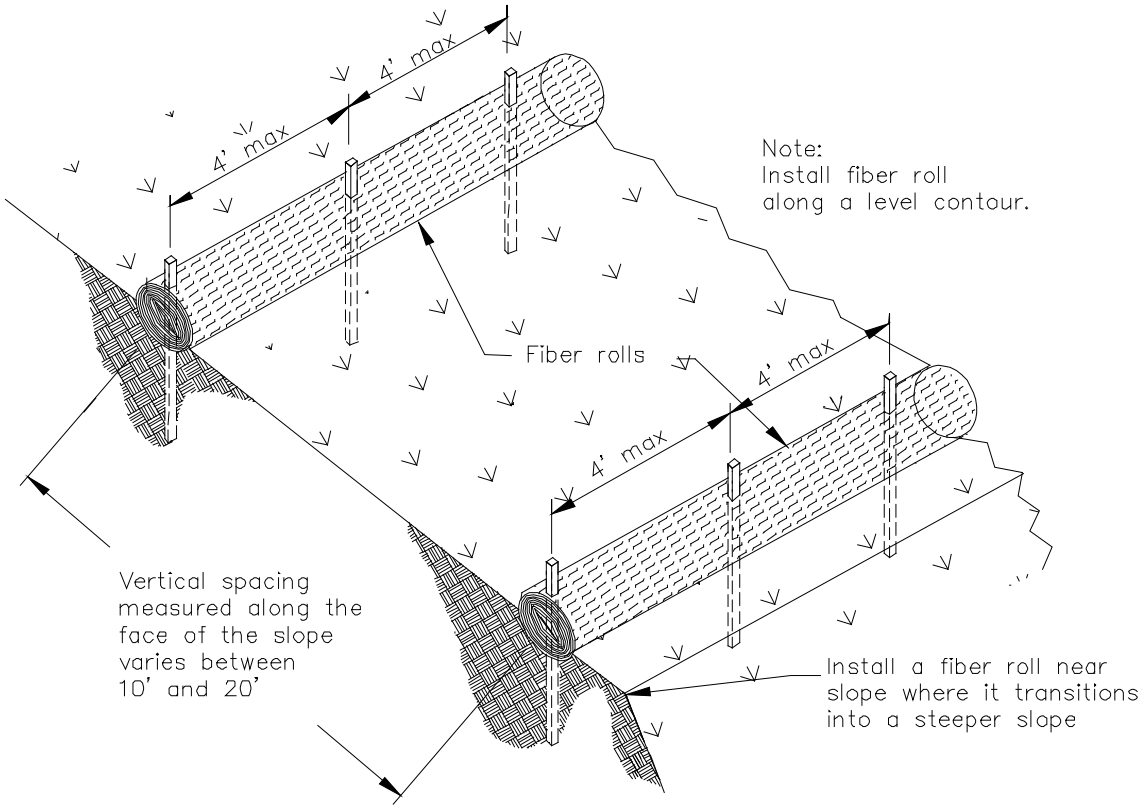
in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-third the designated sediment storage depth.

- If fiber rolls are used for erosion control, such as in a check dam, sediment removal should not be required as long as the system continues to control the grade. Sediment control BMPs will likely be required in conjunction with this type of application.
- Repair any rills or gullies promptly.

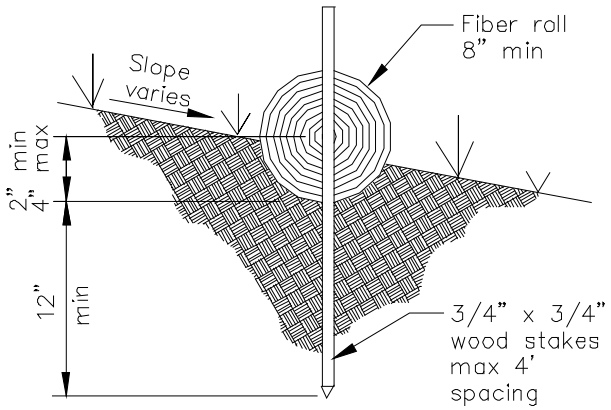
References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

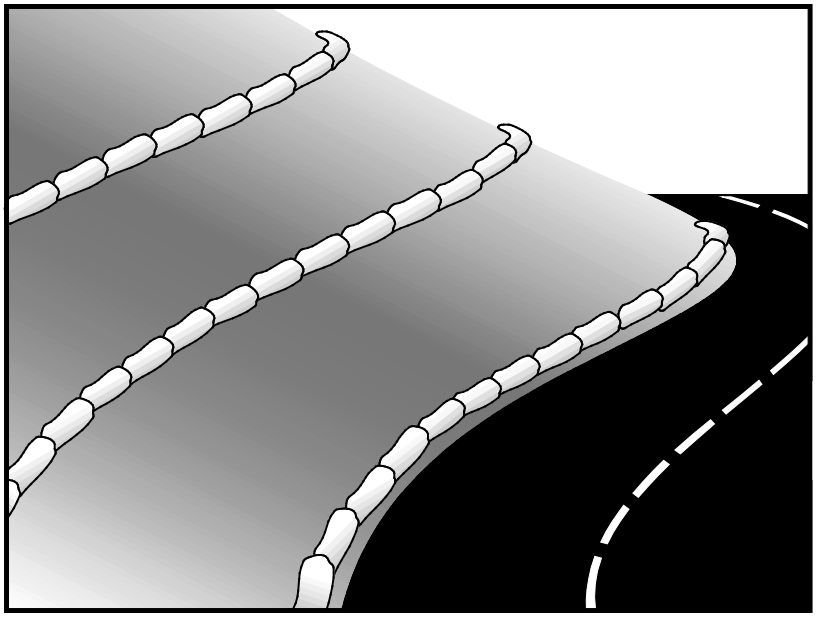


TYPICAL FIBER ROLL INSTALLATION
N.T.S.



ENTRENCHMENT DETAIL
N.T.S.

Gravel Bag Berm SE-6



Description and Purpose

A gravel bag berm is a series of gravel-filled bags placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow runoff, allowing sediment to settle out, and release runoff slowly as sheet flow, preventing erosion.

Suitable Applications

Gravel bag berms may be suitable:

- As a linear sediment control measure:
  - Below the toe of slopes and erodible slopes
  - As sediment traps at culvert/pipe outlets
  - Below other small cleared areas
  - Along the perimeter of a site
  - Down slope of exposed soil areas
  - Around temporary stockpiles and spoil areas
  - Parallel to a roadway to keep sediment off paved areas
  - Along streams and channels
- As a linear erosion control measure:
  - Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

Categories

EC	Erosion Control	☒
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Roll

SE-8 Sandbag Barrier

SE-12 Temporary Silt Dike

SE-14 Biofilter Bags

- At the top of slopes to divert runoff away from disturbed slopes.
- As chevrons (small check dams) across mildly sloped construction roads. For use check dam use in channels, see SE-4, Check Dams.

Limitations

- Gravel berms may be difficult to remove.
- Removal problems limit their usefulness in landscaped areas.
- Gravel bag berm may not be appropriate for drainage areas greater than 5 acres.
- Runoff will pond upstream of the berm, possibly causing flooding if sufficient space does not exist.
- Degraded gravel bags may rupture when removed, spilling contents.
- Installation can be labor intensive.
- Durability of gravel bags is somewhat limited and bags may need to be replaced when installation is required for longer than 6 months.
- Easily damaged by construction equipment.
- When used to detain concentrated flows, maintenance requirements increase.

Implementation

General

A gravel bag berm consists of a row of open graded gravel-filled bags placed on a level contour. When appropriately placed, a gravel bag berm intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding allows sediment to settle. The open graded gravel in the bags is porous, which allows the ponded runoff to flow slowly through the bags, releasing the runoff as sheet flows. Gravel bag berms also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets, which erode rills, and ultimately gullies, into disturbed, sloped soils. Gravel bag berms are similar to sand bag barriers, but are more porous. Generally, gravel bag berms should be used in conjunction with temporary soil stabilization controls up slope to provide effective erosion and sediment control.

Design and Layout

- Locate gravel bag berms on level contours.
- When used for slope interruption, the following slope/sheet flow length combinations apply:
  - Slope inclination of 4:1 (H:V) or flatter: Gravel bags should be placed at a maximum interval of 20 ft, with the first row near the slope toe.
  - Slope inclination between 4:1 and 2:1 (H:V): Gravel bags should be placed at a maximum interval of 15 ft. (a closer spacing is more effective), with the first row near the slope toe.

Slope inclination 2:1 (H:V) or greater: Gravel bags should be placed at a maximum interval of 10 ft. (a closer spacing is more effective), with the first row near the slope toe.

- Turn the ends of the gravel bag barriers up slope to prevent runoff from going around the berm.
- Allow sufficient space up slope from the gravel bag berm to allow ponding, and to provide room for sediment storage.
- For installation near the toe of the slope, gravel bag barriers should be set back from the slope toe to facilitate cleaning. Where specific site conditions do not allow for a set-back, the gravel bag barrier may be constructed on the toe of the slope. To prevent flows behind the barrier, bags can be placed perpendicular to a berm to serve as cross barriers.
- Drainage area should not exceed 5 acres.
- In Non-Traffic Areas:
  - Height = 18 in. maximum
  - Top width = 24 in. minimum for three or more layer construction
  - Top width = 12 in. minimum for one or two layer construction
  - Side slopes = 2:1 (H:V) or flatter
- In Construction Traffic Areas:
  - Height = 12 in. maximum
  - Top width = 24 in. minimum for three or more layer construction.
  - Top width = 12 in. minimum for one or two layer construction.
  - Side slopes = 2:1 (H:V) or flatter.
- Butt ends of bags tightly.
- On multiple row, or multiple layer construction, overlap butt joints of adjacent row and row beneath.
- Use a pyramid approach when stacking bags.

Materials

- ***Bag Material:*** Bags should be woven polypropylene, polyethylene or polyamide fabric or burlap, minimum unit weight of 4 ounces/yd^2, Mullen burst strength exceeding 300 lb/in^2 in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355.

- ***Bag Size:*** Each gravel-filled bag should have a length of 18 in., width of 12 in., thickness of 3 in., and mass of approximately 33 lbs. Bag dimensions are nominal, and may vary based on locally available materials.

- ***Fill Material:*** Fill material should be 0.5 to 1 in. crushed rock, clean and free from clay, organic matter, and other deleterious material, or other suitable open graded, non-cohesive, porous gravel.

Costs

Material costs for gravel bags are average and are dependent upon material availability. $2.50-3.00 per filled gravel bag is standard based upon vendor research.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

- Gravel bags exposed to sunlight will need to be replaced every two to three months due to degrading of the bags.

- Reshape or replace gravel bags as needed.

- Repair washouts or other damage as needed.

- Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.

- Remove gravel bag berms when no longer needed and recycle gravel fill whenever possible and properly dispose of bag material. Remove sediment accumulation and clean, re-grade, and stabilize the area.

References

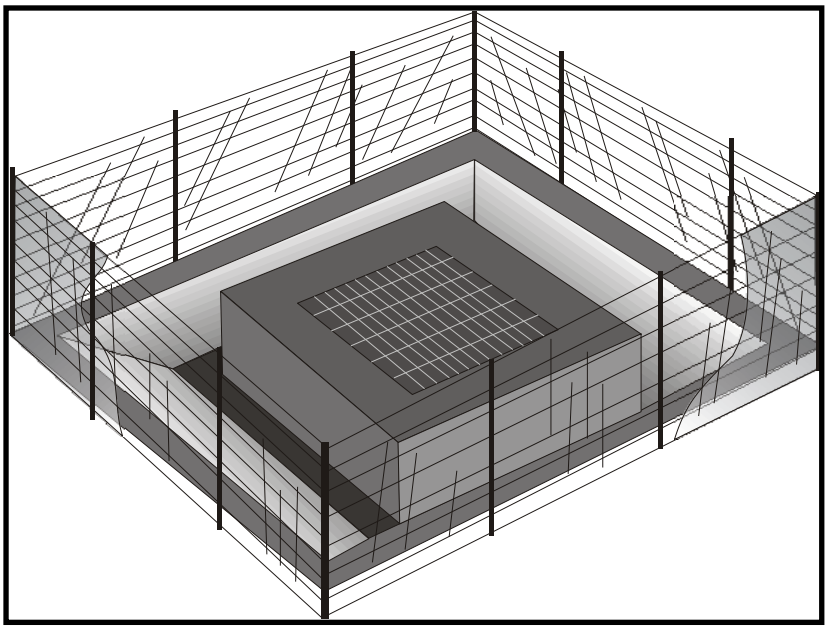
Handbook of Steel Drainage and Highway Construction, American Iron and Steel Institute, 1983.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Pollution Plan Handbook, First Edition, State of California, Department of Transportation Division of New Technology, Materials and Research, October 1992.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

Storm Drain Inlet Protection SE-10



Description and Purpose

Storm drain inlet protection consists of a sediment filter or an impounding area in, around or upstream of a storm drain, drop inlet, or curb inlet. Storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. Some filter configurations also remove sediment by filtering, but usually the ponding action results in the greatest sediment reduction. Temporary geotextile storm drain inserts attach underneath storm drain grates to capture and filter storm water.

Suitable Applications

- Every storm drain inlet receiving runoff from unstabilized or otherwise active work areas should be protected. Inlet protection should be used in conjunction with other erosion and sediment controls to prevent sediment-laden stormwater and non-stormwater discharges from entering the storm drain system.

Limitations

- Drainage area should not exceed 1 acre.
- In general straw bales should not be used as inlet protection.
- Requires an adequate area for water to pond without encroaching into portions of the roadway subject to traffic.
- Sediment removal may be inadequate to prevent sediment discharges in high flow conditions or if runoff is heavily sediment laden. If high flow conditions are expected, use

Categories

EC	Erosion Control	
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	☒
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-14 Biofilter Bags

SE-13 Compost Socks and Berms

other onsite sediment trapping techniques in conjunction with inlet protection.

- Frequent maintenance is required.
- Limit drainage area to 1 acre maximum. For drainage areas larger than 1 acre, runoff should be routed to a sediment-trapping device designed for larger flows. See BMPs SE-2, Sediment Basin, and SE-3, Sediment Traps.
- Excavated drop inlet sediment traps are appropriate where relatively heavy flows are expected, and overflow capability is needed.

Implementation

General

Inlet control measures presented in this handbook should not be used for inlets draining more than one acre. Runoff from larger disturbed areas should be first routed through SE-2, Sediment Basin or SE-3, Sediment Trap and/or used in conjunction with other drainage control, erosion control, and sediment control BMPs to protect the site. Different types of inlet protection are appropriate for different applications depending on site conditions and the type of inlet. Alternative methods are available in addition to the methods described/shown herein such as prefabricated inlet insert devices, or gutter protection devices.

Design and Layout

Identify existing and planned storm drain inlets that have the potential to receive sediment-laden surface runoff. Determine if storm drain inlet protection is needed and which method to use.

- The key to successful and safe use of storm drain inlet protection devices is to know where runoff that is directed toward the inlet to be protected will pond or be diverted as a result of installing the protection device.
  - Determine the acceptable location and extent of ponding in the vicinity of the drain inlet. The acceptable location and extent of ponding will influence the type and design of the storm drain inlet protection device.
  - Determine the extent of potential runoff diversion caused by the storm drain inlet protection device. Runoff ponded by inlet protection devices may flow around the device and towards the next downstream inlet. In some cases, this is acceptable; in other cases, serious erosion or downstream property damage can be caused by these diversions. The possibility of runoff diversions will influence whether or not storm drain inlet protection is suitable; and, if suitable, the type and design of the device.
- The location and extent of ponding, and the extent of diversion, can usually be controlled through appropriate placement of the inlet protection device. In some cases, moving the inlet protection device a short distance upstream of the actual inlet can provide more efficient sediment control, limit ponding to desired areas, and prevent or control diversions.
- Seven types of inlet protection are presented below. However, it is recognized that other effective methods and proprietary devices exist and may be selected.

- Silt Fence: Appropriate for drainage basins with less than a 5% slope, sheet flows, and flows under 0.5 cfs.

- Excavated Drop Inlet Sediment Trap: An excavated area around the inlet to trap sediment (SE-3).

- Gravel bag barrier: Used to create a small sediment trap upstream of inlets on sloped, paved streets. Appropriate for sheet flow or when concentrated flow may exceed 0.5 cfs, and where overtopping is required to prevent flooding.

- Block and Gravel Filter: Appropriate for flows greater than 0.5 cfs.

- Temporary Geotextile Storm drain Inserts: Different products provide different features. Refer to manufacturer details for targeted pollutants and additional features.

- Biofilter Bag Barrier: Used to create a small retention area upstream of inlets and can be located on pavement or soil. Biofilter bags slowly filter runoff allowing sediment to settle out. Appropriate for flows under 0.5 cfs.

- Compost Socks: Allow filtered run-off to pass through the compost while retaining sediment and potentially other pollutants (SE-13). Appropriate for flows under 1.0 cfs.

- Select the appropriate type of inlet protection and design as referred to or as described in this fact sheet.

- Provide area around the inlet for water to pond without flooding structures and property.

- Grates and spaces around all inlets should be sealed to prevent seepage of sediment-laden water.

- Excavate sediment sumps (where needed) 1 to 2 ft with 2:1 side slopes around the inlet.

Installation

- ***DI Protection Type 1 - Silt Fence -*** Similar to constructing a silt fence; see BMP SE-1, Silt Fence. Do not place fabric underneath the inlet grate since the collected sediment may fall into the drain inlet when the fabric is removed or replaced and water flow through the grate will be blocked resulting in flooding. See typical Type 1 installation details at the end of this fact sheet.

  1. Excavate a trench approximately 6 in. wide and 6 in. deep along the line of the silt fence inlet protection device.

  2. Place 2 in. by 2 in. wooden stakes around the perimeter of the inlet a maximum of 3 ft apart and drive them at least 18 in. into the ground or 12 in. below the bottom of the trench. The stakes should be at least 48 in.

  3. Lay fabric along bottom of trench, up side of trench, and then up stakes. See SE-1, Silt Fence, for details. The maximum silt fence height around the inlet is 24 in.

  4. Staple the filter fabric (for materials and specifications, see SE-1, Silt Fence) to wooden stakes. Use heavy-duty wire staples at least 1 in. in length.

5. Backfill the trench with gravel or compacted earth all the way around.

- ***DI Protection Type 2 - Excavated Drop Inlet Sediment Trap -*** Install filter fabric fence in accordance with DI Protection Type 1. Size excavated trap to provide a minimum storage capacity calculated at the rate 67 yd^3/acre of drainage area. See typical Type 2 installation details at the end of this fact sheet.

- ***DI Protection Type 3 - Gravel bag -*** Flow from a severe storm should not overtop the curb. In areas of high clay and silts, use filter fabric and gravel as additional filter media. Construct gravel bags in accordance with SE-6, Gravel Bag Berm. Gravel bags should be used due to their high permeability. See typical Type 3 installation details at the end of this fact sheet.

  1. Construct on gently sloping street.

  2. Leave room upstream of barrier for water to pond and sediment to settle.

  3. Place several layers of gravel bags – overlapping the bags and packing them tightly together.

  4. Leave gap of one bag on the top row to serve as a spillway. Flow from a severe storm (e.g., 10 year storm) should not overtop the curb.

- ***DI Protection Type 4 – Block and Gravel Filter -*** Block and gravel filters are suitable for curb inlets commonly used in residential, commercial, and industrial construction. See typical Type 4 installation details at the end of this fact sheet.

  1. Place hardware cloth or comparable wire mesh with 0.5 in. openings over the drop inlet so that the wire extends a minimum of 1 ft beyond each side of the inlet structure. If more than one strip is necessary, overlap the strips. Place woven geotextile over the wire mesh.

  2. Place concrete blocks lengthwise on their sides in a single row around the perimeter of the inlet, so that the open ends face outward, not upward. The ends of adjacent blocks should abut. The height of the barrier can be varied, depending on design needs, by stacking combinations of blocks that are 4 in., 8 in., and 12 in. wide. The row of blocks should be at least 12 in. but no greater than 24 in. high.

  3. Place wire mesh over the outside vertical face (open end) of the concrete blocks to prevent stone from being washed through the blocks. Use hardware cloth or comparable wire mesh with 0.5 in. opening.

  4. Pile washed stone against the wire mesh to the top of the blocks. Use 0.75 to 3 in.

- ***DI Protection Type 5 – Temporary Geotextile Insert (proprietary)*** – Many types of temporary inserts are available. Most inserts fit underneath the grate of a drop inlet or inside of a curb inlet and are fastened to the outside of the grate or curb. These inserts are removable and many can be cleaned and reused. Installation of these inserts differs between manufacturers. Please refer to manufacturer instruction for installation of proprietary devices.

- ***DI Protection Type 6 - Biofilter bags*** – Biofilter bags may be used as a substitute for gravel bags in low-flow situations. Biofilter bags should conform to specifications detailed in SE-14, Biofilter bags.

    1. Construct in a gently sloping area.
    2. Biofilter bags should be placed around inlets to intercept runoff flows.
    3. All bag joints should overlap by 6 in.
    4. Leave room upstream for water to pond and for sediment to settle out.
    5. Stake bags to the ground as described in the following detail. Stakes may be omitted if bags are placed on a paved surface.

- ***DI Protection Type 7 – Compost Socks*** – A compost sock can be assembled on site by filling a mesh sock (e.g., with a pneumatic blower). Compost socks do not require special trenching compared to other sediment control methods (e.g., silt fence). Compost socks should conform to specification detailed in SE-13, Compost Socks and Berms.

Costs

- Average annual cost for installation and maintenance of DI Type 1-4 and 6 (one year useful life) is $200 per inlet.
- Temporary geotextile inserts are proprietary and cost varies by region. These inserts can often be reused and may have greater than 1 year of use if maintained and kept undamaged. Average cost per insert ranges from $50-75 plus installation, but costs can exceed $100. This cost does not include maintenance.
- See SE-13 for Compost Sock cost information.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Silt Fences. If the fabric becomes clogged, torn, or degrades, it should be replaced. Make sure the stakes are securely driven in the ground and are in good shape (i.e., not bent, cracked, or splintered, and are reasonably perpendicular to the ground). Replace damaged stakes. At a minimum, remove the sediment behind the fabric fence when accumulation reaches one-third the height of the fence or barrier height.
- Gravel Filters. If the gravel becomes clogged with sediment, it should be carefully removed from the inlet and either cleaned or replaced. Since cleaning gravel at a construction site may be difficult, consider using the sediment-laden stone as fill material and put fresh stone around the inlet. Inspect bags for holes, gashes, and snags, and replace bags as needed. Check gravel bags for proper arrangement and displacement.

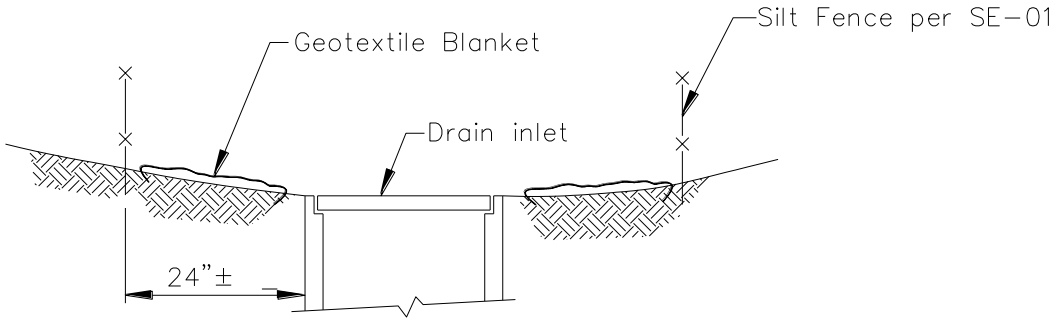
- Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.
- Inspect and maintain temporary geotextile insert devices according to manufacturer's specifications.
- Remove storm drain inlet protection once the drainage area is stabilized.
    - Clean and regrade area around the inlet and clean the inside of the storm drain inlet, as it should be free of sediment and debris at the time of final inspection.

References

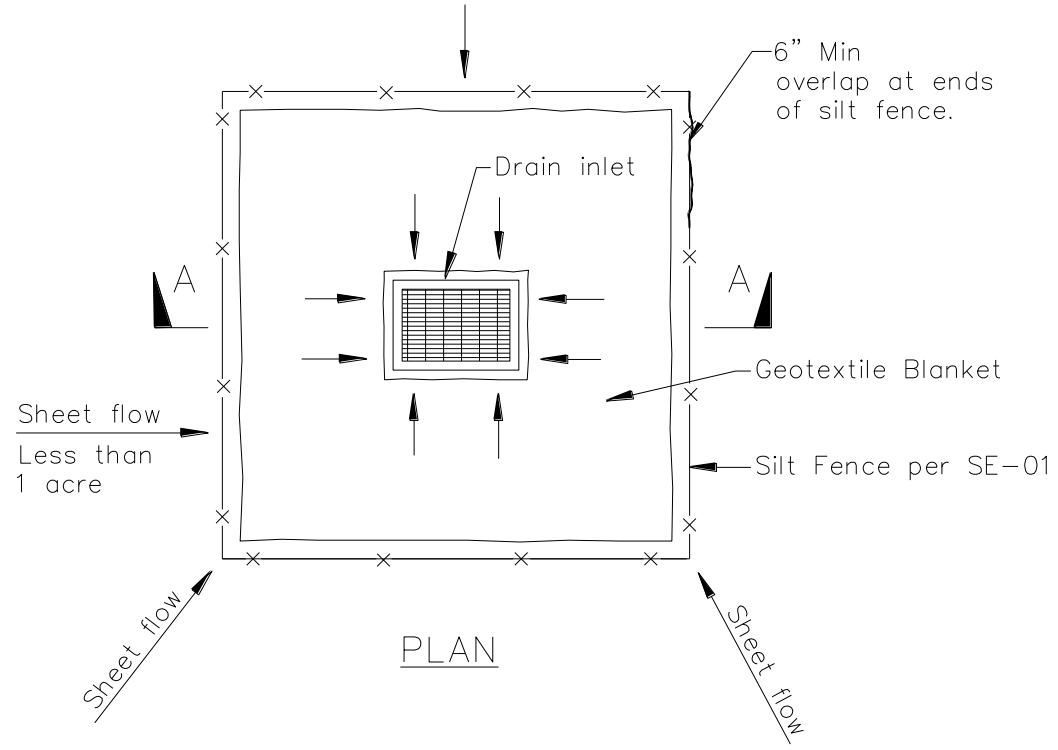
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.



SECTION A–A

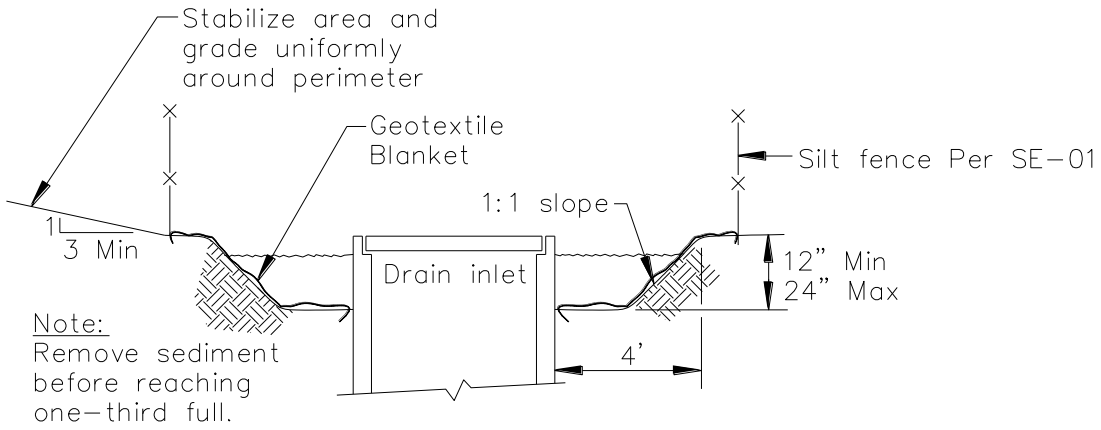


PLAN

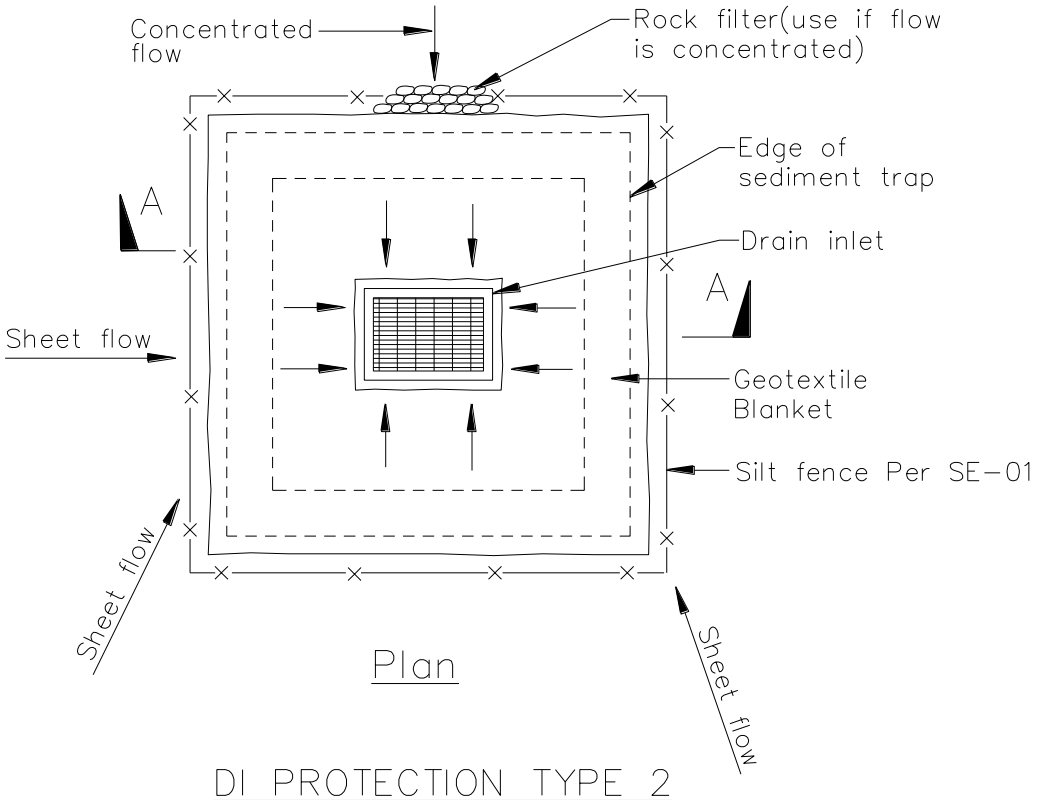
DI PROTECTION TYPE 1
NOT TO SCALE

NOTES:

1. For use in areas where grading has been completed and final soil stabilization and seeding are pending.
2. Not applicable in paved areas.
3. Not applicable with concentrated flows.



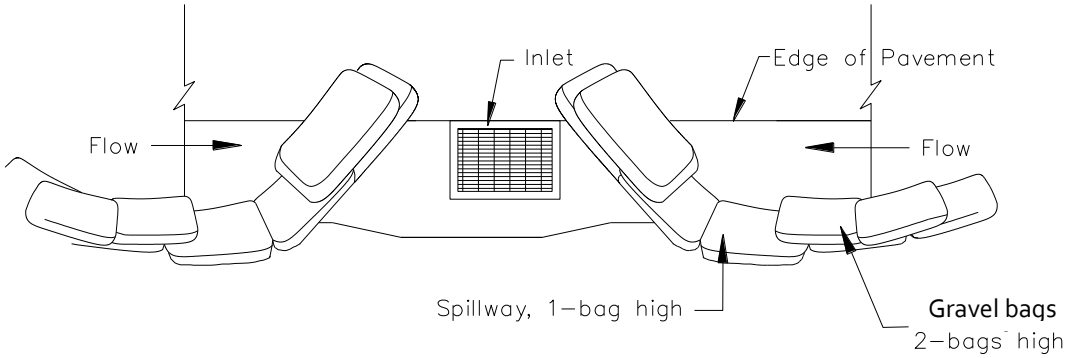
Section A–A



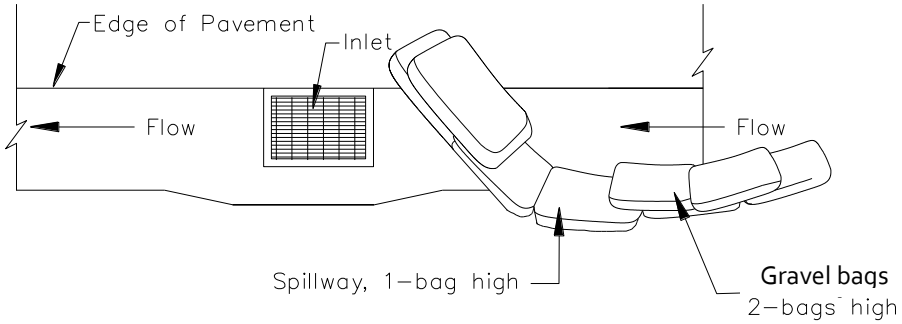
Plan

DI PROTECTION TYPE 2
NOT TO SCALE

Notes
1. For use in cleared and grubbed and in graded areas.
2. Shape basin so that longest inflow area faces longest length of trap.
3. For concentrated flows, shape basin in 2:1 ratio with length oriented towards direction of flow.



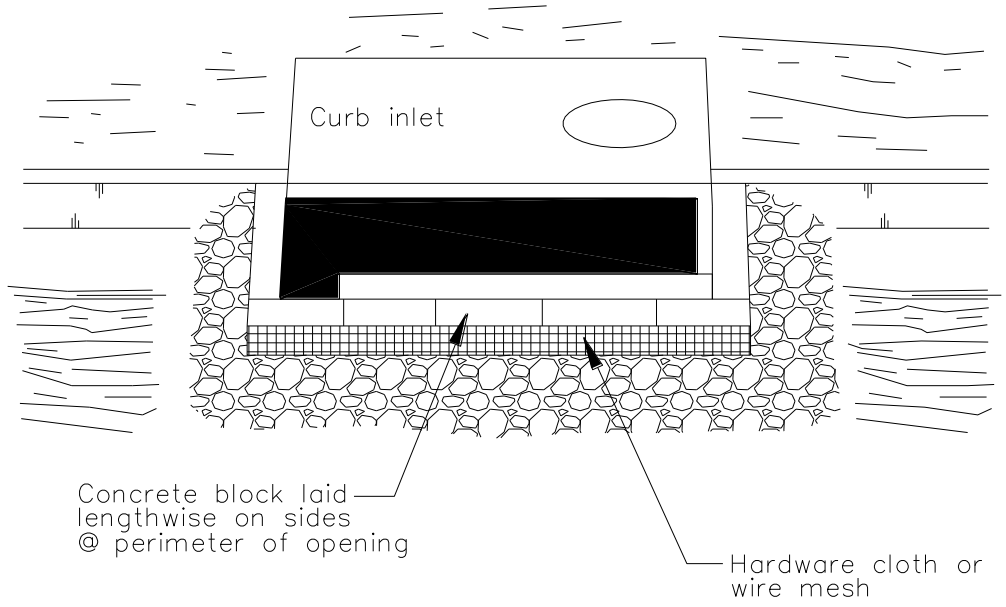
TYPICAL PROTECTION FOR INLET ON SUMP

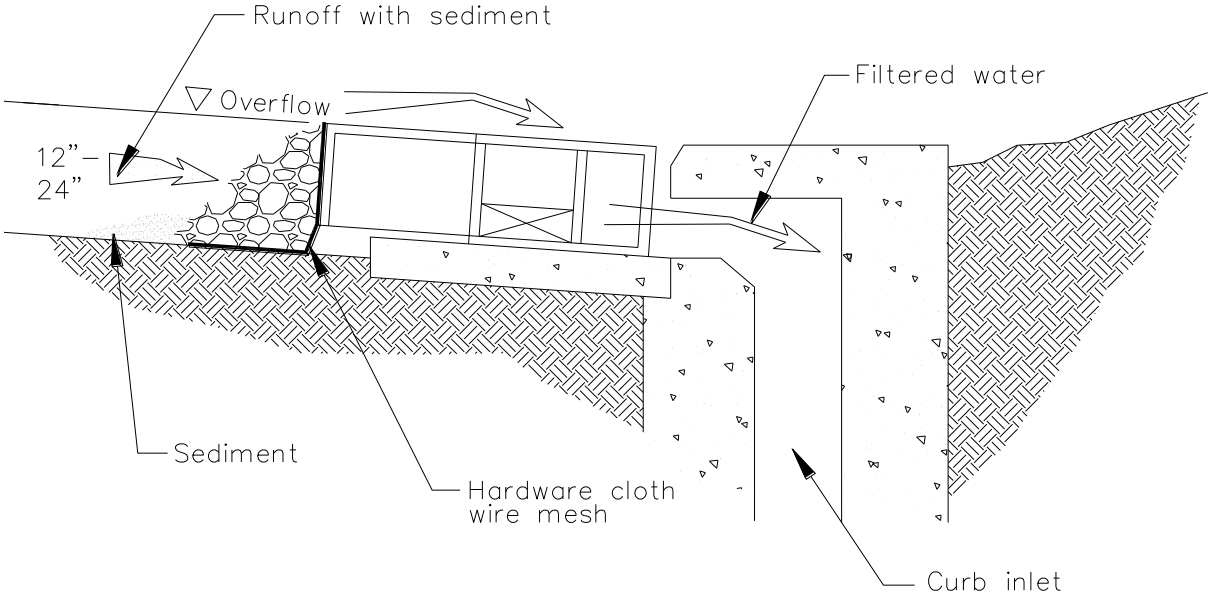


TYPICAL PROTECTION FOR INLET ON GRADE

NOTES:

1. Intended for short-term use.
2. Use to inhibit non-storm water flow.
3. Allow for proper maintenance and cleanup.
4. Bags must be removed after adjacent operation is completed
5. Not applicable in areas with high silts and clays without filter fabric.
6. Protection can be effective even if it is not immediately adjacent to the inlet provided that the inlet is protected from potential sources of pollution.

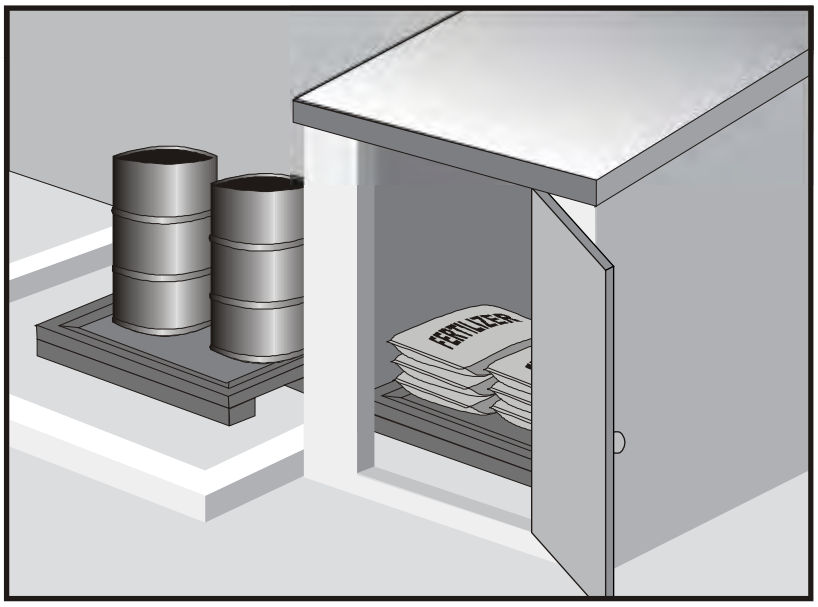




DI PROTECTION – TYPE 4

NOT TO SCALE

Material Delivery and Storage WM-1



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
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NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Description and Purpose

Prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in watertight containers and/or a completely enclosed designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

This best management practice covers only material delivery and storage. For other information on materials, see WM-2, Material Use, or WM-4, Spill Prevention and Control. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

These procedures are suitable for use at all construction sites with delivery and storage of the following materials:

- Soil stabilizers and binders
- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

- Asphalt and concrete components
- Hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Concrete compounds
- Other materials that may be detrimental if released to the environment

Limitations

- Space limitation may preclude indoor storage.
- Storage sheds often must meet building and fire code requirements.

Implementation

The following steps should be taken to minimize risk:

- Chemicals must be stored in water tight containers with appropriate secondary containment or in a storage shed.
- When a material storage area is located on bare soil, the area should be lined and bermed.
- Use containment pallets or other practical and available solutions, such as storing materials within newly constructed buildings or garages, to meet material storage requirements.
- Stack erodible landscape material on pallets and cover when not in use.
- Contain all fertilizers and other landscape materials when not in use.
- Temporary storage areas should be located away from vehicular traffic.
- Material Safety Data Sheets (MSDS) should be available on-site for all materials stored that have the potential to effect water quality.
- Construction site areas should be designated for material delivery and storage.
- Material delivery and storage areas should be located away from waterways, if possible.
    - Avoid transport near drainage paths or waterways.
    - Surround with earth berms or other appropriate containment BMP. See EC-9, Earth Dikes and Drainage Swales.
    - Place in an area that will be paved.
- Storage of reactive, ignitable, or flammable liquids must comply with the fire codes of your area. Contact the local Fire Marshal to review site materials, quantities, and proposed storage area to determine specific requirements. See the Flammable and Combustible Liquid Code, NFPA30.
- An up to date inventory of materials delivered and stored onsite should be kept.

- Hazardous materials storage onsite should be minimized.
- Hazardous materials should be handled as infrequently as possible.
- Keep ample spill cleanup supplies appropriate for the materials being stored. Ensure that cleanup supplies are in a conspicuous, labeled area.
- Employees and subcontractors should be trained on the proper material delivery and storage practices.
- Employees trained in emergency spill cleanup procedures must be present when dangerous materials or liquid chemicals are unloaded.
- If significant residual materials remain on the ground after construction is complete, properly remove and dispose of materials and any contaminated soil. See WM-7, Contaminated Soil Management. If the area is to be paved, pave as soon as materials are removed to stabilize the soil.

Material Storage Areas and Practices

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 should be stored in approved containers and drums and should not be overfilled. Containers and drums should be placed in temporary containment facilities for storage.
- A temporary containment facility should provide for a spill containment volume able to contain precipitation from a 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest container within its boundary, whichever is greater.
- A temporary containment facility should be impervious to the materials stored therein for a minimum contact time of 72 hours.
- A temporary containment facility should be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills should be collected and placed into drums. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. All collected liquids or non-hazardous liquids should be sent to an approved disposal site.
- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.
- Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility.
- Materials should be covered prior to, and during rain events.
- Materials should be stored in their original containers and the original product labels should be maintained in place in a legible condition. Damaged or otherwise illegible labels should be replaced immediately.

- Bagged and boxed materials should be stored on pallets and should not be allowed to accumulate on the ground. To provide protection from wind and rain throughout the rainy season, bagged and boxed materials should be covered during non-working days and prior to and during rain events.
- Stockpiles should be protected in accordance with WM-3, Stockpile Management.
- Materials should be stored indoors within existing structures or completely enclosed storage sheds when available.
- Proper storage instructions should be posted at all times in an open and conspicuous location.
- An ample supply of appropriate spill clean up material should be kept near storage areas.
- Also see WM-6, Hazardous Waste Management, for storing of hazardous wastes.

Material Delivery Practices

- Keep an accurate, up-to-date inventory of material delivered and stored onsite.
- Arrange for employees trained in emergency spill cleanup procedures to be present when dangerous materials or liquid chemicals are unloaded.

Spill Cleanup

- Contain and clean up any spill immediately.
- Properly remove and dispose of any hazardous materials or contaminated soil if significant residual materials remain on the ground after construction is complete. See WM-7, Contaminated Soil Management.
- See WM-4, Spill Prevention and Control, for spills of chemicals and/or hazardous materials.
- If spills or leaks of materials occur that are not contained and could discharge to surface waters, non-visible sampling of site discharge may be required. Refer to the General Permit or to your project specific Construction Site Monitoring Plan to determine if and where sampling is required.

Cost

- The largest cost of implementation may be in the construction of a materials storage area that is covered and provides secondary containment.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Keep storage areas clean and well organized, including a current list of all materials onsite.
- Inspect labels on containers for legibility and accuracy.

- Repair or replace perimeter controls, containment structures, covers, and liners as needed to maintain proper function.

References

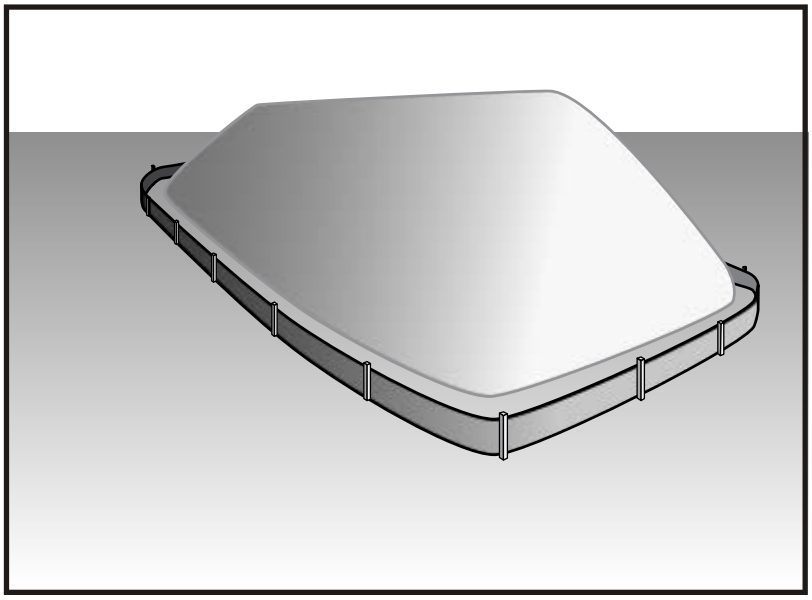
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Stockpile Management WM-3



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☒
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, soil amendments, sand, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure treated wood.

Suitable Applications

Implement in all projects that stockpile soil and other loose materials.

Limitations

- Plastic sheeting as a stockpile protection is temporary and hard to manage in windy conditions. Where plastic is used, consider use of plastic tarps with nylon reinforcement which may be more durable than standard sheeting.
- Plastic sheeting can increase runoff volume due to lack of infiltration and potentially cause perimeter control failure.
- Plastic sheeting breaks down faster in sunlight.
- The use of Plastic materials and photodegradable plastics should be avoided.

Implementation

Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

- On larger sites, a minimum of 50 ft separation from concentrated flows of stormwater, drainage courses, and inlets is recommended.
- After 14 days of inactivity, a stockpile is non-active and requires further protection described below. All stockpiles are required to be protected as non-active stockpiles immediately if they are not scheduled to be used within 14 days.
- Protect all stockpiles from stormwater runon using temporary perimeter sediment barriers such as compost berms (SE-13), temporary silt dikes (SE-12), fiber rolls (SE-5), silt fences (SE-1), sandbags (SE-8), gravel bags (SE-6), or biofilter bags (SE-14). Refer to the individual fact sheet for each of these controls for installation information.
- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information, see WE-1, Wind Erosion Control.
- Manage stockpiles of contaminated soil in accordance with WM-7, Contaminated Soil Management.
- Place bagged materials on pallets and under cover.
- Ensure that stockpile coverings are installed securely to protect from wind and rain.
- Some plastic covers withstand weather and sunlight better than others. Select cover materials or methods based on anticipated duration of use.

Protection of Non-Active Stockpiles

A stockpile is considered non-active if it either is not used for 14 days or if it is scheduled not to be used for 14 days or more. Stockpiles need to be protected immediately if they are not scheduled to be used within 14 days. Non-active stockpiles of the identified materials should be protected as follows:

Soil stockpiles

- Soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- Temporary vegetation should be considered for topsoil piles that will be stockpiled for extended periods.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base

- Stockpiles should be covered and protected with a temporary perimeter sediment barrier at all times.

Stockpiles of "cold mix"

- Cold mix stockpiles should be placed on and covered with plastic sheeting or comparable material at all times and surrounded by a berm.

Stockpiles of fly ash, stucco, hydrated lime

- Stockpiles of materials that may raise the pH of runoff (i.e., basic materials) should be covered with plastic and surrounded by a berm.

Stockpiles/Storage of wood (Pressure treated with chromated copper arsenate or ammoniacal copper zinc arsenate

- Treated wood should be covered with plastic sheeting or comparable material at all times and surrounded by a berm.

Protection of Active Stockpiles

A stockpile is active when it is being used or is scheduled to be used within 14 days of the previous use. Active stockpiles of the identified materials should be protected as follows:

- All stockpiles should be covered and protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" and treated wood, and basic materials should be placed on and covered with plastic sheeting or comparable material and surrounded by a berm prior to the onset of precipitation.
- The downstream perimeter of an active stockpile should be protected with a linear sediment barrier or berm and runoff should be diverted around or away from the stockpile on the upstream perimeter.

Costs

For cost information associated with stockpile protection refer to the individual erosion or sediment control BMP fact sheet considered for implementation (For example, refer to SE-1 Silt Fence for installation of silt fence around the perimeter of a stockpile.)

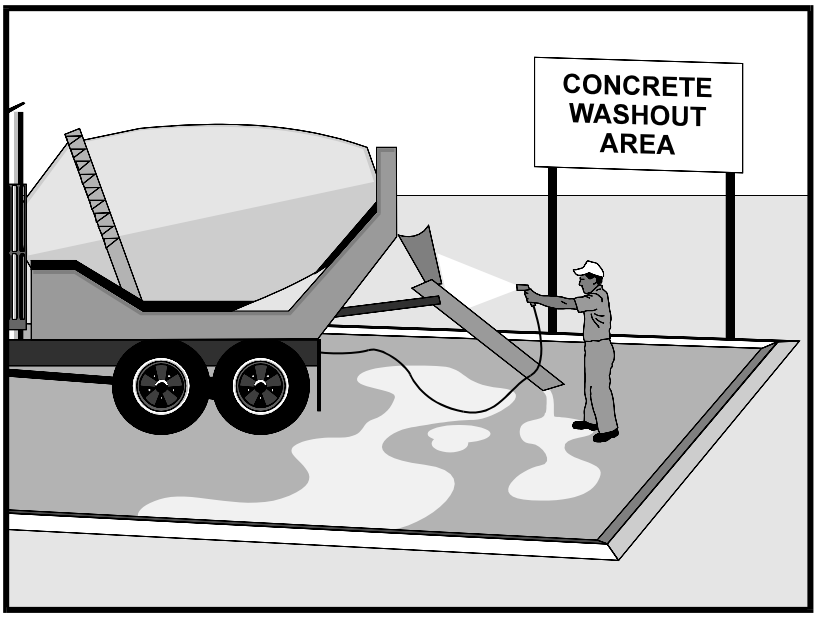
Inspection and Maintenance

- Stockpiles must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- It may be necessary to inspect stockpiles covered with plastic sheeting more frequently during certain conditions (for example, high winds or extreme heat).
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.
- Sediment shall be removed when it reaches one-third of the barrier height.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Concrete Waste Management WM-8



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☒
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Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Prevent the discharge of pollutants to stormwater from concrete waste by conducting washout onsite or offsite in a designated area, and by employee and subcontractor training.

The General Permit incorporates Numeric Action Levels (NAL) for pH (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Many types of construction materials, including mortar, concrete, stucco, cement and block and their associated wastes have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into contact with stormwater flows and raising pH to levels outside the accepted range.

Suitable Applications

Concrete waste management procedures and practices are implemented on construction projects where:

- Concrete is used as a construction material or where concrete dust and debris result from demolition activities.
- Slurries containing portland cement concrete (PCC) are generated, such as from saw cutting, coring, grinding, grooving, and hydro-concrete demolition.
- Concrete trucks and other concrete-coated equipment are washed onsite.

- Mortar-mixing stations exist.
- Stucco mixing and spraying.
- See also NS-8, Vehicle and Equipment Cleaning.

Limitations

- Offsite washout of concrete wastes may not always be possible.
- Multiple washouts may be needed to assure adequate capacity and to allow for evaporation.

Implementation

The following steps will help reduce stormwater pollution from concrete wastes:

- Incorporate requirements for concrete waste management into material supplier and subcontractor agreements.
- Store dry and wet materials under cover, away from drainage areas. Refer to WM-1, Material Delivery and Storage for more information.
- Avoid mixing excess amounts of concrete.
- Perform washout of concrete trucks in designated areas only, where washout will not reach stormwater.
- Do not wash out concrete trucks into storm drains, open ditches, streets, streams or onto the ground. Trucks should always be washed out into designated facilities.
- Do not allow excess concrete to be dumped onsite, except in designated areas.
- For onsite washout:
  - On larger sites, it is recommended to locate washout areas at least 50 feet from storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
  - Washout wastes into the temporary washout where the concrete can set, be broken up, and then disposed properly.
  - Washouts shall be implemented in a manner that prevents leaching to underlying soils. Washout containers must be water tight and washouts on or in the ground must be lined with a suitable impervious liner, typically a plastic type material.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile or dispose in the trash.
- See typical concrete washout installation details at the end of this fact sheet.

Education

- Educate employees, subcontractors, and suppliers on the concrete waste management techniques described herein.

- Arrange for contractor's superintendent or representative to oversee and enforce concrete waste management procedures.
- Discuss the concrete management techniques described in this BMP (such as handling of concrete waste and washout) with the ready-mix concrete supplier before any deliveries are made.

Concrete Demolition Wastes

- Stockpile concrete demolition waste in accordance with BMP WM-3, Stockpile Management.
- Dispose of or recycle hardened concrete waste in accordance with applicable federal, state or local regulations.

Concrete Slurry Wastes

- PCC and AC waste should not be allowed to enter storm drains or watercourses.
- PCC and AC waste should be collected and disposed of or placed in a temporary concrete washout facility (as described in Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures, below).
- A foreman or construction supervisor should monitor onsite concrete working tasks, such as saw cutting, coring, grinding and grooving to ensure proper methods are implemented.
- Saw-cut concrete slurry should not be allowed to enter storm drains or watercourses. Residue from grinding operations should be picked up by means of a vacuum attachment to the grinding machine or by sweeping. Saw cutting residue should not be allowed to flow across the pavement and should not be left on the surface of the pavement. See also NS-3, Paving and Grinding Operations; and WM-10, Liquid Waste Management.
- Concrete slurry residue should be disposed in a temporary washout facility (as described in Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures, below) and allowed to dry. Dispose of dry slurry residue in accordance with WM-5, Solid Waste Management.

Onsite Temporary Concrete Washout Facility, Transit Truck Washout Procedures

- Temporary concrete washout facilities should be located a minimum of 50 ft from storm drain inlets, open drainage facilities, and watercourses. Each facility should be located away from construction traffic or access areas to prevent disturbance or tracking.
- A sign should be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.
- Temporary concrete washout facilities should be constructed above grade or below grade at the option of the contractor. Temporary concrete washout facilities should be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.

- Temporary washout facilities should have a temporary pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.
- Temporary washout facilities should be lined to prevent discharge to the underlying ground or surrounding area.
- Washout of concrete trucks should be performed in designated areas only.
- Only concrete from mixer truck chutes should be washed into concrete wash out.
- Concrete washout from concrete pumper bins can be washed into concrete pumper trucks and discharged into designated washout area or properly disposed of or recycled offsite.
- Once concrete wastes are washed into the designated area and allowed to harden, the concrete should be broken up, removed, and disposed of per WM-5, Solid Waste Management. Dispose of or recycle hardened concrete on a regular basis.
- Temporary Concrete Washout Facility (Type Above Grade)
  - Temporary concrete washout facility (type above grade) should be constructed as shown on the details at the end of this BMP, with a recommended minimum length and minimum width of 10 ft; however, smaller sites or jobs may only need a smaller washout facility. With any washout, always maintain a sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations.
  - Materials used to construct the washout area should conform to the provisions detailed in their respective BMPs (e.g., SE-8 Sandbag Barrier).
  - Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.
  - Alternatively, portable removable containers can be used as above grade concrete washouts. Also called a “roll-off”; this concrete washout facility should be properly sealed to prevent leakage, and should be removed from the site and replaced when the container reaches 75% capacity.
- Temporary Concrete Washout Facility (Type Below Grade)
  - Temporary concrete washout facilities (type below grade) should be constructed as shown on the details at the end of this BMP, with a recommended minimum length and minimum width of 10 ft. The quantity and volume should be sufficient to contain all liquid and concrete waste generated by washout operations.
  - Lath and flagging should be commercial type.
  - Plastic lining material should be a minimum of 10 mil polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

- The base of a washout facility should be free of rock or debris that may damage a plastic liner.

Removal of Temporary Concrete Washout Facilities

- When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and properly disposed or recycled in accordance with federal, state or local regulations. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and properly disposed or recycled in accordance with federal, state or local regulations..

- Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

Costs

All of the above are low cost measures. Roll-0ff concrete washout facilities can be more costly than other measures due to removal and replacement; however, provide a cleaner alternative to traditional washouts. The type of washout facility, size, and availability of materials will determine the cost of the washout.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

- Temporary concrete washout facilities should be maintained to provide adequate holding capacity with a minimum freeboard of 4 in. for above grade facilities and 12 in. for below grade facilities. Maintaining temporary concrete washout facilities should include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials should be removed and properly disposed or recycled in accordance with federal, state or local regulations.

- Washout facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.

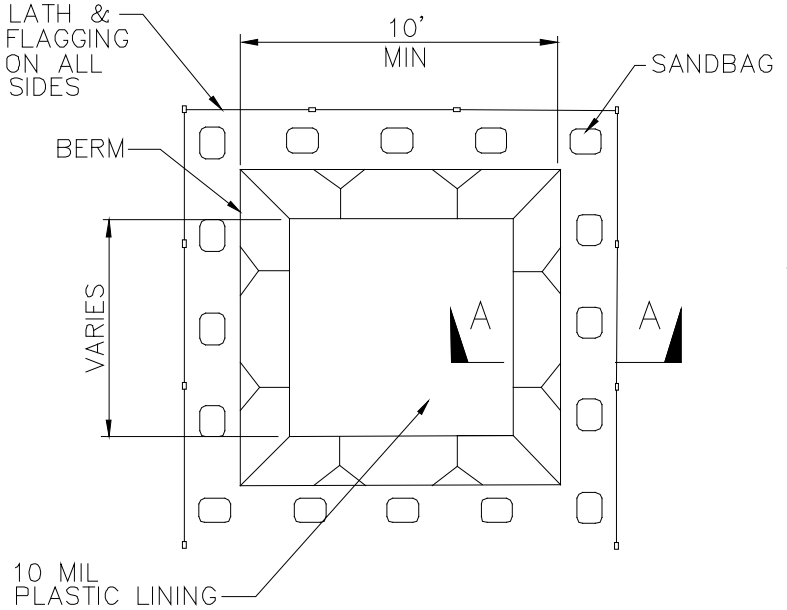
- Inspect washout facilities for damage (e.g. torn liner, evidence of leaks, signage, etc.). Repair all identified damage.

References

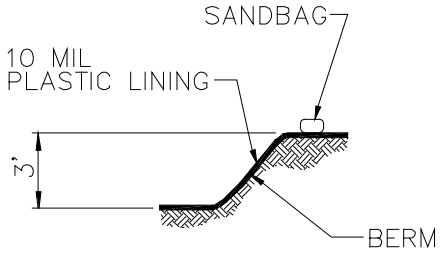
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000, Updated March 2003.

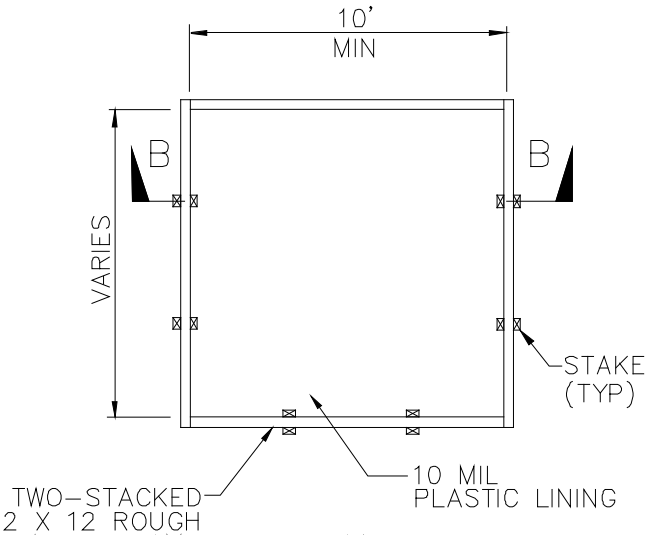
Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.



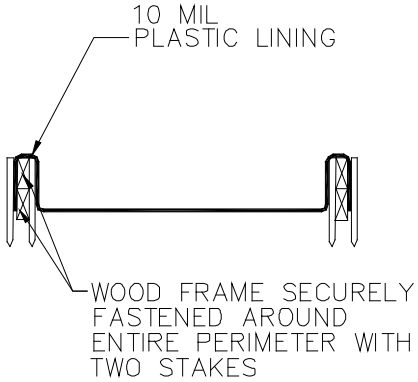
PLAN
NOT TO SCALE
TYPE "BELOW GRADE"



SECTION A–A
NOT TO SCALE



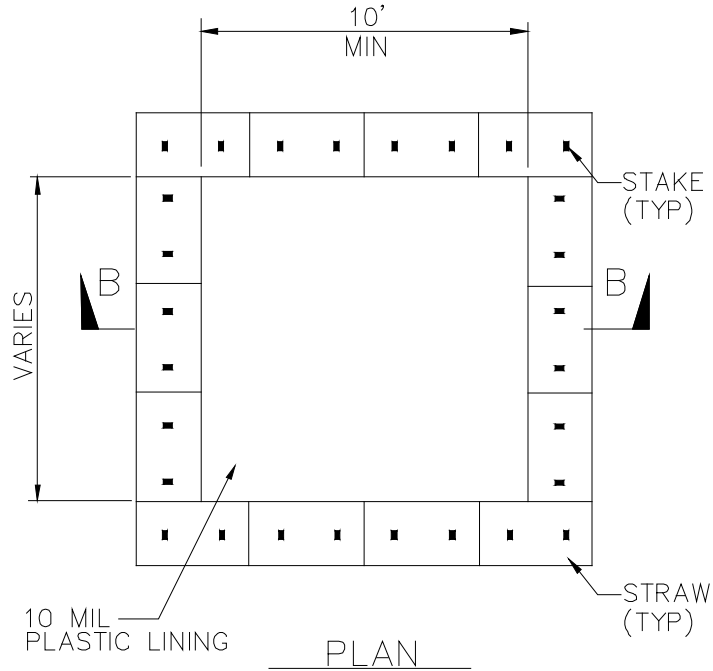
PLAN
NOT TO SCALE
TYPE "ABOVE GRADE"



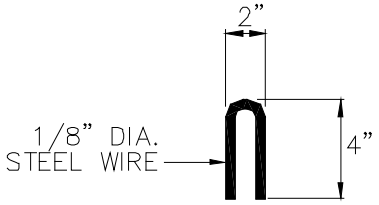
SECTION B–B
NOT TO SCALE

NOTES

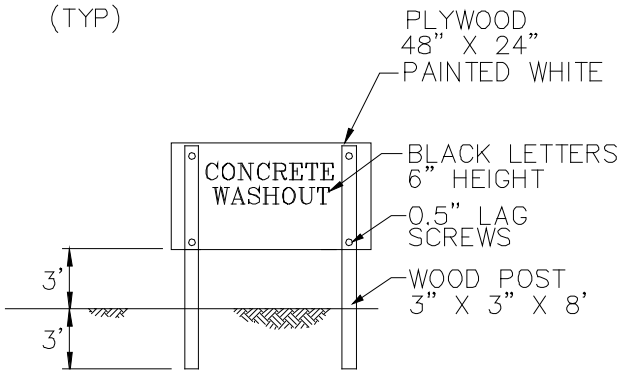
1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.



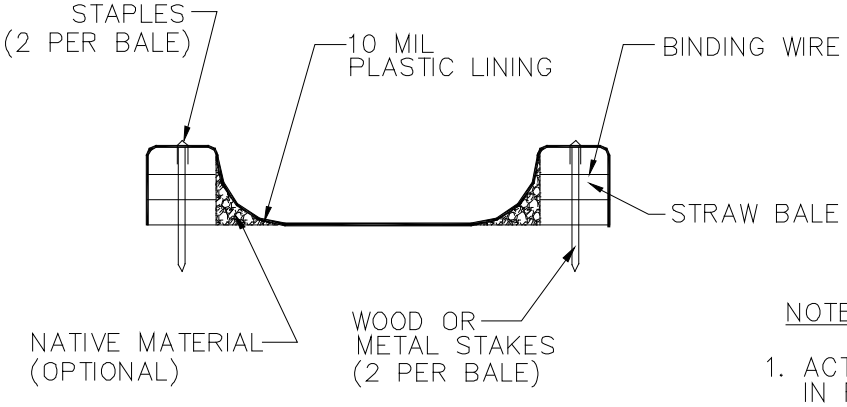
PLAN
NOT TO SCALE
TYPE "ABOVE GRADE"
WITH STRAW BALES



STAPLE DETAIL



CONCRETE WASHOUT
SIGN DETAIL
(OR EQUIVALENT)



SECTION B–B
NOT TO SCALE

NOTES

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2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

APPENDIX E - SPILL PREVENTION PLAN

Spill Prevention Plan

PANOCHE VALLEY
SOLAR PROJECT

Panoche Valley Solar LLC

Panoche Valley Solar Facility
San Benito County

August 28, 2015

Spill Prevention Plan

prepared for

Panoche Valley Solar LLC
Panoche Valley Solar Facility
San Benito, California

August 28, 2015

prepared by

AMEC Foster Wheeler PLC

Document Number: R-PLN-000-004
Revision: 0 – Issued for Use

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Page No.

1.0 INTRODUCTION

The purpose of the Spill Prevention Control Plan is to identify preventive measures and minimize spills or accidental releases of hazardous materials, address proper handling of hazardous wastes that may be generated during construction, and review the appropriate response to emergency situations that may arise in association with hazardous materials. All hazardous materials spills will be cleaned up immediately, in accordance with this Plan.

2.0 HAZADOUS MATERIAL RELEASE PREVENTION

As provided by Section 25501(o) of the California HSC, hazardous materials include any material that poses a significant present or potential hazard to human health, safety, or the environment because of its quantity, concentration, or physical or chemical characteristics. Materials and waste may be considered hazardous if they exhibit hazardous characteristics (i.e., toxicity, ignitability, corrosivity, or reactivity), which may include petroleum products, lubricants, and extremely hazardous substances.

Hazardous Material Storage Areas (HMSAs) will be staged in a manner to prevent releases, explosions, or other chemical reactions. Designated HMSAs on the Project will be properly signed, secured, and will follow all storage restrictions, container management rules, and reporting as required by local, state, and federal requirements. Materials stored at or above the local, state, and or federal thresholds will be subject to a Hazardous Materials Business Plan (HMBP) and a Spill Prevention Control and Countermeasure (SPCC) Plan per 40 Code of Federal Regulations (CFR) 112; CCR Title 19, Sections 2620-2732, CCR Title 24, Part 9, Section 80.115; and California HSC, Division 20, Chapter 6.95.

During construction, hazardous materials will be used as common work practice. Typical materials used during construction include petroleum-based products, such as diesel, gasoline, lubricating oils, transformer oil, grease, and universal wastes. Accidental releases may occur as a result of mishandled materials, improper storage practices, leaking vehicles and equipment, or equipment failures. PVS and its contractors will implement the following measures to prevent and minimize release of hazardous materials:

- Storage, handling, and transportation of flammable and combustible liquids, including gasoline, diesel fuel, and gas cylinders will be performed in accordance with rules developed under state and federal regulations Title 8 CCR Section 1740 and 29 CFR 1910.106, respectively. These regulations include use of a licensed hazardous material transporter, fire protection requirements, storage quantity limitations, and spacing and location requirements.
- Containers of hazardous materials will remain closed unless adding or removing material.
- Hazardous materials will be stored in a secured location to prevent the risk of damage, vandalism, or theft. A secured location shall mean and area that is gated, locked, guarded or otherwise under the control of Project personnel.

- Incompatible materials will be stored in segregated areas. Materials that are incompatible will not be placed in the same container or in an unwashed container that previously held such material.
- Personnel responsible for managing hazardous materials will be trained in proper handling, storage, and transportation requirements, as well as appropriate emergency response procedures.
- Equipment containing petroleum or other hazardous substances will be inspected on a regular basis for leaks or signs of deterioration that could cause a leak or release.
- Hazardous materials will be stored in Department of Transportation (DOT)-approved containers or other compatible containers. When appropriate, hazardous materials will be stored in designated hazardous material storage areas and managed in accordance with this Plan.
- Storage locations of portable pumps, stationary equipment, and requirements for secondary containment will be coordinated on site with the Qualified Storm Water Practitioner (QSP) for the Project to protect water resources. Secondary containment will be used for storage tanks containing 55-gallons or more of oil.
- Only compatible containers designated for storing hazardous materials will be used. If a container is found to be damaged or leaking, the damaged container will be transferred to an overpack drum or the contents will be transferred to a container that is in good condition, and the damaged container will be disposed of properly. The overpack drum will also be clearly labeled with the type of material and hazard classification.
- Containers will be clearly labeled with the content and hazard classification.
- Containers will be maintained in good condition, with no leaks, ruptures, bulges, etc.
- Project personnel will adhere to manufacturer's recommendations on use, storage, and disposal of chemical products used during construction activities.
- Measures to prevent overfilling of fuel storage containers will be implemented. This may include use of a fuel gauge, fuel level alarms, or other devices as appropriate.
- Spill kits containing absorbent material and other spill response equipment sufficient to contain anticipated release scenarios will be clearly marked and readily accessible near designated hazardous material and waste storage areas, as well as jack-and-bore locations.
- Reasonable spill prevention measures, such as the use of spill-safe fuel cans and drip pans will be implemented, as appropriate, when transferring or using hazardous materials.
- All construction equipment and vehicles will be maintained in accordance with the manufacturer's recommendations to help prevent fluid leaks.
- Equipment repairs and refueling will be performed in a manner to prevent impact to waterbodies or groundwater (e.g., performing operations outside of resources when feasible, not leaving fueling activities unattended unless a pump shut-off valve is utilized, and utilizing drip pans).

In addition, the HMBP and SPCC Plans will be implemented during construction to address safe handling of hazardous materials.

3.0 HAZARDOUS RELEASE RESPONSE

Although all efforts will be taken to prevent an inadvertent release of hazardous materials during construction of the Project, if a release does occur, effective and prompt response will be implemented to help reduce the potential for exposure of hazardous materials to human health and the environment. In the event of a release or discovery of contaminated material, the following procedures will be implemented:

- Once discovery of a release has been made, the observer will contact the designated field representative and the site Site Safety Manager (SSM).
- The appropriate Project personnel, along with the field representative or SSM will work together to determine proper containment, cleanup, storage, and disposal of the release as described in the Containment and Cleanup Procedures of this Plan.
- The field representative or SSM will contact the Owner Environmental Compliance Lead as needed to notify them of the release.
- If a release is reportable, notification will be made to the County and other agencies as required by law, and described in the HMBP.

It is the responsibility of the Owner or Operator (i.e., PVS) to make agency notifications if a reportable release occurs.

Containment and Cleanup Procedures

Containment of a hazardous material release will be performed by authorized Project personnel trained in spill response procedures. Cleanup personnel must wear the appropriate personal protective equipment (PPE) and be familiar with the waste storage procedures. Containment procedures that may be implemented during construction include, but are not limited to, the following:

- If the release is relatively small, absorbent pads and material will be applied to the surface of the release to absorb all of the liquid.
- Incidental releases of hazardous materials that can be absorbed, neutralized, or otherwise controlled safely at the time of release by employees in the immediate release area, will be immediately cleaned.
- Discharge into storm drains or other storm water conveyance systems will be prevented by obstructing those features that are located in the area of the release with plastic, booms, and/or earthen dikes.
- Releases will be secured and covered with plastic sheeting to protect the contamination from spreading during rainfall.
- The risk of a large release could occur during transformer filling and fueling operations. Fuel trucks containing transmission oil or diesel fuel typically contain a volume of approximately 10,000 gallons. If a large release of a

petroleum-based product occurs, earthen ditches or dikes will be constructed around the release site to prevent the discharge from flowing off site or into waterways, and Project personnel will determine if a licensed emergency spill response contractor should be utilized. The licensed emergency spill response contractor that will be utilized in the event of a large release will be identified before to the start of construction.

- If it is determined that the release cannot be safely contained by Project personnel, the field representative, or SSM will determine if work should cease in the area, if emergency assistance is necessary, and if containment procedures can be implemented safely. If it is decided that emergency assistance is necessary, the field representative or SSM will contact 911.
- Appropriate signage will be placed around spill to prevent individuals and vehicles from entering larger release areas until the field representative or SSM is able to assess the situation for safety.

Once the release of hazardous material has been contained, cleanup personnel will clean the contaminated area by implementing the following measures:

- Appropriate absorbent materials will be used to thoroughly clean the spill area to the extent possible.
- Spills will not be diluted with water or other liquids for purposes of mitigating the spill. If the use of water or other liquids is necessary for final cleaning or dust control, the water or other liquids will be collected and disposed of in accordance with all local, state, and federal regulations.
- All contaminated material, including rocks, mulch, soil, and cleanup material, will be removed, stored, and disposed of as a hazardous waste in accordance with all local, state, and federal regulations.

APPENDIX F – H.T. HARVEY MEMO

H. T. HARVEY & ASSOCIATES
Ecological Consultants

Memorandum

November 9, 2016 **Project #3128-03**

To: **Burns & McDonnell Engineering Company, Inc.**

From: **H. T. Harvey & Associates**

Subject: **Supplemental Biological Resources Information in Support of the California Environmental Quality Act (CEQA) Addendum for the Construction of a Temporary Jumper Bridge at Little Panoche Creek**

Background

In order to facilitate the construction of the Panoche Valley Solar Project, Panoche Valley Solar, LLC (the Applicant) proposes to install a temporary jumper bridge at the location of the existing Little Panoche Road Bridge at Little Panoche Creek in Fresno County (Bridge Number 42C0138). The work associated with installation and eventual removal (or decommissioning) of the jumper bridge is referred to as the "Bridge Project" herein. The Bridge Project is a temporary load distribution management measure, resulting from implementation of Mitigation Measure (MM) TR-1.2 of the 2015 Final Supplemental Environmental Impact Report (FSEIR) certified by San Benito County on May 19, 2015. This mitigation measure allows for the rehabilitation and monitoring of roadways, bridges, and culverts. Furthermore, the measure requires monitoring and, if necessary, implementation of load distribution management over bridges and culverts, as well as culvert monitoring and repair. Although the FSEIR contemplated temporary load distribution management, it did not anticipate the Bridge Project. Burns & McDonnell Engineering Company, Inc. is preparing an Addendum to the FSEIR pursuant to CEQA Guidelines Section 15164, confirming that the Bridge Project is a minor modification to the Panoche Valley Solar Project, would not result in new or more severe significant impacts, and that none of the conditions described in Section 15162 of the CEQA Guidelines triggering additional environmental review would occur.

Mitigation Measure BR-G.2 in the FSEIR requires implementation of a series of best management practices, which include a restriction on construction activities after dusk and before dawn. However, at the request of Fresno County, the Bridge Project construction would occur up to 24 hours a day to minimize the period of road closure to the greatest extent feasible. The purpose of this memorandum is to analyze whether construction of the Bridge Project at night would result in new or more severe significant impacts to biological resources, or otherwise trigger any of the conditions set forth in CEQA Guidelines Section 15162. In summary, the information provided herein concludes that nighttime construction associated with the Bridge Project would not result in new or more severe significant impacts to biological resources beyond what was previously disclosed and analyzed in the 2010 FEIR and the 2015 FSEIR certified by San Benito County. Furthermore, the Applicant will implement all applicable APMs and MMs adopted by the County, and the construction of the Bridge Project will not require new mitigation measures which are different from those previously disclosed and analyzed in the previous 2010 FEIR or 2015 FSEIR.

Summary of Construction Activities and Disturbance Footprint

A temporary bridge would be constructed over the existing 48-foot-long by 24-foot-wide Little Panoche Creek Bridge. Construction of the temporary bridge project would involve the installation of an Acrow 700XS Panel Bridge over the top of the existing Little Panoche Creek Bridge to serve as a temporary bridge for the approximately two-year duration of the construction of the Panoche Valley Solar Project. The proposed bridge would span approximately 100 feet and will be approximately 24 feet wide. The proposed bridge installation would occur during one single period, resulting in a road closure of no longer than seven (7) consecutive days to minimize the number of roadway closures required to install the bridge. At the request of Fresno County Planning and Public Works personnel, the Bridge Project construction would occur up to 24 hours a day to minimize the period of road closure to the greatest extent feasible.

The existing Little Panoche Creek Bridge and associated support structures would remain in place and intact at all times during construction following installation, and all work associated with the construction of the Bridge Project would be strictly limited to the existing Fresno County road right-of-way (ROW). A jurisdictional delineation[1] conducted on April 29, 2016 confirmed that the Bridge Project is designed to avoid all areas of the delineated waterway of Little Panoche Creek and avoids all impacts to adjoining habitat (See Appendix A and C of Addendum). The existing road ROW within the Bridge Project footprint contains only ruderal plant species within barren dirt or gravel areas of the road shoulder. Therefore, no impacts to natural habitat would occur, including habitat supporting special-status plant and wildlife species.

Potential Impacts to Biological Resources Associated with Nighttime Construction

All direct and indirect impacts to native habitat have been avoided through the design of the Bridge Project within the existing disturbed road ROW, or through the implementation of Best Management Practices (BMPs) in the case of avoiding indirect impacts (spills and releases of hazardous materials or sediment). In addition, construction of the Bridge Project is scheduled to occur before February 1, 2017, outside of the breeding season for avian species known to occur in the vicinity of the Bridge Project site, and outside of the maternity season for special-status bat species. Therefore, the focus of this memorandum is on the potential impacts to special-status wildlife species during nighttime construction. These impacts may occur if special-status wildlife inadvertently enter the construction work area or immediate buffer within natural habitats outside of the Bridge Project footprint. Impacts may include injury, mortality, or disturbance of individuals as a result of construction equipment, personnel, and/or vehicle collisions.

The Addendum identifies all special-status species having the potential to occur within five miles of the Bridge Project. Table 1 provides a summary of these 11 wildlife species addressed in the Addendum. Of these 11 species, seven have the potential to be impacted by nighttime construction due to the nocturnal behavioral patterns of the species or their specific life history requirements. These species are denoted with an asterisk in Table 1 below.

The remaining four species are not expected to be impacted by nighttime construction. The blunt-nosed leopard lizard (*Gambelia sila*) is a diurnal species with seasonal above ground activity that is primarily dependent on temperature, with optimal activity occurring when air temperatures are between 74 and 104

[1] Rincon Consultants. 2016. Little Panoche Road Bridge Project, Panoche Valley Solar Project - Jurisdictional Delineation Report. Monterey, California.

degrees Fahrenheit and ground temperatures are between 72 and 97 degrees Fahrenheit[2]. Smaller lizards and young have a wider activity range than adults which results in them emerging from hibernation earlier than adults, remaining active later in the year, and being active earlier during the day than adults[3]; however this species is not active at night and is not expected to be active above ground during the proposed construction window for the Bridge Project[4] because of the seasonal temperatures.

Similarly, San Joaquin antelope squirrels (*Ammospermophilus nelsoni)* are diurnal, usually active early or late in the day[5], with higher activity levels determined by temperatures over 70 degrees Fahrenheit. Activity is reduced when ambient temperatures drop below about 50 degrees Fahrenheit[6], which is expected in the early morning hours during construction of the Bridge Project. While both the San Joaquin antelope squirrel and blunt-nosed leopard lizard are known to co-occur with the giant kangaroo rat (*Dipodomys ingens)*, discussed below, the documented activity patterns of these species do not overlap with giant kangaroo rat, and will not be impacted by nighttime construction activities at the Bridge Project site.

The San Joaquin coachwhip (*Masticophis flagellum ruddock)* and northern harrier (*Circus cyaneus*) are also diurnal species, not expected to occur at the Bridge Project site during nighttime construction. The temperature requirements of the coachwhip are similar to the blunt-nosed leopard lizard discussed above, with activity levels dependent on warmer daytime temperatures. The northern harrier is a diurnal raptor that forages during the day in a variety of open habitats, but are not active at night[7].

Table 1. Special-Status Wildlife Species with Potential to Occur on or Within 5-Miles of the Bridge Project Site

Animal Species Name	**Status[1] (State/Federal)**
Blunt-nosed leopard lizard (*Gambelia sila*)	ST, SFP/FT
Burrowing owl (*Athene cunicularia*)*	SSC/-
California tiger salamander (*Ambystoma californiense*)*	ST/FT
Giant kangaroo rat (*Dipodomys ingens*)*	SE/FE
San Joaquin antelope squirrel (*Ammospermophilus nelsoni*)	ST/-
Northern harrier (*Circus cyaneus*)	SSC/-
Pallid bat (*Antrozous pallidus*)*	SSC/-
San Joaquin kit fox (*Vulpes macrotis mutica*)*	ST/FE
San Joaquin Pocket Mouse (*Perognathus inornatus*)*	-/BLMS
San Joaquin Coachwhip (*Masticophis flagellum ruddocki*)	SSC/-
Tulare grasshopper mouse (*Onychomys torridus tularensis*)*	SSC/-

[2] USFWS. 1985a. Blunt-nosed leopard lizard revised recovery plan. U.S. Fish and Wildlife Service, Portland OR. 85 p.
[3] Montanucci, R. R. 1965. Observations on the San Joaquin leopard lizard, *Crotaphytus wislizenii silus* Stejneger. Herpetologica 21:270-283.
[4] USFWS. 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Region 1, Portland, OR. 319 p.
[5] Elliot, D.G. 1904. Catalogue of mammals collected by E. Heller in southern California. Field Columbian Mus. Publ. 91, Zool. Series 3:271-321
[6] Hawbecker, A.C. 1958. Survival and home range in the Nelson antelope ground squirrel. J. Mammal. 39:207-215.
[7] Smith, Kimberly G., Sara Ress Wittenberg, R. Bruce Macwhirter and Keith L. Bildstein. (2011). Northern Harrier (*Circus cyaneus*), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: https://birdsna.org/Species-Account/bna/species/norhar
DOI: 10.2173/bna.210

* May be present during nighttime construction

[1] Status definitions:
– = not listed.
BLMS = Bureau of Land Management Sensitive
FE = federally listed as endangered.
FT = federal listed as threatened.
SE = state listed as endangered.
SFP = state fully protected species.
SSC = state species of special concern.
ST = state listed as threatened.

A detailed analysis of the potential impacts to special-status wildlife, including those listed above, and biological resources resulting from the Panoche Valley Solar Project is described in Section C.6 of the 2010 FEIR and 2015 FSEIR. A number of Applicant Proposed Measures (APMs) and MMs were adopted by the County in 2010 and 2015 when these prior EIRs were certified. As stated in the Addendum, the Bridge Project will be required to comply with all APMs and MMs adopted by the County, regardless of whether such measures are mentioned in this memorandum specifically. The list of APMs and MMs that were adopted with the 2015 FSEIR are available at the following link:

http://cosb.us/wp-content/uploads/PVSP_FSEIR1504_i_mmcrp.pdf

A list of APMs and MMs that were previously adopted with the 2010 FEIR and remain unchanged are available at:

http://cosb.us/wp-content/uploads/PVSP_FSEIR1504_app03.pdf

Table 2 below presents a summary of the impacts and associated mitigation measures previously identified in the 2010 FEIR and 2015 FSEIR that are specifically applicable to the seven special-status wildlife species that may be impacted by nighttime construction of the Bridge Project. The discussion that follows Table 2 provides additional detail related to these applicable impacts and mitigation measures. The information provided below confirms that nighttime construction associated with the Bridge Project would not result in new or more severe significant impacts to biological resources beyond what was previously disclosed in the 2010 FEIR and the 2015 FSEIR, and the APMs and MMs adopted by the County are sufficient to address any impacts associated with nighttime construction associated with the Bridge Project.

Table 2. Summary of Previously Identified Impact and Mitigation Measures Applicable to Nighttime Construction of the Bridge Project

Previously Identified Impact	Impact Significance	Applicable Mitigation Measure
Impact BR-6: Construction activities, including the use of access roads, grading, and heavy equipment, would result in disturbance to wildlife and may result in wildlife mortality	Class II	**BR-G.1:** Implement a Worker Environmental Education Program. **BR-G.2:** Implement Best Management Practices. **BR-G.4:** Implement biological construction monitoring.
Impact BR-7: The project could result in injury or mortality of terrestrial California species of Special Concern	Class II	**BR-G.1:** Implement a Worker Environmental Education Program. **BR-G.2:** Implement Best Management Practices. **BR-G.4:** Implement biological construction monitoring. **BR-7c.1:** Conduct focused pre-construction surveys for San Joaquin pocket mouse and Tulare grasshopper mouse and implementation of avoidance measures.
Impact BR-9: The project could result in the loss of individual California tiger salamanders	Class II	**BR-G.1:** Implement a Worker Environmental Education Program. **BR-G.2:** Implement Best Management Practices. **BR-G.4:** Implement biological construction monitoring. **BR-9.1:** Conduct pre-construction surveys for California tiger salamander and implement avoidance measures.
Impact BR-13: The project could result in the loss of burrowing owl	Class II	**BR-G.1:** Implement a Worker Environmental Education Program. **BR-G.2:** Implement Best Management Practices. **BR-G.4:** Implement biological construction monitoring. **BR-13.1:** Focused pre-construction burrowing owl surveys and implementation of avoidance measures.
Impact BR-15: The project could result in mortality of special-status bat species	Class II	**BR-G.1:** Implement a Worker Environmental Education Program. **BR-G.2:** Implement Best Management Practices. **BR-G.4:** Implement biological construction monitoring.
Impact BR-16: The project could result in the loss of giant kangaroo rat	Class II	**BR-G.1:** Implement a Worker Environmental Education Program. **BR-G.2:** Implement Best Management Practices. **BR-G.4:** Implement biological construction monitoring. **BR-16.1:** Conduct focused pre-construction giant kangaroo rat surveys and implement avoidance measures.

Previously Identified Impact	Impact Significance	Applicable Mitigation Measure
Impact BR-19: The project could result in the loss of San Joaquin kit fox	Class II	**BR-G.1:** Implement a Worker Environmental Education Program. **BR-G.2:** Implement Best Management Practices. **BR-G.4:** Implement biological construction monitoring. **BR-19.1:** Conduct focused pre-construction San Joaquin kit fox surveys and implementation of avoidance measures.

Class II: Significant impact; can be mitigated to a level that is less than significant through implementation of recommended mitigation measures

Impact BR-6: Construction activities, including the use of access roads, grading, and heavy equipment, would result in disturbance to wildlife and may result in wildlife mortality

Bridge Project construction activities have the potential to result in disturbance, injury, or mortality of common wildlife species. While suitable habitat will not be impacted, some common wildlife may enter the construction work areas from the surrounding area increasing the risk of mortality. Impacts to common wildlife species were analyzed in both the 2010 FEIR and 2015 FSEIR, although the Panoche Valley Solar Project represents a relatively small proportion of the regional habitat supporting populations of the more common wildlife species that will be impacted by construction activities. The risk of mortality to common wildlife at the Bridge Project site during daytime or nighttime construction are low given the small disturbance footprint within the existing ROW, and the short duration of activities. Separate discussions are provided below for special-status species (see impacts BR-7, 9, 13, 15, 16, and 19), including applicable species specific MMs that will be implemented at the Bridge Project site. Implementation of the project's mitigation measures (BR-G.1, G.2, and G.4) will reduce potential impacts to common wildlife species to a less than significant level. MM BR-G.2 in particular will 1) require the project work areas to be clearly delineated with stakes, flags, or other clearly identifiable system, 2) require vehicles to be parked on pavement, existing roads, and previously disturbed areas to the extent practicable, 3) limit vehicle speeds to 15 miles per hour during the daytime and 10 miles per hour during the nighttime, 4) require all trash to be stored in animal proof containers and/or removed from the site each day, 5) prohibit domesticated animals from the project site, and 6) require a biological monitor to ensure compliance of these measures. Implementation of these existing measures will reduce the risk of disturbance, injury, or mortality of wildlife during both daytime and nighttime hours. No new or more severe significant impacts to common wildlife beyond what was previously disclosed in the 2010 FEIR and the 2015 FSEIR would occur, and the APMs and MMs previously adopted by the County are sufficient to address any impacts associated with nighttime construction.

Impact BR-7: The project could result in injury or mortality of California Species of Special Concern

The FSEIR Addendum lists four species of special concern having a potential to occur at night on the Bridge Project site (see Table 1). Two of these species, burrowing owl and pallid bat, are discussed separately below under impacts BR-13 (burrowing owl) and BR-15 (pallid bat). The two remaining special-status species having a potential to occur at night on the Bridge Project site are San Joaquin pocket mouse and Tulare grasshopper mouse. Similar to Impact BR-6 above, general biological preconstruction surveys will determine the presence/absence of San Joaquin pocket mouse and Tulare grasshopper mouse prior to construction and implementation of the project's mitigation measures (BR-G.1, G.2, and G.4) will reduce potential impacts to a less than significant level. In addition, Bridge Project compliance with MM BR-7c.1 (preconstruction surveys for San Joaquin pocket mouse and Tulare grasshopper mouse) requires that if

these species are observed, that they be captured and relocated to a preapproved area outside the Bridge Project area by a qualified biologist. No new or more severe significant impacts to San Joaquin pocket mouse, Tulare grasshopper mouse, or other state species of special concern would occur beyond what was previously disclosed in the 2010 FEIR and the 2015 FSEIR, and the APMs and MMs adopted by the County are sufficient to address any impacts associated with nighttime construction.

Impact BR-9: The project could result in the loss of individual California tiger salamanders

The California tiger salamander is an endemic member of the California grassland community. The California tiger salamander's preferred breeding habitat consists of temporary (a minimum of 3-4 months), ponded environments (e.g., vernal pool, ephemeral pool, or human-made pond) surrounded by uplands that support small mammal burrows. Such ponds provide breeding and larval habitat, while burrows of small mammals such as California ground squirrels (*Spermophilus beecheyi*) and valley pocket gophers (*Thomomys bottae*) in upland habitats provide refugia for juvenile and adult salamanders during the dry season. The nearest California tiger salamander observation that occurred during protocol-level surveys performed for the Panoche Valley Solar Project in 2010 were in a bermed pool of a tributary on the South Fork of the Little Panoche Creek, over 5 miles to the south of the Bridge Project. Bridge Project construction activities would occur only within the disturbed portion of the road ROW and would not impact potential California tiger salamander breeding or upland habitat. If California tiger salamanders are present within 1.2 miles of the Bridge Project and enter the construction area at night (typically during rain events) while moving between breeding ponds and upland habitat, they may be at risk of injury or mortality. However, this risk is considered low at the Bridge Project site given east-west movement of California tiger salamanders would likely occur under the existing bridge or in locations north or south of the elevated road surface outside of the project footprint of the Bridge Project. In addition, implementation of the project's mitigation measures (BR-G.1, G.2, and G.4), and compliance with MM BR-9.1 (preconstruction surveys for California tiger salamander and implementation of avoidance measures) would reduce any impacts to a less than significant level. These avoidance measures include construction monitoring by an approved designated biologist with knowledge and experience with California tiger salamander and prohibiting work during severe rain events unless it is required. No new or more severe significant impacts to California tiger salamander would occur beyond what was previously disclosed in the 2010 FEIR and the 2015 FSEIR would occur, and the APMs and MMs adopted by the County are sufficient to address any impacts associated with nighttime construction.

Impact BR-13: The project could result in the loss of burrowing owl

Burrowing owls are tolerant of humans and are readily adapted to a variety of anthropogenic influences, including human-altered open spaces, such as some airports, golf courses, and areas adjacent to unimproved and improved roads[8] [9]. Burrowing owls were confirmed present on the Panoche Valley Solar Project site during protocol level surveys, and are known to occur within 5 miles of the Bridge Project (CNDDB 2016). If burrowing owls are present immediately adjacent to the Bridge Project site during construction activities, individuals could be affected by the proposed activities. Although unlikely, the potential for individuals to be harmed or killed by vehicles and equipment during nighttime construction activities is possible.

In addition to MM BR-G.1, G.2, and G.4 described above, MM BR-13.1 requires preconstruction surveys for burrowing owl and implementation of avoidance measures, including the establishment of appropriate

[8] Brenckle, J. F. 1936. The migration of the western burrowing owl. Bird Banding 7:166–168.

[9] Ratcliff, B. D. 1986. The Manitoba burrowing owl survey, 1982–1984. Blue Jay 44:31–37.

no disturbance buffers. Bridge Project construction activities would also occur during the nonbreeding season; therefore, any owls present would be wintering owls, and impacts to breeding owls and young are not expected. The implementation of MM BR-G.1, G.2, G.4, and BR-13.1 would reduce potential impacts to less than significant levels. No new or more severe significant impacts to burrowing owl would occur beyond what was previously disclosed in the 2010 FEIR and the 2015 FSEIR, and the APMs and MMs adopted by the County are sufficient to address any impacts associated with nighttime construction.

Impact BR-15: The project could result in mortality of special-status bat species

The existing Little Panoche Creek Bridge and associated support structures provide suitable roosting habitat for pallid bat. However, the existing bridge and supporting structures would remain in place and intact at all times during construction and following installation of the Bridge Project, and all work associated with the construction of the Bridge Project would be strictly limited to the existing Fresno County ROW. Construction activities are also planned to occur outside of the maternity season for pallid bat. Therefore, if present, bats can continue to use the existing bridge during and after construction of the Bridge Project as a day or night roosting location.

Bats foraging over the Bridge Project site could collide with stationary objects[10] such as construction equipment or vehicles. Also, Orbach and Fenton[11] (2010) found that artificial night light can play a role in bat collisions. Therefore, although unlikely, the potential for individuals to be harmed or killed as a result of collision during nighttime construction activities is possible. However, the potential impacts at the Bridge Project site are no more severe than what was previously disclosed and analyzed in the 2010 FEIR and 2015 FSERI, and the implementation of the project's mitigation measures (BR-G.1, G.2, and G.4), and compliance with MM BR-15.1-15.3 would reduce any impacts to a less than significant level. In addition, BMPs include directional lighting within the construction zone. Avoidance measures include preconstruction surveys for special-status bat species, and construction monitoring by a designated biologist. No new or more severe significant impacts to special-status bat species, including pallid bat, would occur beyond what was previously disclosed in the 2010 FEIR and the 2015 FSEIR, and the APMs and MMs adopted by the County are sufficient to address any impacts associated with nighttime construction.

Impact BR-16: The project could result in the loss of giant kangaroo rat

Surveys of the Panoche Valley Solar Project site and associated conservation lands have confirmed the presence of the giant kangaroo rat. While the Bridge Project site has not been surveyed for the species, the natural lands surrounding the Bridge Project site and road ROW contain suitable habitat for the species. Giant kangaroo rats forage on the surface from around sunset to near sunrise, with most activity taking place in the first two hours after dark. The potential for individuals to be harmed or killed as a result of vehicle collision or construction equipment during nighttime construction activities is possible, although it is unlikely given that work will be strictly limited to the existing Fresno County ROW.

In addition to MM BR-G.1, G.2, and G.4 described above, MM BR-16.1 requires preconstruction surveys and implementation of avoidance measures. Furthermore, because Little Panoche Road will be closed during the Bridge Project construction period (approximately seven days and six nights), traffic on Little Panoche Road during this seven day period will be limited to Bridge Project truck traffic and deliveries and

[10] Crawford, R. L., and W. W. Baker. 1981. Bats Killed at a North Florida Television Tower: A 25-Year Record. Journal of Mammalogy 62:651-652.

[11] Orbach, D. N., and B. Fenton. 2010. Vision impairs the abilities of bats to avoid colliding with stationary obstacles. PLOS ONE 5(11):e13912.

construction personnel. This road closure will significantly reduce vehicle traffic on Little Panoche Road thereby reducing the overall risk of vehicle collisions. As described above, MM BR-G.2 requires construction vehicles to be parked on pavement, existing roads, and previously disturbed areas, limits vehicle speeds to 15 miles per hour during the daytime and 10 miles per hour during the nighttime, and requires a biological monitor to be present at all times. The implementation of MM BR-G.1, G.2, G.4, and BR-16.1 would reduce potential impacts to less than significant levels. No new or more severe significant impacts to giant kangaroo rat would occur beyond what was previously disclosed in the 2010 FEIR and the 2015 FSEIR, and the APMs and MMs adopted by the County are sufficient to address any impacts associated with nighttime construction.

Impact BR-19: The project could result in the loss of San Joaquin kit fox

As described in the 2010 FEIR and 2015 FSEIR, San Joaquin kit fox individuals and their sign have consistently been observed throughout the Panoche Valley Region, the project site, and the conservation lands. The nearest occurrence to the Bridge Project site is a California Natural Diversity Database record from 1977 located approximately 0.3 mile north of the Bridge Project site. The natural lands in the vicinity of the Bridge Project site provide suitable habitat for the species, and the potential for individuals to be harmed or killed as a result of vehicle collision or construction equipment during nighttime construction activities is possible. As described above, due to the closure of the Little Panoche Road to through traffic only construction vehicles would present a collision risk. In addition to MM BR-G.1, G.2, and G.4 described above, MM BR-19.1 requires preconstruction surveys and implementation of kit fox specific avoidance measures and construction monitoring by a designated biologist. The implementation of these measures would reduce potential impacts to less than significant levels. No new or more severe significant impacts to San Joaquin kit fox would occur beyond what was previously disclosed in the 2010 FEIR and the 2015 FSEIR, and the APMs and MMs adopted by the County are sufficient to address any impacts associated with nighttime construction.

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