COUNTY OF TULARE
RESOURCE MANAGEMENT AGENCY

5961 South Mooney Boulevard
Visalia, CA 93277

Initial Study and Mitigated Negative Declaration

Mineral King Road Bridge (Historic Oak Grove Bridge) Replacement Project

May 2021

Prepared by
County of Tulare Resource Management Agency
Economic Development and Planning Branch
Environmental Planning Division

INITIAL STUDY CHECKLIST

1. **Project Title:** Mineral King Road Bridge (Historic Oak Grove Bridge) Replacement Project

2. **Lead Agency:** County of Tulare
Resource Management Agency
5961 S. Mooney Blvd.
Visalia, CA 93277

Contact Person: Jason Vivian, Engineer IV - (559) 624-7135 (Project Manager);
Hector Guerra, Chief, Environmental Planning Division – (559) 624-7121

3. **Project Location:** The Project site is located along Mineral King Road, approximately 6.5 miles east of State Route 98, east of the community of Three Rivers (See Figure 1). The Project area extends approximately 75 feet downstream and 60 feet upstream of the existing Mineral King Road Bridge (bridge) and includes the northern and southern approach roadways and encompasses Assessor Parcel Numbers (APNs) 069-390-021 and 069-390-010. (See Figure 2). The Project is located in Section 15, Township 17 S, Range 29E, MDB&M.

4. **Latitude/Longitude:** Center of Bridge 36° 26' 57" N / 118° 47' 34" W (36.449364, -118.793045)

5. **Applicant:** County of Tulare
Resource Management Agency
5961 S. Mooney Blvd.
Visalia, CA 93277

6. **General Plan Designation:** Foothill Mixed Use, Tule River Development Corridor, per Foothill Growth Management Plan

7. **Zoning:** AF (Foothill Agriculture)

8. **Description of Project (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)** The Project includes the replacement of the Mineral King Road Bridge (Historic Oak Grove Bridge). The purpose of the Project is to construct a replacement bridge with a new cast-in-place tensioned concrete box girder on a new alignment, located immediately upstream (east) of the existing bridge to preserve views from the approach roadway. In addition, three potential staging areas are being considered (see Figure 3). The first construction staging area (West Construction Staging Area) is located immediately north of Mineral King Road, approximately 1.3 miles west of the existing bridge on APN 069-080-042 (which is owned by the United States Department of Interior, Bureau of Land Management). The second construction staging area (East Construction Staging Area) is located approximately 800 feet northeast of the existing bridge on APN 069-390-010 (which is privately owned). The third construction staging area (South Construction Staging Area) is located approximately 370 feet northeast of the existing bridge on APN 069-390-010 (which is privately owned).

9. **Surrounding land uses and setting (Brief description):** The land uses surrounding the property are designated as Foothill Agriculture. The bridge is surrounded by mostly rural, undisturbed land with steep hills, rock formations, and areas of dense vegetation, and there are several scenic vistas (i.e., a viewpoint that provides views of a valued landscape for the benefit of the general public) from the bridge and surrounding areas that include the Project area and the river gorge.

10. **Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement):** California Department of Fish and Wildlife, U.S. Army Corps of Engineers, **and** San Joaquin Valley Unified Air Pollution Control District.

11. **Have California Native American tribes traditionally and culturally affiliated with the project are requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, has consultation begun?** A Sacred Lands File (SLF) search by the Native American Heritage Commission (NAHC) was requested on March 11, 2021. The NAHC responded on April 7, 2021, indicating that the SLF returned with negative results (that is, no sacred lands were discovered on record). Pursuant to AB 52, Tulare County Resource Management Agency (RMA) staff contacted (by letter) thirteen (13) Native American tribal contacts (representing seven (7) tribes) regarding the proposed Project to provide an opportunity for consultation. To date (that is, at the time of release of this draft IS/MND), one tribe (Santa Rosa Rancheria Tachi Yokut Tribe) responded requesting consultation within the mandatory response time-frames. Conditions of Approval have been incorporated into the project to reduce potential impacts in the event of accidental discovery of Native American tribal cultural resources during construction-related activities. Also, see Attachment "D" of this MND.

The Tulare County General Plan 2030 Update (including all appendices and adopted/certified environmental impact report) and the approved 2018 Mitigated negative Declaration for the Mineral King Road Bridge (Historic Oak Bridge, No. 46C0196 Rehabilitation Project (including all appendices) are incorporated herein in their entirety.

Figures 1 through 5 are provided to assist the reader better understand physical component of the Project such as location staging areas, viewpoints, and bridge components as follows:

Figure 1 Regional Location
Figure 2 Project Location
Figure 3 Project Area of Potential Impact Including Staging Areas
Figure 4 Site Plan and Bridge Alignment
Figure 5 Viewpoints

Figure 1. Regional Location

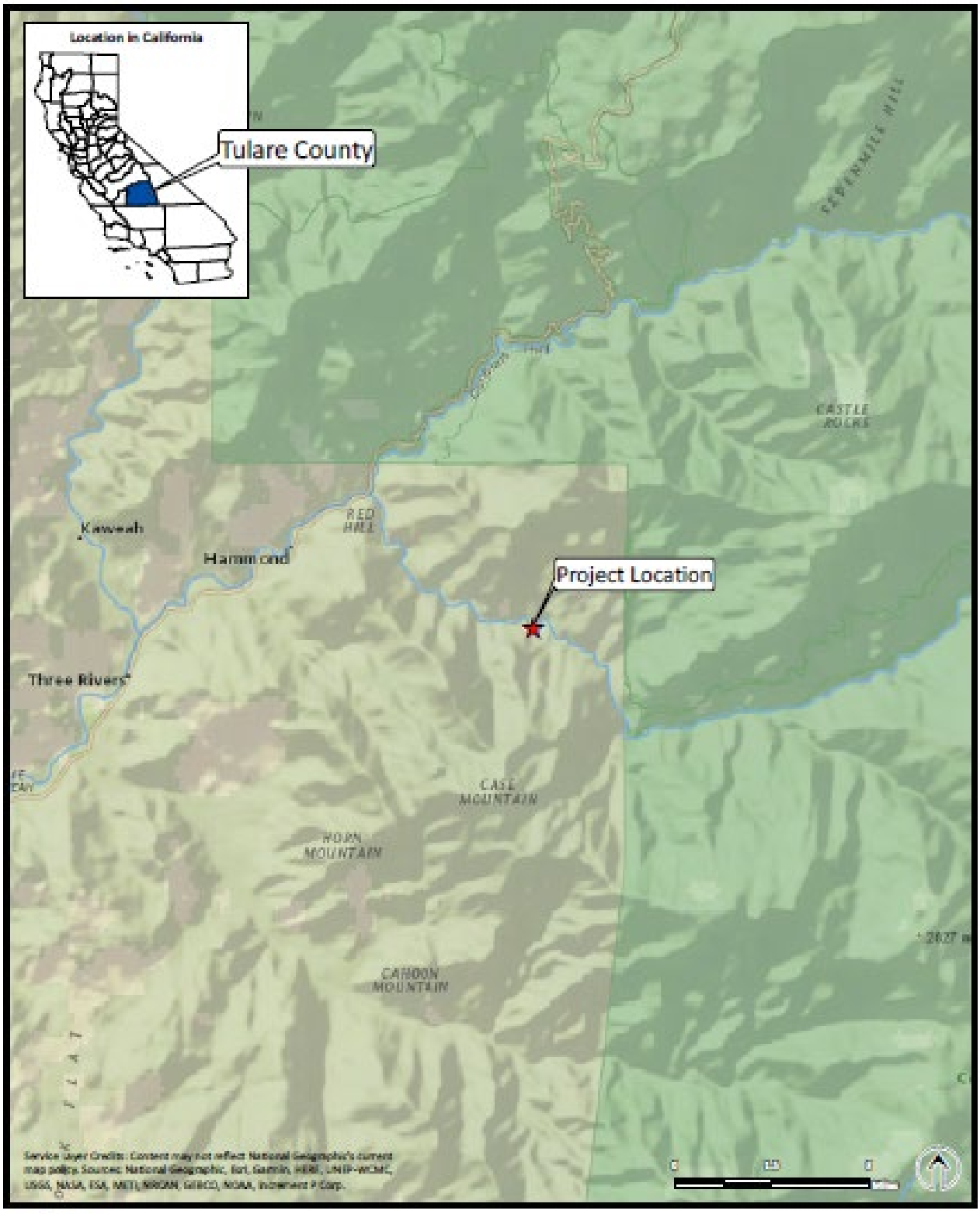
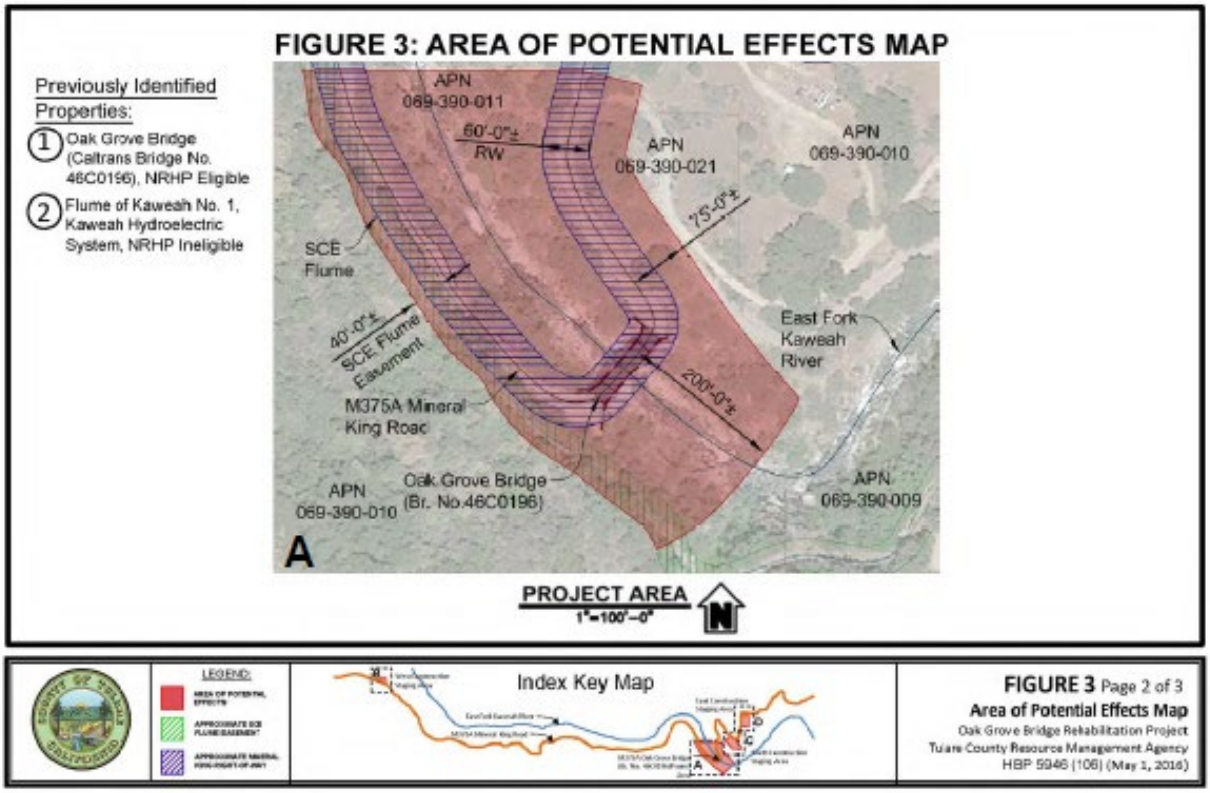


FIGURE 1: REGIONAL LOCATION MAP
Mineral King Road Bridge Rehabilitation

Figure 2. Project Location



Figure 3. Project Area of Potential Impact Including Staging Areas



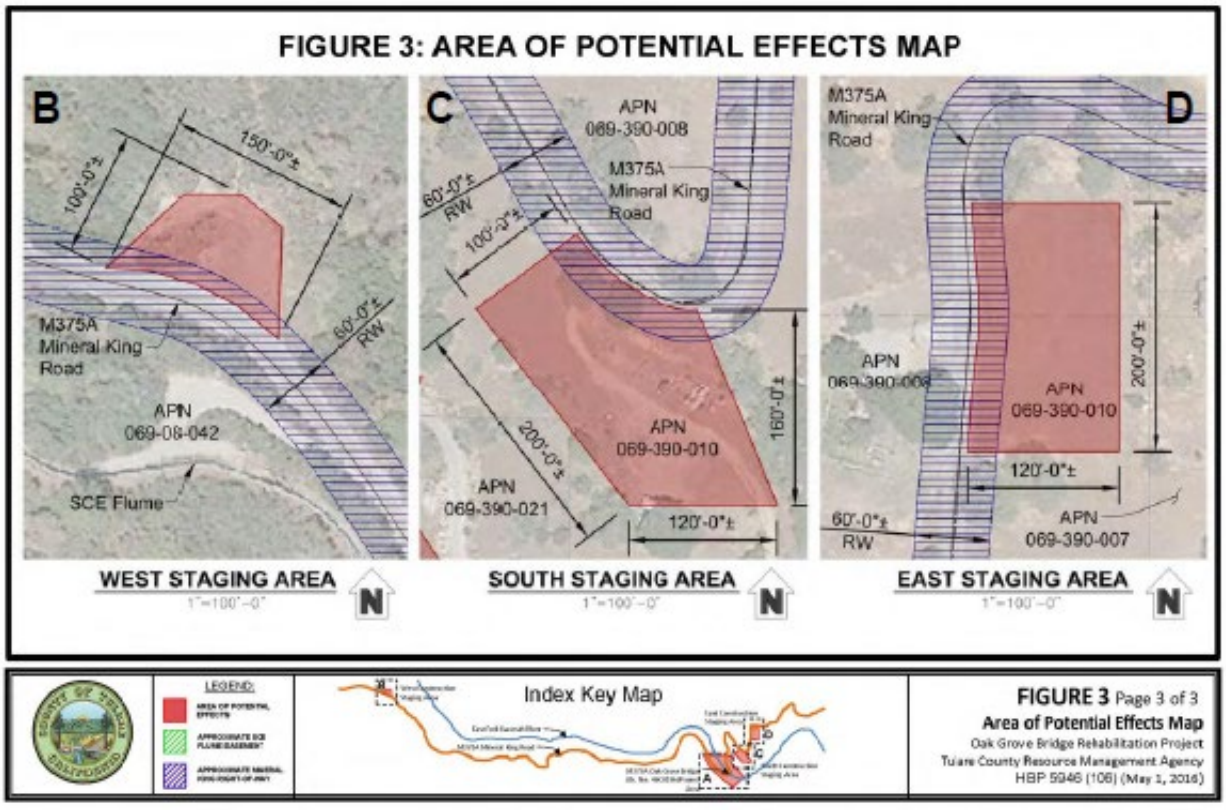
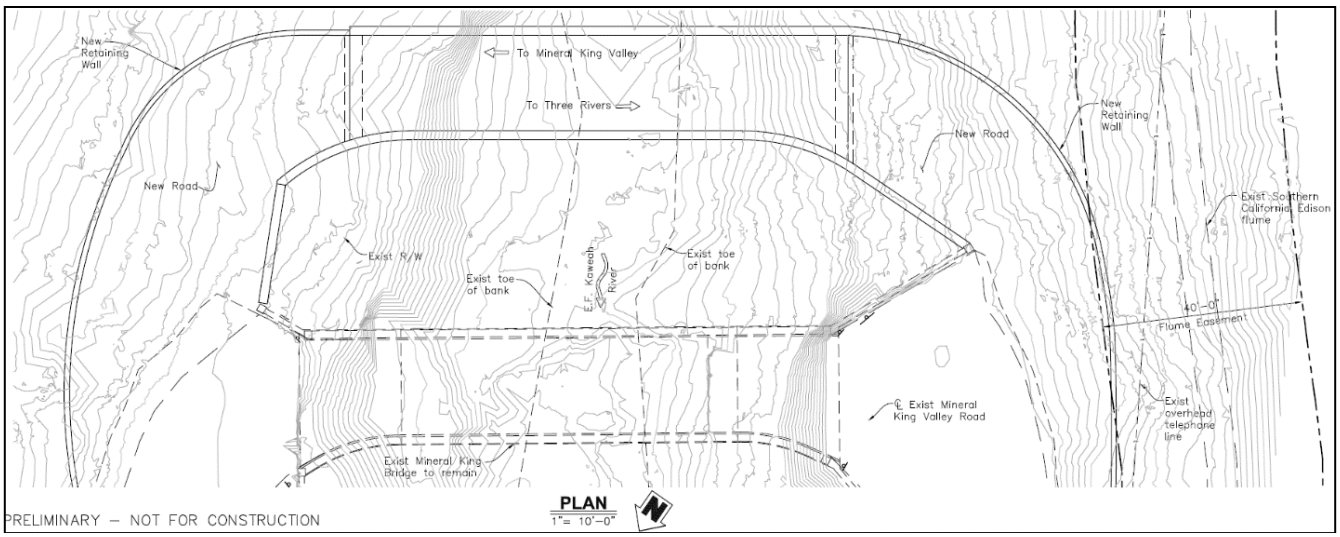


Figure 4. MapSite Plan and Bridge Alignment



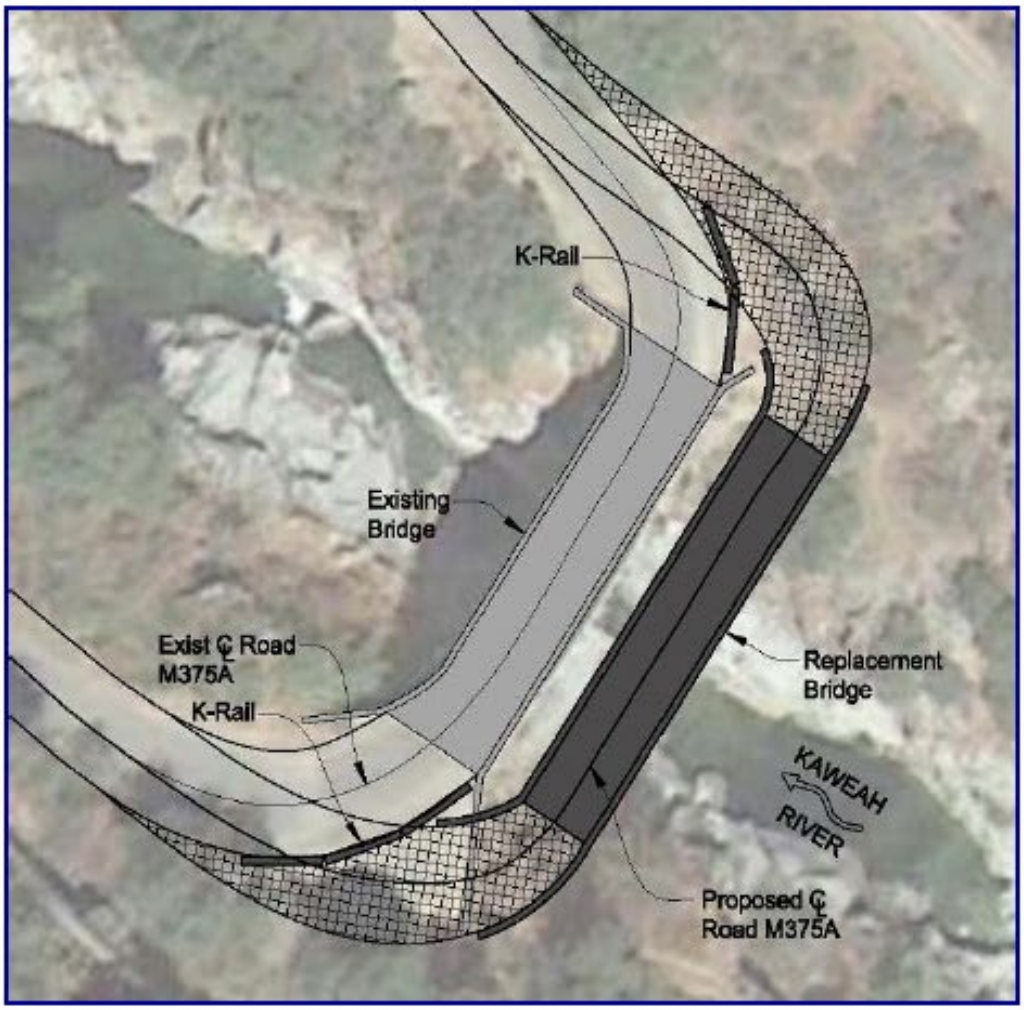
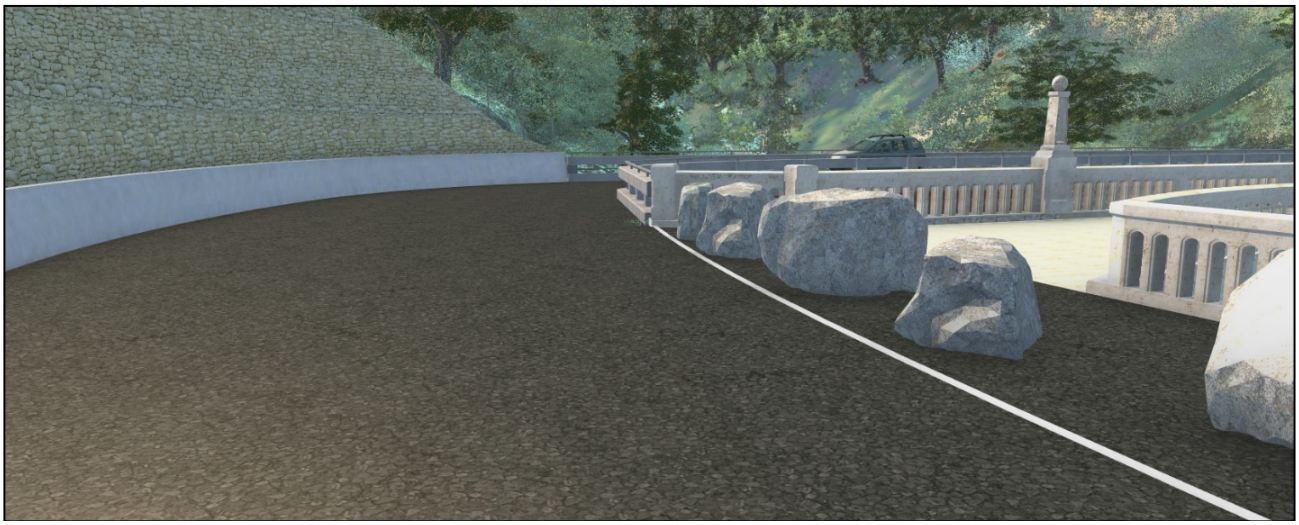


Figure 5. Viewpoint Maps







A. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

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

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

B. DETERMINATION:

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

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

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

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

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

Signature: _____ Date: 5/26/21

Hector Guerra
Printed Name

Chief Environmental Planner
Title

Signature: For _____ Date: 5/26/21

Reed Schenke P.E.
Printed Name

Environmental Assessment Officer
Title

C. EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and

   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
1.	**AESTHETICS**					
	Would the project:					
	a)	Have a substantial adverse effect on a scenic vista?	☐	☒	☐	☐
	b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☒	☐	☐
	c)	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☒	☐	☐
	d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Analysis:

Galvin Preservation Associates (GPA), prepared a "Supplemental Visual Impact Assessment Mineral King Road Bridge (aka, Historic Oak Grove Bridge) Project" (VIA, which is included in Attachment "A" of this document) that determined, "The project would generally maintain the existing visual character and visual quality of the landscape but would result in a visual impact from construction of the retaining walls and tree and vegetation removal. Therefore, the overall visual impacts of Alterative 2B would be moderate."[1] Also, as noted in the VIA, "Cumulative impacts are those resulting from past, present and reasonably foreseeable future actions, combined with the potential visual impacts of this project. For this project, cumulative visual impacts could result if the project, in combination with other nearby projects, were to result in substantial cumulative impacts. No other projects are planned in or near the project area that would contribute to cumulative visual impacts similar to those of the project. Therefore, the project is not expected to result in cumulatively considerable impacts."[2] GPA's conclusion is based on the following "…guidance outlined in the publication Guidelines for Visual Impact Assessment of Highway Projects published by the Federal Highway Administration (FHWA) in January 2015. The guidelines reflect FHWA's current approach to visual assessment for highway projects. The VIA was also prepared using the Caltrans template. The Supplemental VIA was also prepared using the Caltrans template and follows the same steps to assess the potential visual impacts of the project that were used in the original VIA (GPA Consulting, 2018)."[3]

[1] *"Supplemental Visual Impact Assessment Mineral King Bridge (aka, Historic Oak Grove Bridge) Rehabilitation Project"* November 2020. Page 31. Prepared by Galvin Preservation Associates (GPA) and included in Attachment "A" of this IS/MND.

[2] Ibid. 32.

[3] Op. Cit. 8.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	As indicated in the VIA, "The project area extends approximately 75 feet downstream and 60 feet upstream of the existing Mineral King Road Bridge (bridge), and includes the northern and southern approach roadways (see Figure 3). The project area is in a remote location, and the closest residence is more than 700 feet northeast of the project area. The bridge provides access to several private residences along the river, and serves as a gateway to Mineral King Valley in Sequoia National Park, approximately 1.45 miles east of the project area. The landscape is characterized by undisturbed wildlands with rolling hills and substantial vegetation. The County's General Plan Update (August 2012) identifies land uses in the project area as "Foothill Agriculture." The County's 2030 General Plan (Chapter 7) identifies Mineral King Road as a County Scenic Road, a road that has been "identified by the County as important to tourism and the rural travel experience in valley, foothill, and mountain landscapes."[4] <u>Assessment Method</u> "This Supplemental VIA generally follows the guidance outlined in the publication Guidelines for Visual Impact Assessment of Highway Projects published by the Federal Highway Administration (FHWA) in January 2015. The guidelines reflect FHWA's current approach to visual assessment for highway projects. The Supplemental VIA was also prepared using the Caltrans template and follows the same steps to assess the potential visual impacts of the project that were used in the original VIA (GPA Consulting, 2018). The study area for the VIA was identified by considering the existing landscape constraints (landform and land cover) and physiological limits of human sight, and reviewing initial plans and simulation models to identify the visual elements of the project. The VIA study area includes the project area and adjacent areas that have views of the project area. Visual quality within the VIA study area was described based on existing visual character, viewer groups, and expected community preferences. Preliminary identification of key viewpoints was conducted using aerial mapping and project plans. Appropriate viewpoint locations were verified and finalized in the field, and multiple photographs were taken at each viewpoint location. Photographs were evaluated against project plans, and final photograph locations and angles were chosen for their overall representation of key views, key viewers, and potential visual changes. To create a truthful visual representation of the project, photo-realistic simulations were created by combining photographs of existing conditions and design computer aided design (CAD) files. A 3-dinemsional (3D) model was generated using known match points in both the photographs and the virtual model. Images were then duplicated within the simulation, and multi-media elements were added as an overlay with attention paid to location and size of objects. Visual impacts were assessed by measuring the level of visual change in the VIA study area and estimating viewer response. Narrative ratings were used in the analysis. Mitigation measures were developed based on the results of the impacts assessment."[5] <u>Visual Assessment Unit and Key Views</u>				

[4] Op. Cit.
[5] Op. Cit.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

"The same Visual Assessment Unit and Key Views analyzed in the original VIA are analyzed in this Supplemental VIA. Because the project corridor is short, only one visual assessment unit has been analyzed for the project and three key views were chosen (GPA Consulting, 2018).

Visual Assessment Unit – Mineral King Road Bridge and Adjacent Hillsides

The Visual Assessment Unit includes the Mineral King Road Bridge, Mineral King Road directly east and west of the bridge, and the densely vegetated hillsides adjacent to the roadway. Vegetation along the hillsides is dominated by interior live oak (Quercus wislizeni), California buckeye (Aesculus californica), and mountain mahogany (Cerocarpus betuloides). This Visual Assessment Unit captures the bridge from both approaches and the boundaries were determined by the view limitations caused by the steep hillside slopes.

Key View #1 – Mineral King Road Bridge Traveling from the West

Key View #1 is located on Mineral King Road traveling east towards the bridge (see Figure 4 [in the VIA]). This view was selected to capture the bridge as seen by approaching motorists from the south, including the greatest extent of the arch structure possible (see Figure 5 [in the VIA]).

Key View #2 – Mineral King Road Bridge Traveling from the East

Key View #2 is located on Mineral King Road traveling west towards the bridge (see Figure 4 [in the VIA]). This view was selected to capture the bridge as seen by approaching motorists from the north, and has a clear view of the bridge railing (see Figure 6 [in the VIA]).

Key View #3 – Mineral King Road Bridge

Key View #3 is located on the Mineral King Road Bridge looking upstream at the Kaweah River (see Figure 4 [in the VIA]). This view was selected to capture views from the bridge looking upstream, and has clear views of the concrete barrier railing and bridge deck (see Figure 7 [in the VIA])."[6]

Project Visual Impact Summary

"Visual impacts are determined by assessing changes to the visual resources and predicting viewer response to those changes. Alternative 2B would introduce new elements to the landscape, including a new bridge, retaining walls, and rock boulders at the entrance to the existing bridge. These elements would be designed to blend in with the existing environment as much as possible and would not detract from views of the existing bridge. However, the average viewer response of all viewer groups would be moderately high and the project would result in a moderately low change to visual character and quality (resource change); therefore, the visual impacts would be considered moderate (see Table 3 in the VIA, **Table AES-1** in this MND).

The Mineral King Road Bridge is considered a scenic resource because it is visually impressive, historically significant, and serves as a gateway for visitors to Sequoia National Park. The project would maintain the current aesthetics of the existing bridge and would preserve the historic integrity of the bridge.

The project would consist of constructing a new bridge with materials that are the same general class of materials used in the historic bridge, but are slightly different in terms of color, texture, and composition, and would not introduce a jarring new aesthetic to the landscape. The existing sources of lighting in the project area are primarily

[6] Op. Cit. 11.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

associated with roadway vehicles; there is no lighting on the bridge or roadway. In addition, the new bridge would not create new sources of light or glare that would affect day or nighttime views in the area.

The project would generally maintain the existing visual character and visual quality of the landscape but would result in a visual impact from construction of the retaining walls and tree and vegetation removal. Therefore, the overall visual impacts of Alterative 2B would be moderate."[7]

The VIA also evaluated temporary construction impacts and concluded, "Project construction would result in temporary visual impacts, including vegetation removal and equipment staging. Construction activities could also result in the generation of dust, night lighting, and other visual intrusions. The construction is anticipated to last approximately 12 months, and the majority of impacts would be limited to this period. Vegetation removal would result in impacts lasting for a longer period."[8]

In addition, the following Tulare County General Plan 2030 Update policies for this resource apply to this Project: *SL-1.1 Natural Landscapes*; *SL-1.2 Working Landscapes*; *SL-1.3 Watercourses*; *SL-2.1 Designated Scenic Routes and Highways*; *SL-2.2 Gateways to the Sequoias*; *SL-2.3 Historic and Cultural Landscapes*; *SL-4.2 Design of County Roads*; *ERM-1.4 Protect Riparian Areas*; and *ERM-6.7 Solicit Input from Local Native Americans*.

a) – c): Less Than Significant With Mitigation. Scenic Vistas, Scenic Resources, and Visual Character - As noted earlier, the VIA evaluated Items a) – c) and concluded, "Visual impacts resulting from operation of the project, including cumulative impacts, are anticipated to be moderately high. Minimization measures would be incorporated into the project to minimize temporary impacts resulting from construction activities, including vegetation removal and staging. These minimization measures would reduce temporary project impacts as seen from Mineral King Road. With implementation of these proposed measures, moderate short-term visual impacts would remain from vegetation removal, until the vegetation is reestablished."[9] Impacts will be less than significant with implementation of the **Mitigation Measures AES-1** through **AES-4**, as applicable, which are included in the VIA's discussion at "XI. Avoidance, Minimization, and/or Mitigation Measures", but have been numerated as AES-1 through AES-4, below (see page 32 of the VIA included in Attachment "A" of this MND).

a) – c): Mitigation Measures: The implementation of the proposed avoidance and minimization measures shown in **AES-1** through **AES-4**, as applicable, would result in a less than significant impact from the Project.

AES–1 (Staging Areas): Staging areas would be located away from the public view where feasible. These areas would be fenced to reduce visibility, and would be kept clean and orderly.

AES–2 (Vegetation): Vegetation removal would be minimized to the extent feasible. Vegetated areas temporarily disturbed by the project would be restored following project construction using a context sensitive design that is visually compatible with the surrounding landscape.

AES–3 (Hardscape): Barriers, fencing, and other hardscape elements would be designed using materials and aesthetic treatments that are compatible with the existing bridge features and surrounding landscape features.

[7] Op. Cit. 31.
[8] Op. Cit. 31.
[9] Op. Cit. 32.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	AES–4 (Re-Vegetation): Temporarily disturbed areas would be re-contoured and re-vegetated using native species. Any re-vegetation or erosion control implemented would be completed using non-invasive species. **a) – c): Conclusion: Less Than Significant With Mitigation**. **a) – c): Cumulative Project-level Impact: Less Than Significant With Mitigation:** Implementation of **Mitigation Measures AES-1** through **AES-4**, as applicable, would reduce Project-level impacts, there will be a less than significant cumulative impact. **d) No Impact.** Creation of light or glare - As indicated in the VIA, "The existing sources of lighting in the project area are primarily associated with roadway vehicles; there is no lighting on the bridge or roadway. In addition, the new bridge would not create new sources of light or glare that would affect day or nighttime views in the area."[10] As such, the Project would result in no impact to this resource. **Mitigation Measures: None Required.** **Conclusion: No Impact.** **Cumulative Project-level Impact: No Impact.** As there will be no Project-level impact, there will be no cumulative impact. **Cumulative Impact: Less Than Significant With Mitigation.** As noted earlier, implementation of **Mitigation Measures AES-1** through **AES-4**, as applicable**,** would result in a less than significant Project-level impact; therefore, there will be a less than significant cumulative impact.					
2.	**AGRICULTURAL AND FOREST RESOURCES**					
	In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the Rural Valley Lands Plan point evaluation system prepared by the County of Tulare as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest Range Assessment project: and the forest carbon measurement methodology provided in the Forest Protocols Adopted by the Air Resources Board. Would the project:					
	a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
	b)	Conflict with existing zoning for agriculture use, or a Williamson Act contract?	☐	☐	☐	☒

[10] Op. Cit. 31.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources code 12220(g), timberland (as defined in Public Resource Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
	d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
	e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Analysis:

a) and e) No Impact. Farmland Conversion: – The Project site is located in an area of the County considered rural land per the Foothill Agriculture land use designation. Based on the preliminary field reconnaissance, the Project will not convert any farmland to a different use or impact any farmlands in the vicinity of the Project. Project staging may impact existing vegetation (grasses) on a temporary basis. The staging areas will be restored to conditions equivalent to their existing condition (e.g., undeveloped/ vegetated land) after Project construction has been completed. The Project site itself is largely situated over an extremely steep canyon that descends into the East Fork of the Kaweah River. The State of California's Department of Conservation (DOC) Division of Land Resource Protection (DLRP) identifies the Project area as, "nonagricultural or natural vegetation,"[11] The lands around the Project site do not meet requirements for the Farmland Mapping and Monitoring Program's (FMMP) definition of Farmland of Statewide Importance.[12] Therefore, the Project would not result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use. There will be no impact to this resource.

a) and e) Mitigation Measures: None Required.

a) and e) Conclusion: No Impact.

a) and e) Cumulative Project-level Impact: No Impact. As there will be no Project-level impact, there will be no cumulative impact.

[11] Department of Conservation (DOC). Division of Land Resource Protection (DLRP). California Important Farmland Finder. https://maps.conservation.ca.gov/DLRP/CIFF/.

[12] DOC-DLRP. http://www.conservation.ca.gov/dlrp/fmmp/Documents/soil_criteria.pdf

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	b and c) No Impact. Zoning Conflicts - The Project would not conflict with existing zoning for agriculture uses, or a Williamson Act contract. The Project site is located within existing and future Tulare County rights-of-way and has no zoning designation. The Project site is not under a Williamson Act contract. Accordingly, the Project will result in no impact with agricultural zoning or Williamson Act contracts. **b) and c) Mitigation Measures: None Required.** **b) and c) Conclusion: No Impact.** **b) and c) Cumulative Project-level Impact: No Impact.** As there will be no Project-level impact, there will be no cumulative impact. **d) No Impact.** Forest Land Conversion or Loss - The Project site where the bridge is located is within the Tulare County right-of-way and has no zoning designation. The Project does not propose any zone changes related to forest or timberland. No conversion of forestland, as defined in the Public Resource Code and General Code, as referenced earlier, will occur as a result of the Project. The Project will result in no impact to forestland. **Mitigation Measures: None Required.** **Conclusion: No Impact.** **Cumulative Project-level Impact: No Impact.** As there will be no Project-level impact, there will be no cumulative impact. **Cumulative Impact: No Impact.** As the Project would result in no Project impacts, there will be no cumulative impact.					
3.	**AIR QUALITY**					
	Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:					
	a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
	b)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
	c)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
	d)	Result is other emissions (such as those leading to odors adversely affecting a substantial number of people?	☐	☐	☒	☐

Analysis:

This environmental issue focuses on the Project's air quality impacts. Issues over Project consistency with applicable air quality plans, policies and regulations, and increases of any pollutant for which the area has been designated as a "non-attainment" area are to be addressed. Additional concerns are over the exposure of sensitive receptors, such as nearby residents, to increased levels of air pollution or odors.

The following Tulare County General Plan 2030 Update policies for this resource apply to this Project: AQ-2.2 *Indirect Source Review*; AQ-3.4 *Landscape*; AQ-4.2 *Dust Suppression Measures*.

The proposed Project is located in the San Joaquin Valley Air Basin (SJVAB), a continuous inter-mountain air basin. The Sierra Nevada Range forms the eastern boundary; the Coast Range forms the western boundary; and the Tehachapi Mountains form the southern boundary. These topographic features restrict air movement through and beyond the SJVAB. The SJVAB is comprised of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare Counties and the valley portion of Kern County. The SJVAB is approximately 25,000 square miles in area. Tulare County lies within the southern portion of the SJVAB. Air resources in the SJVAB is managed by the San Joaquin Valley Air Pollution Control District (Air District).

Both the federal government (through the United State Environmental Protection Agency (EPA) and the State of California (through the California Air Resources Board (ARB) have established health-based ambient air quality standards (AAQS) for six air pollutants, commonly referred to as "criteria pollutants." The six criteria pollutants are: carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead (Pb).

National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) have been established for each criteria pollutant to protect the public health and welfare. The federal and state standards were developed independently with differing purposes and methods, although both processes are intended to avoid health-related effects. As a result, the federal and state standards differ in some cases. In general, the California state standards are more stringent.

The Federal Clean Air Act requires EPA to set NAAQS for the six criteria pollutants, noted above, that occur throughout the United States. Of the six pollutants, particle pollution and ground-level ozone are the most widespread health threats. EPA regulates the criteria pollutants by developing human health-based and/or environmentally-based criteria (science-based guidelines) for setting permissible levels. The set of limits based on human health is called primary standards. Another set of limits intended to prevent environmental and property damage is called secondary standards.

EPA is required to designate areas as meeting (attainment) or not meeting (nonattainment) the air pollutant standards. The Federal Clean Air Act (CAA) further classifies nonattainment areas based on the severity of the nonattainment problem, with marginal, moderate, serious, severe, and extreme nonattainment classifications for ozone. Nonattainment classifications for PM range from marginal to serious. The Federal CAA requires areas with air quality violating the NAAQS to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The SIP contains the strategies and control measures that states will use to attain the NAAQS. The Federal CAA amendments of 1990 require states containing areas that violate the NAAQS to revise their SIP to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, rules, and regulations of Air Basins as reported by the agencies with jurisdiction over them. The EPA reviews SIPs to determine if they conform to the mandates of the Federal CAA amendments and will achieve air quality goals when implemented. If the EPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan (FIP) for the nonattainment area and impose additional control measures.

The SJVAB is considered to be in attainment for federal and state air quality standards for CO, NO_2, SO_2; attainment for federal and non-attainment for state air quality PM_{10}; and non-attainment of state and federal air

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

quality standards for O_3 and $PM_{2.5}$. To meet federal Clean Air Act requirements, the Air District has adopted the following attainment plans: the 2004 Extreme Ozone Attainment Demonstration Plan (for the 1-hour standard); the 2007 Ozone Plan (for the 1997 8-hour standard); the 2009 RACT SIP; the 2013 Plan for the Revoked 1-Hour Ozone Standard; the 2014 RACT SIP; the 2016 Plan for the 2008 8-Hour Ozone Standard; the 2007 PM10 Maintenance Plan; the 2008 PM2.5 Plan (for the 1997 annual standard); the 2012 PM2.5 Plan (for the 2006 24-hour standard); the 2015 Plan for the 1997 PM2.5 Standard (for annual and 24-hour standards); and the 2004 Revision to the California State Implementation Plan for Carbon Monoxide. The State does not have an attainment deadline for the ozone standards; however, it does require implementation of all feasible measures to achieve attainment at the earliest date possible. State PM10 and PM2.5 standards have no attainment planning requirements, but must demonstrate that all measures feasible for the area have been adopted.

a) Air Quality Plans: *Less Than Significant Impact* – Air quality plans (also known as attainment plans) and subsequent rules are used to bring the applicable air basin into attainment with federal ambient air quality standards designed to protect the health and safety of residents within that air basin. The Project will comply with all applicable Air District rules and regulations including, but not limited to, Regulation VIII (Fugitive PM10 Prohibitions) requirements and District Rule 9510 (Indirect Source Review). The Air District's *Guidance for Assessing and Mitigating Air Quality Impacts* (GAMAQI)[13] states, "…the District has established thresholds of significance for criteria pollutant emissions, which are based on District New Source Review (NSR) offset requirements for stationary sources. Stationary sources in the District are subject to some of the toughest regulatory requirements in the nation. Emission reductions achieved through implementation of District offset requirements are a major component of the District's air quality plans. Thus, projects with emissions below the thresholds of significance for criteria pollutants would be determined to "Not conflict or obstruct implementation of the District's air quality plan.""[14]

The proposed Project does not propose any new developments or changes to the existing surrounding land uses. The equipment used to accomplish the Project will result in short-term, temporary construction-related air emissions. The Air District's construction-related thresholds of significance are provided in **Table 3-1**.[15]

Table 3-1. Criteria Pollutant Thresholds of Significance (Tons per Year)

ROG	NOx	PM10	PM 2.5	SOx	CO
10	10	15	15	27	100

Pursuant to the Air District's *Frequently Asked Questions* (FAQ) *Regarding Indirect Source Review* (ISR) *for Road Construction and Transit Projects*, the Sacramento Metropolitan Air Quality Management District (SMAQMD) Roadway Construction Emissions Model (Roadway Model) can be used to estimate project emissions if certain project details are known.[16] RMA Staff evaluated the short-term construction-related emissions using the Roadway Model (See Attachment "B").[17] The estimated Project-related construction emissions are provided in **Table 3-2**.

[13] San Joaquin Valley Air Pollution Control District (Air District). GAMAQI. www.valleyair.org/transportation/GAMAQI_3-19-15.pdf.

[14] Ibid. Page 65.

[15] Op. Cit. 80 (or online at http://www.valleyair.org/transportation/0714-GAMAQI-Criteria-Pollutant-Thresholds-of-Significance.pdf).

[16] Air District. ISR FAQ for Construction Projects. http://www.valleyair.org/ISR/Documents/ISR_faq_rc.pdf.

[17] Sacramento Metropolitan Air Quality Management District (SMAQMD). Roadway Model. (Version 9.0.0, May 2018). http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/CEQA-Guidance-Tools (Under the Tools & Additional Guidance, select the Roadway Construction Emissions Model).

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Table 3-2. Project-related Criteria Pollutant Emissions (Total Project Emission in Tons)

Pollutant	ROG	NOx	PM10	PM 2.5	SOx	CO
Emissions	1.10	9.93	1.95	0.60	0.02	9.31
Exceeds Threshold?	No	No	No	No	No	No

These emissions present a conservative estimate as some default construction phases are either not a part of the project or are expected to have a shorter duration. Emissions presented are the total emissions for the entire 18-month project. Project annual emissions would be lower than presented as there will be construction activity in 4 months in 2022, 12 months in 2023, and 4 months in 2024.

As presented in **Table 3-2**, the emissions modeling indicates that construction-related emissions would not exceed the Air District's thresholds of significance for any criteria pollutant. The Project does not include any new operational emissions as the Project does not include the construction of any additional lanes and is not intended to increase the capacity of the road segment. The Project would provide a public benefit by improving safety and security of the public by improving the transportation infrastructure for the general population in the region and motorists using these facilities. As such, the Activity/Project will not result in any new operational criteria pollutants. Therefore, the Project will not result in unusual emissions that will have a significant effect on the environment, nor will not result in an impact air quality above any applicable air quality impact thresholds. Furthermore, the Project will be required to comply with all applicable Air District and Caltrans rules and regulations and will implement Best Management Practices (BMP) and project features as deemed appropriate by applicable Responsible Agencies. As such, the proposed Project will have a less than significant impact on air quality.

Violation of Air Quality Standards: ***Less Than Significant Impact*** **-** Nearly all development projects have the potential to generate pollutants that will worsen air quality so it is necessary to evaluate air quality impacts to comply with California Environmental Quality Act. The Air District's GAMAQI states, "Determination of whether project emissions would violate any ambient air quality standard is largely a function of air quality dispersion modeling. If project emissions would not exceed State and Federal ambient air quality standards at the project's property boundaries, the project would be considered to not violate any air quality standard or contribute substantially to an existing or projected air quality violation. The need to perform an air quality dispersion modeling analysis for any project (urban development, commercial, or industrial projects) is determined on a case-by-case basis depending on the level of emissions associated with the proposed project."[18]

The Air District has determined, "A project would be considered to have a significant impact if its emissions are predicted to cause or contribute to a violation of an ambient air quality standard by exceeding any of the following: 1. Any of the CAAQS, or 2. Any of the NAAQS, and if available, the associated Significant Impact Level (SIL)."[19] The Air District applies a screening threshold of 100 pounds per day of any criteria pollutant to determine whether an ambient air quality analysis (AAQA) would be required to determine significance of potential impacts.[20] The Air District has determined that projects below Rule 9510 Indirect Source Review (ISR) applicability thresholds do not generate sufficient criteria pollutant emissions to violate any air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, projects below the ISR applicability thresholds do not require emission quantification for ambient air quality purposes and an

[18] Air District. GAMAQI. Page 65.
[19] Ibid. 90.
[20] Op. Cit. 93.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

AAQA is not required.[21] This Project exceeds the 2.0 tons of NOx ISR applicability threshold for transportation/transit projects. As such quantification of Project-related daily emissions is required.

The Air District's guidance document *Ambient Air Quality Analysis Project Daily Emissions Assessment* provides a procedure to estimate a project's daily emissions in to aid in the determination of the significance of a project's impact on ambient air quality.[22] RMA Staff evaluated the short-term daily construction-related emissions using the Roadway Model (See Attachment "B"). The estimated Project-related average daily construction emissions are provided in **Table 3-3**.

Table 3-3. Project-related Criteria Pollutant Emissions (Maximum Daily Emissions in Pounds per Day)

Pollutant	ROG	NOx	PM10	PM 2.5	SOx	CO
Emissions	8.50	76.29	12.21	4.03	0.17	68.24
Exceeds Threshold?	No	No	No	No	No	No

As demonstrated by **Table 3-3**, Project construction-related emissions will not exceed the Air District's 100 pound per day screening threshold for preparation of an AAQA. Furthermore, the Project will be required to comply with all applicable Air District and Caltrans rules and regulations and will implement BMP and project features as deemed appropriate by applicable Responsible Agencies. Therefore, the Project will not violate any air quality standards or contribute substantially to an existing or projected air quality violation. As such, the Project will result in a less than significant impact.

b) Cumulative Impacts: *Less Than Significant Impact* - The Project would be considered to have a significant cumulative impact on air quality if project-specific impacts are determined to be significant. As previously noted, the emissions analysis indicates that Project construction-related emissions are below the Air District's thresholds of significance at a project-specific level, and that the Project will not conflict with or obstruct implementation of the applicable air quality plans and will not cause or contribute to an existing air quality violation. Therefore, because the Project would have less than significant project-specific impacts, the Project will have a less than significant cumulative impact on air quality.

c) Sensitive Receptor Exposure: *Less Than Significant Impact* – The Project site is located in a sparsely inhabited rural area. There are two groups of receptors that have been identified in the Project area. Short-term users of the bridge include: visitors/recreational, while long-term users include residents/employees. Visitors and recreational users include people passing through or staying in the area (primarily visiting the Sequoia National Park), while residents and employees include the residents in the project area (the nearest residence is more than 700 feet northeast of the site) and employees of the National Park Service traveling along Mineral King Road. Medium- and Heavy-duty diesel trucks and off-road construction equipment would be a source of diesel particulate matter (DPM), which is considered to be a toxic air contaminant, during construction-related operations. As such, the Project has the potential to temporarily expose these receptors to DPM emission concentrations during the short-term, temporary, and intermittent construction-related activities. However, as construction-related emissions will be short-term, temporary, and intermittent, they will cease upon completion of the Project. No schools, hospitals, convalescent homes, or other sensitive institutions are located within two miles of the Project site. Fuels and other equipment maintenance materials may be stored in the construction staging areas. However, the County (as lead for this Project) and its contractor(s) will be required to comply

[21] Op. Cit. 94-96.

[22] Air District. http://www.valleyair.org/transportation/CEQA%20Rules/Ambient-Air-Quality-Analysis-Project-Daily-Emissions-Assessment.pdf.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	with all local, state, and federal policies related to storage, use, and emissions of toxic air pollutants in the event such pollutants require control efforts to minimize their impacts. As such, the Project will not expose sensitive receptors to substantial pollutant concentrations resulting in a less than significant impact. **d) Nuisance Odors:** ***Less Than Significant Impact*** - Potential odor sources associated with the Project could originate from construction-related activities such as diesel exhaust from medium- and heavy-duty trucks and construction equipment, and fumes from architectural coatings and paving operations. Nearby residents, employees, visitors, and recreational users of the bridge could experience Project-generated odors when in close proximity to the Project site. However, the nearest residential receptor is located more than 700 feet northeast of the Project site, and other users would be exposed only when in the Project vicinity and only during short-term, temporary, and intermittent construction-related activities. Construction-related odors, if perceptible, would dissipate as they mix with the surrounding air and would be of limited duration. As such, Project-related objectionable odors would not affect a substantial number of people in the area. Therefore, the Project will result in a less than significant impact.					
4.	**BIOLOGICAL RESOURCES**					
	Would the project:					
	a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
	b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
	c)	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
	d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
	f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☒	☐	☐

Analysis:

The "Supplemental Natural Environment Study Tulare County, California 6-TUL-Mineral King Road Bridge No. 46C-0196 Federal Project Number: HBP 5946 (106)" (NES, included in Attachment "C" of this MND) was prepared by GPA Consulting in November 2020 to determine potential impacts on biological species and identify potential mitigation measures. Prior to conducting the on-site biological survey, available literature was reviewed to identify any special status plants, wildlife, and/or sensitive habitats previously recorded within or near the Biological Study Area (BSA). Among the sources used to identify special-status species and/or habitats with potential to be in or near the BSA included: the California Natural Diversity Data Base (CNDDB), Information for Planning and Conservation (IPAC) Database, and the California Department of Fish and Wildlife (CDFW) Biogeographic Information and Observation System (BIOS). Three biological surveys were conducted of the BSA including the Bridge Area, and Staging Areas 1, 2, and 3 (see the NES in Attachment "C" of this MND.

As contained in Summary section of the NES, "Construction activities including construction of the abutments of the new bridge, retaining walls, retaining wall footing, and concrete drainage behind the retaining wall would result in permanent impacts on approximately 0.031 acre under jurisdiction of the CDFW. Construction personnel and equipment accessing the banks of the river would result in temporary impacts on approximately 0.340 acre of waters under jurisdiction of the CDFW. In addition, construction materials, dust, and debris could result in temporary indirect impacts on water quality if they were to enter flowing water within the channel. However, with implementation of the proposed avoidance and minimization measures, adverse impacts on jurisdictional features are not expected.

Vehicle storage and operation, vegetation removal, rock removal, grading, and paving within the BSA could result in direct impacts on plants in the area. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, with implementation of avoidance, minimization, and mitigation measures, adverse impacts on special-status plants are not anticipated. Vehicle storage and operation, vegetation removal, excavation, grading, paving, bridge work, and vegetation removal within the BSA could result in direct and indirect impacts on wildlife in the area. However, with implementation of avoidance and minimization measures, adverse impacts on special-status wildlife species are not anticipated.

There is potential for the federally Threatened California condor to be in the BSA. The BSA is not within any critical habitat for federally listed threatened or endangered species. Based on project analysis, the project is expected to have no effect on the California condor; therefore, consultation with the United States Fish and Wildlife Service (USFWS) and an incidental take permit (ITP) are not required. There is also potential for the state Fully Protected golden eagle, state endangered California condor, state candidate endangered Crotch bumble bee, and state candidate threatened western bumble bee to be in the BSA. Based on project analysis, the project is not expected to result in adverse impacts on the golden eagle, California condor, Crotch bumble bee, or western bumble bee including take; therefore, consultation with the CDFW and an ITP are not required.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

Invasive plant species were observed within the BSA. Invasive species are often found in disturbed areas, and project activities would have the potential to spread invasive species through further disturbance of the BSA. These species could also be spread through the improper disposal of the graded and excavated soils on site or off site, or through landscaping with invasive species. However, standard measures would be implemented to prevent the spread of invasive species."[23]

The following Tulare County General Plan 2030 Update policies for this resource apply to this Project: ERM-1.1 *Protection of Rare and Endangered Species*; ERM-1.4 *Protect Riparian Areas*; ERM-1.6 *Management of Wetlands*; ERM-1.7 *Planting of Native Vegetation*; ERM-1.12 *Management of Oak Woodland Communities;* ERM-1.16 *Cooperate with Wildlife Agencies;* and ERM-1.17 *Conservation Plan Coordination*.

The following analyses provides more details and will conclude, overall, that a less than significant impact would occur as a result of the Project.

a) Less Than Significant With Mitigation. Sensitive Species and Habitat Modification - The Project is in a rural, mostly undisturbed area, and there is suitable habitat for a variety of plant and wildlife species in the Project area. According to the NES, there are three vegetation communities (*Quercus Douglasii* Woodland Alliance, *Quercus Wislizeni* Woodland Alliance, and *Bromus Diandrus-Brachypodium Distachyon* Semi-Natural Herbaceous Stand) and four vegetation classes (ruderal, open water, bare ground, and developed) within the BSA[24]

Table 1 of the NES identifies the special-status plant and animal species and their potential to be within the BSA based on their geographical range (as recorded in the CNDDB and USFWS species lists), presence of suitable habitat, and survey results.[25]

<u>*Natural Communities:*</u> "According to the CNDDB search, two special-status natural communities have the potential to be in the BSA based on geographical location, Big Tree Forest and Central Valley Drainage Hardhead/Squawfish stream (see Appendix A [of the NES]). However, based on habitat requirements and negative survey results, special-status vegetation communities are not within the BSA, and are not discussed further."[26]

As indicted in the NES, "There are two native woodland communities in the BSA, including the *Quercus Douglasii* Woodland Alliance on the edges of Staging Areas 2 and 3, and *Quercus Wislizeni* Woodland Alliance, on both sides of the East Fork Kaweah River near the bridge."[27] "The project would require some tree and vegetation removal and trimming to allow equipment access and construction of the new bridge approaches and retaining walls. In addition, it is anticipated that oaks trees would be removed to allow for construction of the retaining walls. Equipment use and storage in the staging areas could also result in disturbance of existing vegetation, including removal and trampling. However, with the implementation of the proposed avoidance and minimization measures, and compensatory mitigation discussed below, adverse impacts on oak trees are

[23] "Supplemental *Natural Environment Study Tulare County, California 6-TUL-Mineral King Road Bridge No. 46C-0196 Federal Project Number: HBP 5946 (106)"* (NES). November 2020. Page 1. Prepared by GPA Consulting and included as Attachment "C" of this MND.
[24] Op. Cit. 17-25.
[25] Op. Cit. 27-54.
[26] Op. Cit. 26.
[27] Op. Cit. 61.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	not anticipated."[28] Although not within, but adjacent to Stage Areas 2 and 3, woodland communities exists. As such, to avoid or minimize impact on the oak trees, the NES contains two avoidance and minimization measures that are incorporated herein. **BIO-1 (Avoidance/Minimization):** Removal of oak trees shall be avoided, if feasible. If avoidance is feasible, protective fencing shall be installed beyond the dripline of the tree(s) during construction to prevent construction staff or equipment from entering this area. **BIO-2 (Replacement):** Native oak trees measuring six inches in diameter at breast height or greater and requiring removal, shall be replaced onsite at a minimum 3:1 ratio. <u>*Plant Species*</u>*:* "According to the CNDDB and USFWS search, 52 special-status plant species have the potential to be in the BSA based on recorded geographical distribution. Based on habitat requirements and survey results, 15 special-status plant species have the potential to be in the BSA, and are discussed further in Chapter 4 [of the NES]… A full species list with a discussion of the potential for each species to be within the BSA is listed in Table 1 [of the NES].[29] The consultant identified fifteen (15) special status plant species that have the potential to occur in the BSA.[30] As noted in the NES, "Construction would include vehicle storage and operation, vegetation removal, rock removal, grading, and paving within the BSA, which could result in direct impacts on plants in the area. If present, special-status plants could be directly impacted if they were to be trampled or removed during construction activities. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, the project would be in compliance with dust control regulations, and with implementation of avoidance, minimization, and mitigation measures listed below, adverse impacts on special-status plants are not anticipated."[31] **BIO-3 (Pre-construction Survey):** "Prior to construction, a qualified botanist shall conduct plant surveys within the construction area. Surveys would be conducted during the appropriate blooming period for species with potential to be in the project area, to the extent feasible. If special-status plant species are found during surveys, avoidance measures would be developed and implemented based on recommendations from the qualified botanist. If surveys cannot be conducted within the appropriate blooming period, if presence of species cannot be ruled out for any other reason, or if species present cannot be avoided, appropriate mitigation would be developed and implemented."[32] **BIO-4 (Restoration/Revegetation):** "If it is determined that special-status plants would be impacted as a result of the project, an on-site or off-site restoration plan will be prepared by a qualified botanist. The plan shall include, at a minimum, the following: receiver locations; number of plants to be replanted and the methods of replanting; maintenance and monitoring requirements; and measures necessary for the establishment of self-sustaining populations in suitable open space areas to ensure the long-term survivability of the species in the vicinity. The restoration plan will be implemented prior to the completion of the project." [33]				

[28] Op. Cit.
[29] Op. Cit. 55.
[30] Op. Cit. 62-64.
[31] Op. Cit. 64.
[32] Op. Cit. 64-65.
[33] Op. Cit. 65.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	Animal Species: "According to the CNDDB and USFWS searches, 48 special-status animal species have the potential to be in the BSA based on recorded geographical distribution (see Appendix A [of the NES]). Based on habitat requirements and survey results, 18 special-status wildlife species have the potential to be in the BSA, and are discussed further in Chapter 4 [of the NES]. Several of these species are listed as threatened or endangered under the FESA [Federal Endangered Species Act] or CESA [California Endangered Species Act]."[34] The NES then concludes that, "No other special-status animal species are expected to be within the BSA. A full species list with a discussion on the potential for each species to be in the BSA is in Table 1 [of the NES]."[35] *Invertebrates:* The consultant identified four special status invertebrate species that have the potential to occur in the BSA: Crotch bumble bee; western bumble bee; moestan blister beetle, and Morrison's blister beetle.[36] "... with the implementation of proposed avoidance and minimization measures included below, adverse impacts on invertebrates are not anticipated."[37] The consultant also identified the Project construction-related impacts as, "Construction would include vehicle storage and operation, vegetation removal, excavation, grading, and paving within the BSA, which could result in direct impacts on nesting bees and other invertebrates in the area. In addition, the existing bridge structure and multiple trees would be impacted, which could directly impact bees nesting in these structures. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, the project would be in compliance with dust control regulations, and with the implementation of proposed avoidance and minimization measures included below, adverse impacts on invertebrates are not anticipated."[38] Therefore, to avoid and/or minimize impacts on invertebrates, the following mitigation measure will be implemented where feasible and necessary: **BIO-5 (Minimization):** Vegetation removal and excavation shall be reduced to the extent feasible. **BIO-6 (Pre-construction Survey):** Within the spring season (May to June) prior to construction, a qualified biologist shall survey areas where vegetation removal and excavation shall be conducted to confirm the presence/absence of Crotch bumble bee or western bumble bee nests. **BIO-7 (Buffer Area/Relocation):** If a Crotch bumble bee or western bumble bee nest is identified in the BSA, efforts shall be taken to avoid the nest, and an appropriate buffer shall be installed as determined by a qualified biologist. **BIO-8 (Avoidance):** Ground disturbance would not be conducted during the winter months, if feasible, to avoid impacting overwintering bees. **BIO-9 (Minimization):** Pesticide/insecticide shall not be used as part of the project. **BIO-10 (Restoration/Revegetation):** Areas temporarily impacted during construction shall be restored using native species, including one or more of the food plant genera for the Crotch bumble bee and western bumble bee (*Antirrhinum* sp., *Phacelia sp.*, *Clarkia* sp., *Dendromecon* sp., *Eschscholzia* sp., and *Eriogonum* sp.) if appropriate for the region.				

[34] Op. Cit. 55.
[35] Op. Cit.
[36] Op. Cit. 65.
[37] Op. Cit. 66.
[38] Op. Cit. 66.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	Amphibians: The consultant identified two special status amphibian species that have the potential to occur in the BSA: the Sequoia slender salamander and the coast range newt.[39] The consultant also identified the Project construction-related impacts as, "Construction would include vehicle storage and operation, vegetation removal, rock-removal, grading, and paving within the BSA, which could result in direct impacts on amphibians in the area. These activities could result in direct impacts on amphibians if they were to be crushed or injured during construction activities. In particular, construction vehicles using Mineral King Road could injure or kill amphibians crossing the roadway. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, the project would be in compliance with dust control regulations, and with the implementation of avoidance and minimization measures listed below, adverse impacts on newts are not expected."[40] **BIO-11 (Minimization):** Vegetation removal and excavation shall be reduced to the extent feasible. **BIO-12 (Pre-construction Survey):** Within 48 hours of construction, a qualified biologist shall survey the construction area to confirm the presence/absence of amphibians. **BIO-13 (Buffer Area/Relocation):** If any amphibians are identified within the BSA, all efforts, to the extent feasible, shall be taken to avoid the individual, and an appropriate buffer would be installed as determined by a qualified biologist. If avoidance cannot be accomplished, the individual shall be safely relocated by a qualified biologist. **BIO-14 (Restriction):** Pesticide/insecticide shall not be used as part of the project. *Reptiles*: The consultant identified two special status reptile species that have the potential to occur in the BSA: northern California legless lizard and coast horned lizard.[41] The consultant also identified the Project construction-related impacts as, "Construction would include vehicle storage and operation, vegetation removal, rock-removal, grading, and paving within the BSA, which could result in direct impacts on reptiles in the area. These activities could result in direct impacts on reptiles if they were to be crushed or injured during construction activities. In particular, construction vehicles using Mineral King Road could injure or kill reptiles crossing the roadway. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, with the implementation of avoidance and minimization measures discussed below adverse impacts on special-status reptile species are not anticipated."[42] **BIO-15 (Minimization):** Vegetation removal and excavation shall be reduced to the extent feasible. **BIO-16 (Pre-construction Survey/Removal):** Pre-construction surveys for reptiles shall be conducted by a qualified biologist in the upland portions of the construction area no more than 48 hours prior to construction. Surveys shall be repeated if construction activities are suspended for five days or more. If these species, or other reptiles, are observed within the construction area, a qualified biologist shall capture and relocate them to suitable habitat at least 100 feet outside of the construction area.				

[39] Op. Cit. 66-67.
[40] Op. Cit. 67.
[41] Op. Cit. 67-68.
[42] Op. Cit. 68.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

BIO-17 (Restoration/Revegetation): Temporarily disturbed areas shall be restored following construction.

Birds: The consultant identified three special status bird species that have the potential to occur in the BSA: golden eagle; California condor; and Lewis' woodpecker.[43] The consultant also identified the Project construction-related impacts as, "Construction would include vehicle storage and operation, vegetation removal, rock-removal, grading, and paving within the BSA, which could result in direct and indirect impacts on birds in the area. Work on the bridge could also impact birds nesting on this structure. Vegetation removal and bridge work could result in direct impacts on nesting birds if they were to be nesting in these structures. Construction noise, vibration, and dust could also result in indirect impacts on nesting birds and foraging behavior. However, once construction is initiated, any birds foraging in the vicinity would be expected to move away, and there are other foraging areas available nearby. In addition, the project would be in compliance with dust control regulations, and regulatory permits. Because the California condor is not expected to nest in the BSA, the project would be expected to have no effect on this species. The golden eagle and Lewis' woodpecker could be nesting in the BSA; however, with the implementation of avoidance and minimization measures listed below, adverse impacts on these species, including take, are not anticipated."[44]

BIO-18 (Minimization): Construction in areas that include trees, vegetation, and structures that may provide nesting habitats for birds and raptors shall be reduced to the maximum extent feasible.

BIO-19 (Minimize Removal): Trimming and removal of vegetation and trees shall be minimized and performed outside of the nesting season (February 1 to September 30), to the extent feasible.

BIO-20 (Pre-construction Survey): In the event that trimming or removal of vegetation and trees must be conducted during the nesting season, nesting bird surveys shall be completed within 500 feet of the construction area by a qualified biologist no more than 48 hours prior to trimming or clearing activities to determine if nesting birds are within the affected vegetation. Nesting bird surveys shall be repeated if trimming or removal activities are suspended for five days or more.

BIO-21 (Buffer Area): If nesting birds are found within 500 feet of the construction area, appropriate buffers consisting of orange flagging/fencing or similar (typically 300 feet for birds and 500 feet for raptors) shall be installed and maintained until nesting activity has ended, as determined in coordination with the project biologist and regulatory agencies, as appropriate.

BIO-22 (Removal/Monitoring): Prior to construction, any inactive swallow nests and other nests shall be removed under supervision of a qualified biologist during the non-breeding season (October 1 to January 31). The inactive nests shall also be checked for bats prior to removal. During the nesting season (February 1 to September 30), the BSA shall be monitored as necessary to ensure that no new nests are built, and any partially-built nests shall be removed from the bridge during construction to prevent swallows from nesting on the bridge structure. Monitoring and nesting deterrence would continue until birds no longer attempt to nest.

BIO-23 (Avoidance): In the event that any bird species is observed foraging within the construction site, it shall be allowed to move away from the site prior to initiating any construction activities that could result in direct injury or disturbance of the individual.

[43] Op. Cit. 69.
[44] Op. Cit. 69-70.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

BIO-24 (Compliance): Construction shall be in compliance with San Joaquin Valley Air Pollution Control District Regulation VIII (Fugitive PM10 Prohibition), which requires a number of measures to control fugitive dust during construction activities.

"There is potential for the state Fully Protected golden eagle and state Endangered California condor to be in the BSA. Based on project analysis, the project is not expected to result in adverse impacts on the golden eagle or California condor, including take; therefore, consultation with the CDFW and an ITP are not anticipated for these species."[45]

Mammals: The consultant identified seven species of bat that have the potential to occur within the BSA: pallid bat; Townsend's big-eared bat; spotted bat; western mastiff bat; western small-footed mvotis; and fringed mvotis.[46] The consultant also identified the Project construction-related impacts as, "Construction would include vehicle storage and operation, vegetation and tree removal, rock removal, grading, and paving within the BSA, which could result in direct and indirect impacts on bats in the area. Work on the bridge could also impact bats roosting on this structure. Tree removal and bridge work could result in direct impacts on bats if they were to be roosting in these structures. Construction noise, vibration, and dust could also result in indirect impacts on roosting bats. Bridge rehabilitation would include replacing the joint seals, applying methacrylate to the existing bridge deck, and epoxy injecting larger cracks in the arch ribs and pier spandrel columns. Re-sealing the joint would be expected to improve the existing habitat, since parts of the joints are currently open to the deck, and the new sealant would provide additional overhead protection. The project would be in compliance with dust control regulations, and with the implementation of avoidance and minimization measures included below, adverse impacts on bats are not expected."[47]

BIO-25 (Avoidance): To avoid potential impacts to maternity bat roosts, where feasible, tree and structure removal shall be conducted outside of the period between April 1 and September 30 (general maternity bat roost season), the time frame within which colony-nesting bats generally assemble, give birth, nurse their young, and ultimately disperse. If pre- construction and focused surveys (see Mitigation Measure BIO 4.26) indicate the presence of bat roosts and tree and structure removal is to be conducted within the bat roosting period, a Bat Eviction Plan will be prepared and written approval given by CDFW prior to start of tree removal and construction activities.

BIO-26 (Pre-construction Survey): A habitat assessment for pallid and Townsends's big-eared bat shall be conducted by a qualified biologist prior to the start of construction activities to determine if the project area or its immediate vicinity contains suitable habitat for special status bat species. If suitable habitat is present a protocol-level survey shall be conducted during the appropriate seasonal period of bat activity. If during the protocol-level survey bats are found in the project area a Bat Eviction Plan will be prepared and written approval given by CDFW prior to start of construction activities. If any removal of mature trees or structure is to occur between April 1 and September 30, then within 30 days prior to scheduled removal and/or construction activities, a qualified biologist shall conduct a thorough bat roosting habitat assessment (survey) of all trees and structures to be removed or otherwise impacted during construction. Visual and acoustic surveys shall be conducted for at least two nights at all identified roosting habitat to assess the presence of roosting bats. If presence is detected, a count and species analysis shall be completed to help

[45] Op. Cit. 76.
[46] Op. Cit. 71-72.
[47] Op. Cit.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

assess the type of colony and usage. If no bats are observed to be roosting or breeding, then no further action would be required, and construction could proceed.

BIO-27 (Removal/Relocation): No less than two weeks prior to construction, and during the non-breeding and active season (typically October), bats shall be safely evicted from roosts impacted by the project under the direction of a qualified biologist. Once bats have been safely evicted, exclusionary devices shall be installed to prevent bats from returning and roosting in these areas prior to removal. Roosts that would not be impacted by the project shall be left undisturbed.

BIO-28 (Avoidance/Removal): If the presence or absence of bats cannot be confirmed in potential roosting habitat, a qualified biologist shall be onsite during removal or disturbance of this area. If the biologist determines that bats are being disturbed during this work, work shall be suspended until bats have left the vicinity on their own, or can be safely excluded under direction of the biologist. Work shall resume only once all bats have left the site and/or approval to resume work is given by a qualified biologist.

BIO-29 (Buffer Area): In the event that a maternal colony of bats is found, no work shall be conducted within 100 feet of the maternal roosting site until the maternal season is finished or the bats have left the site, or as otherwise directed by a qualified biologist. The site shall be designated as a sensitive area and protected as such until the bats have left the site. No activities shall be authorized adjacent to the roosting site. Combustion equipment, such as generators, pumps, and vehicles, shall not be parked nor operated under or adjacent to the roosting site. Construction personnel shall not be authorized to enter areas beneath the colony, especially during the evening exodus (typically between 15 minutes prior to sunset and one hour following sunset).

"The project would include rehabilitating the existing bridge, and would not contribute to development in the area. The project would have no impacts on special-status natural communities. The project could result in temporary impacts on plant and wildlife species; however, the project would include avoidance, minimization, and mitigation measures to prevent adverse impacts. In addition, any additional measures required by regulatory permits would be implemented during construction. There are no other planned projects in the vicinity of the BSA; however, other planned projects would be expected to include similar measures. Therefore, the project would not be expected to result in cumulatively considerable impacts on biological resources"[48]

As discussed in greater detail in the NES, the Project would have direct and indirect adverse effects on the biological species within the BSA. However, as identified above, **Mitigation Measures BIO-1** through **BIO-29**, as applicable, would reduce potential impacts on these species. As such, the Project will have a less than significant impact with mitigation to the special status species that may occur within the BSA.

Mitigation Measures: See BIO-1 through **BIO-29**.

Conclusion: Less Than Significant With Mitigation.

Cumulative Project-level Impact: Less Than Significant With Mitigation. Implementation of **Mitigation Measures BIO-1** through **BIO-29**, as applicable, would reduce the cumulative impact to less than significant.

b) Less Than Significant With Mitigation. Riparian Habitat and Other Sensitive Natural Communities - As noted in Checklist Item 4 a), earlier, there are two sensitive natural communities within the BSA, specifically

[48] Op. Cit. 73-74.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

the *Quercus Douglasii* Woodland Alliance on the edges of Staging Areas 2 and 3, and *Quercus Wislizeni* Woodland Alliance, on both sides of the East Fork Kaweah River near the bridge. **Mitigation Measures BIO-1** and **BIO-2**, as applicable, would be implemented to reduce potential adverse impacts from trimming and/or removal of oak trees within these communities.

Various special status plant and animal species identified in Table 1 of the NES are dependent on and located in riparian habitat.[49] "The BSA was evaluated for waters under jurisdiction of the CDFW by delineating the areas within the river channel from the top of bank to top of bank. There was no riparian vegetation outside of the creek banks. The river had a defined bed and bank and supported vegetation at the time of the surveys; therefore, it is expected to fall under CDFW jurisdiction."[50] "The project would include installation of a replacement bridge upstream of the existing bridge and would result in permanent and temporary impacts on CDFW jurisdiction (see **Figure 5**). Work would be conducted outside of the OHWM, and there would be no impacts on waters under jurisdiction of the USACE or RWQCB. There is year-round water flow in the river; however, work would be conducted outside of the wetted portion of the channel, and a water diversion is not anticipated. Construction activities including construction of the abutments of the new bridge, retaining walls, retaining wall footing, and concrete drainage behind the retaining wall would result in permanent impacts on approximately 0.031 acre under jurisdiction of the CDFW. Construction personnel and equipment accessing the banks of the river would result in temporary impacts on approximately 0.34 acre of waters under jurisdiction of the CDFW. In addition, construction materials, dust, and debris could result in temporary indirect impacts on water quality if they were to enter flowing water within the river. However, the project would be conducted in compliance with applicable water quality and dust control regulations, and regulatory permits, and with implementation of the proposed avoidance and minimization measures listed below, there would be no adverse impacts on jurisdictional features."[51] As indicated in the NES, to avoid and minimize temporary impacts on jurisdictional features, the following mitigation measures (where applicable) will be implemented.

BIO-30 (Minimization): Work areas would be reduced to the maximum extent feasible, and staging areas shall be located away from the river.

BIO-31 (Best Management Practices): Best management practices (BMP), such as silt fencing, fiber rolls, straw bales, or other measures would be implemented during construction to minimize dust, dirt, and construction debris from entering the river and/or leaving the construction area. Construction shall be in compliance with San Joaquin Valley Air Pollution Control District Regulation VIII (Fugitive PM10 Prohibitions), which requires a number of measures to control fugitive dust during construction-related activities.

BIO-32 (Best Management Practices): Appropriate hazardous material BMPs would be implemented to reduce the potential for chemical spills or contaminant releases into the river, including any non-stormwater discharge.

BIO-33 (Best Management Practices): All equipment refueling and maintenance would be conducted in the staging area away from the river. In addition, vehicles and equipment would be checked daily for fluid and fuel leaks, and drip pans would be placed under all equipment that is parked and not in operation.

[49] *"Natural Environment Study Tulare County, California 6-TUL-Mineral King Road Bridge No. 46C-0196 Federal Project Number: HBP 5946 (106)"* (NES). July 2018. Page 57. Prepared by GPA Consulting and included as Attachment "C" of this MND.

[50] Op. Cit. 57.

[51] Op. Cit.60

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

BIO-34 (Restoration/Revegetation): Temporarily disturbed areas would be re-contoured and revegetated using native species. Any revegetation or erosion control implemented shall be completed using non-invasive species.

BIO-35 (CNDDB Reporting): Any special status species or natural communities identified during surveys shall be reported to the California Natural Diversity Database (CNDDB).

The types of information to be reported to CNNDB can be found online at: https://wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

CNDDB field surveys forms can be found online at https://wildlife.ca.gov/Data/CNDDB/Submitting-Data.

Completed forms can be mailed electronically to CNDDB@wildlife.ca.gov.

Mitigation Measures: See **BIO-1** and **BIO-2**, and **BIO-30** through **BIO-35**.

Conclusion: Less Than Significant With Mitigation.

Cumulative Project-level Impact: Less Than Significant With Mitigation. Implementation of **Mitigation Measures BIO-1** and **BIO-2**, as applicable, will reduce potential impacts to the oak woodlands within the BSA, and **BIO-30** through **BIO-35**, as applicable, will reduce potential impacts on jurisdictional features in the BSA, would reduce the cumulative impact to less than significant.

c) **Less Than Significant With Mitigation.** Wetlands - The NES prepared by GPA Consulting prepared an analysis of habitats and natural communities of special concern. The NES provides a summary of survey results relative to jurisdictional features and provided the following:

United States Army Corps of Engineers [USACE] - "The BSA was evaluated for waters under jurisdiction of the USACE by determining the ordinary high water mark (OHWM) of the river, and determining connectivity of waterways within the BSA to navigable waters. The river is a natural waterway that is expected to fall under USACE jurisdiction. The USACE will have final authority and discretion as to whether this area meets the "significant nexus" criteria required to establish USACE jurisdiction over these waterways.

Regional Water Quality Control Board [RWQCB] - The BSA was evaluated for waters under jurisdiction of the RWQCB by delineating the OHWM of the river. The river had surface waters at the time of the surveys; therefore, it is expected to fall under RWQCB jurisdiction.

California Department of Fish and Wildlife [CDFW)] - The BSA was evaluated for waters under jurisdiction of the CDFW by delineating the areas within the river channel from the top of bank to top of bank. There was no riparian vegetation outside of the creek banks. The river had a defined bed and bank and supported vegetation at the time of the surveys; therefore, it is expected to fall under CDFW jurisdiction."[52]

In regard to Project impacts, the NES states, "The project would include installation of a replacement bridge upstream of the existing bridge and would result in permanent and temporary impacts on CDFW jurisdiction (see Figure 5). Work would be conducted outside of the OHWM, and there would be no impacts on waters under jurisdiction of the USACE or RWQCB. There is year-round water flow in the river; however, work would

[52] Op. Cit.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	be conducted outside of the wetted portion of the channel, and a water diversion is not anticipated. Construction activities including construction of the abutments of the new bridge, retaining walls, retaining wall footing, and concrete drainage behind the retaining wall would result in permanent impacts on approximately 0.031 acre under jurisdiction of the CDFW. Construction personnel and equipment accessing the banks of the river would result in temporary impacts on approximately 0.34 acre of waters under jurisdiction of the CDFW. In addition, construction materials, dust, and debris could result in temporary indirect impacts on water quality if they were to enter flowing water within the river. However, the project would be conducted in compliance with applicable water quality and dust control regulations, and regulatory permits, and with implementation of the proposed avoidance and minimization measures listed below [**BIO-29** through **BIO-35** in this MND], there would be no adverse impacts on jurisdictional features."[53] **Mitigation Measures:** See **BIO-30** through **BIO-35.** **Conclusion: Less Than Significant With Mitigation.** **Cumulative Project-level Impact: Less Than Significant With Mitigation.** Implementation of **Mitigation Measures BIO 30** through **BIO-35**, as applicable, will reduce potential impacts on jurisdictional features in the BSA, as applicable, would reduce the cumulative impact to jurisdictional waters to less than significant. **d) Less Than Significant With Mitigation.** Wildlife Movement and Migratory Corridors - "A migration or wildlife corridor is an area that connects two or more patches of habitat that would otherwise be isolated from each other. Wildlife corridors are typically adjacent to urban areas. A functional wildlife corridor allows for ease of movement between habitat patches and is important in preventing habitat fragmentation. Habitat fragmentation is typically caused by human development and can lead to a decrease in biodiversity and ecosystem functionality. According to [Biogeographic Information and Observation System] BIOS, there are essential wildlife connectivity areas and natural landscape blocks in the [Biological Study Area] BSA. In addition, the BSA could be a corridor for bat migration based on habitat and proximity to the river. Therefore, the BSA is likely to be used as a migration or travel corridor for wildlife. There are downstream fish passage barriers; therefore, the BSA is not likely used for fish migration, although there may be some localized fish species in the area."[54] **Mitigation Measures:** See **BIO-1** and **BIO-2**, and **BIO-30** through **BIO-35.** **Conclusion: Less Than Significant With Mitigation.** **Cumulative Project-level Impact: Less Than Significant With Mitigation.** Implementation of **Mitigation Measures BIO-1 and BIO-2**, as applicable, to reduce potential impacts on special status species, and **BIO 29** through **BIO-35**, as applicable, to reduce potential impacts on jurisdictional features in the BSA, as applicable, would reduce the cumulative impact to jurisdictional waters to less than significant. Implementation of these measures would reduce potential impacts resulting from interference with the movement of fish or wildlife species. As such, the Project will have a less than significant impact with mitigation to native resident or migratory wildlife corridors and native wildlife nursery sites.				

[53] Op. Cit.
[54] Op. Cit. 26.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

e) Less Than Significant With Mitigation. Local Policies and Ordinances - Tulare County does not have a tree preservation ordinance in place. However, the General Plan does include Policy ERM-1.12 *Management of Oak Woodland Communities*, which requires the County to support the conservation and management of oak woodland communities and their habitats by ensuring that the provisions of Public Resources Code Section 21083.4 are followed when evaluating projects in areas containing oak woodlands and requiring replacement planting of native oaks where woodlands are proposed for alteration.[55]

The NES indicates, "There are two native woodland communities in the BSA, including the *Quercus Douglasii* Woodland Alliance on the edges of Staging Areas 2 and 3, and *Quercus Wislizeni* Woodland Alliance, on both sides of the East Fork Kaweah River near the bridge."[56] "The project would require some tree and vegetation removal and trimming to allow equipment access and construction of the new bridge approaches and retaining walls. In addition, it is anticipated that oaks trees would be removed to allow for construction of the retaining walls. Equipment use and storage in the staging areas could also result in disturbance of existing vegetation, including removal and trampling. However, with the implementation of the proposed avoidance and minimization measures, and compensatory mitigation discussed below, adverse impacts on oak trees are not anticipated."[57] Although not within, but adjacent to Stage Areas 2 and 3, woodland communities exists. As such, to avoid or minimize impact on the oak trees, the NES contains two avoidance and minimization measures that are incorporated herein. These mitigation measures have been previously noted in Checklist Item 4 a), **Mitigation Measures BIO-1** and **BIO-2**, as applicable, which would be implemented, as applicable, to reduce potential impacts on oak woodlands. As such, the Project will not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance result in a less than significant impact with mitigation.

Mitigation Measures: See **BIO-1** and **BIO-2**.

Conclusion: Less Than Significant With Mitigation.

Cumulative Project-level Impact: Less Than Significant With Mitigation. Implementation of **Mitigation Measures BIO-1** through **BIO-2**, as applicable, to reduce potential impacts on oak woodlands. As such, the Project will not cumulatively conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance and would result in a less than significant impact with mitigation.

f) Less Than Significant With Mitigation. Conservation Plans – According to the CDFW Natural Conservation Community Planning (NCCP) website, there are no NCCP's in place at, or near, the Project site. The CDFW's California Regional Conservation Plans map identifies one Habitat Conservation Plan (HCPs), the PG&E San Joaquin Valley Operations & Maintenance HCP, in place that is applicable to Tulare County.[58] According to the USFWS Environmental Conservation Online System (ECOS), there are six HCPs that apply in Tulare County: 1) Kern Water Bank HCP; 2) PG&E San Joaquin Valley Operations & Maintenance HCP; 3) Southern California Edison Cross Valley Loop HCP; 4) State Route 99/Cartmill Avenue Interchange Low-effect HCP; 5) Tulare Irrigation District Main Intake Canal Lining Project HCP; and 6) Woodville Solid Waste Disposal Site Expansion HCP.[59]

[55] Tulare County General Plan 2030 Update, Part I – Goals and Policies Report, Chapter 8 – Environmental Resource Management, Policy ERM-1.12 on Page 8-10, and Implementation Measure 14 on page 8-23 and Measure 16 on page 8-24.

[56] *"Natural Environment Study Tulare County, California 6-TUL-Mineral King Road Bridge No. 46C-0196 Federal Project Number: HBP 5946 (106)"* (NES). July 2018. Page 61. Prepared by GPA Consulting and included as Attachment "C" of this MND.

[57] Ibid.

[58] California Department of Fish and Wildlife (CDFW). California Regional Conservation Plans. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=68626&inline.

[59] United States Fish and Wildlife Service (USFWS). Environmental Conservation Online System (ECOS). Habitat Conservation Plans.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	The USFWS identifies two federal recovery plans applicable in the County: 1) Recovery Plan for Upland Species of the San Joaquin Valley; and 2) Recovery Plan for the California Condor.[60] Based on review of the Recovery Plan for Upland Species of the San Joaquin Valley, the Project is outside of the planning area identified in this Plan.[61] Review of the ECOS indicates that the Project is within the range of the condor; however, the Critical Habitat mapper indicates that the Project is outside of the area designated as critical habitat. [62] The NES also contains a section titled "Chapter 5 – Conclusions and Regulatory Determinations" that summarizes the Federal Endangered Species Act consultation, Essential Fish Habitat consultation, California Endangered Species Act consultation, Wetland and Other Waters coordination (Federal Clean Water Act and California Fish and Game Code), Invasive Species, and Migratory Birds as follows: *Federal Clean Water Act*: "There is potential for the federally Threatened California condor to be in the BSA; however, based on project analysis, the project would have no effect on the California condor. Therefore, consultation with the USFWS is not required. The BSA is not within any critical habitat for federally listed threatened or endangered species, and would have no effect on federally threatened and endangered species (see Table 2 [of the NES])."[63] *Essential Fish Habitat Consultation Summary:* "The National Marine Fisheries Service (NMFS) Essential Fish Habitat (EFH) mapper tool was accessed on April 24, 2018. The BSA is outside of NMFS jurisdiction; therefore, no consultation or effects determination is required."[64] *California Endangered Species Act Consultation Summary:* "There is potential for the state Fully Protected golden eagle and state Endangered California condor to be in the BSA. Based on project analysis, the project is not expected to result in adverse impacts on the golden eagle or California condor, including take; therefore, consultation with the CDFW and an ITP are not anticipated for these species."[65] Regarding invasive species, the NES notes, "There are several species growing in the BSA that are listed by the Invasive Species Council of California as invasive to California. A complete list of native, non-native, and invasive plant species observed in the BSA is included in Appendix C [of the NES]. Invasive species are often found in disturbed areas, and project activities would have the potential to spread invasive species through further disturbance of the BSA. These species could also be spread through the improper disposal of the graded and excavated soils on site or off site, or through landscaping with invasive species. However, the following standard measures would be implemented to prevent the spread of invasive species: • Vegetation removed from the BSA would be treated and disposed of in a manner that would prevent the spread of invasive species onsite or offsite.				

https://ecos.fws.gov/ecp0/conservationPlan/region/summary?region=8&type=HCP.

[60] USFWS. Recovery Plan Search. https://www.fws.gov/endangered/species/recovery-plans.html.

[61] USFWS. Recovery Plan for Upland Species of the San Joaquin Valley. Figure 73, https://ecos.fws.gov/docs/recovery_plans/1998/980930a.pdf.

[62] USFWS. ECOS. Species Profile for California Condor, https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=B002; and Critical Habitat for Threatened & Endangered Species, https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77

[63] *"Natural Environment Study Tulare County, California 6-TUL-Mineral King Road Bridge No. 46C-0196 Federal Project Number: HBP 5946 (106)"* (NES). July 2018. Page 77. Prepared by GPA Consulting and included in Attachment "C" of this MND.

[64] Ibid.

[65] Op. Cit. 78.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
		• New landscaping materials, including erosion control seed mixes and other plantings, would be composed of non-invasive species and would be clear of weeds, and all erosion control and landscape planting would be conducted in a manner that would not result in the spread of invasive species. • Plants listed by the USDA in the Pest Ratings of Noxious Weed Species and Noxious Weed Seed (United States Department of Food and Agriculture, 2016) would not be used as part of the project. With implementation of these measures, the project would be in compliance with Executive Order 13112."[66] *Migratory Birds:* The NES notes, "During the biological survey performed on April 9 and April 10, 2015, July 25 and July 26, 2016, and May 2, 2017, no special-status bird species were observed within the BSA. However, many bird species were observed foraging in or flying over the BSA, including the mourning dove, American crow, ash-throated flycatcher, and California scrub jay. Nesting birds could be directly impacted by construction activities if they were to be nesting in structures or vegetation within the construction area. In addition, these species could be indirectly impacted by loss of habitat resulting from vegetation or structure removal. However, with implementation of measures included in Section 4.0 [of the NES, and **Mitigation Measures BIO-18**through **BIO-24** in this IS/MND], as applicable, the project would be in compliance with the MBTA and California Fish and Game Code."[67] As the Project will not conflict with any HCP, NCCP, or any other approved local, regional, or state conservation plans or regulation and mitigation measures will be implemented to reduce potential impacts on special status plant and animal species, the Project will have a less than significant impact with mitigation to this resource. **Mitigation Measures: See BIO-18** through **BIO-24.** **Conclusion: Less Than Significant With Mitigation.** **Cumulative Project-level Impact: Less Than Significant With Mitigation.** Implementation of **Mitigation Measures BIO-18** through **BIO-24**, as applicable, would reduce cumulative impacts to this resource. **Cumulative Impact: Less Than Significant With Mitigation.** Implementation of **Mitigation Measures BIO-1** through **BIO-35**, as applicable, would mitigate impacts to this resource to less than significant for Project-level and cumulative impacts.				
5.	**CULTURAL RESOURCES**					
	a)	Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☒	☐	☐
	b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐

[66] Op. Cit.78-79.
[67] Op. Cit. 76

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	c)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Analysis:

As noted in the "Supplemental Finding of No Adverse Effect [Supplemental FNAE] of the Oak Grove Bridge (Caltrans Bridge # 46C0196) On Mineral King Road Over the East Fork of the Kaweah River near Three Rivers, Tulare County, California Federal Air Project No. HBP 5946 (106)" (Oak Grove Bridge Revised Alternative 2B Supplemental FNAE) prepared by consultant Galvin Preservation Associates (GPA) the Revised Alternative 2B would not result in direct or indirect adverse effects to the historic Oak Grove Bridge."[68] Importantly, as indicated in the Supplemental FNAE, "There are no changes to the Area of Potential Effects (APE) as a result of the proposed project changes. All direct and indirect potential effects are limited to the previously established APE."[69] As such, the replacement bridge will not impact any areas outside of what has been previously investigated.

The Supplemental FNAE summarizes the project, the one historic property within the Area of Potential Effect (APE), study methodology, reason the replacement bridge is now the preferred alternative, and Criteria of Adverse Effect as follows: "The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans), proposes to construct a new bridge upstream of the existing Oak Grove Bridge (46C0196) on Mineral King Road over the east fork of the Kaweah River. The existing bridge is located 6.68 miles east of State Route 198, near Three Rivers in Tulare County, California. The proposed project would be partially funded under the federal Highway Bridge Program (HBP) thereby making it an undertaking as defined by the National Historic Preservation Act (NHPA). Caltrans, as assigned by the Federal Highway Administration (FHWA), is the lead federal agency for the undertaking and the County RMA is the local lead agency.

One historic property, the Oak Grove Bridge (46C0196), is located within the Area of Potential Effects (APE) for this project. The bridge was determined eligible for the National Register of Historic Places (NRHP) by the Caltrans California Bridge Survey in 1986 and the Caltrans Historic Bridge Inventory Update in 2004. The SHPO concurred with the determination of eligibility in 1987. The bridge is listed in the California Register of Historical Resources.

The studies for this undertaking were carried out in a manner consistent with Caltrans' regulatory responsibilities under Section 106 of the National Historic Preservation Act (36 CFR Part 800) and pursuant to the January 2014 First Amended Programmatic Agreement among the Federal Highway Administration (FHWA), the Advisory Council on Historic Preservation (ACHP), the California State Historic Preservation Officer (SHPO), and the California Department of Transportation (Caltrans) Regarding Compliance with Section 106 of the National Historic Preservation Act (Section 106 PA). Section 106 compliance activities to date include the preparation of an Archaeological Survey Report (ASR) and Historic Property Survey Report (HPSR), which were approved in October 2017, and a Finding of Effect (FOE), which was approved in December 2017. In a letter dated March 22, 2018, the State Historic Preservation Officer (SHPO) acknowledged receipt of the ASR, HPSR, and FOE and expressed no objection to Caltrans' determination that a finding of no adverse effect was appropriate for the undertaking, which at that time proposed to rehabilitate the Oak Grove Bridge (see Appendix B: Correspondence).

[68] Supplemental Finding of No Adverse Effect [Supplemental FNAE] of the Oak Grove Bridge (Caltrans Bridge # 46C0196) On Mineral King Road Over the East Fork of the Kaweah River near Three Rivers, Tulare County, California Federal Air Project No. HBP 5946 (106)" (Oak Grove Bridge Revised Alternative 2B Supplemental FNAE). Page 22. Prepared by Galvin Preservation Associates (GPA) and included in Attachment "D" of this MND.

[69] Ibid. 8.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	Subsequently, a detailed conditions assessment of the Oak Grove Bridge was conducted in December 2019. The assessment identified severe Alkali Silica Reactivity (ASR) as the primary source of deterioration in the existing structure, and concluded that available ASR treatments were unlikely to extend the remaining service life of the Oak Grove Bridge beyond 20 years. As a result, the County RMA, in cooperation with Caltrans, now proposes to instead construct a new steel plate girder bridge on a new alignment located approximately 50 feet upstream of the existing Oak Grove Bridge. The existing bridge would remain in place and be closed to vehicular traffic once the new bridge is operational. A Supplemental HPSR was approved in DATE 2020 to document the proposed project changes and re-assess effects to the Oak Grove Bridge. Caltrans has applied the Criteria of Adverse Effect as outlined in 36 CFR 800.5 to the historic property within the APE and determined that the revised undertaking (referred to as Revised Alternative 2B) would not cause an adverse effect on the historic bridge. Caltrans has considered all views concerning such effects which have been provided by consulting parties and the public, as per 36 CFR 800.5(a). Caltrans, in applying the Criteria of Adverse Effect, has determined that a Finding of No Adverse Effect is appropriate for the undertaking as a whole and is seeking SHPO concurrence with this finding, pursuant to 36 CFR 800.5(c) and Section 106 PA Stipulation X.B.2."[70] As noted in the Supplemental FNAE, Revised Undertaking, *Overview of Revised Alternative 2B*, "The revised undertaking (also referred to as Revised Alternative 2B) would construct a new steel plate girder bridge on a new alignment located upstream of the existing bridge. The proposed new structure would be located far enough upstream to not require any of the historic elements of the existing bridge to be removed. Traffic would be maintained on the existing bridge during construction of the new structure. The new alignment would require cutting into the existing hillside at both bridge approaches as well as the construction of rock anchor retaining walls. Specialized rock removal would be required in order to construct the proposed bridge abutments and rock anchor retaining walls. Two methods of specialized rock removal are anticipated. The first would utilize expansive rock breaking non-explosive demolition agents, such as expanding grout, to facilitate the excavation of the proposed roadway. This method eliminates fly rock, limits the amount of noise produced by this operation, and is a vibration-free excavation method ideal for environmentally sensitive areas or areas adjacent to existing structures. Due to the higher cost and increased construction duration associated with expansive rock breaking non-explosive demolition agents, it is anticipated the contractor may also utilize controlled fracturing of rock using minimal quantities of explosive chemical compounds placed in judiciously spaced predetermined drilled holes. Fly rock, dust, and noise transmission associated with this method are reduced through the use of large, rubber mats placed over the area prior to fracturing. The existing bridge, as well as the existing viewshed of the historic structure while approaching the crossing along Mineral King Road, would be preserved as part of this revised alternative. It is anticipated that the existing structure may still be used as a pedestrian crossing. Furthermore, the funds not spent on removing the existing bridge may be used to perform minor rehabilitation work on the existing structure in order to maximize its remaining life. Such work may include replacing the joint seals, applying methacrylate to the existing bridge deck, and epoxy injecting larger cracks in the arch ribs and pier spandrel columns."[71]				

[70] Op. Cit. 1-2.
[71] Op. Cit. 5-6.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

The Proposed Replacement Bridge discussion contained in the Supplemental FNAE states, "The proposed replacement bridge superstructure consists of a new 100-foot-long clear span steel plate girder bridge. The depth of the steel plate girder superstructure would be 5 feet 6 inches, which would provide a depth-to-span ratio of 0.055. This depth-to-span ratio is consistent with the guidelines contained in the American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design (LRFD) Bridge Design Specifications, 6th Edition Table 2.5.2.6.3-1 and as shown on page 10-26 of Caltrans Bridge Design Aids.

The new bridge abutments are anticipated to consist of seat type abutments. Depending upon the depth to bedrock, the abutments would be supported on either cast-in-drilled-hole (CIDH) concrete piles with concrete rock sockets or spread footings cast directly on bedrock. In the case that spread footings are selected and dead load of the structure prove insufficient to resist uplift due to overturning, post tensioned rock anchors would be used to provide additional resistance. Specialized rock removal is anticipated at the abutments to provide a level surface to construct the abutment foundations. In addition, new cantilever retaining walls would be required at the abutments to support the proposed roadway approaches."[72]

Staging areas and temporary easements of the Project are discussed in the Supplemental FNAE *Construction Considerations* section which notes, "The undertaking includes three potential construction staging areas, identified as the West, South, and East Staging Areas (see Appendix A, Project Area and Staging Areas Map). The West Staging Area is approximately 1.3 miles west of the existing bridge on the north side of Mineral King Road. The South Staging Area is approximately 400 feet northeast of the existing bridge on the south side of Mineral King Road. Finally, the East Staging Area is approximately 800 feet northeast of the existing bridge on the east side of Mineral King Road. Temporary construction easements would be required, and right-of-way acquisitions may be required to accommodate construction of the project. There would be no utility relocation required as part of the project. Temporary catchment basins to collect storm water and shrouding (i.e., covering or wrapping) of the bridge arch would be required to prevent debris from falling into the existing river channel during construction."[73]

Also, the following Tulare County General Plan 2030 Update policies for this resource apply to this Project: *ERM-6.1 Evaluation of Cultural and Archaeological Resources*; *ERM-6.2 Protection of Resources with Potential State or Federal Designations*; *ERM-6.3 Alteration of Sites with Identified Cultural Resources*; *ERM-6.8 Solicit Input from Local Native Americans*; and *ERM-6.9 Confidentiality of Archeological Sites*.

a) and b) Less Than Significant With Mitigation. Historical and Archaeological Resources - As noted earlier, the overall Project consists of construction of a new bridge upstream of the existing Oak Grove Bridge on Mineral King Road over the east fork of the Kaweah River. The new bridge is located approximately 6.8 miles east of State Route 198 near the unincorporated community of Three Rivers in Tulare County, California. As noted earlier, the proposed replacement bridge superstructure consists of a new 100-foot-long clear span steel plate girder bridge.[74]

A Project Scoping Study dated December 1, 2015, previously identified Alternative 2B, replacement with new cast-in-place post tensioned box girder bridge on a new alignment immediately upstream of the existing bridge while preserving the existing bridge, as the most promising alternative.[75] Based on conclusions in the Corrosion Assessment report, the retrofit and rehabilitation of the existing bridge (Alternative 1) was eliminated from

[72] Op. Cit. 6-7.
[73] Op. Cit. 7-8.
[74] Op. Cit. 6.
[75] Op. Cit. 3.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	consideration as it is no longer considered feasible and prudent. In contrast to the retrofit and rehabilitation alternative (Alternative 1), a new replacement bridge would have a design life of 75 years and be less costly to construct. The County has since elected to move forward with the design of a new steel plate girder bridge on a new alignment located approximately 50 ft. upstream of the existing alignment (Revised Alternative 2B).[76] "The revised undertaking (also referred to as Revised Alternative 2B) would construct a new steel plate girder bridge on a new alignment located upstream of the existing bridge. The proposed new structure would be located far enough upstream to not require any of the historic elements of the existing bridge to be removed. Traffic would be maintained on the existing bridge during construction of the new structure. The new alignment would require cutting into the existing hillside at both bridge approaches as well as the construction of rock anchor retaining walls. Specialized rock removal would be required in order to construct the proposed bridge abutments and rock anchor retaining walls."[77]. As noted earlier, there are no changes to the Area of Potential Effects (APE) as a result of the proposed project changes. All direct and indirect potential effects are limited to the previously established APE. As indicated in the Supplemental FNAE, "The historic Oak Grove Bridge, as well as the existing viewshed of the historic structure while approaching the crossing along Mineral King Road, would be preserved as part of the Revised Alternative 2B (see Figure 10). The existing structure would be maintained by the County, and may still be used as a pedestrian crossing."[78]. "The Revised Alternative 2B does not involve physical destruction of or damage to all or part of the historic property [36 CFR 800.5(a)(2)(i)], removal of the property from its historic location [36 CFR 800.5(a)(2)(iii)], or neglect of the property which causes its deterioration [36 CFR 800.5(a)(2)(vi)]. As indicated above, the existing bridge would remain intact. It would be monitored during the construction period to prevent inadvertent damage, and would be maintained by the County after construction of the new structure is complete. The historic bridge is County-owned and will remain as such; the transfer, lease, or sale of the historic property out of Federal ownership or control [36 CFR 800.5(a)(2)(vii)] is not an applicable example of adverse effect for this undertaking."[79] "The Revised Alternative 2B does not involve alteration of a property that is not consistent with the Secretary's Standards for the Treatment of Historic Properties and applicable guidelines [36 CFR 800.5(a)(2)(ii)]."[80] As noted in the Supplemental FNAE, "The proposed new bridge would be in close proximity to the historic bridge. The applicable Rehabilitation Standards for related new construction are Standards 9 and 10: *(9) New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.* *(10) New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.*				

[76] Op. Cit. 4.
[77] Op. Cit. 5-6.
[78] Op. Cit. 15.
[79] Op. Cit.
[80] Op. Cit. 16.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	The wing walls of the existing and proposed structures would immediately abut each other (see Figure 11 [in the Supplemental FNAE]). Fiberboard expansion joint filler is proposed at the separation between the two structures. The historic concrete material of the bridge, and its wing wall and barrier features, would not be destroyed by the abutting construction. These features are proposed to remain intact during and after the construction period, and the fiberboard is intended to protect the historic concrete from potential damage as a result of any thermal expansion that might occur in the abutting new structure. This construction is proposed in such a manner that if the proposed new bridge were to be removed in the future, the essential form and integrity of the historic bridge would be unimpaired."[81] "The physical arrangement of the Oak Grove Bridge over the east fork of the Kaweah River, which is the spatial arrangement that characterizes the historic property, would not be changed. The historic bridge will maintain its current position over the river, with no intervening construction proposed between the historic bridge and the river channel below. The proposed new bridge would be constructed of concrete and Corten steel. The proposed materials, concrete and metal, are the same general class of materials used in the historic bridge, but are slightly differentiated in terms of color, texture, and composition. The proposed features of the new bridge include a low profile I-girder and Type 85 concrete barrier rails (see Figure 13 [in the Supplemental FNAE]). The proposed features are simplified and utilitarian in design, and are compact and minimal in terms of size, mass, and proportion. As a result, the proposed new bridge would not visually compete with the grand arched design, decorative bridge railing features, and larger physical presence of the historic bridge. Overall, the materials and design of the new structure would not introduce a jarring new aesthetic to the environment of the historic bridge, but also would not mimic the historic bridge. It will be evident to bridge users which is the old and which is the new structure. As a result of careful design choices made for the related new construction, the proposed new bridge is consistent with the Secretary's Standards."[82] "The physical features of the setting that contribute to the historic significance of the Oak Grove Bridge include its location on a scenic highway, setting within a wilderness area, and turnouts at bridge approaches for parking and scenic viewing. The first two features are identified as among the "Most Significant (strongly conveys sense of time and place)" character defining features in Section 4.1 above, and the latter is identified as "Significant (conveys sense of time and place)." The physical location of the historic bridge would not change. The existing roadway would extend beyond the current bridge approaches to provide access to the replacement bridge, and the original approaches to the historic bridge would remain in place and physically connected to the scenic highway. The historic bridge approaches, as well as the historic bridge itself, can continue to serve as areas for scenic viewing. Natural boulders would be placed at the ends of the bridge deck in lieu of bollards to prevent vehicular access to the historic bridge, but it will still be visually apparent that the Oak Grove Bridge had served as part of the highway (see Figure 15)."[83] "In addition to the above-described changes to existing physical features of the setting, the Revised Alternative 2B also involves the introduction of new elements to the setting. However, the undertaking does not involve any "visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features [36 CFR 800.5(a)(2)(iv)] (emphasis added). Proposed new visual elements include the temporary construction site, and the permanent new bridge, retaining walls, and associated roadway improvements. New atmospheric and audible elements are expected to occur for a limited time, as a result of temporary construction vibration and noise. The temporary visual, atmospheric, and audible elements associated with construction will cease at the end of the construction period and will not permanently alter the setting or the historic bridge itself.				

[81] Op. Cit. 16-17.
[82] Op. Cit. 18.
[83] Op. Cit. 20.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	Accelerometers would be used during construction to ensure vibrations remain below a threshold that would have the potential to cause damage to the historic bridge."[84] "The permanent visual elements associated with the new bridge, retaining walls, and roadway extension will not physically alter any of the historic features of the Oak Grove Bridge structure. As described in the discussion of 36 CFR 800.5(a)(2)(ii) above, the proposed bridge would be consistent with the Rehabilitation Standards and associated guidelines for related new construction. The proposed bridge design and placement are intended to minimize the visual appearance of the new structure and maximize the distance between the historic and proposed bridge decks. A low-profile I-girder structure, with an approximate depth of 5 feet 6 inches, is proposed upstream of the historic bridge, allowing the historic bridge to visually obscure the new bridge from sight when travelling along Mineral King Road (see Figure 10). Views of the historic bridge from the roadway are preserved as a result. Pedestrians on the historic bridge deck will have a more prominent view of the new bridge than drivers on the roadway, but the two bridge decks will be physically separated by approximately 40 feet of distance (see Figure 14). The simple aesthetic of the new bridge is also visually distinct from the historic bridge, but not in a manner that visually distracts from an appreciation of the historic bridge materials, features, and design (see . Similarly, the visual appearance of the proposed retaining walls would be softened by a sculpted, colored concrete finish intended to blend with the natural surroundings and keep the historic bridge as the primary focal point. In addition, the required roadway extension to the new bridge would be similar to existing improvements. An understanding of the significance of the Oak Grove Bridge as an early example of scenic highway bridge design would not be impeded by the visual presence of the new bridge, retaining walls, or roadway segments. In summary, the Revised Alternative 2B would not result in direct or indirect adverse effects to the historic Oak Grove Bridge. The setting of the historic bridge would be altered by the new proposed bridge and related improvements, but not in a manner that would diminish the integrity of the historic property or its ability to convey its historic significance. The historic Oak Grove Bridge structure would remain fully intact, with minor rehabilitative work that is consistent with the Rehabilitation Standards and associated guidelines."[85] Finally, the Supplemental FNAE concludes, "The County RMA, in cooperation with Caltrans, proposes to construct a new bridge upstream from the existing Oak Grove Bridge (Bridge No. 46C0196) over the east fork of the Kaweah River. The project is being partially funded with federal funds under the Highway Bridge Program (HBP), which qualifies the project as a federal undertaking. Caltrans, as assigned by FHWA, is the lead federal agency for the undertaking and the local lead agency is the County RMA. Caltrans prepared this Supplemental Finding of No Adverse Effect (FNAE), which applies the Criteria of Adverse Effect (36 CFR 800.5) to the Oak Grove Bridge under the Revised Alternative 2B. The Oak Grove Bridge is the only historic property within the project APE. This property was previously identified as eligible for listing in the National Register of Historic Places. Caltrans has applied the Criteria of Adverse Effect as outlined in 36 CFR 800.5 to the historic property within the Area of Potential Effects (APE) and has determined that the revised undertaking (referred to as Revised Alternative 2B) would not cause an adverse effect on the historic bridge. Caltrans has considered any views concerning such effects which have been provided by consulting parties and the public, as per 36 CFR 800.5(a).				

[84] Op. Cit. 21.
[85] Op. Cit. 22.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

Caltrans, in applying the Criteria of Adverse Effect, has determined that a Finding of No Adverse Effect is appropriate for the undertaking as a whole and is seeking SHPO concurrence with this finding, pursuant to 36 CFR 800.5(c) and Section 106 PA Stipulation X.B.2."[86]

As noted earlier, the APE of the Project area has not changed. As such, the conclusions and use of the previously prepared HPRS and FNAE remains valid. "The records search revealed that there has been one previous cultural resources study within the APE and two investigations within a 0.5-mile radius of the APE. The records search identified one historic-era archaeological site (P-54-004764) within the APE and four additional cultural resources within a 0.5-mile radius of the APE. During pedestrian survey on June 7, 2016, Æ identified and recorded one additional feature associated with P-54-004764. Also within the portion of the APE surrounding the existing bridge, Æ found the remains of a previously unrecorded historic-era bridge abutment that predates the existing bridge. This resource was assigned temporary number AE-2945-01. No prehistoric archaeological resources were identified within the APE. Two historic built environment resources occur within the APE. Bridge 46C-0196, constructed in 1923, and the Southern California Edison hydroelectric flume. Both resources are historically significant and eligible for the National Register of Historic Places."[87]

Lastly, it is Caltrans' policy to avoid cultural resources whenever possible. If buried cultural materials are encountered during construction, it is Caltrans' policy that work stop in that area until a qualified archaeologist can evaluate the nature and significance of the find. Additional survey(s) will be required if the APE changes to include areas not previously surveyed.

Based on qualified expertise of consultant GPA and the information, analysis, recommendations, and conclusions contained in the Supplemental FNAE (prepared by GPA), staff supports and agrees that the Project will result in a less than significant impact to these resources. However, as an abundance of caution, in the unlikely event that subsurface resources are located, **Mitigation Measures CUL-1** through **CUL-2** would be implemented thereby reducing the potential level of impact to this resource as less than significant for resources listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k); or to a resource consider significant to a California Native American tribe.

a) and b) Mitigation Measures: See **Mitigation Measures CUL-1** through **CUL-2.**

a) and b) Conclusion: Less Than Significant With Mitigation.

a) and b) Cumulative Project-level Impact: Less Than Significant With Mitigation. The Project would result in construction of a new bridge, and would not, upon completion, cause a substantial adverse change in the significance of an historical or archeological resource as defined in Section 15064.5. The Project could result in the inadvertent discovery or uncovering of an unknown historical or archeological resource; however, the application/implementation of State law(s), Caltrans policy(ies), and/or Tulare County General Plan policies would result in a less than significant impact to this resource during the construction-related phase. Further, As an abundance of caution, in the unlikely event that subsurface resources are located, **Mitigation Measures CUL-1** through **CUL-2**, as applicable, would be implemented thereby reducing the potential level of impact to this resource as less than significant for resources listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section

[86] Op. Cit. 23.

[87] "Archaeological Survey Report Mineral King Road Bridge (No. 46C-0196) over the East Fork of the Kaweah River near Three Rivers, Tulare County, California HBP 5946 (106)". Page iii. Prepared by Applied Earth Works, Inc. and included in Attachment in this MND.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

5020.1(k); or to a resource consider significant to a California Native American tribe. Therefore, the Project would result in a less than significant impact to this resource.

c) Less Than Significant With Mitigation. Human Remains - Application/implementation of State law(s), Caltrans policy(ies), and/or Tulare County General Plan policies would require immediate cessation of grading or construction, and other requirements specified by State law, in the unlikely event of discovering human remains during activities on the Project site. As noted in earlier, the APE of the Project area has not changed. As such, the conclusions remain valid and use of the previously prepared HPRS and FNAE is applicable and appropriate.

A CHRIS records search conducted on April 17, 2015 identified one previously recorded resource within the Project APE. P-54-004761 was recorded as two dry-stacked rock retaining walls, one on either side of Mineral King Road. Two historic-era built environment resources also occur within the APE, the existing Mineral King Bridge (46C-0196), built in 1923, and the Southern California Edison (SCE) hydroelectric flume. Both resources are historically significant and eligible for the NRHP. Four other previously recorded resources are within 0.5 mile of the Project (ASR, November 2016 Draft, page 4).[88] The NAHC conducted a Sacred Lands File search and responded on March 9, 2016, stating that it did not identify any sacred sites within or adjacent to the APE.[89]

"On June 7, 2016, Æ Associate Archaeologist Katie Asselin, performed an intensive pedestrian survey of the 6.33-acre APE using parallel and meandering transects spaced no more than 15–20 meters apart. Upon the discovery of a cultural resource, Æ defined the site limits using a close-interval survey, recorded the site limits with a Trimble Global Position System (GPS) unit, took digital photographs, and documented the resource on the applicable California Department of Parks and Recreation 523 series forms."[90] "The APE is four discontinuous areas that include the area surrounding the existing bridge, and three potential staging areas on Mineral King Road in the vicinity of the bridge, designated as the West, East, and South staging areas (Map 3 [of the ASR]). Ground visibility was generally poor, with thick grasses up to 3 feet high, brush, and oak trees obscuring visibility to less than 5 percent. Soils are a tan silty loam typical of the Sierra Nevada. There are granite boulders and outcrops throughout the Project APE. The survey conditions for each area varied slightly; these are summarized below."[91]

Bridge: "The area surrounding the bridge is the largest portion of the APE. It encompasses the existing bridge and roadway approaches on Mineral King Road. … Æ observed three metal eyelets imbedded in a granite boulder just northeast of the existing bridge (Figure 4 [of the ASR]). The metal eyelets were noted, but they were not recorded as a historic feature because of the lack of definitive association with the historic bridge or development of the area."[92]

West Staging Area (No. 1): "The West Staging Area is approximately 1.3 miles downstream (west) of Bridge 46C-0196 on the north side of Mineral King Road. It is a 0.22-acre area that is approximately 128 feet wide (southwest to northeast) by 144 feet long (northwest to southeast). It has been graded and improved as a road pullout and is generally void of vegetation. Soils are compact and portions are covered in asphalt. Æ observed a dozer push pile covered in brush and weeds near the southwest corner of the staging area (Figure 5). The

[88] Ibid. 4.
[89] Op. Cit. 5.
[90] Op. Cit. 10.
[91] Op. Cit. 11.
[92] Op. Cit.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	surrounding slopes are steep and covered with thick grasses and shrubs that obscure visibility. Visibility ranged from less than 5 percent to 100 percent, averaging about 30 percent. Æ noted modern trash scattered across the area."[93] *South Staging Area (No. 3):* "The South Staging Area encompasses 0.73-acre and is approximately 400 feet upslope (northeast) of Bridge 46C-0196. It lies primarily on the south side of Mineral King Road at a predominate bend. It is approximately 289 feet long (northwest to southeast) by 194 feet wide (southwest to northeast). The area is accessed by a dirt road from Mineral King Road. It contains a modern camper trailer, cars, and other debris, including car parts, lawn mowers, and piled wood and lumber (Figure 6). The camper trailer is at the southern end of the area and appeared to be occupied at the time of survey. Visibility varied from excellent (70–100 percent) in the dirt roadway and area surrounding the trailer to poor (less than 5 percent) in the areas covered by thick grasses"[94] *East Staging Area (No. 2):* "The East Staging Area covers 0.65 acre and is approximately 800 feet upslope (northeast) of Bridge 46C-0196 on the east side of Mineral King Road. … Æ noted several objects, including a water spigot, a section of 1-inch metal pipe, and the remains of a wood fence with what appear to be hand-hewn posts (Figure 8 [of the ASR]). Although these objects suggest that this parcel may have been part of a homestead, there are no temporally diagnostic artifacts or other attributes to allow definitive association with a historic-era occupation or development of the area. During a public informational meeting for the Project, the County received a comment that this area contains remains of a former Civilian Conservation Corps (CCC) camp as well as Native American artifacts. However, Æ did not observe any evidence to suggest the homestead objects were associated with a CCC camp, nor did they find any information about a CCC camp at this location in the historical record. Additionally, Æ did not observe any Native American artifacts on this parcel."[95] "Study Findings and Conclusions Æ's pedestrian survey of the four discontinuous areas that make up the Project APE resulted in the expansion of one previously recorded historic archaeological site, P-54-004764, and documentation of one newly identified resource, assigned temporary number AE-2945-01. Both resources occur in the APE surrounding the bridge. Æ did not observe any prehistoric or historic-era artifacts, sites, or features in the South, West, or East Staging Areas. When first recorded in 2010, P-54-004764 was described as containing two dry-stacked rock walls (Features A and B), one on either side of Mineral King Road (Kovak and Jackson 2010). During the pedestrian survey, Æ observed the previously recorded Features A and B and identified a third previously unrecorded segment of dry-stacked rock wall associated with the site. Æ documented this segment as Feature C (Figure 9 [of the ASR]). It is just southeast of Feature B on the northeast (downslope) side of Mineral King Road (see Appendix D [of the ASR]). It is stacked between one and three courses high and is approximately 1 foot wide and 5 feet long. The feature may extend farther north, possibly connecting with Feature B; however, the area is overgrown with grasses and thick brush and its continuation could not be confirmed. It does not appear that Feature C extends farther south. The other rock walls (Features A and B) appear to be in good condition and do not appear to have changed since they were first recorded in 2010 (Figure 10 [of the ASR])."[96]				

[93] Op. Cit.13.
[94] Op. Cit.
[95] Op. Cit. 14.
[96] Op. Cit. 15.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	"AE-2945-01 consists of wood debris and stacked rocks that appears to be the ruins of an abutment for an older bridge on Mineral King Road over the East Fork of the Kaweah River (Figure 11 [of the ASR]) that predates the existing 1923 bridge. Æ could only observe the debris from Mineral King Road using binoculars because the terrain was too rugged and steep to access safely. Æ observed debris only on the southwest bank of the river. No associated debris of a possibly matching abutment was visible on the northeast bank. The two previously recorded historic-era structures in the APE, the existing Mineral King Road Bridge (46C-0196) and the SCE flume, are addressed in the Historic Property Survey Report for this Project [included in Attachment "D" of this IS/MND]. If previously unidentified cultural materials are unearthed during construction, it is Caltrans' policy that work be halted in the area until a qualified archaeologist can assess the significance of the find. Additional archaeological survey will be needed if project limits are extended beyond the present survey limits."[97] Based on the qualified expertise of consultant GPA and the information, analysis, recommendations, and conclusions contained in the Supplemental FNAE (prepared by GPA), staff supports and agrees that the Project will result in a less than significant impact to this resource. **Cumulative Project-level Impact: Less Than Significant With Mitigation.** It is anticipated that the Project would not disturb any human remains, including those interred outside of formal cemeteries result in construction of a new bridge, and would not, upon completion, cause a substantial adverse change in the significance of an historical or archeological resource as defined in Section 15064.5. The Project could result in the inadvertent discovery or uncovering of unknown archeological resources. As noted earlier, application/implementation of State law(s), Caltrans policy(ies), and/or Tulare County General Plan policies would prevent cumulative impacts to paleontological resources in the APE. Therefore, the Project will result in a less than significant impact on human remains. **Mitigation Measures: Mitigation Measures CUL-1** through **CUL-3**, as applicable, would be implemented as part of the Project to minimize project effects to cultural resources. **CUL-1** ***(Discovery of Archaeological or Historical Resources)*****:** If, in the course of Project construction or operation, any archaeological or historical resources are uncovered, discovered, or otherwise detected or observed, activities within fifty (50) feet of the find shall be ceased. A qualified archaeologist shall be contacted and advise the County of the site's significance. If the findings are deemed significant by the Tulare County Resources Management Agency, appropriate mitigation measures shall be required prior to any resumption of work in the affected area of the proposed Project. Where feasible, mitigation achieving preservation in place will be implemented. Preservation in place may be accomplished by, but is not limited, to: planning construction to avoid archaeological sites or covering archaeological sites with a layer of chemically stable soil prior to building on the site. If significant resources are encountered, the feasibility of various methods of achieving preservation in place shall be considered, and an appropriate method of achieving preservation in place shall be selected and implemented, if feasible. If preservation in place is not feasible, other mitigation shall be implemented to minimize impacts to the site, such as data recovery efforts that will adequately recover scientifically consequential information from and about the site. Mitigation shall be consistent with CEQA Guidelines section 15126.4(b)(3). An archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology, hereafter "qualified archaeologist," should inspect the findings within 24 hours of discovery.				

[97] Op. Cit. 17.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	CUL-2 ***(Discovery of Cultural Resources)*****:** If cultural resources are encountered during construction or land modification activities work shall stop and the County shall be notified at once to assess the nature, extent, and potential significance of any cultural resources. If such resources are determined to be significant, appropriate actions shall be determined. Depending upon the nature of the find, mitigation could involve avoidance, documentation, or other appropriate actions to be determined by a qualified archaeologist. For example, activities within 50 feet of the find shall be ceased. If it is determined that the Project could damage a significant cultural resource, mitigation should be implemented with a preference for preservation in place, consistent with the priorities set forth in CEQA Guidelines Section 15126.4(b)(3). If avoidance is not feasible, a qualified archaeologist should prepare and implement a detailed treatment plan in consultation with the County of Tulare and, for prehistoric resources, the ethnographically associated Native American tribe. If the resource is determined to be a tribal cultural resource, as defined by Public Resources Code 21074, the County of Tulare, in consultation with the ethnographically associated Native American tribe, should, if feasible, minimize significant adverse impacts by avoiding the resource or treating the resource with culturally appropriate dignity, which includes protecting the cultural character and integrity of the resource, protecting the traditional use of the resource, and protecting the confidentiality of the resource. **CUL-3** ***(Discovery of Human Remains)*****:** Inadvertent Discovery of Human Remains. In the unlikely event of discovery or recognition of any human remains during construction-related activities, the provisions of CEQA Guidelines § 15064.5(e) shall be followed and such activities should cease within 50 feet of the find until the Tulare County Coroner has been contacted to determine that no investigation of the cause of death is required. If it is determined that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be contacted within 24 hours. The NAHC will then identify the person or persons it believes to be the most likely descendant (MLD) from the deceased Native American. The MLD would, in turn, make recommendations to the County of Tulare for the appropriate means of treating the human remains and any grave goods. **Conclusion: Less Than Significant With Mitigation.** **Cumulative Project-level Impact: Less Than Significant** with implementation of **Mitigation Measures CUL-1** through **CUL-3**, as applicable. **Cumulative Impact : Less Than Significant With Mitigation.** Implementation of **Mitigation Measures CUL-1** through **CUL-3**, as applicable, would mitigate impacts to this resource to less than significant for Project-level and cumulative impacts.					
6.	**ENERGY**					
	Would the project:					
	a)	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	b)	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Analysis:

a) and b) Less Than Significant. Consumption of Energy and Renewable Energy Plans – The Project is proposing a replacement bridge upriver of the existing Mineral King Road bridge with a two-lane bridge structure to provide improved safety and operations on the facility. The replacement bridge would be located approximately 60 feet north of the existing Mineral King Road bridge. Temporary construction easements are needed throughout the Project area and construction staging would take place within County right-of-way and adjacent privately owned parcels. Minor permanent right-of-way acquisitions are anticipated. The only energy consumed would be through the use of fossil fuels (gasoline and diesel operated equipment) during construction-related activities. These activities will be short-term, intermittent, and temporary as construction is anticipated to be completed within twelve-months of initiation. As the existing bridge will remain in place for use by vehicular traffic until the replacement bridge is completed, no detours would be required of typical users of the bridge; as such, no fuel will be consumed outside of the amounts currently used while traveling along Mineral King Road. Therefore, the Project will neither have significant environmental impact due to wasteful or unnecessary consumption of energy resources nor obstructs any renewable or energy efficiency plans.

Mitigation Measures: None required.

Conclusion: Less Than Significant.

Cumulative Project-level Impact: Less Than Significant. As construction- and rehabilitation-related activities will be short-term, intermittent, and temporary; impacts associated with these activities would cease.

Cumulative Impact: Less Than Significant. As noted, earlier, the only energy consumed would be through the use of fossil fuels (gasoline and diesel operated equipment) during construction- and rehabilitation-related activities. These activities will be short-term, intermittent, and temporary as construction is anticipated to be completed within 12 months of initiation, and rehabilitation within 6 months of initiation. As the existing bridge will remain in place until the replacement bridge is completed, no detours would be required of typical users of the bridge; as such, no fuel will be consumed outside of the amounts currently used while traveling along Mineral King Road.

7.	**GEOLOGY/SOILS**					
	Would the project:					
	a)	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i)	Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication No. 42.	☐	☐	☒	☐

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	ii)	Strong seismic ground shaking?	☐	☐	☒	☐
	iii)	Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
	iv)	Landslides?	☐	☐	☐	☒
	b)	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
	c)	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
	d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
	e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
	f)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

Analysis:

The Natural Resources Conservation Soil (NRCS) Resource Report for Tulare County, Central Part, identifies Fallbrook sandy loam (a soil with roughly equal proportions of sand, silt, and clay) in the project area, and does not identify any hydric soils within the project area [hydric soils are saturated by water and are indicators of wetlands].[98]

The Phase I Initial Site Assessment conducted by consultant Wallace Kuhl & Associates (included in Attachment "E" of this MND) has identified Walong-Rock outcrop complex, Blasingame sandy loam, and Fallbrook sandy loam at the Project site.[99]

A seismic assessment of the Mineral King Bridge Replacement Project was conducted and included as part of a "M375A Mineral King Bridge Draft Project Scoping Study" (Scoping Study) prepared by consultant Cornerstone Structural Engineering Group in May of 2015 (and included as Attachment "E" of this MND). Results from this investigation indicate that the Project will result in less than significant impacts related to geological or seismic hazards. The Preliminary Foundation Report provided substantiating geotechnical findings as Appendix H (of the Scoping Study) which is included in this IS/MND as Attachment "E".

[98] Preliminary Environmental Study. Page 6-88. Included in Attachment "G" of this MND.

[99] Phase I Initial Site Assessment Mineral King Road Bridge Project. Page 8. Prepared by Wallace Kuhl & Associates. May 2018.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

Also, the following Tulare County General Plan 2030 Update policies for this resource apply to this Project: HS-1.4 *Building and Codes*; HS-2.2 *Landslide Areas*; HS-2.4 *Structure Siting*; HS-1.11 *Site Investigations*; HS-2.7 *Subsidence*; HS-2.8 *Alquist-Priolo Act Compliance*.

a) Less Than Significant Impact. Faults, Ground Shaking, Liquefaction, and Landslides - According to the Health and Safety Element of the Tulare County General Plan 2030 Update (Part I – Goals and Policies Report, Chapter 10), the proposed Project site straddles the S-1 and S-2 seismic zones, which includes roughly the western half of the Sierra Nevada Mountains. [100]

The S-1 seismic zone, which is characterized by hard rock alluvium on valley floors and thick sections of weathered bedrock in mountain meadows, has "low" risks for shaking hazards, "moderate to high" risks for landslides, "minimal" risk for subsidence, "low" risks for liquefaction in the valley portion of the zone, and "minimal" risk for seiching. [101]

The S-2 seismic zone is characterized by hard rock alluvium on mountain floors, and thick sections of weathered bedrock on mountain meadows. S-2 seismic zones have a "low to moderate" ground shaking potential, "moderate" landslide potential, "minimal" susceptibility to subsidence, "moderate" liquefaction potential (valley floors only), and a "minimal" risk of seiching. [102]

The distance to area faults, i.e., Clovis group, Pond/Poso, San Andreas and Independence, the expected sources of the shaking, is sufficiently great that the shaking effects should be minimal (Fault activity map of California (2010). However, as noted in the Cornerstone report, the existing bridge deck has insufficient flexure strength, the existing spandrel columns fail in shear during the design longitudinal seismic event; the existing spandrel columns are insufficient in flexure loading due to inadequate steel reinforcement; and other structural deficiencies results in a conclusion that the bridge does not meet the "no collapse" criteria specified in Caltrans memo to Designers 20-4.

i) *Fault Rupture*: The Scoping Study indicates that the Project site is not located within the Alquist-Priolo Earthquake Fault Zone and no active or potentially active fault traces are known to traverse the site. The consultant utilized probabilistic acceleration response spectra (ARS) in addition to aerial-photograph review and site reconnaissance to arrive at this determination.[103]

ii) *Ground Shaking*: "As discussed previously in the section of Site Geology, the existing bridge is situated within a small canyon with two sides comprised of granitic bedrock. For purpose of developing Caltrans ARS curves, a Soil Profile Type B/A, (Rock/Hard Rock) [h]as been assumed. A VS30 of 1,500 m/s has been used in developing Caltrans ARS curves. The ARS curves were developed using ARS online tool (http://dap3.dot.ca.gov/ARS_Online/index.php). The calculated Caltrans ARS curves are attached with this memo. As it can be seen on Plate [Figure] 2 [of the Kleinfelder letter], the seismic design spectrum is controlled by the minimum deterministic spectrum for periods less than 1.0 seconds and by the

[100] Tulare County General Plan 2030 Update. Section 10.2 – Geologic and Seismic Hazards. Figure 10-5.

[101] Five County Seismic Safety Element. Summary of Seismic Hazards & Safety Recommendations, following page 2. Available on Tulare County website at https://tularecounty.ca.gov/rma/index.cfm/planning-building/environmental-planning/environmental-planning-resources/five-county-seismic-safety-element-1974/

[102] Ibid.

[103] *"M375A Mineral King Bridge Draft Project Scoping Study" (Scoping Study)"* May of 2015. Page 34; also pages 34 and 2 of 4 of the attached letter to Mr. Cullers, Cornerstone Structural Engineering Group Prepared by consultant Cornerstone Structural Engineering Group and included in Attachment "E" of this MND.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

probabilistic spectrum for periods beyond. The peak horizontal ground acceleration is 0.17g and the associated earthquake magnitude is 6.5"[104]

iii) *Ground Failure-Liquefaction*: The Project site is not located within a State of California Earthquake Fault Zone however the Project parcel and surrounding areas have not been evaluated by the California Geological Survey for seismic landslide or liquefaction hazards (California Department of Conservation, 2018, https://maps.conservation.ca.gov/cgs/EQZApp/app/).[105] "Based on the anticipated site geology, Kleinfelder, Inc., determined that liquefaction, seismically induced settlement, and lateral spreading will not present any hazard at the proposed project site."[106]

iv) *Landslides*: As discussed earlier, consultant Kleinfelder, Inc., has determined that the Project area presents a low probability of lateral spreading (landslide) and as such, will not present such a hazard (Ibid.).[107]

Therefore, the Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving earthquakes, strong seismic ground shaking, liquefaction, or landslides. Therefore, the Project will result in no to a less than significant impact.

Mitigation Measures: None Required.

Conclusion: Less Than Significant.

Cumulative Project-level Impact: Less Than Significant. The Project would result in construction of a new replacement bridge and rehabilitation work on the existing bridge. The Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving earthquakes, strong seismic ground shaking, liquefaction, or landslides. Therefore, a less than significant cumulative impact would occur as a result of this Project.

b) Less Than Significant Impact. Soil Erosion and Loss of Topsoil – The Project site is located in an area of high topographical relief in the foothill area of central/eastern Tulare County. The Natural Resources Conservation Service (NRCS) has identified local soils to consist of Fallbrook sandy loam on 30 to 50 percent slopes.[108] Fallbrook sandy loam is well drained.

Replacement of the Mineral King Road Bridge Project would include vehicle storage and operation, temporary vegetation removal, excavation, grading, and paving activities which likely will not result in substantial erosion of area landscapes. Both new bridge construction- and existing bridge rehabilitation-related activities will remain within already disturbed areas. Such activities will be short-term, temporary, and intermittent and will cease upon Project completion.

National Pollutant Discharge Elimination System (NPDES) stormwater permitting programs regulate stormwater quality from construction sites, which includes erosion and sedimentation. Under the NPDES permitting program, the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP)

[104] Ibid.
[105] Op. Cit.
[106] Op. Cit.
[107] Op. Cit.
[108] United States Department of Agriculture (USDA). Natural Resources Conservation Service. See: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

are required for construction activities that would disturb an area of one acre or more. The SWPPP must identify potential sources of erosion or sedimentation that may be reasonably expected to affect the quality of stormwater discharges as well as identify and implement Best Management Practices (BMPs) that ensure the reduction of these pollutants during stormwater discharges. Typical BMPs intended to control erosion include sand bags, detention basins, silt fencing, storm drain inlet protection, street sweeping, and monitoring of water bodies. Project design features, such as a SWPPP, implemented at the project site, shall reduce to a less than significant level, adverse impacts caused by replacement and rehabilitation activities at the bridge site and/or staging areas.

Therefore, compliance with construction BMPs for erosion, a SWPPP (if required) during construction- and rehabilitation-related activities, compliance with Valley Air District dust control rules/regulations, and implementation of design and engineering specifications, standards, requirements, etc., the Project would result in a less than significant impact.

Mitigation Measures: None Required.

Conclusion: Less Than Significant.

Cumulative Project-level Impact: Less Than Significant. The Project would result in construction on a new replacement bridge and rehabilitation work on the existing bridge, and would not, upon completion, promote substantial soil erosion or the loss of topsoil. The project could result in temporary impacts to soil and topsoil however, as noted earlier, construction BMPs for erosion, a SWPPP (if required) during construction- and rehabilitation-related activities, compliance with Valley Air District dust control rules/regulations, and implementation of design and engineering specifications, standards, requirements, etc., would prevent adverse impacts that might occur during the rehabilitation/retrofitting phase. Therefore, a less than significant cumulative impact would occur as a result of this Project.

c) No Impact. Unstable Soils – As indicated in the Scoping Study, the proposed Project site is not located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.[109] As such, no impact would occur as a result of this Project.

d) No Impact. Expansive Soils – The bridge's pier seats and abutments rest on granitic bedrock, as such, it was not necessary for the geotechnical report to analyze expansive soils.[110] The geotechnical reports does not provide any indications, facts or conclusions indicating that soil conditions at the Project site (including staging areas) are such that expansive soils would create substantial risks to life or property.

Based on this information, the bridge replacement Project is not located on expansive soil as defined in Table 18-1-B of the Uniform Building Code (1994) and would not create a substantial risk to life or property; therefore, there would be no impact to or from this resource.

e) No Impact. Septic Tank/Wastewater Disposal Soil Suitability – The Project is replacement of the existing Mineral King Road Bridge with a new bridge approximately 60 feet upstream of the current bridge's location. As such, the Project will not require nor lead to the introduction or installation of septic tanks or alternative

[109] *"M375A Mineral King Bridge Draft Project Scoping Study" (Scoping Study)"* May of 2015. Page 2034; also pages 34 and 2 of 4 of the attached letter to Mr. Cullers, Cornerstone Structural Engineering Group Prepared by consultant Cornerstone Structural Engineering Group and included in Attachment "E" of this MND..

[110] Ibid.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	waste water disposal systems into area soils. During the construction period it is anticipated that portable toilets will be placed on site to accommodate work crews' needs and cleaned/emptied of offsite. No impacts will occur to area soils and there will be no requirement that these soils prove capable of supporting septic tanks or alternative waste water disposal systems. **c) - e) Mitigation Measures: None Required.** **c) - e) Conclusions: No Impact** **c) - e) Cumulative Project-level Impact: No Impact.** As there will be no project-level impact, there will be no cumulative impact. **Cumulative Impact: Less Than Significant Impact.** The Project is not located on unstable or expansive soils and it will not require septic tank/wastewater disposal into area soils. As such, the Project would result in a no cumulative impact.					
8.	**GREENHOUSE GAS EMISSIONS**					
	Would the project:					
	a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
	b)	Conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒
	Analysis: The following Tulare County General Plan 2030 Update policies for this resource apply to this Project: AQ-3.4 *Landscape*; ERM-4.2 *Streetscape and Parking Improvements for Energy Conservation.* **a) Less Than Significant Impact.** Greenhouse Gas Emissions and Applicable Greenhouse Gas Plans, Policies, and Regulations - This Initial Study is relying on the guidance and expertise of the San Joaquin Valley Unified Air Pollution Control District (Air District) in addressing greenhouse gas (GHG) emissions. The Air District is a public health agency with jurisdiction over air quality and resources in the San Joaquin Valley Air Basin. The following assessment follows the Air District's recommendation for evaluation of potential impacts on GHG emissions as provided in the *Guidance for Assessing and Mitigating Air Quality Impacts* (GAMAQI) adopted by the Air District Governing Board on March 19, 2015. The Air District has determined that projects complying with an approved GHG emission reduction plan or GHG mitigation program, which avoids or substantially reduces GHG emissions within the geographic area in which the project is located, would be determined to have a less than significant individual and cumulative impact for GHG emissions (GAMAQI, page 112).[111] The *Tulare County Climate Action Plan* (CAP) serves as a guiding document for County actions to reduce GHG emissions and adapt to the potential effects of climate change. The CAP is an implementation measure of the					

[111] San Joaquin Valley Unified Air Pollution Control District (Air District), *"Guidance for Assessing and Mitigating Air Quality Impacts "*(GAMAQI). Page 112.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

Tulare County General Plan 2030 Update which provides the supporting framework for development in the County. The CAP builds on the General Plan's framework with more specific actions that will be applied to achieve emission reduction targets required by State of California legislation. The Tulare County General Plan 2030 Update fulfills many sustainability and GHG reduction objectives at the program level. Individual projects that will implement the General Plan will comply with these policies resulting in long-term benefits to GHG reductions that will help the County achieve the CAP reduction targets. The CAP identifies the policies from the various General Plan elements that promote more efficient development and reduce travel and energy consumption.

The Project includes the replacement of the existing bridge and approach lanes on either side of the bridge. The Project will result in direct GHG emissions from construction-related operations and from on-road vehicles thereafter. It is not intended to increase traffic volumes; it is merely replacement of an existing facility that is structurally deficient (i.e., the bridge does not meet the "no collapse" criteria specified in Caltrans memo to Designers 20-4 as noted in Item 6 a), earlier). As the Project is not adding additional capacity and is a safety-related project, the Project is consistent with the Tulare County General Plan and CAP. As such, Project-related GHG emissions will not have a significant impact on the environment, nor will the project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. The Project will result in a less than significant impact.

Mitigation Measures: None Required.

Conclusions: Less Than Significant Impact.

Cumulative Project-level Impact: Less. Than Significant. As project-level impact would be less than significant, cumulative impact would also be less than significant.

b) No Impact. Conflict with Plans – Tulare County adopted its Tulare County Climate Action Plan in 2012 and subsequently adopted the 2018 Climate Action Plan Update in December 2018. Since the Project is planned in the County's General Plan, the Federal Transportation Improvement Program, and Regional Transportation Plan, the Project is not anticipated to conflict with the Tulare County Climate Action Plan or other applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of greenhouse gases (Tulare County, 2012).

Mitigation Measures: None required

Conclusion: No Impact.

Cumulative Project-level Impact: No Impact. As there would be no project-level impact, there will be no cumulative impact.

Cumulative Impact: Less Than Significant Impact. As noted earlier, the Project would have less than significant impacts on climate change or GHG emissions as the Project would replace a structurally deficient bridge, no additional traffic would be added. Long-term traffic volumes would be the same with or without the project. There would be no difference in CO2 emissions comparing existing levels and future levels with Alternative 2B. Since the Project is consistent with the County's General Plan, the Federal Transportation Improvement Program, and Regional Transportation Plan. Lastly, the Project is not anticipated to conflict with the Tulare County Climate Action Plan or other applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of greenhouse gases

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
9.	**HAZARDS AND HAZARDOUS MATERIALS**					
	Would the project:					
	a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
	b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
	c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
	d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
	e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working the project area?	☐	☐	☐	☒
	f)	Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
	g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒
	Analysis: The following Tulare County General Plan 2030 Update policies for this resource apply to this Project: HS-6.5 Fire Risk Recommendations; HS-6.7 Water Supply System; HS-6.10 Fuel Breaks; PFS-7.2 *Fire Protection Standards.*					

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

a) Less Than Significant Impact. Transport, Use, or Disposal of Hazardous Materials - The Project involves replacement of the Mineral King Road Bridge with a new bridge, and rehabilitation of the existing Mineral King Road Bridge. Upon completion of the Project, the replacement bridge will continue to provide access to the upper Mineral King area via vehicular and pedestrian traffic; while the bridge rehabilitation project would be used for non-vehicle and pedestrian traffic while maintaining the historical features of the bridge. The Project will not create or result in a significant hazard to the public or the environment as its purpose is to allow typical/routine us of vehicles regardless of purpose including transport, use, or disposal of hazardous materials.

Project construction-related activities may involve the use and transport of hazardous materials. These materials may include fuels, oils, mechanical fluids, and other chemicals used during construction-related activities. Construction-related activities will also be required to comply with the California fire code to reduce the risk of potential fire hazards. The Tulare County Environmental Health Services Division (TCEHSD) requires submittal of a Hazardous Materials Business Plan, if the site ever handles or stores quantities of hazardous materials in excess of 55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of a compressed gas or any amount of a hazardous waste. Bridge rehabilitation may include replacing the joint seals, applying methacrylate to the existing bridge deck, and epoxy injecting larger cracks in the arch ribs and pier spandrel columns. Compliance with local, state and federal regulations would be adequate such that the Project will not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Therefore, the Project would result in a less than significant impact to this resource.

b) Less Than Significant Impact. Accidental Release of Hazardous Materials – The Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment or risk explosion. As noted above, the TCEHSD requires a Hazardous Materials Business Plan if the Applicant will handle or store quantities of hazardous materials in excess of 55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of a compressed gas, or any amount of a hazardous waste. While the facility operates in compliance with local, state and federal regulations, there is no significant hazard to the public or the environment. Therefore, the Project would result in a less than significant impact to this resource.

a) and b) Mitigation Measures: None Required.

a) and b) Conclusion: Less Than Significant.

a) and b) Cumulative Project-level Impact: Less Than Significant. As there would be a less than significant impact project-level impact, there will a less than significant cumulative impact.

a) and b) Cumulative Impact: Less Than Significant Impact. As the project will result in less than significant impacts, a less than significant cumulative impact would also occur.

c) No Impact. Use of/Release of Hazardous Materials Near Schools – The Project will not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. The facility is more than six miles from the nearest school (Three Rivers Elementary School, to the southeast). Therefore, the Project would result in no impact to this resource.

d) No Impact. Located on a Hazardous Material Clean Up Site - According to the State of California Department of Toxic Substances Control *EnviroStor* database map and *Hazardous Waste and Substance Sites List*, the

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	Project site does not contain and is not proximate to a listed hazardous site, pursuant to Government Code Section 65962.5.[112] Therefore, the Project would result in no impact to this resource. **e) No Impact.** Located Within an Airport Land Use Plan or Within Two Miles of a Public Airport: No Impact – According to the *Tulare County Comprehensive Airport Land Use* Plan (CALUP), the Project site is not located within an airport land use plan area or within two miles of a public-use airport.[113] The nearest public-use airport with an airport land use plan is Woodlake Airport, approximately 18 miles northwest of the Project site in Woodlake.[114] Therefore, the Project would result in no impact to public-use airports. **f) No Impact.** Located in the Vicinity of a Private Airstrip – The Project site is not in the vicinity of a private airstrip and will be not result in a safety hazard for people residing or working in the project area. Therefore, the Project would result in no impact to this resource. **g) No Impact.** Emergency Response or Evacuation Plans – Emergency response and/or evacuation plans in the Three Rivers and Project area may involve an integrated and coordinated response by local, state, and federal agencies. Sequoia Kings Canyon National Park (SEKI) provides its own emergency and law enforcement services and maintains mutual aid agreements with the County of Tulare[115]. The Project site (and almost the entire Mineral King corridor), lies within an area designated as a moderate-to-high wildland fire hazard severity zone in California Department of Forestry and Fire Protection (Cal Fire's) *Fire Hazard Severity Zones in State Responsibility Areas Map* (2007).[116] In the event of an emergency it is anticipated that the Mineral King Road (and adjacent utility service roads on Case Mountain) would provide escape corridors in the event of a significant wildfire or other emergency in the upper Mineral King corridor. Mineral King Road is the only access to the Mineral King sub-district of SEKI and the other private properties at nearby Cabin Flat and Silver City. Timely completion of replacement of the Mineral King Bridge will allow implementation of adopted emergency response and evacuation plans by remedying the structural deficiencies of the existing Mineral King Bridge. During the Project's replacement phase, vehicular access on the existing bridge will continue thereby enabling emergency responders (and their assets/resources) to have continued access/egress to the upper Mineral King corridor during construction-related activities of the replacement Mineral King Bridge. Over the long term, the Project will enhance and enable emergency service provisions and efficient/effective implementation of Tulare County's OEP in the Mineral King area. As such, the Project would result in a less than significant impact to this resource. **h) No Impact.** Risk of Loss, Injury, or Death Involving Wildland Fires - The Project involves replacement of a Mineral King Bridge located in the lower section of the Mineral King canyon. The Project will not expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. Also see discussion at Item g), above.				

[112] State of California Department of Toxic Substances Control EnviroStor database map (http://www.envirostor.dtsc.ca.gov/public/) and Hazardous Waste and Substance Sites List (http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm).

[113] Tulare County Comprehensive Airport Land Use Plan (CALUP) 2012. Page 5-24. Prepared by Aries Consultants Ltd.

[114] Ibid.

[115] County of Tulare. Tulare County Operational Area Emergency Operations Plan (EOP). 2013. Page 35.

[116] California Department of Forestry and Fire Protection. Fire Hazard Severity Zones in State Responsibility Areas Map. 2007 (see https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/) .

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	Therefore, there will be no impact leading to the exposure of people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. **c) - h) Mitigation Measures: None Required.** **c) - h) Conclusion: No Impact.** **c) – h) Cumulative Project-level Impact:** As there would be no project-level impact, there will be no cumulative impact. **Cumulative Impact: Less Than Significant Impact.** As the Project will result in no to less than significant impacts to these resources, less than significant cumulative impacts would occur.					
10.	**HYDROLOGY AND WATER QUALITY**					
	Would the project:					
	a)	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☒	☐	☐
	b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
	c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☒	☐	☐
	i)	Result in substantial erosion or siltation on-or off-site?	☐	☐	☒	☐
	ii)	Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?	☐	☐	☐	☒
	iii)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
	iv)	Impede or redirect flood flows?	☐	☐	☐	☒

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
	e)	Conflict with or obstruct implementation of water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

Analysis:

The "Water Quality Assessment Report Mineral King Road Bridge Project" (WQAR) was prepared by consultants Galvin Preservation Associates (GPA) on behalf of Tulare County and Caltrans (see Attachment "F" in this MND) and is used in this analysis to support the environmental determinations (i.e., impacts) to this resource item.

As indicated in the WQAR's Executive Summary, "The primary purpose of a Water Quality Assessment Report (WQAR) is to fulfill the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and provide information, to the extent possible, for the National Pollution Discharge Elimination System (NPDES) permitting.

This WQAR includes a discussion of the project, the physical setting of the project area, and the regulatory framework with respect to water quality. It also provides data on the project area watershed and existing water quality, describes water quality impairments and beneficial uses, identifies potential water quality impacts/benefits associated with the project, and recommends avoidance and/or minimization measures for potentially adverse impacts.

The project is located in the Sierra Nevada foothills and the bridge serves as a seasonal entrance to Mineral King Valley in Sequoia National Park, approximately 1.45 miles east of the project area. The bridge is surrounded by mostly undisturbed wildlands with rolling hills and dense vegetation, including mature trees within and surrounding the project area. The project area is in a remote location, and the closest residence is more than 700 feet northeast of the bridge. The project area is in the East Fork Kaweah River watershed (HUC 1803000702) in the Tulare Lake Basin. The Tulare Lake Basin is a closed drainage basin (does not drain to the ocean) at the south end of the San Joaquin Valley, south of the San Joaquin River watershed. Within the project area, Kaweah River has a natural bottom lined with solid granite rock and flows southwest to Lake Kaweah."[117]

"The Kaweah River is considered waters of the United States (U.S.) and state, and is therefore protected under federal (Clean Water Act (CWA) Section 404) and state (CWA Section 401 and California Fish and Game Code Section 1602) regulations. A pre-construction notification under CWA Section 404 Nationwide Permit 14 from the United States Army Corps of Engineers (USACE), a CWA Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB), and a California Fish and Game Code Section 1602 Streambed Alteration Agreement from the California Department of Fish and Wildlife (CDFW) would be required for the project."[118]

The Introduction section of the WQAR summarized Alternative 2B as, "The Replacement Alternative would include construction of a replacement bridge with a new cast-in-place tensioned concrete box girder on a new alignment. The new bridge would be constructed immediately upstream of the existing bridge. The replacement bridge would consist of an approximately 120-foot-long single-span bridge (see Attachment A, Engineering

[117] Mineral King Road Bridge Project Water Quality Assessment Report. Executive Summary. Page i. Prepared by GPA and included in Attachment "F" of this MND.
[118] Ibid.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	Drawings). The replacement bridge would be the same width as the existing bridge, approximately 19 feet wide from curb to curb. The total bridge width, with Type 80 barrier rails, would be 22.5 feet (including a 19-foot travel way plus two 1-foot, 9-inch barrier rails). The replacement bridge would be located east (upstream) of the existing bridge, and traffic would continue to use the existing bridge until construction is completed. Following construction, the existing bridge would likely be used as a pedestrian crossing. Because the alignment of the bridge would be shifted to the east, the approach roadways would also be realigned. The new alignment would require cutting into the hillside at both bridge approaches. Depending on the depth to bedrock, blasting or hydro drilling of the existing rock would be required. Retaining walls would likely be needed to accommodate both roadway approaches and bridge abutments. In addition, new fill and retaining walls would be required to support the proposed alignment at the southwest corner of the structure. Under this alternative, minor rehabilitation work on the existing bridge is proposed to maximize its remaining life. This may include replacing the joint seals, applying methacrylate to the bridge deck, and/or injecting epoxy into the larger cracks in the arch ribs and pier spandrel columns."[119] At section 5.0 Potential Impacts 5.1 Construction Impacts, the WQAR notes, "Alternative 2B would include construction of a replacement bridge on a new alignment and would require cutting into the hillside at both bridge approaches. Depending on the depth to bedrock, blasting or hydro drilling of the existing rock would be required. There is potential for erosion of the hillside, and dust/soil to fall into the river, which could affect water quality from an increase in dust and turbidity. Additionally, oil, fuel, and other petroleum products used to maintain and operate construction equipment could be accidentally released. The project would require excavation to a maximum depth of 25 feet, but would not be expected to encounter groundwater or interfere with groundwater recharge. A water diversion would likely be required to divert water around the construction area, which would alter river flows. The diversion would be minimized to the extent feasible, and would not be longer than necessary to divert water through the construction area. Following construction, the water diversion would be removed and flow patterns would be restored to their normal conditions. Therefore, there would not be a permanent change to flow patterns in the project area. A water model has not been run for this project; therefore, the exact increase in turbidity resulting from the project is not known. However, standard BMPs outlined below in Section 6.0 would be included in the project to avoid or minimize the release of sediment and pollutants, including bridge materials and chemical toxins, into the river during construction. The project would be conducted in accordance with applicable water quality regulations and regulatory permits, and would not be expected to result in substantial water quality impacts."[120] In addition to construction impacts, the WQAR also addressed operational impact at section 5.2 Operational Impacts, to wit, "Installation of the new bridge under Alternative 2B would result in an increase of approximately 216 square feet of impervious surface area. Although the project would result in a minor increase in storm water runoff, the project would be designed to accommodate existing and anticipated runoff levels, and would not result in substantial increases in polluted runoff. The new bridge would not result in an increase in traffic volumes;				

[119] Op. Cit. 9.
[120] Op Cit. 24

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	therefore, it would not result in an increase in pollutant runoff from vehicles…The project would be designed in compliance with regulatory requirements; therefore, operational impacts on water quality would be minimal."[121] Also, the following Tulare County General Plan 2030 Update policies for this resource apply to this Project: *WR-2.1 Protect Water Quality*; *WR-2.2 National Pollutant Discharge Elimination System (NPDES) Enforcement*; *WR-2.3 Best Management Practices (BMPs)*; *WR-2.4 Construction Site Sediment Control*; and *WR-3.3 Adequate Water Availability*. **a) and c) Less Than Significant Impact With Mitigation** Water Quality Standards and Alteration of a Stream or River Resulting in Erosion or Siltation - As noted earlier, the WQAR indicates that the Project would require work within the river during the construction and that such activity could result in impacts to hydrology and water quality. Because work would be required within the river, the County is required to receive a Section 401 Water Quality Certification, Section 404 Nationwide Permit, and Section 1602 Streambed Alteration Agreement for the project. Additionally, a water diversion would likely be required to divert water around the construction area, which would alter river flows. The diversion would be minimized to the extent feasible, and would not be longer than necessary to divert water through the construction area. Following construction, the water diversion would be removed and flow patterns would be restored to their normal conditions. Therefore, impacts would be temporary, and not be a permanent change to flow patterns in the project area. The WQAR contains "avoidance, minimization and or mitigation strategies" and calls out; "Standard BMPs including erosion control measures would be incorporated into the project to comply with the County's NPDES Permit. The measures that would be implemented for the project area listed in the sections below [as contained in the WQAR]."[122] The WQAR specifically notes inclusion of standard BMPs (including measures that would be incorporated into the project to comply with the County's NPDES Permit); measures to prevent hazardous materials from entering the Kaweah River; and best management practices which should be implemented during construction to avoid or minimize adverse effects on water quality within the Kaweah River. As noted earlier, water diversion would likely be required to divert water around the construction area, which would alter river flows. The diversion would be minimized to the extent feasible, and would not be longer than necessary to divert water through the construction area. Following construction, the water diversion would be removed and flow patterns would be restored to their normal conditions. Therefore, there would not be a permanent change to flow patterns in the project area. **Mitigation Measures HYD - 5** through **HYD - 7** can be implemented to avoid and minimize impacts to the riverine corridor from water diversions as applicable. With the use of these mitigation measures as applicable, it is anticipated that impacts that could alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on-or off-site, would be less than significant. As such, to avoid and/or impacts on the water quality resource, the avoidance and minimization measures contained in the WQAR (numbered WQ-1 through WQ -9 in the WQAR, and re-enumerated as **HYD – 1** through **HYD – 7** in this MND) are incorporated herein. The Project will not result in runoff water that would exceed the capacity of existing or planned stormwater drainage systems, nor would the Project provide substantial additional sources of polluted runoff. The Project site lies in a natural drainage system, the East Fork of the Kaweah River and is not served by a community storm water drainage system. Stormwater will not be generated by this Project.				

[121] Op. Cit.
[122] Op. Cit. 26.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

Based on studies and analysis provided by consultant GPA (and included in Attachment "F" of this MND), the Project will not substantially degrade surface or groundwater quality. As addressed in Checklist Item 9 a) earlier, with the implementation of the **Mitigation Measures HYD - 1** through **HYD - 7** and compliance with applicable water quality regulations and other regulatory permits, rules, regulations, orders, standards, etc., the project would not result in substantial surface or groundwater quality impacts during the construction-related activities phase. Further, it is not anticipated normal usage (i.e., daily operation) of the newly rehabilitation/retrofitted bridge would impact surface or groundwater quality.

a) and c) Mitigation Measures: HYD – 1 through HYD - 7.

HYD-1 (Best Management Practices): Appropriate hazardous material BMPs, including having a spill prevention kit on site would be implemented to minimize the potential for chemical spills or containment releases into the Kaweah River, including any non-storm water discharge.

HYD-2 (Fueling and Maintenance): All equipment refueling and maintenance would be conducted in the upland staging area away from the canal, per standard specifications and regulatory permits. In addition, vehicles and equipment would be checked daily for fluid and fuel leaks, and drip pans would be placed under all equipment that is parked and not in operation.

HYD-3 (Work Areas): Work areas would be minimized to the smallest area feasible.

HYD-4 (Staging Areas): Staging areas would be sited away from the edges of the river to reduce potential for disturbance of, or non-storm water discharge to, the Kaweah River.

HYD-5 (Best Management Practices): BMPs, including silt fencing and fiber rolls, would be implemented to minimize dust, dirt, and debris resulting from construction activities, and to protect the water quality of the Kaweah River pursuant to the requirements of the RWQCB and project permits.

HYD-6 (Erosion Control): Following completion of construction activities, appropriate erosion control measures would be implemented to ensure that soils disturbed by construction are stabilized, to minimize non-storm water discharges into the Kaweah River, and to meet the requirements of the RWQCB and project permits.

HYD-7 (Minimization and Revegetation): All disturbance to aquatic habitat, including riparian vegetation and jurisdictional waters, would be minimized with the use of environmentally sensitive area fencing and all soil exposed as a result of project construction would be revegetated using native-plant hydroseeding or live planting methods. Restoration would be at a minimum ratio of 1:1, or as agreed upon as part of regulatory permitting.

Conclusion: Less Than Significant with Mitigation

Cumulative Project-level Impact: Less Than Significant With Mitigation. The Project would include construction of a new replacement bridge and rehabilitation work on the existing bridge, and would not, upon completion, violate any water quality standards or waste discharge requirements. The Project could result in temporary impacts to soil and topsoil; however, the Project includes **Mitigation Measures HYD-1** through **HYD-7** to prevent adverse impacts to water quality (or other resources) that might occur during the rehabilitation/retrofitting phase. With the implementation of the **Mitigation Measures HYD-1** through **HYD-7** and compliance with applicable water quality regulations and other regulatory permits, rules, regulations,

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

orders, standards, etc., the Project would not result in substantial water quality impacts. As such, impacts to this resource would be less than significant with mitigation.

b) No Impact. Groundwater Supplies and Recharge – The Project will not deplete groundwater supplies or interfere with groundwater recharge. "The Project is located approximately five miles outside of the nearest groundwater basin, the Tule Groundwater Sub-basin. White River flows from east to west and ultimately drains to this groundwater basin."31 No groundwater wells would be drilled as part of the proposed project. The proposed project would not deplete groundwater supplies or interfere substantially with groundwater recharge that would result in a net deficit in aquifer volume or lowering of the local groundwater table level.

As noted earlier, Alternative 2B would include construction of a replacement bridge on a new alignment and would require cutting into the hillside at both bridge approaches. Depending on the depth to bedrock, blasting or hydro drilling of the existing rock would be required. There is potential for erosion of the hillside, and dust/soil to fall into the river, which could affect water quality from an increase in dust and turbidity. Additionally, oil, fuel, and other petroleum products used to maintain and operate construction equipment could be accidentally released. The project would require excavation to a maximum depth of 25 feet, but would not be expected to encounter groundwater or interfere with groundwater recharge. Therefore, the Project would not result in an impact to this resource.

Mitigation Measures: None Required.

Conclusion: No Impact.

Cumulative Project-level Impact: No Impact. As the Project would result in no impact, there would be no cumulative impact.

d) No Impact. Flood Hazard, Tsunami, Seiche zones – As the Project is not located in or near a lake or enclosed body of water, near a seashore, or located in lands conducive or subject to inundation by flooding, tsunami, or seiche zones that would risk release of pollutants due to inundation. Therefore, the Project would result in no impact to this resource.

Mitigation Measures: None Required.

Conclusion: No Impact.

Cumulative Project-level Impact: No Impact. As the Project would result in no impact, there would be no cumulative impact.

e) No Impact. Water quality control or sustainable groundwater management plan - Per the discussions in Items a) through c), the Project would not cause any conflicts or result in the obstruction of any water quality control or groundwater management plans.

Mitigation Measures: None required.

Conclusion: No Impact.

Cumulative Project-level Impact: No Impact. As the Project would result in no impact, there would be no cumulative impact.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	Cumulative Impact: Less Than Significant. Implementation of **Mitigation Measures HYD-1** through **HYD-7** would mitigate impacts to this resource to less than significant for Project-level and cumulative impacts. With the exception of Items a) and c), the Project would result in no-to-less than significant impact.					
11.	**LAND USE AND PLANNING**					
	Would the project:					
	a)	Physically divide an established community?	☐	☐	☐	☒
	b)	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
	Analysis: The following Tulare County General Plan 2030 Update policies for this resource apply to this Project: FGMP-2.1 *Community Commercial Development*; LU-1.10 *Roadway Access*; LU-4.5 *Commercial Building Design*. **a) No Impact.** Divide an Established Community - The Project site is located approximately six (6) miles east of the community of Three Rivers in an isolated stretch of the East Fork of the Kaweah River. The Mineral King Bridge connects the upper and lower regions of the Mineral King Valley. As such, the Project will not divide an established community. Therefore, the Project would result in no impact to this resource. **b) No Impact.** Conflict with Applicable Land Use Plans, Policies, or Regulations – The Project site is outside of the Three Rivers Urban Development Boundary (UDB) in unincorporated Tulare County. The Project site is subject to the Foothill Growth Management Plan (FGMP) component of the Tulare County General Plan 2030 Update (Part II – Area Plan Policies, Chapter 3). Ownership of the lands under and adjacent to the Project site is private and zoned "AF", Foothill Agricultural Zone.[123] The existing and replacement bridge sites are located within existing and future rights-of-way. Replacement of the Mineral King Bridge will not conflict with any applicable land use plan, policy, or regulation of the County or any other agency; no impacts will result from this Project. **a) and b) Mitigation Measures: None required.** **a) and b) Conclusion: No Impact.** **Cumulative Project-level Impact: No Impact.** As the Project would result in no project-level impact, there would be no cumulative impact. **Cumulative Impact: No Impact.** As noted earlier, as the Project would result in replacement of an existing bridge with a new bridge and rehabilitation of the existing bride for non-vehicular purposes, the Project would not divide an established community, nor would it conflict with applicable land use plans, policies, or regulations. As such, the Project would result in no impact to this resource.					

[123] Tulare County, 2018, ArcGIS.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
12.	**MINERAL RESOURCES**					
	Would the project:					
	a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
	b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Analysis:

a) No Impact. Loss of availability of a known regional and state mineral resource – No oil or gas wells are located within or near the proposed Project site. According to the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR), there are only three areas within Tulare County that produce (or have produced) gas and oil: the Trico gas field; and the Deer Creek (including Deer Creek North) and Terra Bella oil fields.[124] No other mineral resources of value are known to exist on or near the Project site. Therefore, the Project would result in no impact to this resource.

b) No Impact. Loss of availability of a locally important mineral resource – According to the Environmental Resources Management Element of the Tulare County General Plan 2030 Update, the most important minerals that are extracted in Tulare County are sand, gravel, crushed rock, and natural gas.[125] The Project site does not contain any of the minerals or natural resources of local or state significance known to exist in the County. According to the Environmental Resources Management Element, the Project site is not in a Mineral Resource Zone and none are in the immediate Project vicinity; the nearest mineral resource zone is located approximately 14 miles west-southwest of the Project site.[126] Therefore, the Project would result in no impact to this resource.

a) and b) Mitigation Measures: None required.

a) and b) Conclusion: No Impact.

Cumulative Project-level Impact: No Impact. As the Project would result in no project-level impact, there would be no cumulative impact.

Cumulative Impact : No Impact. As noted earlier, as the Project would result in replacement of an existing bridge with a new bridge and rehabilitation of the existing bride for non-vehicular purposes, the Project would not divide an established community, nor would it conflict with applicable land use plans, policies, or regulations. As such, the Project would result in no impact to this resource.

[124] State of California, Department of Conservation. Oil and Gas Maps: District 4 at: http://www.conservation.ca.gov/dog/maps/Pages/d4_index_map1.aspx or go directly to: ftp://ftp.consrv.ca.gov/pub/oil/maps/dist4/451/Map451.pdf .

[125] Tulare County General Plan 2030 Update. Part I – Goals and Policies Report, Chapter 8.

[126] Ibid. Environmental Resources Management Element Section 8.2 – Mineral Resources. Figure 8-2.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
13.	**NOISE**					
	Would the project result in:					
	a)	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
	b)	Generation of excessive ground-borne vibration or ground-borne noise levels?	☐	☒	☐	☐
	c)	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

Analysis:

The following Tulare County General Plan 2030 Update policies for this resource apply to this Project: HS-8.11 *Peak Noise Generators*; HS-8.12 *Foothill and Mountain Noise*; HS-8.1 7 *Coordinate with Caltrans*; HS-8.18 *Construction Noise*; HS-8.19 *Construction Noise Control.*

The distinction between short-term construction noise impacts and long-term operational noise impacts is a typical one in CEQA documents and local noise ordinances, which generally acknowledge that short-term noise from construction-related activities is inevitable and cannot be mitigated beyond a certain level. The Health and Safety Element (Section 10.8 Noise) does not identify short-term, construction-noise-level thresholds. It does, however, limit noise generating activities such as construction to hours of normal business operation unless specific County approval is given. Thus, the County provides latitude to short-term noise at levels that it would not accept from permanent noise sources.

The Health and Safety Element of the Tulare County General Plan 2030 Update (Part I – Goals and Policies Report, Chapter 10) identifies noise producers in the County including highways and roads, railroads, manufacturing plants, airports, and agricultural operations. The Health and Safety Element establishes noise level criteria for typical land uses throughout Tulare County. Exterior noise levels in the range of 60 dB Ldn or Community Noise Equivalent Level (CNEL), or below, are generally considered acceptable for residential land uses, 70 dB Ldn (or CNEL) or below are considered acceptable for golf courses, and 75 dB Ldn (or CNEL) or below are considered acceptable for industrial and agricultural uses.[127] Permanent (i.e., daily, regularly occurring) noise sources that contribute to ambient noise levels in and adjacent to the Project site is limited to traffic traveling along Mineral

[127] Tulare County General Plan 2030 Update. 10. Health and Safety Element Goals and Policy Report. Section 10.8 – Noise. Table 10-1. Page 10-61 January 2008. Accessed May 2021 at: http://generalplan.co.tulare.ca.us/documents/GP/001Adopted%20Tulare%20County%20General%20Plan%20Materials/000General%20Plan%202030%20Part%20I%20and%20Part%20II/GENERAL%20PLAN%202012.pdf .

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

King Road and traversing Mineral King Bridge. The County's General Plan Health and Safety Element-Noise Section identifies noise sensitive land use as "Noise sensitive receptors that include residential areas, hospitals, convalescent homes and facilities, schools, and other similar land uses."[128] No sensitive receptors are in the immediate vicinity of the proposed project site. However, isolated single-family rural residences are located within vicinity of the Project site. The nearest rural residence is approximately 700 feet from potential noise generating activities such as pile drilling, demolition, and other noise from construction-related equipment.

As noted earlier, the proposed Project is to rehabilitate the existing bridge. The Project will not increase the number of through traffic lanes. In general (and similar to the County), Caltrans considers noise sensitive land uses to include residences, schools, hospitals, churches, and parks. In accordance with the Caltrans Environmental Handbook guidelines, noise is defined as unwanted sound. Sound levels usually are measured and expressed in decibels (dB), with 0 dB being the threshold of hearing. Decibel levels range from 0 to 140: 50 dB for light traffic is considered a low decibel level, whereas 120 dB for a jet takeoff at 200 feet is considered a high decibel level. Under the Caltrans Traffic Noise Analysis Protocol (CaTNAP) 2011, projects that are not Type 1 only require an evaluation of predicted construction noise. The Project is not a Type 1 project as defined in 23 CFR 772.5(h); generally as construction on new location or the physical alteration of an existing highway, which significantly changes either the horizontal or vertical alignment or increases the number of through-traffic lanes.[129]"

a) Less Than Significant Impact With Mitigation. Excessive Noise - Proposed Project construction- and rehabilitation-related activity will involve short-term, temporary, and intermittent noise sources from construction-related equipment operations which are anticipated to be completed in approximately twelve months (365 days). Typical construction equipment will include backhoe(s), drilling rig(s), cranes, and other miscellaneous equipment for removal of the existing bridge components and installation of new bridge components.

Table 12-1. Typical Construction Noise Levels

Type of Equipment	dBA at 50 feet	
	Without Feasible Noise Control	With Feasible Noise Control[1]
Dozer or Tractor	80	75
Excavator	88	80
Scraper	88	80
Front End Loader	79	75
Backhoe	85	75
Grader	85	75
Truck	91	75

Source: U.S. Department of Transportation, Federal Transit Administration. 2006.

[1] Feasible noise control includes the use of intake mufflers, exhaust mufflers, and engine shrouds operating in accordance with manufacturers specifications.

During the construction phase, noise from construction-related activities will contribute to the noise environment in the immediate proposed Project vicinity. Activities involved in construction will generate maximum noise levels (as indicated in **Table 12-1**) ranging from 55 to 95 dBA (outdoor noise levels) at a distance of 50 feet, without feasible noise control (e.g., mufflers, well maintained equipment, shielding noisier equipment parts, and/or time and activity constraints) and ranging from 75 to 86 dBA at a distance of 50 feet,

[128] Ibid.

[129] Code of Federal Regulations Title 23 Chapter 1 Subchapter H Part 772. Procedures for Abatement of Highway Traffic Noise and Construction Noise. Accessed May 2021 at: https://www.ecfr.gov/cgi-bin/text-idx?rgn=div5&node=23:1.0.1.8.44#se23.1.772_15

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with feasible noise control. There are isolated single residences located in the vicinity of the proposed Project site. Although the noise generated from earthmoving equipment may exceed the 75 dB Ldn during earthmoving operations, the impact is short-term, temporary, and intermittent occurring only during normal business hours, typically from 8:00 a.m-5:00 p.m.

Use of construction-related noise control/minimization **Mitigation Measures NOI-1** through **NOI-5** are incorporated into the Project from Caltrans' Standard Specifications and **Mitigation Measure NOI-6** will implement noise reduction via Tulare County General Plan policies. Therefore, the Project will result in a less than significant impact to this resource.

Mitigation Measures: See **NOI-1** through **NOI-6.**

Construction noise is regulated by Caltrans Section 14-8.02 of the Standard Specifications (which are enumerated consistent with numbering conventions within this MND) and applicable local noise standards. The Contractor shall follow Caltrans Section 14-8.02 of the Standard Specifications and the Noise Section of the 2012 General Plan which are listed below as **Mitigation Measures NOI-1** through **NOI-6**, as applicable. As such, the following shall be implemented as noise minimization measures:

NOI-1: Do not exceed 86 dBA LMax at 50 feet from the job site activities from 9 A.M. to 6 A.M.

NOI-2: Equip an internal combustion engine with the manufacturer-recommended muffler. Do not operate an internal combustion engine on the job site without the appropriate muffler.

NOI-3: Noise levels generated during construction shall comply with applicable local, state, and federal regulations.

NOI-4: Construction activities are limited to the hours of 7 A.M. to 7 P.M., Monday through Saturday when construction activities are located near sensitive receptors. No construction shall occur on Sundays or national holidays without a permit from the County. No peak noise generating activities shall be allowed to occur outside of normal business hours without County approval.

NOI-5: The construction contractor will implement best practices guidelines (i.e.; berms, screens, etc.) as appropriate and feasible to reduce construction-related noise impacts on surrounding land uses.

And Tulare County Noise Minimization Measure:

NOI-6: The contractor shall implement appropriate additional noise mitigation measures including more strict curfews on the hours of operation during construction as directed by the County per the County's General Plan Health and Safety Element-Noise Section guidelines and regulations.

Conclusion: Less Than Significant With Mitigation.

Cumulative Project-level Impact: Implementation of **Mitigation Measures NOI-1** through **NOI-6**, as applicable, would reduce noise impacts to less than significant.

b) Less Than Significant With Mitigation. Excessive Groundborne Vibration and Noise: Less Than Significant Impact – Vibration is the periodic oscillation of a medium or object. Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. Similar to airborne sound, ground borne vibrations may

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

be described by amplitude and frequency. Vibration amplitudes are usually expressed in peak particle velocity (PPV) or root mean squared (RMS), as in RMS vibration velocity. The PPV and RMS (VbA) vibration velocity are normally described in inches per second (in/sec). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal and is often used in monitoring of blasting vibration because it is related to the stresses that are experienced by buildings (FTA 2006).[130]

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. As it takes some time for the human body to respond to vibration signals, it is more prudent to use vibration velocity when measuring human response. The vibration velocity level is reported in decibels relative to a level of 1x10-6 inches per second and is denoted as VdB. The typical background vibration-velocity level in residential areas is approximately 50 VdB. Ground borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels (FTA 2006).[131]

Typical outdoor sources of perceptible ground borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. Construction vibrations can be transient, random, or continuous. The approximate threshold of vibration perception is 65 VdB, while 85 VdB is the vibration acceptable only if there are an infrequent number of events per day (FTA 2006).[132] The **Table 12-2** describes the typical construction equipment vibration levels.

Table 12-2
Typical Construction Vibration Levels

Equipment	VdB at 25 ft^2
Small Bulldozer	58
Jackhammer	79

Source: U.S. Department of Transportation. Federal Transit Administration, Transit Noise and Vibration Impact Assessment.

Vibration from construction- and rehabilitation-related activities will be short-term, temporary, and intermittent and will not exceed the FTA threshold for the residences near the proposed Project. Therefore, the Project will result in a less than significant impact. **Mitigation Measures 12.1** through **12.6**, as applicable, are incorporated into the Project from Caltrans' Standard Specifications and noise reduction via Tulare County General Plan policies.

Mitigation Measures: See **Mitigation Measures NOI-1** through **NOI-6.**

Conclusion: Less Than Significant With Mitigation.

Cumulative Project-level Impact: Implementation of **Mitigation Measures NOI-1** through **NOI-6**, as applicable, would reduce the cumulative impact to less than significant.

c) Less Than Significant Impact. Permanent Increase in Ambient Noise – Proposed Project construction-and rehabilitation-related activity will involve short-term, temporary, and intermittent noise sources from

[130] U.S. Department of Transportation, Federal Transit Administration. Transit Noise and Vibration Impact Assessment. May 2006. Pages 7-4 and 7-5. Accessed at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf

[131] Ibid.

[132] Op. Cit. 7-6.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

earthmoving equipment operations which are anticipated to be completed in approximately twelve months (365 days); thus, avoiding a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the Project. The use of **Mitigation Measures NOI-1** through **NOI-6**, as applicable, will reduce noise to a less than significant impact.

Mitigation Measures: See **Mitigation Measures NOI-1** through **NOI-6.**

Conclusion: Less Than Significant With Mitigation.

Cumulative Project-level Impact: Implementation of **Mitigation Measures NOI-1** through **NOI-6**, as applicable, would reduce the cumulative impact to less than significant.

d) Less Than Significant With Mitigation. Temporary or Periodic Increase in Ambient Noise: Less Than Significant Impact – Proposed Project construction- and rehabilitation-related activity will involve short-term, temporary, and intermittent noise sources from earthmoving equipment operations which is anticipated to last approximately twelve months resulting in a temporary or periodic increase in ambient noise levels in the Project vicinity. **Mitigation Measures 12.1** through **12.6**, as applicable, are incorporated into the Project from Caltrans' Standard Specifications; and Tulare County General Plan policies. Therefore, the Project will result in a less than significant impact.

Mitigation Measures: See **Mitigation Measures NOI-1** through **NOI-6.**

Conclusion: Less Than Significant With Mitigation.

Cumulative Project-level: Less Than Significant With Mitigation. Implementation of **Mitigation Measures NOI-1** through **NOI-6**, as applicable, would reduce noise impacts to both Project-level and cumulative impact to less than significant.

e) - f) No Impact. Project Located Within Two Miles of Public Airport or Private Airstrip - The proposed Project is not located within an airport land use plan or, where such a plan has not been or public use airport, will the adopted, within two miles of a public airport project nor is it within the vicinity of a private airstrip. There is no possibility of exposing people residing or working in the Project area to excessive noise levels in or near an existing airport public or private airstrip. As such, no impact will occur.

Mitigation: None Required.

Conclusion: No Impact.

Cumulative Project-level Impact: No Impact. As there would be no impact at the project-level, there would be no cumulative impact.

Cumulative Impact: Less Than Significant With Mitigation. Implementation of **Mitigation Measures NOI-1** through **NOI-6**, as applicable, would reduce noise impacts to both Project-level and cumulative impact to less than significant.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
14.	**POPULATION AND HOUSING**					
	Would the project:					
	a)	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
	b)	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
		Analysis: **a) - c) No Impact.** Population Growth and Displacement of Housing or People - The Project consists of a rehabilitation/retrofit of the Mineral King Bridge over the East Fork of the Kaweah River in a remote section of unincorporated Tulare County. The Project will serve the needs of persons requiring access to the upper Mineral King Valley, (i.e. local residents, tourists and government service providers) in addition to maintaining and improving the bridge. The Project does not include new housing, new roads, or other new infrastructure that might induce population growth in the Project area. Employees working on the Project would be in the area during the rehabilitation/retrofit work and may stay in temporary accommodations in the Three Rivers area, approximately six miles west of the Project site. As such, the proposed Project will not result in demographic or population changes, induce population growth, alter the location, distribution, or density of the area's population, or displace any housing or people; and the Project does not conflict with the County's adopted housing element. Therefore, the Project would result in no impact to this resource. **a) - c) Mitigation Measures: None Required.** **Conclusion: No Impact.** **a) - c) Cumulative Impact: No Impact.** There will be no project-level or cumulative impact to this resource as the project is limited to construction of a new replacement bridge and rehabilitation of the existing bridge for non-vehicular use.				
15.	**PUBLIC SERVICES**					
	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:					
	a)	Fire protection?	☐	☐	☒	☐
	b)	Police protection?	☐	☐	☒	☐
	c)	Schools?	☐	☐	☐	☒
	d)	Parks?	☐	☐	☐	☒
	e)	Other public facilities?	☐	☐	☐	☒

Analysis:

The following Tulare County General Plan 2030 Update policies for this resource apply to this Project: WR-3.3 *Adequate Water Availability*; PFS-7.2 *Fire Protection Standards*; PFS-7.8 *Law Enforcement Staffing Ratios*.

a) Less Than Significant Impact. Fire Protection – The Project consists of a rehabilitation/retrofit of a Mineral King Bridge over the East Fork of the Kaweah River in a remote section of unincorporated Tulare County. The Project does not contain any proposals or plans that are anticipated to create conditions that will impact area fire protection resources. According to Cal Fire, the Project area lies within a State Responsibility Area (SRA).[133] The Project site lies in a geographical and topographical relief that features high-fuel loads, high wildland fire danger, dispersed housing, and close proximity to Sequoia National Park. It is anticipated that any fire outbreak in the area will become a multi-agency event involving the resources of Tulare County Fire, Cal Fire and the National Park Service fire brigades and aviation unit located alternately at Hammond Station (summer), Ash Mountain (all-year) and Three Rivers.[134] While the Project will require the temporary use of a short-term bypass bridge immediately west of the existing Mineral King Bridge, the bypass bridge will serve existing, pass-through traffic and enable continued emergency service to continue utilizing Mineral King Road, thereby maintaining fire protection services to the area. As such, the Project will have a less than significant impact to this resource.

Mitigation: None Required.

Conclusion: Less Than Significant Impact.

Cumulative Project-level Impact: Less Than Significant Impact. As there would be a less than significant project-level impact, there would be a less than significant cumulative impact.

b) Less Than Significant Impact. Police Protection - The proposed Project will not include any population growth and will, therefore, not impact the need for additional police facilities. Police protection will be continue to be provided by the Tulare County Sheriff's Department, California Highway patrol and/or National Park Service Law Enforcement via mutual aid request. Therefore, the Project will have a less than significant impact to this resource.

Mitigation: None Required.

Conclusion: Less Than Significant Impact.

Cumulative Project-level Impact: Less Than Significant Impact. As there would be a less than significant project-level impact, there would be a less than significant cumulative impact.

c) No Impact. Schools - The proposed Project will not include any population growth and will, therefore, not impact the need for additional school facilities. As such, the Project would result in no impact to this resource.

Mitigation: None Required.

Conclusion: No Impact.

Cumulative Project-level Impact: No Impact. As there would be no impact at the project-level, there would be no cumulative impact.

d) No Impact. Parks. - Community parks are not located within or in the vicinity of the proposed Project. The Project enables visitation to the Mineral King sub-district of Sequoia National Park thereby enhancing access

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	of national park resources by local residents, visitors, and park staff. The Project would result in no impact to this resource. **Mitigation: None Required.** **Conclusion: No Impact.** **Cumulative Project-level Impact: No Impact.** As there would be no impact at the project-level, there would be no cumulative impact. **e) No Impact.** Other Public Facilities. No Impact – The proposed Project is replacement of a public facility (the bridge) whose maintenance and upkeep will allowed continued movement of people and goods along the Mineral King corridor. The Project will enhance such services and facilities and will result in no impact to this Checklist Item. **Mitigation: None Required.** **Conclusion: No Impact.** **Cumulative Project-level Impact: No Impact.** As there would be no impact at the project-level, there would be no cumulative impact. **Cumulative Impact: Less Than Significant Impact.** As noted earlier, ss there would be no to less than significant impact at the project-level, there would be a less than significant cumulative impact.					
16.	**RECREATION**					
	a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
	b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
	Analysis: **a) - b) No Impact.** Increased Use of Existing Recreational Facilities or Construction of New Recreational Facilities - The Mineral King Bridge provides an important route to access and visit recreational areas of the Mineral King sub-district of Sequoia National Park. As indicated in the seismic assessment of the Mineral King Bridge rehabilitation/retrofitting project, the *"M375A Mineral King Bridge Draft Project Scoping Study"* prepared by consultant Cornerstone Structural Engineering Group (and included in Attachment "E" of this					

[133] Cal Fire. 2018. Fire Prevention Fee. Accessed at: https://www.fire.ca.gov/grants/fire-prevention-grants/state-responsibility-area-fire-prevention-fee/

[134] Three Rivers Community Plan 2018 Update. Page 157.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	MND) concluded that the bridge does not meet the "no collapse" criteria specified in Caltrans memo to Designers 20-4.[135] As such, there is a potential for the bridge to fail (collapse) during a seismic event. The Project scope has changed from rehabilitation/retrofitting of the existing bridge to bridge; however, the conclusions of the *"M375A Mineral King Bridge Draft Project Scoping Study"* remain valid. Rather than simply abandon/retire the existing bridge, the Project now includes retrofitting the bridge to accommodate non-vehicular usage (e.g., pedestrians and cyclists) The replacement bridge is not expected to increase the use of any public park facilities and will not result in increased impacts on existing recreational resources. Further, the Project does not include recreational facilities, or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. Upon completion of the Project, the bridge will continue to provide ongoing usage to access the recreational locations noted earlier. Therefore, the Project will not increase the use of the park or other recreational facility, and it does not include recreational facilities, or require the construction or expansion of recreational facilities. As such, there will be no impact to these resources as a result of the Project. **a) - b) Mitigation Measures. No Required.** **a) - b) Conclusion: No Impact.** **a) - b) Cumulative Project-level Impact.** As there will be no project-level impact, there will be no cumulative impact. **Cumulative Impact: No Impact.** As noted earlier, the Project would result in replacement of an existing bridge with a new bridge and rehabilitation of the existing bride for non-vehicular purposes. The Project does not include recreational facilities, or require the construction or expansion of recreational facilities. Therefore, the Project would result in no cumulative impact to this resource.					
17.	**TRANSPORTATION**					
	Would the project:					
	a)	Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☐	☒
	b)	Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	☐	☐	☐	☒
	c)	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses, (e.g., farm equipment)?	☐	☐	☐	☒
	d)	Result in inadequate emergency access?	☐	☐	☐	☒

[135] *"M375A Mineral King Bridge Draft Project Scoping Study" (Scoping Study)"* May of 2015. Page 34; also pages 34 and 2 of 4 of the attached letter to Mr. Cullers, Cornerstone Structural Engineering Group Prepared by consultant Cornerstone Structural Engineering Group and included as Attachment "E" of this MND.

Analysis:

The following Tulare County General Plan 2030 Update policies for this resource apply to this Project: LU-1.10 *Roadway Access*; *TC-1.3 Regional Coordination*; *TC-1.4 Funding Sources*; and *TC-1.5 Public Road System Maintenance*.

The proposed Project will result in rehabilitating/retrofitting an existing two-lane bridge on Mineral King Road over the East Fork of the Kaweah River. Completion of a structurally sound bridge will allow continued year-round access while improving safety and meeting the daily usage needs of the bridge. The proposed Project will not increase traffic patterns, levels of service (LOS) or vehicle miles traveled (VMT), nor require the construction or expansion of existing facilities. The analysis concludes that there will be no impact to traffic and transportation resources; rather, the Project will benefit this resource as it would result in improvements to the existing bridge structure thereby meeting current structural standards while maintaining its current and future functionality.

a) No. Impact. Conflict with Applicable Plans, Ordinances, or Policies for Circulation Systems – As summarized from the Preliminary Environmental Study (included in Attachment "G" of this MND); the County of Tulare (County), via funding from the California Department of Transportation (Caltrans), proposes to replace the existing Mineral King (Oak Grove) bridge with a new bridge over the East Fork of the Kaweah River in an unincorporated area of Tulare County (approximately six miles east of Three Rivers, California). Following completion of the new bridge, the existing bridge would be rehabilitated for non-vehicular uses (e.g., pedestrians and cyclists). The proposed Project addresses the need to replace the existing bridge with a modern structure designed to improve safety. The Project costs are included in the Federal Transportation Improvement Program (FTIP) and are subsidized by the Federal Highway Bridge Replacement (HBP) funding program. The Project footprint for the replacement bridge includes land.[136] The replacement bridge (and associated roadway) would be located within public rights-of-way along Mineral King Road. The existing bridge will be rehabilitated following completion of the new bridge, in the interim, the existing bridge will continue to accommodate vehicular traffic. Once the rehabilitation component of the existing bridge is completed, it will be closed to vehicular traffic and can be used by pedestrians and cyclists without concern of vehicles that would normally use the bridge. The Project will not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of a circulation system; therefore, no impact will occur as a result of this Project.

Mitigation: None Required.

Conclusion: No Impact.

Cumulative Project-level Impact: No Impact. As there would be no impact at the project-level, there would be no cumulative impact.

b) No Impact. Conflict with CEQA guidelines section 15064.3. – The Project would replace the existing Mineral King (Oak Grove) bridge with a new bridge over the East Fork of the Kaweah River. Following completion of the new bridge, the existing bridge would be rehabilitated for non-vehicular uses (e.g., pedestrians and cyclists). As such, the Project will not increase or decrease vehicle miles travelled. There will be no impact on this Checklist Item as a result of the Project.

Mitigation: None Required.

Conclusion: No Impact.

Cumulative Project-level Impact: No Impact. As there would be no impact at the project-level, there would be no cumulative impact.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	c) No Impact. Increased Hazards Resulting from Design Features – The Project would replace the existing Mineral King (Oak Grove) bridge with a new bridge over the East Fork of the Kaweah River. Following completion of the new bridge, the existing bridge would be rehabilitated for non-vehicular uses (e.g., pedestrians and cyclists). "The project area extends approximately 75 feet downstream and 60 feet upstream of the existing bridge, and includes the northern and southern approach roadways. In addition, two potential staging areas are being considered; the first construction staging area (Construction Staging Area 1) is located approximately 800 feet northeast of the existing bridge, and the second construction staging area (Construction Staging Area 2) is located immediately north of Mineral King Road approximately 1.3 miles west of the existing bridge. Temporary construction easements (TCE) would be required, and right-of-way (ROW) acquisitions may be required to accommodate construction of the project."[137] The Project will not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses, hazards or barriers for vehicles, pedestrians, or bicyclists. During the construction phase, adequate signage will delineate staging area turnoffs and parking areas. The existing b bridge will allowed continued vehicle access across the Kaweah River and would not disrupt traffic operations or affect access to nearby residences or to Sequoia National Park. As applicable, traffic circulation though the construction zone will be addressed as needed through traffic management controls consistent with Caltrans (and/or County) requirements/standards. Following replacement of the bridge, operational conditions along the bridge corridor are anticipated to return to pre-construction levels of use and service. As such, improvements will likely substantially decrease hazards as a result of the replacement bridge's structural and design features. Therefore, the Project will result in a less than significant impact to this Checklist Item. **Mitigation: None Required.** **Conclusion: No Impact.** **Cumulative Project-level Impact: No Impact.** As there would be no impact at the project-level, there would be no cumulative impact. **d) No Impact.** Result in Inadequate Emergency Access – The Project is located approximately six (6) miles east of Three Rivers along the Mineral King Road which provides access to SR 198. The Project will require a temporary bridge immediately below the existing bridge site during the construction phase to allow continued vehicle usage of the road. As such, emergency access from the Three Rivers area (and/or the Valley floor) will not be interrupted and the Project will result in a less than significant impact to this resource. **Mitigation: None Required.** **Conclusion: No Impact.** **Cumulative Project-level Impact: No Impact.** As there would be no impact at the project-level, there would be no cumulative impact.				

[136] Preliminary Environmental Study, HBP 5946 (106. Page 6-83 and included in Attachment "G" in this MND.
[137] Ibid.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	Cumulative Impact: No Impact. As noted earlier, As there would be no impact at the project-level, there would be no cumulative impact.					
18.	**TRIBAL CULTURAL RESOURCES**					
	Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:					
	a)	Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?	☐	☒	☐	☐
	b)	A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☒	☐	☐
	Analysis: As noted in the "Supplemental Finding of No Adverse Effect [Supplemental FNAE] of the Oak Grove Bridge (Caltrans Bridge # 46C0196) On Mineral King Road Over the East Fork of the Kaweah River near Three Rivers, Tulare County, California Federal Air Project No. HBP 5946 (106)" (Oak Grove Bridge Revised Alternative 2B Supplemental FNAE) prepared by consultant Galvin Preservation Associates (GPA) the Revised Alternative 2B would not result in direct or indirect adverse effects to the historic Oak Grove Bridge." Importantly, as indicated in the Supplemental FNAE, "There are no changes to the Area of Potential Effects (APE) as a result of the proposed project changes. All direct and indirect potential effects are limited to the previously established APE."[138] As such, the replacement bridge will not impact any areas outside of what had been previously investigated. An Archeological Survey Report (ASR) (prepared by Applied Earthworks, Inc. (Æ, a sub-consultant to primary consultant GPA) and included in Attachment "D" in this MND) was used to determine potential impacts on cultural resources that might occur as part of a rehabilitation/retrofit of the Mineral King (Oak Grove) Road Bridge. Prior to field inspection, Æ reviewed records on file with the Southern San Joaquin Valley Information Center of the California Historical Resources Information System (CHRIS) to identify areas previously surveyed and identify known cultural resources present within or in close proximity to the Project Study Area. The ASR is included in this IS/MND in Attachment "D" Æ conducted a systematic archaeological pedestrian survey on June 7, 2016, to identify any archaeological sites, features, or artifacts that might be present on the ground surface and any historic artifacts, features, and structures					

[138] Supplemental Finding of No Adverse Effect [Supplemental FNAE] of the Oak Grove Bridge (Caltrans Bridge # 46C0196) On Mineral King Road Over the East Fork of the Kaweah River near Three Rivers, Tulare County, California Federal Air Project No. HBP 5946 (106)". Page 8. Prepared by GPA and included as Attachment B of Attachment "D" of this MND.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

over 50 years old. "On March 6, 2016, Æ sent an e-mail to the Native American Heritage Commission (NAHC [commission]) requesting a search of their Sacred Lands File and the contact information for local Native American representatives that may have information about the area or an interest in the Project. The NAHC responded on March 9, 2016, stating that it did not identify any sacred sites within or adjacent to the APE (Appendix C [of the ARS]). The commission cautions that its Sacred Lands Inventory is not exhaustive and the absence of recorded sites does not preclude the discovery of cultural resources during project activities. The NAHC also provided the names and contact information for five Native American representatives who may have an interest in the project. On March 18, 2016, Æ sent a letter to each of these representatives describing the project, including a map of its location, and requesting information about the study area. On June 22, 2016, Æ attempted follow-up contact with the representatives by telephone.

Æ received one response to its request for information. Kern Valley Indian Council Secretary Julie Turner responded that the Project is outside the Kern Valley Indian Council's area of interest. Æ has not received any further responses to date (see consultation log in Appendix C [of the ASR]). Æ will forward any further communication received to Tulare County."[139]

As part of the MND process for this bridge replacement project, Tulare County RMA staff requested a Sacred Lands File (SLF) search by the Native American Heritage Commission (NAHC) on March 11, 2021. The NAHC responded on April 7, 2021, indicating negative results of the SLF (that is, no sacred lands were discovered on record). Pursuant to AB 52, Tulare County Resource Management Agency (RMA) staff contacted (by letter) thirteen (13) Native American tribal contacts (representing seven (7) tribes) regarding the proposed Project to provide an opportunity for consultation. To date (that is, at the time of release of this draft IS/MND), one tribe (Santa Rosa Rancheria Tachi Yokut Tribe) responded requesting consultation within the mandatory response time-frames. Mitigation Measures have been incorporated into the Project to reduce potential impacts in the event of accidental discovery of Native American tribal cultural resources during construction-related activities. Also, see Attachment "D" of this MND.

The following Tulare County General Plan 2030 Update policies for this resource apply to this Project: *ERM-6.1 Evaluation of Cultural and Archaeological Resources*; *ERM-6.2 Protection of Resources with Potential State or Federal Designations*; *ERM-6.3 Alteration of Sites with Identified Cultural Resources*; *ERM-6.8 Solicit Input from Local Native Americans*; and *ERM-6.9 Confidentiality of Archeological Sites*.

a) and b) Less Than Significant Impact With Mitigation. Change to Tribal Cultural Resources including Listed and Other Historical Resources - A SLF records search was requested from the NAHC for the Project area in 2016 and 2021; both searches returned with "negative" results. A CHRIS records search conducted on April 17, 2015 identified one previously recorded resource within the Project APE. P-54-004761 was recorded as two dry-stacked rock retaining walls, one on either side of Mineral King Road. "Two historic-era built environment resources also occur within the APE, the existing Mineral King Bridge (46C-0196), built in 1923, and the Southern California Edison (SCE) hydroelectric flume. Both resources are historically significant and eligible for the NRHP. Four other previously recorded resources are within 0.5 mile of the Project."[140] However, no Native American resources were identified. The NAHC conducted a Sacred Lands File search and responded on March 9, 2016, stating that it did not identify any sacred sites within or adjacent to the APE.[141]. As noted earlier, another SLF search was requested of the NAHC for this bridge replacement Project. NACH provide its

[139] *"Archeological Survey Report (ASR) Mineral King Road Bridge (No. 46C-0196) over the Eat Fork of the Kaweah River near Three Rivers, Tulare County, California"* Page 5. Prepared by Applied Earthworks, Inc. (Æ) and included in Attachment "D" in this MND.

[140] Ibid. 4.

[141] Ibid. 5.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	response indicating that no sacred lands were present within the APE. Also as noted earlier, of the 13 tribes contacted by RMA staff, only the Santa Rosa Rancheria Tachi Yokut Tribe has responded (to date) requesting consultation within the mandatory response time-frames. Although no surface artifacts, resources, or other Native American finds (including human remains, burial grounds, cemeteries, etc.) were discovered, the County is obligated to comply with Section 7050.5 of the California Health and Safety Code and (CEQA Guidelines) Section 15064.5, if human remains of Native American origin are discovered during Project construction, it is necessary to comply with State laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American Heritage Commission (Public Resources Code Sec. 5097). Also, see Checklist Item 5 Cultural Resources. Therefore, based on the information above, and in Checklist Item 5 Cultural Resources, the Project would result in a less than significant impact with mitigation to this resource. **a) and b) Mitigation Measures: See CUL-1 through CUL-3 and TCR-1.** **TCR-1 (Continued Consultation):** The County will continue consultation with Native American Tribes and Caltrans to appropriately address tribal concerns regarding the cultural significance of the project area. **a) and b) Conclusion: Less Than Significant Impact With Mitigation.** Based on the qualified expertise of Applied Earthworks (subconsultant to GPA) and the information, analysis, recommendations, and conclusions contained in the Supplemental FNAE (prepared by GPA), and in continuing consultation with Native American Tribes, the Project will result in less than significant impacts to this resource. **Cumulative Impact: Less Than Significant Impact.** As project-level impacts will be mitigated to a less than significant level, there will be a less than significant cumulative impact.				
19.	**UTILITIES AND SERVICE SYSTEMS**					
	Would the project:					
	a)	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
	b)	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
	c)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in	☐	☐	☐	☒

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
		addition to the provider's existing commitments?				
	d)	Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒
	e)	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Analysis:

The Project is replacement of the Mineral King Road Bridge. No utilities or services would be impacted as a result of the Project.

The following Tulare County General Plan 2030 Update policies for this resource apply to this Project:: FGMP-8.4 *Development of Wastewater Systems*; FGMP-9.2 *Provision of Adequate Infrastructure*; PFS-2.1 *Water Supply*; PFS-2.2 *Adequate Systems*; PFS-2.4 *Water Connections*; PFS-3.1 *Private Sewage Disposal Standards*; PFS-3.4 *Alternative Rural Wastewater Systems*; PFS-4.2 *Site Improvements*; PFS-4.4 *Stormwater Retention Facilities*; PFS-4.5 *Detention/Retention Basins Design;* PFS-5.7 *Provisions for Solid Waste Storage, Handling, and Collection*; PFS-7.2 *Fire Protection Standards.*

a) **No Impact.** Exceed Wastewater Treatment Requirements – The Project is replacement of the Mineral King Road Bridge. The Project will not require nor lead to the introduction or installation of septic tanks or alternative waste water disposal systems into area soils. During the construction period it is anticipated that portable toilets will be placed onsite to accommodate work crews' needs with disposal of wastewater of offsite. Therefore, the Project will not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board and subsequently will have no impact on this resource.

Mitigation: None Required.

Conclusion: No Impact.

Cumulative Project-level Impact: No Impact. As there would be no impact at the project-level, there would be no cumulative impact.

b) **No Impact.** Construction of New Water or Wastewater Treatment Facilities - The Project will not require or result in the construction of new water or wastewater treatment facilities, nor the expansion of existing facilities, the construction of which could cause significant environmental effects. As previously noted, The Project is construction of a replacement bridge over the Kaweah River on Mineral King Road. As such, there will be no impacts to the wastewater treatment requirements of the Regional Water Quality Control Board.

Mitigation: None Required.

Conclusion: No Impact.

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	Cumulative Project-level Impact: No Impact. As there would be no impact at the project-level, there would be no cumulative impact. **c) No Impact.** Construction of New Storm Water Drainage Facilities - The Project will not require or result in the construction of new storm water drainage facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects. The Project would be designed in compliance with regulatory requirements; therefore, operational impacts on water quality would be minimal.[142] As such, the Project would result in no impact to this Checklist Item. **Mitigation: None Required.** **Conclusion: No Impact.** **Cumulative Project-level Impact: No Impact.** As there would be no impact at the project-level, there would be no cumulative impact. **d) No Impact.** Water Supplies - As noted earlier, the Project is rehabilitating/retrofitting the Mineral King Road Bridge. The project does not require a water supply. Imported water may be used for dust controlled related activities; potable water will be provided by construction-related contractors/crews or through individual, personal means. As such, the Project does not need to have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed and would; therefore, result in no impact to this resource. **Mitigation: None Required.** **Conclusion: No Impact.** **Cumulative Project-level Impact: No Impact.** As there would be no impact at the project-level, there would be no cumulative impact. **e) No Impact.** Adequate Wastewater Capacity - The Project will not be served by a wastewater treatment facility as it is a rehabilitating/ retrofitting project of an existing bridge. As such, the Project does not need to be served by a wastewater treatment facility. Therefore, the Project will have no impact on this Checklist Item. **Mitigation: None Required.** **Conclusion: No Impact.** **Cumulative Project-level Impact: No Impact.** As there would be no impact at the project-level, there would be no cumulative impact. **f) No Impact.** Sufficient Landfill Capacity - Solid waste output from the Project site will be limited to the construction phase and non-hazardous waste will likely be disposed of at the Visalia Landfill while any hazardous waste, if generated, will be removed separately to an appropriate receiving facility in accordance with County and state regulations and policies. Once operational there will be no solid waste disposal services				

[142] *"Mineral King Road Bridge Project Water Quality Assessment Report"* (WQAR). May 2017. Page 24. The WQAR is included in Attachment "F" of this MND.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	required by the Project site as the Project is a bridge and it will not generate nor store solid waste. Therefore, the Project will result in no impact. **Mitigation: None Required.** **Conclusion: No Impact.** **Cumulative Project-level Impact: No Impact.** As there would be no impact at the project-level, there would be no cumulative impact. **g) No Impact.** Comply with Federal, State, and Local Statutes and Regulations – As previously noted, the Project may result in construction-related waste during the short-term construction phase, generate however upon operational build-out, the Project will result in no waste stream or requirement for waste disposal services. Construction-phase waste generation will comply with federal, state, and local statutes and regulations related to solid waste; therefore, there will be no impact related to this Checklist Item. **Mitigation: None Required.** **Conclusion: No Impact.** **Cumulative Project-level Impact: No Impact.** As there would be no impact at the project-level, there would be no cumulative impact. **Cumulative Impact: No Impact.** As noted earlier, as there would be no impact at the project-level, there would be no cumulative impact.					
20.	**WILDFIRES**					
	If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:					
	a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
	b)	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
	c)	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	d)	Expose people or structures to significant risks, including downslope or downstream flooding, or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Analysis:

a)-d) No Impact. According to CalFire's Fire Hazard Severity Zones in SRA map, the Project area is located in a State Responsibility Area (SRA) with moderate -to-high risk.[143] The Project is proposing to replace the existing M109 over White River Bridge (Bridge No. 46C-0133) with a two-lane bridge structure to provide improved safety and operations on the facility. Temporary construction easements are needed throughout the Project area and construction staging would take place within County right-of-way and adjacent privately owned parcels. Minor permanent right-of-way acquisitions are anticipated. The existing bridge will remain open throughout construction of the new replacement bridge; as such, the Project will not substantially impair emergency response or evacuation plans. The Project site (and almost the entire Mineral King corridor), lies within an area designated as a moderate-to-high wildland fire hazard severity zone in Cal Fire's Fire Hazard Severity Zones in State Responsibility Areas Map

Temporary Best Management Practices (BMPs), including practices for erosion control, would be implemented during construction-related activities. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Map (FIRM), the Project area is designated as Zone A. Zone A indicated high risk flood areas, with a 1% annual chance of flooding. The Project is not located within a Central Valley Flood Protection Board (CVFPB) Designated Floodway (DF) nor is it within 30 feet from a Regulated Stream.[144] In addition, construction and design of the proposed project shall be in compliance with current construction and seismic codes and standards, which would reduce potential seismic hazard risks to acceptable levels. Due to the low frequency of traffic in the area, the Project will not expose people or structures to significant risks in flooding, landslides, post-fire slope instability, or drainage changes.

Mitigation: None Required.

Conclusion: No Impact.

Cumulative Project-level Impact: No Impact. As there would be no impact at the project-level, there would be no cumulative impact.

Cumulative Impact: No Impact. As noted earlier, as there would be no impact at the project-level, there would be no cumulative impact.

21.	MANDATORY FINDINGS OF SIGNIFICANCE					
	a)	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the	☐	☒	☒	☐

[143] CalFire Fire Hazard Severity Zones in SRA. Accessed April 2021 at: Map of CAL FIRE's Fire Hazard Severity Zones in State Responsibility Areas – Tulare County

[144] Water Quality Technical Memorandum. February 2021. Page 11. Prepared by Dokken Engineering and included in Attachment "F" of this MND.

			SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
		number or restrict the range of a rare or endangered plant or animal species, or eliminate important examples of the major periods of California history or prehistory?				
	b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
	c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Analysis:

The following Tulare County General Plan 2030 Update policies for this resource apply to this Project: FGMP-1.13 *Land Use and Zoning*; FGMP-6.3; *Development Along Scenic Highways*; FGMP-6.4 *Development within Scenic Corridors*; FGMP-8.4 *Development of Wastewater Systems*; FGMP-8.13 *Use of Native Landscaping*; FGMP-9.2 *Provision of Adequate Infrastructure*; AQ-2.2 *Indirect Source Review*; AQ-3.4 *Landscape*; AQ-4.2 *Dust Suppression Measures*; ERM-1.1 *Protection of Rare and Endangered Species*; ERM-1.6 *Management of Wetlands*; ERM-1.7 *Planting of Native Vegetation*; ERM-1.15 *Minimize Lighting Impacts;* ERM-4.2 *Streetscape and Parking Improvements for Energy Conservation*; ERM-6.1 *Evaluation of Cultural and Archaeological Resources*; HS-1.2 *Development Constraints*; HS-1.4 *Building and Codes*; HS-1.11 *Site Investigations*; HS-2.8 *Alquist-Priolo Act Compliance*; HS-6.5 *Fire Risk Recommendations*; HS-6.7 *Water Supply System*; HS-6.10 *Fuel Breaks*; HS-8.11 *Peak Noise Generators*; HS-8.18 *Construction Noise*; HS-8.19 *Construction Noise Control*; LU-1.10 *Roadway Access*; LU-1.10 *Roadway Access*; LU-4.5 *Commercial Building Design*; LU-7.9 *Visual Access*; PFS-2.1 *Water Supply*; PFS-2.2 *Adequate Systems*; PFS-2.4 *Water Connections*; PFS-3.1 *Private Sewage Disposal Standards*; PFS-3.4 *Alternative Rural Wastewater Systems*; PFS-4.2 *Site Improvements*; PFS-4.4 *Stormwater Retention Facilities*; PFS-4.5 *Detention/Retention Basins Design;* PFS-5.7 *Provisions for Solid Waste Storage, Handling, and Collection*; PFS-7.2 *Fire Protection Standards;* PFS-7.8 *Law Enforcement Staffing Ratios*; SL-1.1 *Natural Landscapes*; SL-1.2 *Working Landscapes*; SL-2.1 *Designated Scenic Routes and Highways*; WR-2.1 *Protect Water Quality*; WR-2.2 *National Pollutant Discharge Elimination System (NPDES) Enforcement*; WR-2.3 *Best Management Practices (BMPs)*; WR-2.4 *Construction Site Sediment Control*; WR-3.3 *Adequate Water Availability*.

a) Less Than Significant Impact With Mitigation. Quality of the Environment, Habitat Reduction, Elimination of Biological Resources, and Elimination of Important Examples of History or Prehistory - As noted earlier, the Project would replace the existing Mineral King (Oak Grove) bridge with a new bridge over the East Fork of the Kaweah River. Following completion of the new bridge, the existing bridge would be rehabilitated for non-vehicular uses (e.g., pedestrians and cyclists).The Project would have no to less than significant impacts on special-status natural communities. The Project could result in temporary impacts on plant and wildlife

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT

species; however, the project would include mitigation measures to prevent adverse impacts. In addition, any additional measures required by regulatory permits would be implemented during construction. There are no other planned projects in the vicinity of the BSA; however, other planned projects would be expected to include similar measures. Therefore, the Project would not be expected to result in cumulatively considerable impacts on biological resources.

As noted in section 4.0 Biological Resources, the Project would have a less than significant impact on special-status natural communities. The Project could result in temporary impacts on plant and wildlife species; however, the project would include mitigation measures to prevent adverse impacts. In addition, any additional measures required by regulatory permits would be implemented during construction. There are no other planned projects in the vicinity of the BSA; however, it is likely that other planned projects would be expected to include similar measures. As discussed in greater detail in the NES (see Attachment "C"), the Project could have direct and indirect adverse effects on the biological species within the BSA. However, as identified earlier in section, **Mitigation Measures BIO - 1** through **BIO - 35** would reduce potential impacts on these species to less than significant. As such, the Project will have a less than significant impact with mitigation to the special status species that may occur within the BSA.

As noted in Items 5 Cultural Resources and 17 Tribal Cultural Resources, the Project would not, upon completion, interfere with the archeological significance of the site or induce an adverse change in the significance of archeological resources as defined in Section 15064.5. Although no surface artifacts, resources, or other Native American finds (including human remains, burial grounds, cemeteries, etc.) were discovered during on site transects of the Project area, the County is obligated to comply with Section 7050.5 of the California Health and Safety Code and (CEQA Guidelines) Section 15064.5, if human remains of Native American origin are discovered during Project construction, it is necessary to comply with State laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American Heritage Commission (Public Resources Code Sec. 5097). The project could result in temporary impacts to visitor enjoyment of the site and/or alter the historic aesthetic of the structure itself however, the project would include mitigation measures to prevent adverse impacts that might occur during the construction phase. The Project could result in the inadvertent discovery or uncovering of hither fore unknown archeological resources; however, the application/implementation of State law(s), Caltrans policy(ies), and/or Tulare County General Plan policies would result in a less than significant impact to this resource during the construction-related phase. As an abundance of caution, **Mitigation Measures CUL-1** though **CUL-3** are included in the unlikely event of discovery of either cultural or tribal cultural resources.

b) Less Than Significant Cumulative Impact. Cumulatively Considerable Impacts - The Project includes short-term, intermittent, and temporary construction-related activities only and will not result in cumulative impacts to any resource. Aesthetics, air quality, biological (plants species only) hydrological (temporary stream diversion), and noise resources would likely be impacted by short-term, temporary, and intermittent impacts; however, following completion of the Project, impacts to these respective resources would end. As such, the proposed Project will not result in environmental impacts that are individually limited, but cumulatively considerable; therefore, cumulative impacts will be less than significant.

c) Less Than Significant Impacts With Mitigation. Direct and Indirect Impacts on Humans – The Project will result in impacts to geological, hydrological, noise and traffic resources that have the potential to cause substantial adverse effects on human beings, either directly or indirectly, on a temporary basis. The Project, at completion and in its operational stage, is anticipated to revert to baseline conditions as they correspond to these impacts. With the implementation of **Mitigation Measures AES- 1 through AES– 3**; **HYD- 1 through HYD-7**, **NOI-1** through **NOI-6**, short-term, intermittent, and temporary construction-related impacts will be

		SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT IMPACT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
	reduced to a less than significant level. The implementation of **Mitigation Measure TCR-1** will reduce impacts to the culturally sensitive project area. **Mitigation Measures**: Mitigation measures as described below would reduce potential impacts on human populations to a less than significant level: Checklist Item 1 Aesthetics: **Mitigation Measures AES - 1** through **AES – 3** Checklist Item 9 Hydrological: **Mitigation Measures HYD - 1** through **HYD – 7** Checklist Item 12 Noise: **NOI - 1** through **NOI – 6** Checklist Item 18 Tribal Cultural Resources: **TCR-1** As the Project is to replace the existing Mineral King (Oak Grove) bridge with a new bridge over the East Fork of the Kaweah River, and upon completion of the new bridge, rehabilitation of the existing bridge for non-vehicular uses, the project will not have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly. In conclusion, the Project would result in a **Less Than Significant Impact With Mitigation**.				

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Mitigation Monitoring and Reporting Program

6-TUL Mineral King Road, Bridge No. 46C0164

The Mitigation Monitoring and Reporting Program (MMRP) has been prepared in compliance with State law and the Mitigated Negative Declaration prepared for the project by the County of Tulare.

The California Environmental Quality Act (CEQA) Section 21081.6 requires adoption of a reporting or monitoring program for those measures placed on a project to mitigate or avoid adverse effects on the environment.[145] The law states that the reporting or monitoring program shall be designed to ensure compliance during project implementation. The Mitigation Monitoring and Reporting Program contains the following elements:

- **Action and Procedure.** The mitigation measures are recorded with the action and procedure necessary to ensure compliance. In some instances, one action may be used to verify implementation of several mitigation measures.

- **Compliance and Verification.** A procedure for compliance and verification has been outlined for each action necessary. This procedure designates who will take action, what action will be taken and when, and to whom and when compliance will be reported.

- **Flexibility.** The program has been designed to be flexible. As monitoring progresses, changes to compliance procedures may be necessary based upon recommendations by those responsible for the Mitigation Monitoring and Reporting Program. As changes are made, new monitoring compliance procedures and records will be developed and incorporated into the program.

[145] Public Resource Code §21081.6

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
Mitigation Measure		**Monitoring Timing / Frequency**	**Action Indicating Compliance**	**Monitoring Agency**	**Verification of Compliance**		
					Initials	**Date**	**Remarks**
Aesthetics							
VIA-1	***(Staging Areas)*** Staging areas would be located away from the public view where feasible. These areas would be fenced to reduce visibility, and would be kept clean and orderly.	Prior to start construction-related activities.	On-going monitoring by construction manager and reporting to County.	County of Tulare Planning Department			
VIA-2	***(Vegetation)*** Vegetation removal would be minimized to the extent feasible. Vegetated areas temporarily disturbed by the project would be restored following project construction using a context sensitive design that is visually compatible with the surrounding landscape.	Prior to start and during construction-related activities.	On-going monitoring by construction manager and reporting to County.	County of Tulare Planning Department			
VIA-3	***(Hardscape)*** Barriers, fencing, and other hardscape elements would be designed using materials and aesthetic treatments that are compatible with the existing bridge features and surrounding landscape features.	Prior to start and during construction-related activities.	On-going monitoring by construction manager and reporting to County.	County of Tulare Planning Department			
Biological Resources							
Natural Communities							
BIO-1	***(Avoidance/Minimization)*** Removal of oak trees shall be avoided, if feasible. If avoidance is feasible, protective fencing shall be installed beyond the dripline of the tree(s) during construction to prevent construction staff or equipment from entering this area.	Prior to start and during construction-related activities.	On-going monitoring by construction manager and reporting to County.	County of Tulare Planning Department			
BIO-2	***(Replacement)*** Native oak trees measuring six inches in diameter at breast height or greater and requiring removal, shall be replaced onsite at a minimum 3:1 ratio.	Post construction.	Coordination between construction manager and County.	County of Tulare Planning Department			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
Mitigation Measure		**Monitoring Timing / Frequency**	**Action Indicating Compliance**	**Monitoring Agency**	**Verification of Compliance**		
					Initials	**Date**	**Remarks**
Plant Species							
BIO-3	***(Pre-construction Survey)*** Prior to construction, a qualified botanist shall conduct plant surveys within the construction area. Surveys would be conducted during the appropriate blooming period for species with potential to be in the project area, to the extent feasible. If special-status plant species are found during surveys, avoidance measures would be developed and implemented based on recommendations from the qualified botanist. If surveys cannot be conducted within the appropriate blooming period, if presence of species cannot be ruled out for any other reason, or if species present cannot be avoided, appropriate mitigation would be developed and implemented.	Prior to construction-related activities.	Retention of qualified botanist during appropriate blooming period of species; development of avoidance measures.	County of Tulare Planning Department			
BIO-4	***(Restoration/Revegetation)*** If it is determined that special-status plants would be impacted as a result of the project, an on-site or off-site restoration plan will be prepared by a qualified botanist. The plan will include, at a minimum, the following: receiver locations; number of plants to be replanted and the methods of replanting; maintenance and monitoring requirements; and measures necessary for the establishment of self-sustaining populations in suitable open space areas to ensure the long-term survivability of the species in the vicinity. The restoration plan will be implemented prior to the completion of the project.	Following completion of construction-related activities.	Ongoing monitoring by County until revegetated plants are established. Restoration plan will be prepared by a qualified botanist prior to construction.	County of Tulare Planning Department			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
Mitigation Measure		**Monitoring Timing / Frequency**	**Action Indicating Compliance**	**Monitoring Agency**	**Verification of Compliance**		
					Initials	**Date**	**Remarks**
Invertebrates							
BIO-5	***(Minimization)*** Vegetation removal and excavation shall be reduced to the extent feasible.	Prior to construction.	Monitored by construction manager; oversight by County.	County of Tulare Planning Department			
BIO-6	***(Pre-construction Survey)*** Within the spring season (May to June) prior to construction, a qualified biologist shall survey areas where vegetation removal and excavation shall be conducted to confirm the presence/absence of Crotch bumble bee or western bumble bee nests	During construction-related activities.	Monitored by qualified biologist.	County of Tulare Planning Department			
BIO-7	***(Buffer Area/Relocation)*** If a Crotch bumble bee or western bumble bee nest is identified in the BSA, efforts shall be taken to avoid the nest, and an appropriate buffer shall be installed as determined by a qualified biologist.	During construction-related activities..	Monitored by qualified biologist; oversight by County.	County of Tulare Planning Department			
BIO-8	***(Avoidance)*** Ground disturbance would not be conducted during the winter months, if feasible, to avoid impacting overwintering bees..	Self-explanatory.	Oversight by County.	County of Tulare Planning Department			
BIO-9	***(Minimization)*** Pesticide/insecticide shall not be used as part of the project.	Upon completion of construction-related activities.	Monitored by qualified biologist; oversight by County.	County of Tulare Planning Department			
BIO-10	**(Restoration/Revegetation)** Areas temporarily impacted during construction shall be restored using native species, including one or more of the food plant genera for the Crotch bumble bee and western bumble bee (*Antirrhinum* sp., *Phacelia sp.*, *Clarkia* sp., *Dendromecon* sp., *Eschscholzia* sp., and *Eriogonum* sp.) if appropriate for the region.	Upon completion of construction-related activities.	Monitored by qualified biologist; oversight by County.	County of Tulare Planning Department			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
Mitigation Measure		**Monitoring Timing / Frequency**	**Action Indicating Compliance**	**Monitoring Agency**	**Verification of Compliance**		
					Initials	**Date**	**Remarks**
Amphibians							
BIO-11	***(Minimization)*** Vegetation removal and excavation shall be reduced to the extent feasible.	Prior to construction-related activities.	Monitored by construction manager; oversight by County.	County of Tulare Planning Department			
BIO-12	***(Pre-construction Survey)*** Within 48 hours of construction, a qualified biologist shall survey the construction area to confirm the presence/absence of amphibians.	During construction-related activities.	Monitored by qualified biologist; oversight by County.	County of Tulare Planning Department			
BIO-13	***(Buffer Area/Relocation)*** If any amphibians are identified within the BSA, all efforts, to the extent feasible, shall be taken to avoid the individual, and an appropriate buffer would be installed as determined by a qualified biologist. If avoidance cannot be accomplished, the individual shall be safely relocated by a qualified biologist.	Prior to and during construction-related activities.	Monitored by qualified biologist; oversight by County.	County of Tulare Planning Department			
BIO-14	***(Minimization)*** Pesticide/insecticide shall not be used as part of the project.	Self-explanatory.	Oversight by County.	County of Tulare Planning Department			
Reptiles							
BIO-15	***(Minimization)*** Vegetation removal and excavation shall be reduced to the extent feasible.	Prior to construction-related activities.	Monitored by construction manager; oversight by County.	County of Tulare Planning Department			
BIO-16	***(Pre-construction Survey/Removal)*** Pre-construction surveys for reptiles shall be conducted by a qualified biologist in the upland portions of the construction area no more than 48 hours prior to construction. Surveys shall be repeated if construction activities are suspended for five days or more. If these	Prior to construction-related activities.	Monitored by qualified biologist and construction manager; oversight by County.	County of Tulare Planning Department			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
Mitigation Measure		**Monitoring Timing / Frequency**	**Action Indicating Compliance**	**Monitoring Agency**	**Verification of Compliance**		
					Initials	**Date**	**Remarks**
	species, or other reptiles, are observed within the construction area, a qualified biologist shall capture and relocate them to suitable habitat at least 100 feet outside of the construction area.						
BIO-17	***(Restoration/Revegetation)*** Temporarily disturbed areas shall be restored following construction.	Upon completion of construction-related activities.	Monitored by qualified biologist and construction manager; oversight by County.	County of Tulare Planning Department			
Birds							
BIO-18	***(Minimization)*** Construction in areas that include trees, vegetation, and structures that may provide nesting habitats for birds and raptors shall be reduced to the maximum extent feasible.	Prior to initiation of construction.	Monitoring by qualified biologist and construction manager.	County of Tulare Planning Department			
BIO-19	***(Minimization)*** Trimming and removal of vegetation and trees shall be minimized and performed outside of the nesting season (February 1 to September 30), to the extent feasible.	Self-explanatory.	Monitoring by construction manager; oversight by County.	County of Tulare Planning Department			
BIO-20	***(Pre-construction Survey)*** In the event that trimming or removal of vegetation and trees must be conducted during the nesting season, nesting bird surveys shall be completed within 500 feet of the construction area by a qualified biologist no more than 48 hours prior to trimming or clearing activities to determine if nesting birds are within the affected vegetation. Nesting bird surveys shall be repeated if trimming or removal activities are suspended for five days or more.	Prior to initiation trimming or tree removal.	Monitoring by qualified biologist and construction manager.	County of Tulare Planning Department			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
Mitigation Measure		**Monitoring Timing / Frequency**	**Action Indicating Compliance**	**Monitoring Agency**	**Verification of Compliance**		
					Initials	**Date**	**Remarks**
BIO-21	***(Buffer Area)*** If nesting birds are found within 500 feet of the construction area, appropriate buffers consisting of orange flagging/fencing or similar (typically 300 feet for birds and 500 feet for raptors) shall be installed and maintained until nesting activity has ended, as determined in coordination with the project biologist and regulatory agencies, as appropriate.	Prior to and during construction-related activities.	Monitoring by qualified biologist and construction manager.	County of Tulare Planning Department			
BIO-22	***(Removal/Monitoring)*** Prior to construction, any inactive swallow nests and other nests shall be removed under supervision of a qualified biologist during the non-breeding season (October 1 to January 31). The inactive nests shall also be checked for bats prior to removal. During the nesting season (February 1 to September 30), the BSA shall be monitored as necessary to ensure that no new nests are built, and any partially-built nests shall be removed from the bridge during construction to prevent swallows from nesting on the bridge structure. Monitoring and nesting deterrence would continue until birds no longer attempt to nest.	Prior to construction-related activities.	Monitoring by qualified biologist and construction. Manager.	County of Tulare Planning Department			
BIO-23	***(Avoidance)*** In the event that any bird species is observed foraging within the construction site, it shall be allowed to move away from the site prior to initiating any construction activities that could result in direct injury or disturbance of the individual.	On-going during construction-related activities.	Monitoring by construction manager.	County of Tulare Planning Department			
BIO-24	***(Compliance)*** Construction shall be in compliance with San Joaquin Valley Air Pollution Control District Regulation VIII (Fugitive PM10 Prohibition), which requires a	On-going.	Monitoring by construction manager.	Valley Air District and County of Tulare			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
Mitigation Measure		**Monitoring Timing / Frequency**	**Action Indicating Compliance**	**Monitoring Agency**	**Verification of Compliance**		
					Initials	**Date**	**Remarks**
	number of measures to control fugitive dust during construction activities.			Planning Department.			
Mammals							
BIO-25	***(Avoidance)*** To avoid potential impacts to maternity bat roosts, where feasible, tree and structure removal shall be conducted outside of the period between April 1 and September 30 (general maternity bat roost season), the time frame within which colony-nesting bats generally assemble, give birth, nurse their young, and ultimately disperse.. If pre-construction and focused surveys (see Mitigation Measure BIO 4.25) indicate the presence of bat roosts and tree and structure removal is to be conducted within the bat roosting period, a Bat Eviction Plan will be prepared and written approval given by CDFW prior to start of tree removal and construction activities.	Prior to construction-related activities.	Monitoring by qualified biologist; removal by construction manager.	County of Tulare Planning Department			
BIO-26	***(Pre-construction and Focused Surveys)*** A habitat assessment for pallid and Townsends's big-eared bat shall be conducted by a qualified biologist prior to the start of construction activities to determine if the project area or its immediate vicinity contains suitable habitat for special status bat species. If suitable habitat is present a protocol-level survey shall be conducted during the appropriate seasonal period of bat activity. If during the protocol-level survey bats are found in the project area a Bat Eviction Plan will be prepared and written approval given by CDFW prior to start of construction activities. If any removal of mature trees or structure is to occur between	Prior to construction-related activities.	Monitoring by qualified biologist and removal by construction manager.	County of Tulare Planning Department and California Dept. of Fish and Wildlife, as necessary			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
Mitigation Measure		**Monitoring Timing / Frequency**	**Action Indicating Compliance**	**Monitoring Agency**	**Verification of Compliance**		
					Initials	**Date**	**Remarks**
	April 1 and September 30, then within 30 days prior to scheduled removal and/or construction activities, a qualified biologist shall conduct a thorough bat roosting habitat assessment (survey) of all trees and structures to be removed or otherwise impacted during construction. Visual and acoustic surveys shall be conducted for at least two nights at all identified roosting habitat to assess the presence of roosting bats. If presence is detected, a count and species analysis shall be completed to help assess the type of colony and usage. If no bats are observed to be roosting or breeding, then no further action would be required, and construction could proceed.						
BIO-27	***(Removal/Relocation)*** No less than two weeks prior to construction, and during the non-breeding and active season (typically October), bats shall be safely evicted from roosts impacted by the project under the direction of a qualified biologist. Once bats have been safely evicted, exclusionary devices shall be installed to prevent bats from returning and roosting in these areas prior to removal. Roosts that would not be impacted by the project shall be left undisturbed.	Prior to construction-related activities.	Monitoring by qualified biologist and eviction by construction manager.	County of Tulare Planning Department and California Dept. of Fish and Wildlife, as necessary			
BIO-28	***(Avoidance/Removal)*** If the presence or absence of bats cannot be confirmed in potential roosting habitat, a qualified biologist shall be onsite during removal or disturbance of this area. If the biologist determines that bats are being disturbed during this work, work shall be suspended until bats have left the vicinity on their own, or can be safely excluded	During construction-related activities.	Monitoring by qualified biologist and removal by construction manager.	County of Tulare Planning Department and California Dept. of Fish and Wildlife, as necessary			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
Mitigation Measure		**Monitoring Timing / Frequency**	**Action Indicating Compliance**	**Monitoring Agency**	**Verification of Compliance**		
					Initials	**Date**	**Remarks**
	under direction of the biologist. Work shall resume only once all bats have left the site and/or approval to resume work is given by a qualified biologist.						
BIO-29	***(Buffer Area)*** In the event that a maternal colony of bats is found, no work shall be conducted within 100 feet of the maternal roosting site until the maternal season is finished or the bats have left the site, or as otherwise directed by a qualified biologist. The site shall be designated as a sensitive area and protected as such until the bats have left the site. No activities shall be authorized adjacent to the roosting site. Combustion equipment, such as generators, pumps, and vehicles, shall not be parked nor operated under or adjacent to the roosting site. Construction personnel shall not be authorized to enter areas beneath the colony, especially during the evening exodus (typically between 15 minutes prior to sunset and one hour following sunset).	Prior to and during construction-related activities.	Verification by County of Tulare.	U.S. Fish and Wildlife Service and/or U.S. Army Corps of Engineers and/or California Dept. of Fish and Wildlife and/or Central Valley Regional Water Quality Control Board			
Riparian Habitat							
BIO-30	***Minimization)*** Work areas would be reduced to the maximum extent feasible, and staging areas shall be located away from the river.	Prior to and during construction-related activities.	Verification by County of Tulare.	California Dept. of Fish and Wildlife and/or Central Valley Regional Water Quality Control Board			
BIO-31	**(Best Management Practices)** Best management practices (BMP), such as silt fencing, fiber rolls, straw bales, or other	Prior to and during construction-related activities.	Verification by County of Tulare.	California Dept. of Fish and Wildlife			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
Mitigation Measure		**Monitoring Timing / Frequency**	**Action Indicating Compliance**	**Monitoring Agency**	**Verification of Compliance**		
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	measures would be implemented during construction to minimize dust, dirt, and construction debris from entering the river and/or leaving the construction area. Construction shall be in compliance with San Joaquin Valley Air Pollution Control District Regulation VIII (Fugitive PM10 Prohibitions), which requires a number of measures to control fugitive dust during construction-related activities.			and/or Central Valley Regional Water Quality Control Board			
BIO-32	***(Best Management Practices)*** Appropriate hazardous material BMPs would be implemented to reduce the potential for chemical spills or contaminant releases into the river, including any non-stormwater discharge.	Prior to and during construction-related activities.	Verification by County of Tulare.	California Dept. of Fish and Wildlife and/or Central Valley Regional Water Quality Control Board			
BIO-33	***(Best Management Practices)*** All equipment refueling and maintenance would be conducted in the staging area away from the river. In addition, vehicles and equipment would be checked daily for fluid and fuel leaks, and drip pans would be placed under all equipment that is parked and not in operation.	Prior to and during construction-related activities.	Verification by County of Tulare.	California Dept. of Fish and Wildlife and/or Central Valley Regional Water Quality Control Board			
BIO-34	***(Restoration/Revegetation)*** Temporarily disturbed areas would be re-contoured and revegetated using native species. Any revegetation or erosion control implemented shall be completed using non-invasive species.	Prior to and during construction-related activities.	Verification by County of Tulare.	California Dept. of Fish and Wildlife and/or Central Valley Regional Water			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
Mitigation Measure		**Monitoring Timing / Frequency**	**Action Indicating Compliance**	**Monitoring Agency**	**Verification of Compliance**		
					Initials	**Date**	**Remarks**
				Quality Control Board			
BIO-35	***(CNDDB Reporting)*** – Any special status species or natural communities identified during surveys shall be reported to the California Natural Diversity Database (CNDDB). The types of information to be reported to CNNDB can be found online at: https://www.wildlife/ca/gov/Data/CNDDB/Plants-and-Animals. CNDDB field surveys forms can be found online at https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. Completed forms can be mailed electronically to CNDDB@wildlife.ca.gov.	Prior to and during construction-related activities.	Verification by County of Tulare.	County of Tulare Planning Department and California Dept. of Fish and Wildlife, as necessary			
Cultural Resources							
CUL-1	***(Discovery of Archaeological or Historical Resources)*** If, in the course of Project construction or operation, any archaeological or historical resources are uncovered, discovered, or otherwise detected or observed, activities within fifty (50) feet of the find shall be ceased. A qualified archaeologist shall be contacted and advise the County of the site's significance. If the findings are deemed significant by the Tulare County Resources Management Agency, appropriate mitigation measures shall be required prior to any resumption of work in the affected area of the proposed Project. Where feasible, mitigation achieving	Prior to and during construction-related activities.	Retention of professional paleontologist/ ongoing monitoring/ submittal of Report of Findings, if applicable	County of Tulare Planning and Public Works Department			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
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	preservation in place will be implemented. Preservation in place may be accomplished by, but is not limited, to: planning construction to avoid archaeological sites or covering archaeological sites with a layer of chemically stable soil prior to building on the site. If significant resources are encountered, the feasibility of various methods of achieving preservation in place shall be considered, and an appropriate method of achieving preservation in place shall be selected and implemented, if feasible. If preservation in place is not feasible, other mitigation shall be implemented to minimize impacts to the site, such as data recovery efforts that will adequately recover scientifically consequential information from and about the site. Mitigation shall be consistent with CEQA Guidelines section 15126.4(b)(3). An archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology, hereafter "qualified archaeologist," should inspect the findings within 24 hours of discovery.						
CUL-2	**(Discovery of Cultural Resources)** If cultural resources are encountered during construction or land modification activities work shall stop and the County shall be notified at once to assess the nature, extent, and potential significance of any cultural resources. If such resources are determined to be significant, appropriate actions shall be determined. Depending upon the nature of the find, mitigation could involve avoidance, documentation, or other appropriate actions to	Prior to and during construction-related activities.	Retention of professional paleontologist/ ongoing monitoring/ submittal of Report of Findings, if applicable	County of Tulare Planning and Public Works Department			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
Mitigation Measure		**Monitoring Timing / Frequency**	**Action Indicating Compliance**	**Monitoring Agency**	**Verification of Compliance**		
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	be determined by a qualified archaeologist. For example, activities within 50 feet of the find shall be ceased. If it is determined that the Project could damage a significant cultural resource, mitigation should be implemented with a preference for preservation in place, consistent with the priorities set forth in CEQA Guidelines Section 15126.4(b)(3). If avoidance is not feasible, a qualified archaeologist should prepare and implement a detailed treatment plan in consultation with the County of Tulare and, for prehistoric resources, the ethnographically associated Native American tribe. If the resource is determined to be a tribal cultural resource, as defined by Public Resources Code 21074, the County of Tulare, in consultation with the ethnographically associated Native American tribe, should, if feasible, minimize significant adverse impacts by avoiding the resource or treating the resource with culturally appropriate dignity, which includes protecting the cultural character and integrity of the resource, protecting the traditional use of the resource, and protecting the confidentiality of the resource.						
CUL-3	***(Discovery of Human Remains)*** Inadvertent Discovery of Human Remains. In the unlikely event of discovery or recognition of any human remains during construction-related activities, the provisions of CEQA Guidelines § 15064.5(e) shall be followed and such activities should cease within 50 feet of the find until the Tulare County Coroner has been contacted to	Prior to and during construction-related activities.	Retention of professional paleontologist/ ongoing monitoring/ submittal of Report of Findings, if applicable	County of Tulare Planning and Public Works Department			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
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	determine that no investigation of the cause of death is required. If it is determined that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be contacted within 24 hours. The NAHC will then identify the person or persons it believes to be the most likely descendant (MLD) from the deceased Native American. The MLD would, in turn, make recommendations to the County of Tulare for the appropriate means of treating the human remains and any grave goods.						
Hydrology / Water Quality							
HYD-1	***(Best Management Practices)*** Appropriate hazardous material BMPs, including having a spill prevention kit on site would be implemented to minimize the potential for chemical spills or containment releases into the Kaweah River, including any non-storm water discharge.	Prior to and during construction-related activities.	Verification by County of Tulare.	California Dept. of Fish and Wildlife and/or Central Valley Regional Water Quality Control Board			
HYD-2	***(Fueling and Maintenance)*** All equipment refueling and maintenance would be conducted in the upland staging area away from the canal, per standard specifications and regulatory permits. In addition, vehicles and equipment would be checked daily for fluid and fuel leaks, and drip pans would be placed under all equipment that is parked and not in operation.	Prior to and during construction-related activities.	Verification by County of Tulare.	California Dept. of Fish and Wildlife and/or Central Valley Regional Water Quality Control Board			
HYD-3	***(Work Areas)*** Work areas would be minimized to the smallest area feasible.	Prior to and during construction-related activities.	Verification by County of Tulare.	California Dept. of Fish and Wildlife and/or			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
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				Central Valley Regional Water Quality Control Board			
HYD-4	***(Staging Areas)*** Staging areas would be sited away from the edges of the river to reduce potential for disturbance of, or non-storm water discharge to, the Kaweah River.	Prior to and during construction-related activities.	Verification by County of Tulare.	California Dept. of Fish and Wildlife and/or Central Valley Regional Water Quality Control Board			
HYD-5	***(Best Management Practices)*** BMPs, including silt fencing and fiber rolls, would be implemented to minimize dust, dirt, and debris resulting from construction activities, and to protect the water quality of the Kaweah River pursuant to the requirements of the RWQCB and project permits.	Prior to and during construction-related activities.	Verification by County of Tulare.	California Dept. of Fish and Wildlife and/or Central Valley Regional Water Quality Control Board			
HYD-6	***(Erosion Control)*** Following completion of construction activities, appropriate erosion control measures would be implemented to ensure that soils disturbed by construction are stabilized, to minimize non-storm water discharges into the Kaweah River, and to meet the requirements of the RWQCB and project permits.	Prior to and during construction-related activities.	Verification by County of Tulare.	California Dept. of Fish and Wildlife and/or Central Valley Regional Water Quality Control Board			
HYD-7	***(Minimization and Revegetation)*** All disturbance to aquatic habitat, including riparian vegetation and jurisdictional waters, would be minimized with the use of environmentally sensitive area fencing and all	Prior to and during construction-related activities	Verification by County of Tulare	California Dept. of Fish and Wildlife and/or			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
Mitigation Measure		**Monitoring Timing / Frequency**	**Action Indicating Compliance**	**Monitoring Agency**	**Verification of Compliance**		
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	soil exposed as a result of project construction would be revegetated using native-plant hydroseeding or live planting methods. Restoration would be at a minimum ratio of 1:1, or as agreed upon as part of regulatory permitting.			Central Valley Regional Water Quality Control Board			
Noise							
NOI-1	***(Noise Limits)*** Do not exceed 86 dBA LMax at 50 feet from the job site activities from 9 A.M. to 6 A.M.	During construction-related activities.	Verification by on-site Project Manager	County of Tulare Public Works			
NOI-2	***(Equipment Requirements)*** Equip an internal combustion engine with the manufacturer-recommended muffler. Do not operate an internal combustion engine on the job site without the appropriate muffler.	During construction-related activities.	Verification by on-site Project Manager	County of Tulare Public Works			
NOI-3	***(Noise Levels)*** Noise levels generated during construction shall comply with applicable local, state, and federal regulations.	During construction-related activities.	Verification by on-site Project Manager	County of Tulare Public Works			
NOI-4	***(Construction Hours)*** Construction activities are limited to the hours of 7 A.M. to 7 P.M., Monday through Saturday when construction activities are located near sensitive receptors. No construction shall occur on Sundays or national holidays without a permit from the County. No peak noise generating activities shall be allowed to occur outside of normal business hours without County approval.	During construction-related activities.	Verification by on-site Project Manager	County of Tulare Public Works			
NOI-5	***(Best Management Practices)*** The construction contractor will implement best practices guidelines (i.e.; berms, screens, etc.) as	During construction-related activities.	Verification by on-site Project Manager	County of Tulare Public Works			

Mitigation Monitoring Reporting Program Mineral King Bridge (Historic Oak Grove Bridge) Replacement							
Mitigation Measure		**Monitoring Timing / Frequency**	**Action Indicating Compliance**	**Monitoring Agency**	**Verification of Compliance**		
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	appropriate and feasible to reduce construction-related noise impacts on surrounding land uses.						
NOI-6	***(Noise Regulations)*** The contractor shall implement appropriate additional noise mitigation measures including more strict curfews on the hours of operation during construction as directed by the County per the County's General Plan Health and Safety Element-Noise Section guidelines and regulations.	During construction-related activities.	Verification by on-site Project Manager	County of Tulare Public Works			
Tribal Cultural Resources							
TCR-1	***(Continued Consultation)*** The County will continue consultation with Native American Tribes and Caltrans to appropriately address tribal concerns regarding the cultural significance of the project area.	Prior to and during construction-related activities.	Verification by County of Tulare	County of Tulare Public Works Department and Caltrans			
See Mitigation Measures CUL-1 through CUL-3							

ATTACHMENT "A"

AESTHETIC RESOURCES:

Supplemental Visual Impact Assessment (2020)

Visual Impact Assessment (2018)

Supplemental Visual Impact Assessment

SUPPLMENTAL VISUAL IMPACT ASSESSMENT

Mineral King Road Bridge (aka Historic Oak Grove Bridge) Project

November 2020

California Department of Transportation

District 6, Tulare County, Mineral King Road
Bridge No. 46C-0196
Federal Project No. HBP 5946 (106)

Prepared by: _____ **Date:** November 20, 2020
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Senior Biologist/Visual Resource Specialist
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Approved by: _____ **Date:** _____
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Landscape Architect / Co-Owner
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License # XX
Caltrans District Landscape Architect
Division of Design, Landscape Architecture Program
District 6

Statement of Compliance: Produced in compliance with National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) requirements, as appropriate, to meet the level of analysis and documentation that has been determined necessary for this project.

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I. PURPOSE OF STUDY

The purpose of this Supplemental Visual Impact Assessment (VIA) is to document potential visual impacts resulting from the Mineral King Road Bridge Project (project) and to develop measures to reduce these impacts. Visual impacts have been assessed by identifying visual resources in the project area, measuring the level of change that would result from the project, and predicting how affected viewers would respond to or perceive those changes. A VIA (original VIA) was prepared as part of the original environmental analysis and approved by the California Department of Transportation (Caltrans) in August 2018. The original VIA considered two alternatives, including the Rehabilitation Alternative (Alternative 1) and the No Build Alternative. Following an additional corrosion assessment of the existing bridge, a Corrosion Assessment Report was prepared in February 2020 and concluded the Alkali Silica Reactivity (ASR) in the existing concrete bridge arches was in a severe state, and ASR was observed throughout the depth of the coring samples, indicating the ASR extended throughout the entire structural section of the arches. Based on these findings, Caltrans determined that rehabilitation of the bridge is no longer feasible. Alternative 2B, described in more detail below, is analyzed in this Supplemental VIA.

II. PROJECT DESCRIPTION

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with Caltrans proposes to construct a new bridge upstream of the existing Mineral King Road Bridge (aka Oak Grove Bridge) (Bridge #46C-0196) on Mineral King Road over the east fork of the Kaweah River. The project is located approximately six miles east of the census designated place of Three Rivers near the entrance to Sequoia National Park in the county of Tulare, California (see **Figure 1** and **Figure 2**).

The Mineral King Road Bridge is considered a scenic resource because it is historically significant and serves as a gateway for visitors to Sequoia National Park. The bridge is surrounded by mostly undisturbed wildlands with rolling hills and substantial vegetation, and the project area and surrounding area are considered a scenic vista. The project would require minor rehabilitations to the existing bridge and tree and vegetation removal would be required. The project would be designed to maintain or complement the aesthetic appearance of the existing bridge; however, the project would likely result in noticeable visual changes. This Supplemental VIA examines Alternative 2B (replacement alternative).

Alternative 2B. Replacement (Preserve Existing Bridge): Alternative 2B would construct a a new steel plate girder bridge on a new alignment located upstream of existing bridge. The proposed new structure would be located far enough upstream to not require any of the historic elements of the existing bridge to be removed. Traffic would be maintained on the existing bridge during construction of the new structure. The new alignment would require cutting into the existing hillside at both bridge approaches as well as the construction of rock anchor retaining walls. Specialized rock removal would be required in order to construct the proposed bridge abutments and rock anchor retaining walls.

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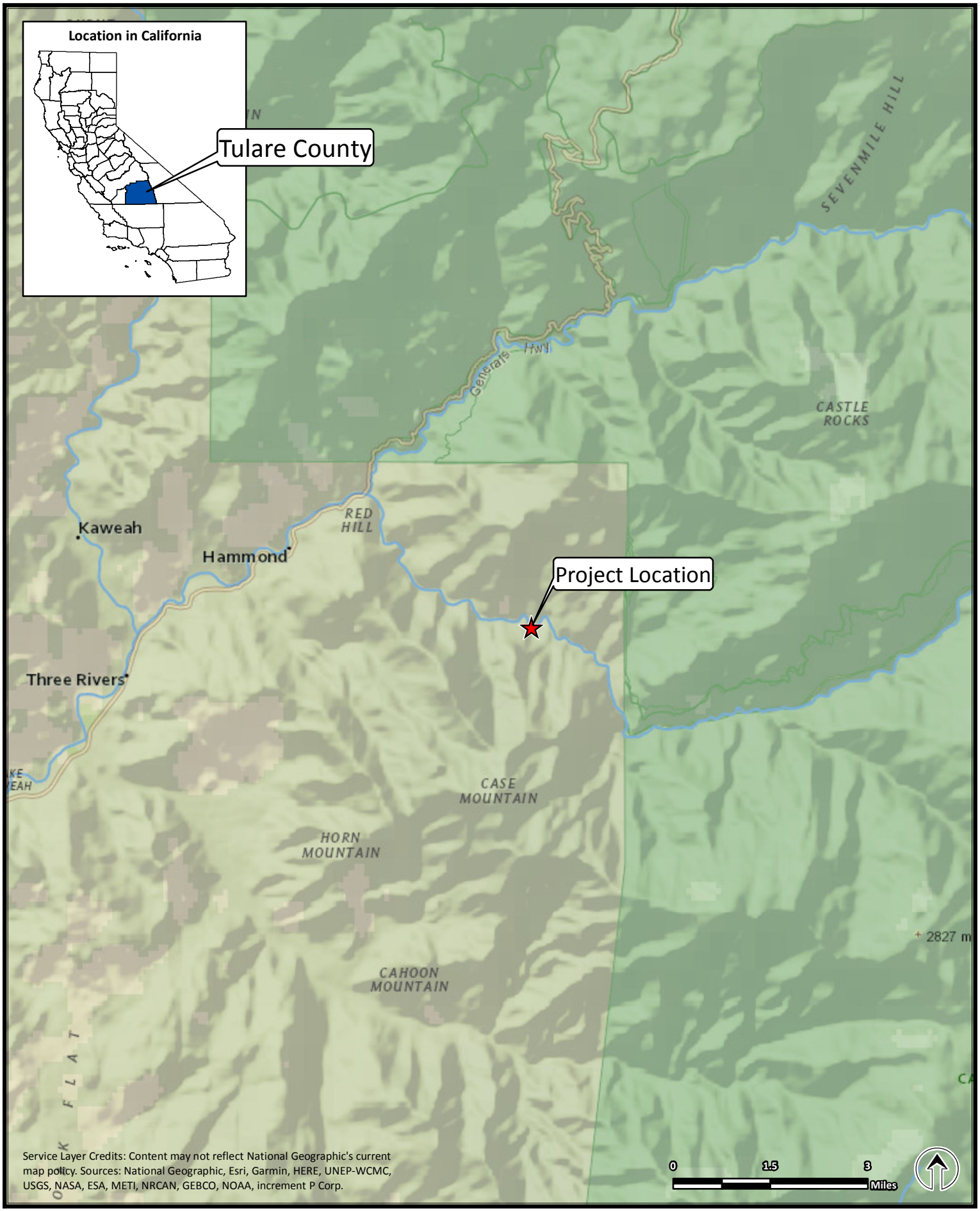


FIGURE 1: REGIONAL LOCATION MAP
Mineral King Road Bridge Project

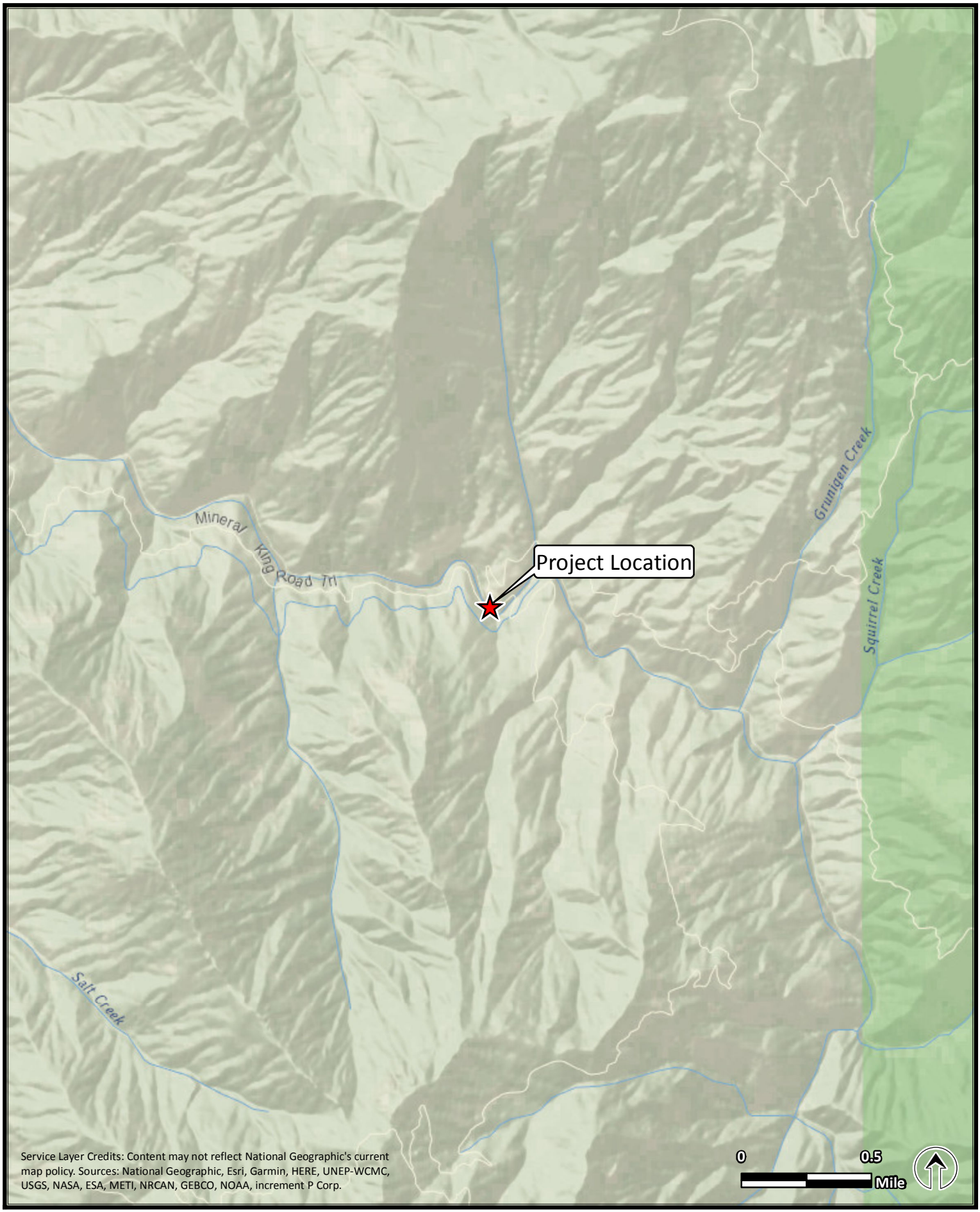


FIGURE 2: PROJECT LOCATION MAP
Mineral King Road Bridge Project

Two methods of specialized rock removal are anticipated. The first would utilize expansive rock breaking non-explosive demolition agents, such as expanding grout, to facilitate the excavation of the proposed roadway. This method eliminates fly rock, limits the amount of noise produced by this operation, and is a vibration-free excavation method ideal for environmentally sensitive areas or areas adjacent to existing structures. Due to the higher cost and increased construction duration associated with expansive rock breaking non-explosive demolition agents, it is anticipated the contractor may also utilize controlled fracturing of rock using minimal quantities of explosive chemical compounds placed in judiciously spaced predetermined drilled holes. Fly rock, dust, and noise transmission associated with this method would be reduced through the use of large, rubber mats placed over the area prior to fracturing.

The existing bridge, as well as the existing viewshed of the historic structure while approaching the crossing along Mineral King Road, would be preserved as part of this alternative. It is anticipated that the existing structure may still be used as a pedestrian crossing. Natural boulders would be placed at the ends of the bridge deck in lieu of bollards to prevent vehicular access to the historic bridge, but it will still be visually apparent that the Oak Grove Bridge had served as part of the highway. Furthermore, the Federal Highway Bridge Program allows the funds not spent on removing the existing bridge to be used to perform minor rehabilitation work on the existing structure in order to maximize its remaining life. Such work may include replacing the joint seals, applying methacrylate to the existing bridge deck, and epoxy injecting larger cracks in the arch ribs and pier spandrel columns.

Superstructure

The proposed replacement bridge superstructure consists of a new 100-foot-long clear span steel plate girder bridge. The depth of the steel plate girder superstructure would be five feet, six inches. Advantages of a steel plate girder superstructure include its relatively low cost, long span length, shallow superstructure depth, ease of maintenance, and familiarity with this type of construction among a variety of contractors.

Substructure

The new bridge abutments are anticipated to consist of seat type abutments. Depending upon the depth to bedrock, the abutments would be supported on either cast-in-drilled-hole concrete piles with concrete rock sockets or spread footings cast directly on bedrock. In the case that spread footings are selected and dead load of the structure prove insufficient to resist uplift due to overturning, post tensioned rock anchors would be used to provide additional resistance. Specialized rock removal is anticipated at the abutments to provide a level surface to construct the abutment foundations. In addition, new cantilever retaining walls would be required at the abutments to support the proposed roadway approaches.

Staging Areas

Three possible construction staging areas have been identified. The first is located approximately 800 feet northeast of the existing bridge. The second is located immediately north of Mineral King Road approximately 1.3 miles west of the existing bridge. The third staging area is approximately 400 feet northeast of the existing bridge. Temporary construction easements would be required, and right-of-way acquisitions may be required to accommodate construction of the project. There

would be no utility relocation required as part of the project.

III. PROJECT LOCATION AND SETTING

The project location and setting provide the context for determining the type and severity of changes to the existing visual environment. The terms “visual character” and “visual quality” are defined below and are used to describe the visual environment in more detail. The project setting is also referred to as the corridor or project corridor which is defined as the area of land that is visible from, adjacent to, and outside the roadway right of way, and is determined by topography, vegetation, and viewing distance.

The project area extends approximately 75 feet downstream and 60 feet upstream of the existing Mineral King Road Bridge (bridge), and includes the northern and southern approach roadways (see **Figure 3**). The project area is in a remote location, and the closest residence is more than 700 feet northeast of the project area. The bridge provides access to several private residences along the river, and serves as a gateway to Mineral King Valley in Sequoia National Park, approximately 1.45 miles east of the project area. The landscape is characterized by undisturbed wildlands with rolling hills and substantial vegetation. The County’s General Plan Update (August 2012) identifies land uses in the project area as “Foothill Agriculture.”

The County’s 2030 General Plan (Chapter 7) identifies Mineral King Road as a County Scenic Road, a road that has been “identified by the County as important to tourism and the rural travel experience in valley, foothill, and mountain landscapes.”

IV. ASSESSMENT METHOD

This Supplemental VIA generally follows the guidance outlined in the publication *Guidelines for Visual Impact Assessment of Highway Projects* published by the Federal Highway Administration (FHWA) in January 2015. The guidelines reflect FHWA’s current approach to visual assessment for highway projects. The Supplemental VIA was also prepared using the Caltrans template and follows the same steps to assess the potential visual impacts of the project that were used in the original VIA (GPA Consulting, 2018).

The study area for the VIA was identified by considering the existing landscape constraints (landform and land cover) and physiological limits of human sight, and reviewing initial plans and simulation models to identify the visual elements of the project. The VIA study area includes the project area and adjacent areas that have views of the project area. Visual quality within the VIA study area was described based on existing visual character, viewer groups, and expected community preferences.

Preliminary identification of key viewpoints was conducted using aerial mapping and project plans. Appropriate viewpoint locations were verified and finalized in the field, and multiple photographs were taken at each viewpoint location. Photographs were evaluated against project plans, and final photograph locations and angles were chosen for their overall representation of key views, key viewers, and potential visual changes.



FIGURE 3. PROJECT AREA AND STAGING AREAS
Mineral King Road Bridge Project

To create a truthful visual representation of the project, photo-realistic simulations were created by combining photographs of existing conditions and design computer aided design (CAD) files. A 3-dinemsional (3D) model was generated using known match points in both the photographs and the virtual model. Images were then duplicated within the simulation, and multi-media elements were added as an overlay with attention paid to location and size of objects.

Visual impacts were assessed by measuring the level of visual change in the VIA study area and estimating viewer response. Narrative ratings were used in the analysis. Mitigation measures were developed based on the results of the impacts assessment.

V. VISUAL ASSESSMENT UNIT AND KEY VIEWS

The same Visual Assessment Unit and Key Views analyzed in the original VIA are analyzed in this Supplemental VIA. Because the project corridor is short, only one visual assessment unit has been analyzed for the project and three key views were chosen (GPA Consulting, 2018).

Visual Assessment Unit – Mineral King Road Bridge and Adjacent Hillsides

The Visual Assessment Unit includes the Mineral King Road Bridge, Mineral King Road directly east and west of the bridge, and the densely vegetated hillsides adjacent to the roadway. Vegetation along the hillsides is dominated by interior live oak (*Quercus wislizeni)*, California buckeye (*Aesculus californica*), and mountain mahogany (*Cerocarpus betuloides*). This Visual Assessment Unit captures the bridge from both approaches and the boundaries were determined by the view limitations caused by the steep hillside slopes.

Key View #1 – Mineral King Road Bridge Traveling from the West

Key View #1 is located on Mineral King Road traveling east towards the bridge (see **Figure 4**). This view was selected to capture the bridge as seen by approaching motorists from the south, including the greatest extent of the arch structure possible (see **Figure 5**).

Key View #2 – Mineral King Road Bridge Traveling from the East

Key View #2 is located on Mineral King Road traveling west towards the bridge (see **Figure 4**). This view was selected to capture the bridge as seen by approaching motorists from the north, and has a clear view of the bridge railing (see **Figure 6**).

Key View #3 – Mineral King Road Bridge

Key View #3 is located on the Mineral King Road Bridge looking upstream at the Kaweah River (see **Figure 4**). This view was selected to capture views from the bridge looking upstream, and has clear views of the concrete barrier railing and bridge deck (see **Figure 7**).

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FIGURE 4. KEY VIEWPOINT MAP
Mineral King Road Bridge Project



Source: GPA Consulting, 2017

Figure 5. Key View #1



Source: GPA Consulting, 2017

Figure 6. Key View #2



Source: GPA Consulting, 2017

Figure 7. Key View #3

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VI. VISUAL RESOURCES AND RESOURCE CHANGE

"Resource change" is assessed by evaluating the visual character and the visual quality of the visual resources that comprise the project corridor before and after construction of the project. Resource change is one of the two major variables in the equation that determine visual impacts (the other is "viewer response," discussed below in *Section VII Viewers and Viewer Response*).

Narrative ratings have been used to assess the visual quality within each visual assessment unit. Narrative ratings ranging from very low (bad), low (poor), moderately low (fair), moderate (good), moderately high (very good), and high (excellent) have been given for each of the individual criteria, vividness, intactness, and unity, and the rating for the overall visual quality has been assigned based on an average of the individual ratings. If the average rating was between ratings, then the higher of the two ratings has been assigned.

Visual Resources

Visual resources of the project setting are defined and identified below by assessing visual character and visual quality in the project corridor.

Visual Character

Visual character includes attributes such as form, line, color, texture, and is used to describe, not to evaluate; these attributes are neither considered good nor bad. However, a change in visual character can be evaluated when it is compared with the viewer response to that change. Changes in visual character can be identified by how visually compatible a project would be with the existing condition by using visual character attributes as an indicator. The following attributes were considered for the project:

- **Form**: Visual mass or shape
- **Line**: Edges or linear definition
- **Color**: Reflective brightness (light, dark) and hue (red, green)
- **Texture**: Surface coarseness
- **Pattern**: Repeated form or design
- **Dominance**: Position, size, or contrast
- **Diversity:** Variety of visual patterns
- **Continuity:** Uninterrupted flow of form, line, color, or textural pattern

The project area is comprised primarily of undisturbed wildlands with rolling hills and dense vegetation. Mineral King Road is a paved, winding roadway that traverses through the project area and views are restricted by the slopes of the hillside and dense vegetation. The vegetation along the hillsides provides an even color and coarse texture to the landscape. The form of the bridge structure is a dominant feature within the landscape and consists of a concrete open spandrel arch structure with a uniform patterned railing. The color of the bridge is neutral and does not detract from the overall views of the landscape. There is no nighttime lighting in the project area.

Key Views

Because it is not feasible to analyze all of the views in which the project would be seen, it is necessary to select a number of key views associated with a visual assessment unit that would most clearly illustrate the change in the project's visual resources. Key views also represent the viewer groups that have the highest potential to be affected by the project considering exposure and sensitivity. Three key views have been chosen for the project (see **Figure 4**).

Key View #1 – Mineral King Road, Approaching Bridge from the West

Key View #1 is located on Mineral King Road with a view of the Mineral King Road Bridge from the west (see **Figure 5**). The dominant features in this viewpoint are the arch structure of the Mineral King Road Bridge and dense vegetation along the hillsides south of the bridge. The bridge is the focal point in the viewshed, framed by the surrounding vegetation. The straight lines, solid color, and texture of the bridge structure provide contrast to the varying colors of green and texture of the vegetation surrounding the bridge. There are no visual patterns in the viewshed that stand out, and visual diversity is low. The continuity of the viewshed is high.

Key View #2 – Mineral King Road, Approaching Bridge from the East

Key View #2 is located on Mineral King Road with a view of the Mineral King Road Bridge from the east (see **Figure 6**). The dominant features in this viewpoint are Mineral King Road and the dense vegetation surrounding the bridge. The visible portion of the bridge is limited to the bridge railings; the arch structure is not visible. The bridge, in particular the bridge pylons, are the focal point in the viewshed, framed by the surrounding vegetation. The colors of the landscape consist of various shades of green of the vegetation and the muted gray of the bridge structure and roadway. In addition, the texture of the landscape varies from the relatively smooth roadway to the coarser textures of the vegetation. The bridge railing provides a contrasting pattern to the surrounding vegetation and diversity is moderate. The roadway leads the eye towards the bridge and the continuity of the viewshed is moderate.

Key View #3 – Mineral King Road Bridge

Key View #3 is of the Mineral King Road Bridge railing and has views of the Kaweah River upstream of the bridge (see **Figure 7**). The color, form, and texture of the bridge railing provide a stark contrast against the varying colors and textures of the vegetation upstream of the bridge. Views of the Kaweah River are minimal; however, water rushing downstream along boulder-lined banks can be seen through the gaps in the bridge railing. There is no clear pattern to the landscape because the bridge railing and vegetation contrast, and the eye is not drawn to one particular area. Diversity and continuity of the viewshed are low.

Visual Quality

Visual quality is evaluated by identifying the vividness, intactness, and unity in the existing visual setting. Public attitudes validate the assessed level of quality and predict how changes to the project corridor can affect these attitudes. This process assists with identification of appropriate measures to address visual impacts that may result from a project. The three criteria for evaluating visual quality are defined below:

- **Vividness**: The extent to which the landscape is memorable and is associated with distinctive, contrasting, and diverse visual elements;
- **Intactness**: The integrity of visual features in the landscape and the extent to which the existing landscape is free from non-typical visual intrusions; and
- **Unity:** is the extent to which all visual elements combine to form a coherent, harmonious visual pattern.

The undisturbed hillsides create a memorable view along Mineral King Road therefore, vividness within the viewshed is considered high. Development and visual intrusions within the viewshedis limited, and intactness of the viewshed is considered high. The bridge is a focal point in the viewshed; however, the vegetation forms a coherent visual pattern surrounding the bridge. Therefore, the unity within the project corridor is considered moderate. Visual quality in this landscape unit is considered high.

Key View #1 – Mineral King Road Approaching Bridge from the West

Key View #1 is located on Mineral King Road with a view of the Mineral King Road Bridge from the west. Vividness at this key viewpoint is considered high. The undisturbed hillsides and decorative structure of the bridge create a memorable view at this viewpoint. Development within this key view is limited and intactness is considered high. The vegetation along the hillsides is mostly uniform and the bridge and roadway are the only elements that detract from the unity of the corridor; therefore, unity is considered moderately high.

Key View #2 – Mineral King Road Approaching Bridge from the East

Key View #2 is located on Mineral King Road with a view of the Mineral King Road Bridge from the east. Vividness at this key viewpoint is considered moderate. Vegetation does not stand out from other views along Mineral King Road and is not considered more memorable than other views in the viewshed. Views of the bridge are limited to the bridge railings which are limited in height and blend with the surroundings; therefore, intactness is considered moderately high. This key view is divided by the roadway and bridge in the foreground and middle ground, and vegetation in the background and framing the view; therefore, unity at this key view is considered moderately high.

Key View #3 – Mineral King Road Bridge

Key View #3 is of the Mineral King Road Bridge railing and has views of the Kaweah River upstream of the bridge and surrounding hillsides. The bridge railing consists of concrete posts with views of the Kaweah River between the gaps of the railing. The railing partially blocks views of the river; therefore, vividness is considered moderately high. There is no development upstream of the bridge and the intactness of the landscape at this key view is considered moderately high. The lines of the bridge railing are perpendicular to the bridge, and break the unity of the landscape; therefore, unity is considered moderate.

VII. VIEWERS AND VIEWER RESPONSE

The population affected by a project is composed of "viewers." Viewers are people whose views of the landscape may be affected by a project because the landscape itself has changed, or because their perception of the landscape has changed. Viewer response, defined as the response viewers have to changes in their visual environment, is one of two variables that determine the extent of visual impacts that would result from a project. The other variable is the change to visual resources discussed earlier in *Section VI Visual Resources and Resource Change*.

Types of Viewers

There are various types of viewer groups, depending on the type of project and project setting. Each viewer group has their own particular level of "viewer exposure" and "viewer sensitivity," resulting in distinct and predictable visual concerns for each group, which help to predict their responses to visual changes.

Viewers of the Project Area

Viewers of the project area are people who have views of the Mineral King Road Bridge. For this project, viewers have been subdivided into different viewer groups by associated activity, because different uses may generate viewer groups with distinct reasons for being in the project area and distinct responses to changes in visual resources. The following viewers of the project area were considered for the project:

- ***Visitors/Recreational Users:*** This viewer group includes visitors or recreational users within the project area, primarily those visiting Sequoia National Park and cyclists. In addition, many people visit the bridge specifically based on its reputation as a scenic resource.
- ***Residents/Employees:*** This viewer group includes residents in the project area and National Park Service employees. The nearest residence is more than 700 feet northeast of the bridge, and there are no direct views of the bridge.

Viewers from the Project Area

Viewers from the project area are people who have views from the Mineral King Road Bridge. For this project, viewers have been subdivided into viewer groups by reason for travel. The following viewers from the project area were considered for the project:

- ***Visitors/Recreational Users:*** This viewer group includes visitors in the project area, including recreational users and other travelers that may be passing through or staying in the area.
- ***Residents/Employees:*** This viewer group includes residents or National Park Service employees traveling along Mineral King Road.

Viewer Response

Viewer response is a measure or prediction of the viewer's reaction to changes in the visual environment and has two dimensions as previously mentioned: viewer exposure and viewer sensitivity.

Viewer Exposure

Viewer exposure is a measure of the viewer's ability to see a particular object. Viewer exposure has three attributes: location, quantity, and duration. "Location" relates to the position of the viewer in relationship to the object being viewed. The closer the viewer is to the object, the more exposure. "Quantity" refers to how many people see the object. The more people who can see an object or the greater frequency an object is seen, the more exposure the object has to viewers. "Duration" refers to how long a viewer is able to keep an object in view. The longer an object can be kept in view, the more exposure it has. High viewer exposure helps predict that viewers will have a response to a visual change. Narrative ratings have been used to assess viewer exposure. Narrative ratings range from low (larger distance, fewer viewers, and/or short duration), moderate (moderate distance, moderate number of viewers, and/or moderate duration), and high (proximal location, large number of viewers, and/or long duration of exposure).

Viewer Sensitivity

Viewer sensitivity is a measure of the viewer's recognition of a particular object. Viewer sensitivity has three attributes: activity, awareness, and local values. "Activity" relates to the pre-occupation of viewers, whether they are preoccupied, thinking of something else, or are they truly engaged in observing their surroundings. The more they are actually observing their surroundings, the more sensitivity viewers will have of changes to visual resources. "Awareness" relates to the focus of view, whether the focus is wide and the view general or the focus is narrow and the view specific. The more specific the awareness, the more sensitive a viewer is to change. "Local values" and attitudes also affect viewer sensitivity. If the viewer group values aesthetics in general or if a specific visual resource has been protected by local, state, or national designation, it is likely that viewers will be more sensitive to visible changes. High viewer sensitivity helps predict that viewers will have a high concern for any visual change.

The Mineral King Road Bridge is considered a scenic resource because it is visually impressive and historically significant and serves as a gateway to Sequoia National Park. Therefore, overall viewer sensitivity is expected to be high. Chapter 7 of the County's 2030 General Plan identifies Mineral King Road as a County Scenic Road, a road that has been "identified by the County as important to tourism and the rural travel experience in valley, foothill, and mountain landscapes."

Viewers of the Project Area

Visitors/Recreational Users

There would be many viewers in this viewer group as Mineral King Road serves as a gateway to Mineral King Valley in Sequoia National Park. However, views would be seasonal because parts of Mineral King Road are closed during the winter months. Because of the winding nature of the roadway and dense vegetation along the hillsides, viewers would have short-term exposure to views in the project area when traveling along Mineral King Road or stopping at the bridge. Overall exposure for this viewer group would be moderate.

Most viewers in this group would be traveling to view the bridge, traveling through the area on a bicycle, or traveling to Sequoia National Park for recreation. Awareness of the visual setting would be high for drivers, because the speed limit on Mineral King Road is low and there are turnouts

on either side of the bridge for drivers to pull over. Awareness of the visual setting would also be high for passengers and cyclists, who would be engaged in passive activities and would be focused on their surroundings. Therefore, overall sensitivity of this viewer group to visual changes in the project area is expected to be moderately high.

Residents/National Park Service Employees

There would be limited viewers in this viewer group, because there are minimal residences within the project vicinity and the only employees would be those working for the National Park Service. The closest residence is more than 700 feet northeast of the bridge and because of the rolling hillsides and dense vegetation, the nearest resident does not have a view of the project area from their residence. National Park Service employees would have views of the bridge as they travel to or from work, but they may have these views daily. Overall exposure for this viewer group would be moderate.

Most viewers in this group would be traveling to or from their homes or work. Awareness of existing visual setting and sensitivity to visual changes would be high for these viewers because they would be familiar with the existing appearance of the area, and would notice the changes. Therefore, overall sensitivity of this viewer group to visual changes in the project area is expected to be moderately high.

Viewers from the Project Area

Visitors/Recreational Users

Most viewers in the group would be traveling to view the bridge or traveling to Sequoia National Park. There are turn-outs on either side of the bridge so viewers can access the bridge and scenic vistas by foot. There are scenic vistas from the bridge and surrounding areas that include the project area and river gorge. Visitors stopping at the bridge would have close-up views of the project area, but they would not be at the site for long or very often. Overall exposure for this viewer group would be moderate.

Awareness of the visual setting would be high for drivers since the speed limit on Mineral King Road is low, and would also be high for passengers and cyclists who would be engaged in passive activities and would be focused on their surroundings. For visitors stopping at the bridge, focus would be entirely on the views. Therefore, overall sensitivity of this viewer group to visual changes in the project area is expected to be moderately high.

Residents/National Park Service Employees

There would be a limited number of viewers in this viewer group. This viewer group would have views that would be relatively distant from their homes and place of employment. Viewers would see the changes when traveling to or from their homes or Sequoia National Park. This viewer group would have short-term exposure to views in the project area when traveling over the bridge along Mineral King Road; however, exposure would be often, potentially daily. During the winter months when parts of Mineral King Road are closed, viewer exposure would be less. Overall exposure for this viewer group would be moderately high.

Most viewers in this group would be traveling to or from work or home. Awareness of the visual setting would be moderate for drivers, who would be focused on driving. Therefore, overall

sensitivity of this viewer group to visual changes in the project area is expected to be moderately high.

Viewer Response

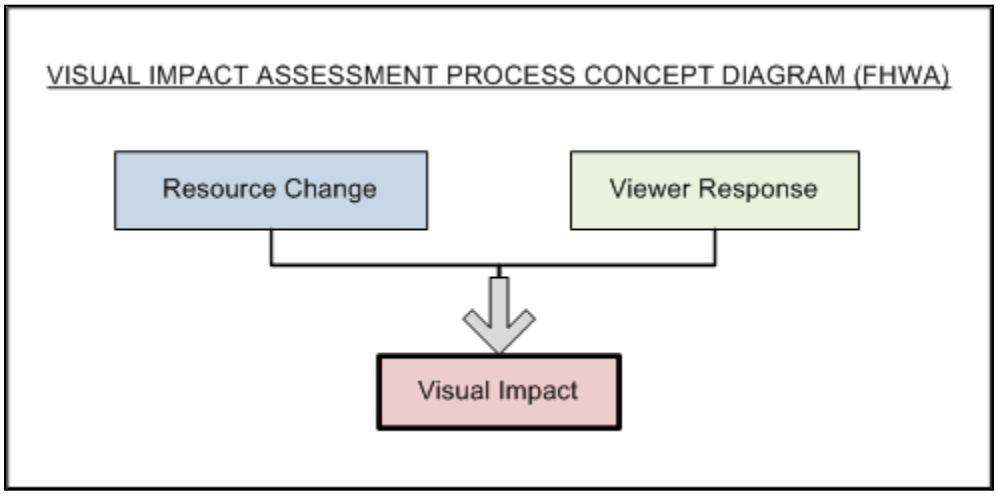
The narrative descriptions of viewer exposure and viewer sensitivity for each viewer group have been combined and averaged to establish the overall predicted viewer response of each group to visual changes resulting from the project (see **Table 1**). Overall predicted viewer response would be moderately high.

Table 1 - Predicted Viewer Response

Viewer Group	Exposure	Sensitivity	Viewer Response
Viewers of the Project Area			
Visitors/Recreational Users	Moderate	High	Moderately High
Residents/Employees	Moderate	High	Moderately High
Viewers from the Project Area			
Visitors/Recreational Users	Moderate	High	Moderately High
Residents/Employees	Moderately High	Moderate	Moderately High

VIII. VISUAL IMPACTS

Visual impacts have been determined by assessing changes to the visual resources and predicting viewer response to those changes. Cumulative impacts and temporary impacts associated with construction activities have also been considered. A generalized overview of the visual impact assessment process is illustrated in the following diagram:



Resource Change

Resource change includes changes to existing visual resources that would result from the project, in particular the changes to the existing visual character and visual quality. The overall level of resource change has been assessed and quantified by assigning one of five resource change levels: low, moderately low, moderate, moderately high, or high. **Table 2** provides a reference for determining levels of visual impact by combining resource change and viewer response.

Table 2 - Visual Impact Ratings Using Resource Change and Viewer Response

		Viewer Response				
		Low (L)	Moderate-Low (ML)	Moderate (M)	Moderate-High (MH)	High (H)
Resource Change	Low (L)	L	ML	ML	M	M
	Moderate-Low (ML)	ML	ML	M	M	MH
	Moderate (M)	ML	M	M	MH	MH
	Moderate-High (MH)	M	M	MH	MH	H
	High (H)	M	MH	MH	H	H

Visual Impacts

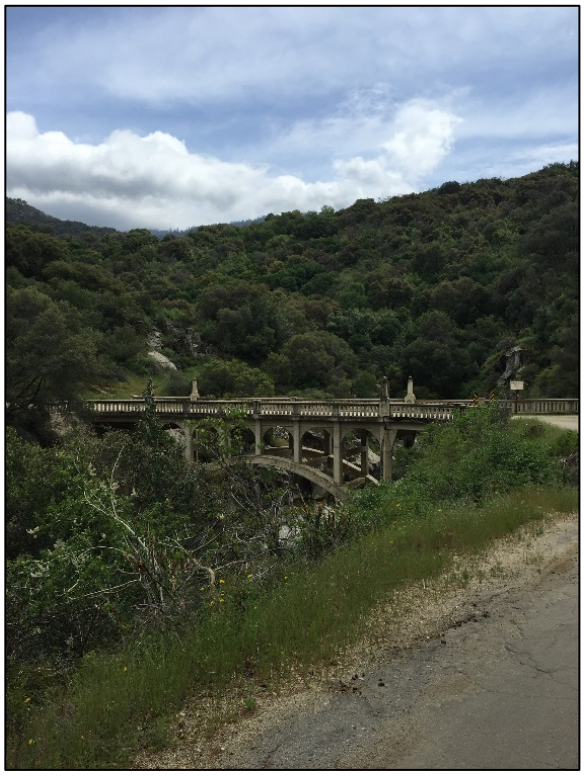
Alternative 2B

Visual Assessment Unit/Key View #1 – Mineral King Road, Approaching Bridge from the West

The primary elements of Alternative 2B visible at Key View #1 would be the retaining walls at the roadway approaches on either side of the bridge. Because the new bridge is located upstream of the existing bridge and has a low profile at the same elevation, views of the new bridge would be mostly obscured by the existing bridge. The existing bridge would be preserved and would continue to be the main focal point of this view. In addition, the replacement bridge is a clear span bridge designed to avoid visual interference with the iconic arch structure of the existing bridge and the river channel below. The new retaining walls would provide a new element to the landscape but would be treated with a sculpted, colored concrete finish that would simulate a rocky earthen hillside and would be similar to existing rock wall structures along Mineral King Road (see **Figure 8** and **Figure 9**). This context-sensitive design solution is proposed to minimize the appearance of the walls and promote visual continuity across the landscape.

The setting would still be largely undeveloped, with vegetated hillsides surrounding the existing bridge and the natural river channel below. Because the retaining walls would replace and cover some of the vegetation along the hillsides, the visual character of the viewshed would be slightly altered as the texture and color of the walls would be different from the texture and color of the vegetation. However, the visual character of Alternative 2B would be mostly compatible with the existing visual character of the corridor within Key View #1.

Alternative 2B would not impact the views or integrity of the existing bridge; however, the retaining walls would slightly reduce the intactness and unity of the project corridor. Because the physical changes in views at Key View #1 would be minimal, Alternative 2B would result in a moderately low change to visual character and quality (resource change). Viewer response to these changes would be moderately high, based on analysis provided above in Section VII. Therefore, visual impacts at Key View #1 would be considered moderate.



Source: GPA Consulting, 2015

Figure 8. Key View #1 Prior to Project Implementation



Source: Cornerstone, 2020

Figure 9. Simulation of Key View #1 with Implementation of Alternative 2B

Visual Assessment Unit/Key View #2 – Mineral King Road Approaching Bridge from the East

The primary elements of Alternative 2B visible at Key View #2 would be the eastern retaining wall and rock boulders used to prevent vehicle access to the existing bridge. In addition, the existing roadway would extend beyond the current bridge approaches to provide access to the new bridge. Because the replacement bridge would have a low profile, views of this bridge would be partially obscured by the existing bridge. The retaining walls and boulders would add new elements to the landscape; however, they would be designed to blend in with the existing landscape to the extent feasible (see **Figure 10** and **Figure 11**).

Although the eastern retaining wall would replace views of vegetation, the vegetation behind the bridge would remain and the roadway and vegetation would still be dominant views in this viewshed. The rock boulders would add new forms to the landscape, but would be compatible with the existing colors and textures of the viewshed. The visual character of Alternative 2B would be compatible with the existing visual character of the corridor within Key View #2. Because the new bridge would be obscured by the existing bridge, and the retaining wall and boulders would be compatible with the existing landscape, the vividness, intactness, and unity of the project corridor would remain the essentially the same. Because the physical changes in views at Key View #2 would be minor, Alternative 2B would result in a moderately low change to visual character and quality (resource change). Viewer response to these changes would be moderately high, based on analysis provided above in Section VII. Therefore, visual impacts at Key View #2 would be considered moderate.

Visual Assessment Unit/Key View #3– Mineral King Road Bridge

The primary element of Alternative 2B that would be visible at Key View #3 would be the new bridge structure upstream of the existing bridge. The new bridge would be a simple design and have a low profile, but would block existing views of the river and vegetation (see **Figure 12** and **Figure 13**). The features of the new bridge would be compact and minimal in terms of size, mass, and proportion; however, the new bridge would add smooth texture and new horizontal lines to the viewshed. The visual character of Alternative 2B would be mostly compatible with the existing visual character of the corridor within Key View #3.

The addition of the new bridge would slightly reduce the vividness, intactness, and unity of the viewshed. Alternative 2B would result in a moderate change to visual character and quality (resource change). Viewer response to these changes would be moderately high, based on analysis provided above in Section VII. Therefore, visual impacts at Key View #3 would be considered moderately high.



Source: GPA Consulting, 2015

Figure 10. Key View #2 Prior to Project Implementation



Source: Cornerstone, 2020

Figure 11. Simulation of Key View #2 with Implementation of Alternative 2B



Source: GPA Consulting, 2015

Figure 12 - Key View #3 Prior to Project Implementation



Source: Cornerstone, 2020

Figure 13 - Simulation of Key View #3 with Implementation of Alternative 2B

IX. PROJECT VISUAL IMPACT SUMMARY

Visual impacts are determined by assessing changes to the visual resources and predicting viewer response to those changes. Alternative 2B would introduce new elements to the landscape, including a new bridge, retaining walls, and rock boulders at the entrance to the existing bridge. These elements would be designed to blend in with the existing environment as much as possible and would not detract from views of the existing bridge. However, the average viewer response of all viewer groups would be moderately high and the project would result in a moderately low change to visual character and quality (resource change); therefore, the visual impacts would be considered moderate (see **Table 3**).

Table 3 – Summary of Key View Narrative Ratings

Visual Assessment Unit/ Key View	Alternative 2B		
	Resource Change	**View Response**	**Visual Impact**
#1 – Mineral King Road Assessing the Bridge from the West	Moderately Low	Moderately High	Moderate
#2 – Mineral King Road Assessing the Bridge from the East	Moderately Low	Moderately High	Moderate
#3 – Mineral King Road Bridge	Moderate	Moderately High	Moderately High
Overall Project Area	Moderately Low	Moderately High	Moderate

The Mineral King Road Bridge is considered a scenic resource because it is visually impressive, historically significant, and serves as a gateway for visitors to Sequoia National Park. The project would maintain the current aesthetics of the existing bridge and would preserve the historic integrity of the bridge.

The project would consist of constructing a new bridge with materials that are the same general class of materials used in the historic bridge, but are slightly different in terms of color, texture, and composition, and would not introduce a jarring new aesthetic to the landscape. The existing sources of lighting in the project area are primarily associated with roadway vehicles; there is no lighting on the bridge or roadway. In addition, the new bridge would not create new sources of light or glare that would affect day or nighttime views in the area.

The project would generally maintain the existing visual character and visual quality of the landscape but would result in a visual impact from construction of the retaining walls and tree and vegetation removal. Therefore, the overall visual impacts of Alterative 2B would be moderate.

Temporary Construction Impacts

Project construction would result in temporary visual impacts, including vegetation removal and equipment staging. Construction activities could also result in the generation of dust, night lighting, and other visual intrusions. The construction is anticipated to last approximately 12 months, and the majority of impacts would be limited to this period. Vegetation removal would result in impacts lasting for a longer period.

X. CUMULATIVE IMPACTS

Cumulative impacts are those resulting from past, present and reasonably foreseeable future actions, combined with the potential visual impacts of this project. For this project, cumulative visual impacts could result if the project, in combination with other nearby projects, were to result in substantial cumulative impacts. No other projects are planned in or near the project area that would contribute to cumulative visual impacts similar to those of the project. Therefore, the project is not expected to result in cumulatively considerable impacts.

XI. AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The following measures to avoid and minimize visual impacts would be incorporated into the project:

- Staging areas would be located away from the public view where feasible. These areas would be fenced to reduce visibility and would be kept clean and orderly.
- Vegetation removal would be minimized to the extent feasible. Vegetated areas temporarily disturbed by the project would be restored following project construction using a context sensitive design that is visually compatible with the surrounding landscape.
- Barriers, fencing, and other hardscape elements would be designed using materials and aesthetic treatments that are compatible with the existing bridge features and surrounding landscape features.
- Temporarily disturbed areas would be re-contoured and re-vegetated using native species. Any re-vegetation or erosion control implemented would be completed using non-invasive species.

XII. CONCLUSIONS

Visual impacts resulting from operation of the project, including cumulative impacts, are anticipated to be moderately high. Minimization measures would be incorporated into the project to minimize temporary impacts resulting from construction activities, including vegetation removal and staging. These minimization measures would reduce temporary project impacts as seen from Mineral King Road. With implementation of these proposed measures, moderate short-term visual impacts would remain from vegetation removal, until the vegetation is reestablished.

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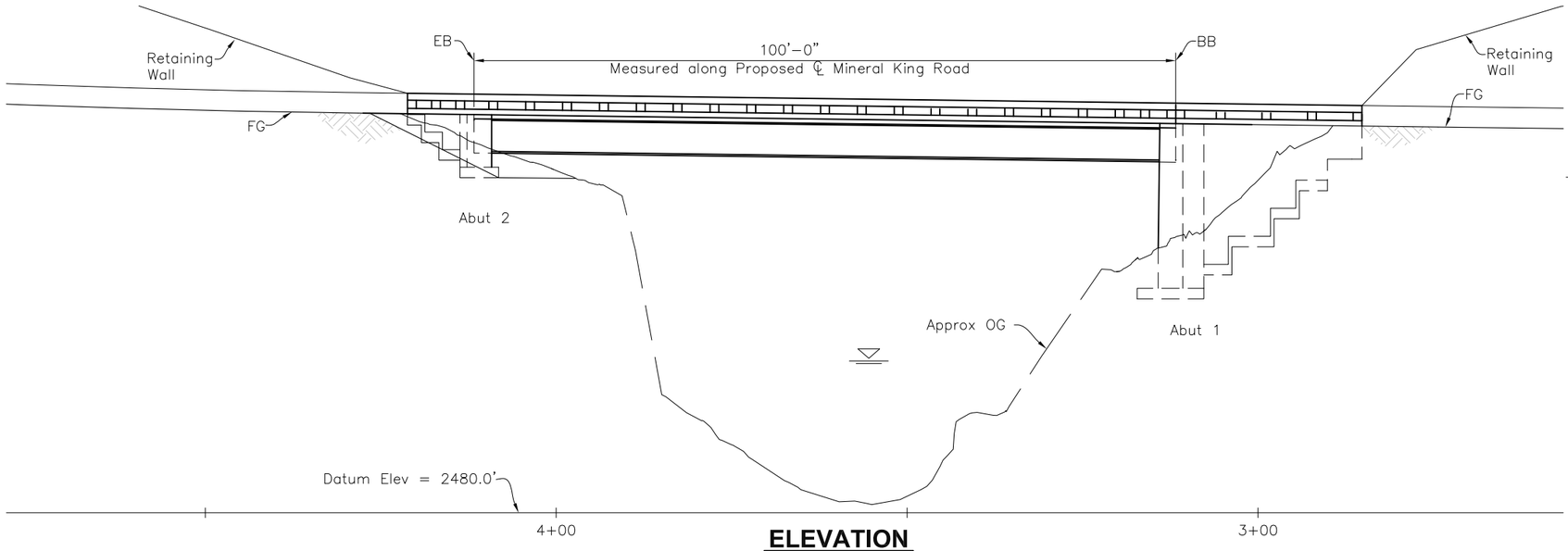
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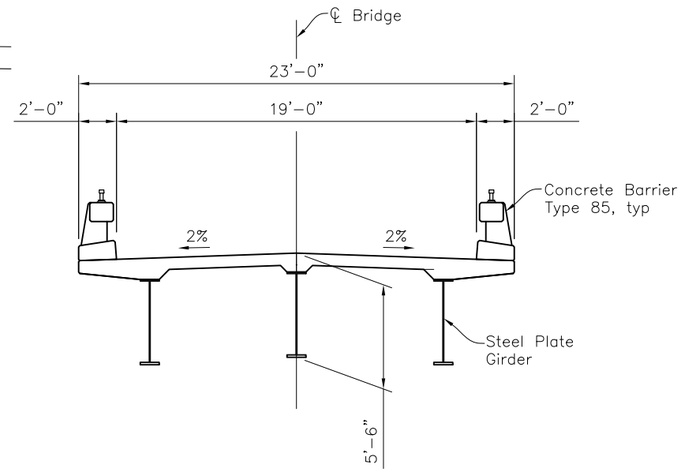
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Appendix A

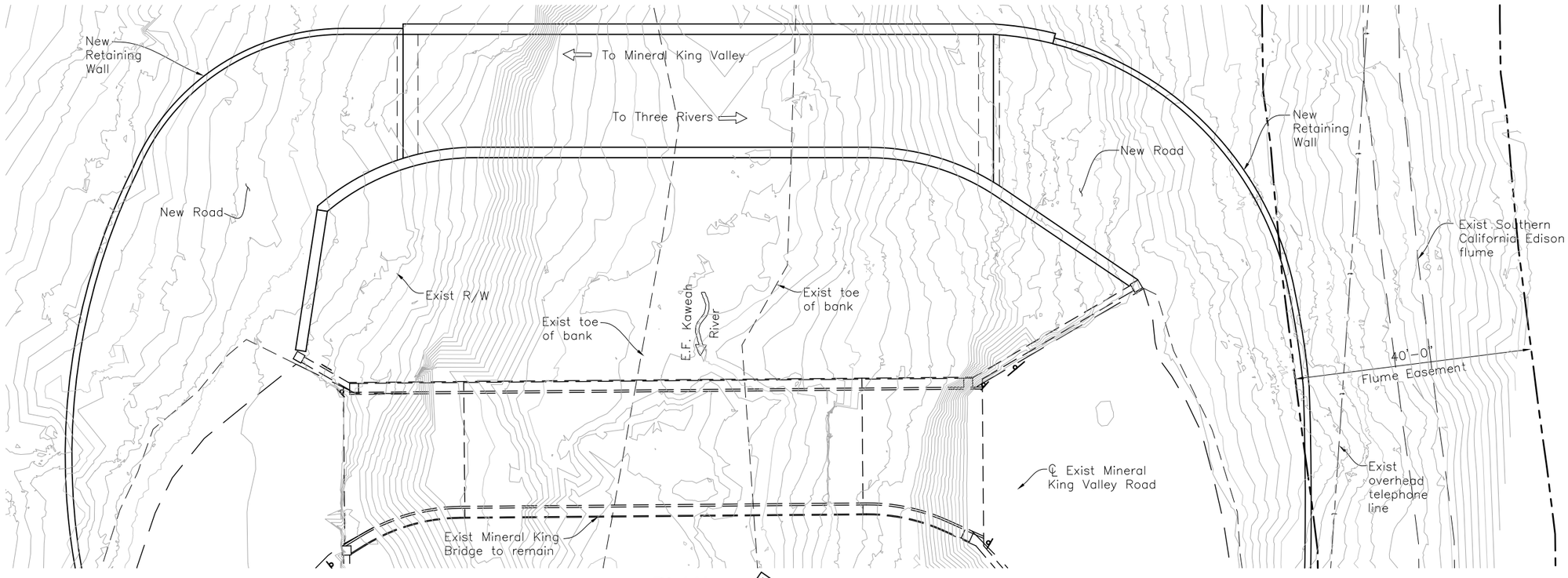
Project Plans



ELEVATION
1"= 10'–0"



TYPICAL SECTION
1/4"=1'–0"



PLAN
1"= 10'–0"

General Notes:

1. These plans shall incorporate the 2018 State Standard Specifications and the 2018 State Standard Plans.
2. The contractor shall verify all controlling field dimensions before ordering or fabricating any material.
3. A representative of the Geotechnical Engineer of Record shall be on site at all times during earthwork activities and foundation construction.

Legend:

- Indicates new construction
- Indicates existing bridge (Br. No. 46C–0196)
- Indicates direction of traffic
- B0-3 / 3-1 — Indicates Caltrans standard plan sheet no. / Indicates detail no.

REGISTERED PROFESSIONAL ENGINEER SHAWN M. CULLERS No. S5561 STRUCTURAL STATE OF CALIFORNIA

PRELIMINARY – NOT FOR CONSTRUCTION

REVISIONS			
NO.	DESCRIPTION	DATE	BY

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TULARE COUNTY RESOURCE MANAGEMENT AGENCY
5961 SOUTH MOONEY BLVD., VISALIA, CALIFORNIA 93277

SCALE	As Noted
DESIGNED	SMC
DRAWN	NRZ
CHECKED	MAW
FILE NAME	2014046
DATE	

GENERAL PLAN – ALTERNATIVE No. 2B

M375A MINERAL KING BRIDGE OVER THE EAST FORK OF THE KAWEAH RIVER

SHEET No. S1 / 1 OF 1

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Visual Impact Assessment

VISUAL IMPACT ASSESSMENT

Mineral King Road Bridge (aka Historic Oak Grove Bridge) Rehabilitation Project

May 2018

California Department of Transportation

District 6, Tulare County, Mineral King Road
Bridge No. 46C-0196
Federal Project No. HBP 5946 (106)



Prepared by: Marieka Schrader **Date:** May 11, 2018
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Division of Design, Landscape Architecture Program
District 6

Statement of Compliance: Produced in compliance with National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) requirements, as appropriate, to meet the level of analysis and documentation that has been determined necessary for this project.

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I. PURPOSE OF STUDY

The purpose of this Visual Impact Assessment (VIA) is to document potential visual impacts resulting from the Mineral King Road Bridge Rehabilitation Project (project) and to develop measures to reduce these impacts. Visual impacts have been assessed by identifying visual resources in the project area, measuring the level of change that would result from the project, and predicting how affected viewers would respond to or perceive those changes.

II. PROJECT DESCRIPTION

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans) proposes to rehabilitate the existing Mineral King Road Bridge (aka Oak Grove Bridge) (Bridge #46C-0196) on Mineral King Road over the east fork of the Kaweah River. The project is located approximately six miles east of the census designated place of Three Rivers near the entrance to Sequoia National Park in the county of Tulare, California (see **Figure 1** and **Figure 2**).

The Mineral King Road Bridge is considered a scenic resource because it is historically significant and serves as a gateway for visitors to Sequoia National Park. The bridge is surrounded by mostly undisturbed wildlands with rolling hills and substantial vegetation, and the project area and surrounding area are considered a scenic vista. The project would require modifications to the existing bridge and tree and vegetation removal would be required. The project would be designed to maintain or complement the aesthetic appearance of the existing bridge; however, the project would likely result in noticeable visual changes to the bridge and surrounding area.

This VIA examines two alternatives, including the no-build alternative. The alternatives assessed in this study are:

- **Alternative 1. Rehabilitation/Retrofit:** The Rehabilitation/Retrofit Alternative would include removal and replacement of the bridge deck, spandrel columns, spandrel crossbeams, arch fins, transverse deck beams, and longitudinal exterior beam over the main arch span; repair of carbonated concrete at the pier spandrel columns and arch; replacement of the existing deficient concrete barrier rails with new concrete barrier rails meeting current federal barrier rail safety standards; and application of silane waterproofing treatment to all remaining exposed concrete surfaces.

  To make the necessary repairs, a temporary scaffolding system would be required. The scaffolding would be placed within the creek. Because the existing bridge would be closed during construction, a temporary bridge would be required downstream of the existing bridge to maintain traffic during construction. The centerline of the temporary bridge would be located approximately 50 feet north of the existing bridge's northern edge of deck. The span length of the temporary bridge would be approximately 120 to 130 feet. The temporary bridge would be supported on temporary cast-in-place abutments that would be removed following rehabilitation of the existing bridge. Because of limitations on the size of equipment that can access the site, the temporary bridge would likely be placed in three or more sections on two temporary supports in the channel.

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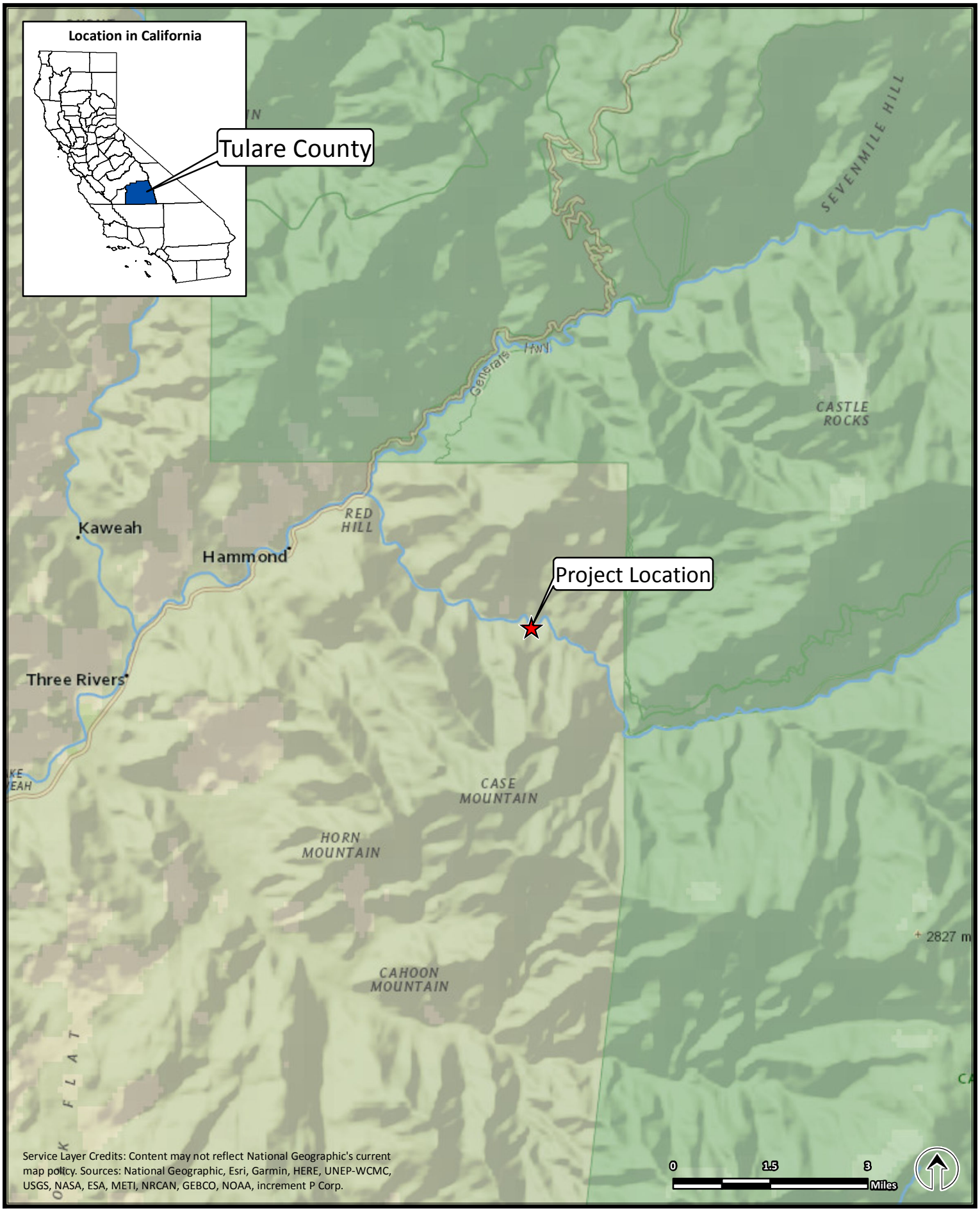


FIGURE 1: REGIONAL LOCATION MAP
Mineral King Road Bridge Rehabilitation

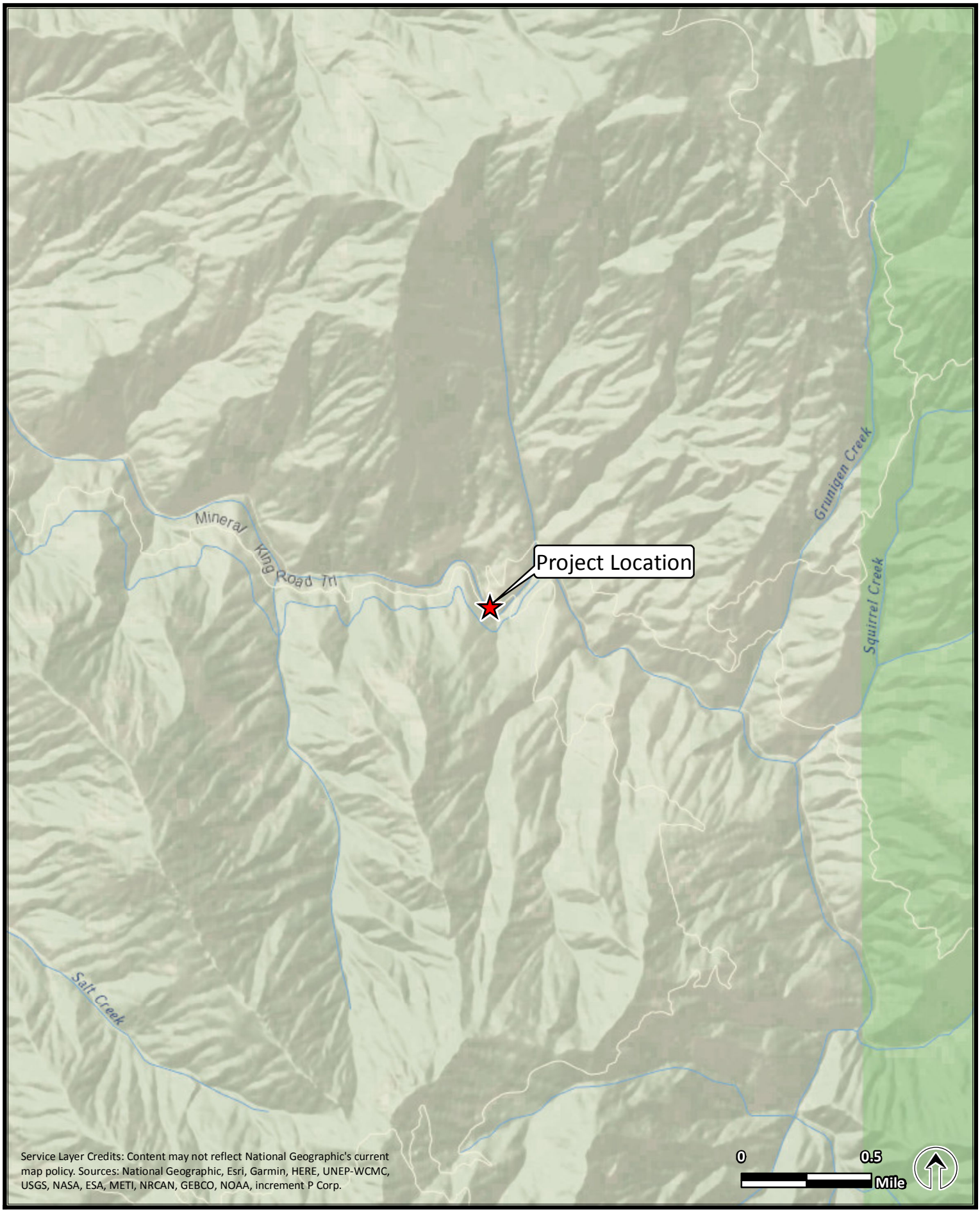


FIGURE 2: PROJECT LOCATION
Mineral King Road Bridge Rehabilitation

Three potential staging areas are being considered: the first construction staging area (East Construction Staging Area) is located approximately 800 feet northeast of the existing bridge; the second construction staging area (West Construction Staging Area) is located immediately north of Mineral King Road, approximately 1.3 miles west of the existing bridge; and the third construction staging area (South Construction Staging Area) is located approximately 370 feet northeast of the existing bridge.

- **No Build Alternative:** The No Build Alternative would not include any improvements to the existing facility other than routine maintenance.

The following alternatives were considered, but eliminated because Alternative 1 is the only build alternative that would not result in an adverse effect on the bridge, a historic resource.

- **Alternative 2B. Replacement (Preserve Existing Bridge):** The Replacement Alternative would include construction of a replacement bridge with a new cast-in-place tensioned concrete box girder on a new alignment. The new bridge would be constructed immediately upstream of the existing bridge. The replacement bridge would consist of an approximately 120-foot-long single-span bridge. The replacement bridge would be the same width as the existing bridge, approximately 19 feet wide from curb to curb. The total bridge width, with Type 80 barrier rails, would be 22.5 feet (including a 19-foot travel way plus two 1-foot, 9-inch barrier rails).

  The replacement bridge would be located east (upstream) of the existing bridge, and traffic would continue to use the existing bridge until construction is completed. Following construction, the existing bridge would likely be used as a pedestrian crossing.

  Because the alignment of the bridge would be shifted to the east, the approach roadways would also be realigned. The new alignment would require cutting into the hillside at both bridge approaches. Depending on the depth to bedrock, blasting or hydro drilling of the existing rock would be required. Retaining walls would likely be needed to accommodate both roadway approaches and bridge abutments. In addition, new fill and retaining walls would be required to support the proposed alignment at the southwest corner of the structure. Under this alternative, minor rehabilitation work on the existing bridge is proposed to maximize its remaining life. This may include replacing the joint seals, applying methacrylate to the bridge deck, and/or injecting epoxy into the larger cracks in the arch ribs and pier spandrel columns.

- **Alternative 3. Hybrid Rehabilitation/Replacement:** The Hybrid Rehabilitation/Replacement Alternative is a combination of Alternatives 1 and 2B. The original arches of the existing bridge would be maintained, and the existing bridge deck would be reconstructed with a new girder type bridge. All aesthetic features on the new bridge deck would be reconstructed to match the existing bridge.

  The new girder type bridge would consist of a cast-in-place post-tensioned concrete box girder constructed over the existing arch to mimic the appearance of the existing structure. This would be accomplished by forming the exterior girder to give the appearance of the existing exterior face along the bridge deck. The box girder would be a single span, approximately the same length as the existing bridge (approximately 120 feet). This span would require a box girder depth of approximately five feet. While this depth is greater than the existing exterior floor

beams, which are approximately 2.5 feet deep, the exterior appearance of the new bridge would be almost identical to the existing bridge. The existing arch ribs, spandrel columns, and piers would be repaired and laterally stabilized against transverse and longitudinal motion by pin dowels that would be placed into the new box girder bridge.

Because the existing bridge deck would need to be removed, a temporary bridge, as described in Alternative 1, would be required to maintain traffic during construction. After erection of the temporary bridge, construction of the new structure would begin with the demolition of the existing deck, spandrel beams to the tops of the spandrel columns, and abutments. New abutments would be constructed behind the existing abutments. Temporary bracing (i.e., falsework) would be installed for the existing arch ribs and spandrel columns, and the arches would then be used to help support the temporary falsework for construction of the box girder. Construction of the box girder would be completed, and the temporary falsework would be removed.

III. PROJECT LOCATION AND SETTING

The project location and setting provide the context for determining the type and severity of changes to the existing visual environment. The terms “visual character” and “visual quality” are defined below and are used to describe the visual environment in more detail. The project setting is also referred to as the corridor or project corridor which is defined as the area of land that is visible from, adjacent to, and outside the roadway right of way, and is determined by topography, vegetation, and viewing distance.

The project area extends approximately 75 feet downstream and 60 feet upstream of the existing Mineral King Road Bridge (bridge), and includes the northern and southern approach roadways (see **Figure 3**). The project area is in a remote location, and the closest residence is more than 700 feet northeast of the project area. The bridge provides access to several private residences along the river, and serves as a gateway to Mineral King Valley in Sequoia National Park, approximately 1.45 miles east of the project area. The landscape is characterized by undisturbed wildlands with rolling hills and substantial vegetation. The County’s General Plan Update (August 2012) identifies land uses in the project area as “Foothill Agriculture.”

The County’s 2030 General Plan (Chapter 7) identifies Mineral King Road as a County Scenic Road, a road that has been “identified by the County as important to tourism and the rural travel experience in valley, foothill, and mountain landscapes.”

IV. ASSESSMENT METHOD

This VIA generally follows the guidance outlined in the publication *Guidelines for Visual Impact Assessment of Highway Projects* published by the Federal Highway Administration (FHWA) in January 2015. The guidelines reflect FHWA’s current approach to visual assessment for highway projects. The VIA was also prepared using the Caltrans template.



FIGURE 3. PROJECT AREA AND STAGING AREAS
Mineral King Road Bridge Project

The following steps were followed to assess the potential visual impacts of the project:

- The project location and setting were defined;
- Visual assessment units and key viewpoints were identified;
- Existing visual resources and key viewers were identified;
- Resource change and viewer response were assessed;
- The visual appearance of the project at key viewpoints was simulated;
- Visual impacts resulting from the project were analyzed; and
- Measures to offset visual impacts were developed.

A Caltrans VIA scoping questionnaire was completed in April 2018. The scoping questionnaire consists of 10 questions and provides an explanation of each with a scoring system to help determine the type of VIA required. The total score for the project was 20 points, indicating that a Moderate VIA was needed.

The study area for the VIA was identified by considering the existing landscape constraints (landform and land cover) and physiological limits of human sight, and reviewing initial plans and simulation models to identify the visual elements of the project. Visual quality within the VIA study area was then described based on existing visual character, viewer groups, and expected community preferences.

Preliminary identification of key viewpoints was conducted using aerial mapping and project plans. Appropriate viewpoint locations were verified and finalized in the field, and multiple photographs were taken at each viewpoint location. Photographs were evaluated against project plans, and final photograph locations and angles were chosen for their overall representation of key views, key viewers, and potential visual changes.

To create a truthful visual representation of the project, photo-realistic simulations were created by combining photographs of existing conditions and design computer aided design (CAD) files. A 3-dinemsional (3D) model was generated using known match points in both the photographs and the virtual model. Images were then duplicated within the simulation, and multi-media elements were added as an overlay with attention paid to location and size of objects.

Visual impacts were assessed by measuring the level of visual change in the VIA study area and estimating viewer response. Narrative ratings were used in the analysis. Mitigation measures were developed based on the results of the impacts assessment.

V. VISUAL ASSESSMENT UNIT AND KEY VIEWS

Visual Assessment Unit

Visual assessment units are typically defined by the limits of a particular viewshed or similar visual character; viewshed was used to define the visual assessment unit for this project. The visual assessment unit has its own visual character and visual quality. Because the project corridor is short, only one visual assessment unit has been analyzed for the project (see **Figure 4**).

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FIGURE 4. KEY VIEWPOINT MAP
Mineral King Road Bridge Project

Visual Assessment Unit – Mineral King Road Bridge and Adjacent Hillsides

The Visual Assessment Unit includes the Mineral King Road Bridge, Mineral King Road directly east and west of the bridge, and the densely vegetated hillsides adjacent to the roadway. Vegetation along the hillsides is dominated by interior live oak (*Quercus wislizeni)*, California buckeye (*Aesculus californica*), and mountain mahogany (*Cerocarpus betuloides*). This Visual Assessment Unit captures the bridge from both approaches and the boundaries were determined by the view limitations caused by the steep hillside slopes.

Key Views

Because it is not feasible to analyze all of the views in which the project would be seen, it is necessary to select a number of key views associated with a visual assessment unit that would most clearly illustrate the change in the project's visual resources. Key views also represent the viewer groups that have the highest potential to be affected by the project considering exposure and sensitivity. Three key views have been chosen for the project (see **Figure 4**).

Key View #1 – Mineral King Road Bridge Traveling from the West

Key View #1 is located on Mineral King Road traveling east towards the bridge (see **Figure 4**). This view was selected to capture the bridge as seen by approaching motorists from the south, including the greatest extent of the arch structure possible (see **Figure 5**).

Key View #2 – Mineral King Road Bridge Traveling from the East

Key View #2 is located on Mineral King Road traveling west towards the bridge (see **Figure 4**). This view was selected to capture the bridge as seen by approaching motorists from the north, and has a clear view of the bridge railing (see **Figure 6**).

Key View #3 – Mineral King Road Bridge

Key View #3 is located on the Mineral King Road Bridge looking upstream at the Kaweah River (see **Figure 4**). This view was selected to capture views from the bridge looking upstream, and has clear views of the concrete barrier railing and bridge deck (see **Figure 7**).

VI. VISUAL RESOURCES AND RESOURCE CHANGE

"Resource change" is assessed by evaluating the visual character and the visual quality of the visual resources that comprise the project corridor before and after the construction of the project. Resource change is one of the two major variables in the equation that determine visual impacts (the other is "viewer response," discussed below in *Section VII Viewers and Viewer Response*).

Narrative ratings have been used to assess the visual quality within each visual assessment unit. Narrative ratings ranging from very low (bad), low (poor), moderately low (fair), moderate (good), moderately high (very good), and high (excellent) have been given for each of the individual criteria, vividness, intactness, and unity, and the rating for the overall visual quality has been assigned based on an average of the individual ratings. If the average rating was between ratings, then the higher of the two ratings has been assigned.



Source: GPA Consulting, 2017

Figure 5. Key View #1



Source: GPA Consulting, 2017

Figure 6. Key View #2



Source: GPA Consulting, 2017

Figure 7. Key View #3

Visual Resources

Visual resources of the project setting are defined and identified below by assessing visual character and visual quality in the project corridor.

Visual Character

Visual character includes attributes such as form, line, color, texture, and is used to describe, not to evaluate; these attributes are neither considered good nor bad. However, a change in visual character can be evaluated when it is compared with the viewer response to that change. Changes in visual character can be identified by how visually compatible a project would be with the existing condition by using visual character attributes as an indicator. The following attributes were considered for the project:

- **Form**: Visual mass or shape
- **Line**: Edges or linear definition
- **Color**: Reflective brightness (light, dark) and hue (red, green)
- **Texture**: Surface coarseness
- **Pattern**: Repeated form or design
- **Dominance**: Position, size, or contrast
- **Diversity:** Variety of visual patterns
- **Continuity:** Uninterrupted flow of form, line, color, or textural pattern

The project area is comprised primarily of undisturbed wildlands with rolling hills and dense vegetation. Mineral King Road is a paved, winding roadway that traverses through the project area and views are restricted by the slopes of the hillside and dense vegetation. The vegetation along the hillsides provides an even color and coarse texture to the landscape. The form of the bridge structure is a dominant feature within the landscape and consists of a concrete open spandrel arch structure with a uniform patterned railing. The color of the bridge is neutral and does not detract from the overall views of the landscape. There is no nighttime lighting in the project area.

Key View #1 – Mineral King Road, Approaching Bridge from the West

Key View #1 is located on Mineral King Road with a view of the Mineral King Road Bridge from the west (see **Figure 4**). The dominant features in this viewpoint are the arch structure of the Mineral King Road Bridge and dense vegetation along the hillsides south of the bridge. The bridge is the focal point in the viewshed, framed by the surrounding vegetation. The straight lines, solid color, and texture of the bridge structure provide contrast to the varying colors of green and texture of the vegetation surrounding the bridge. There are no visual patterns in the viewshed that stand out, and visual diversity is low. The continuity of the viewshed is high.

Key View #2 – Mineral King Road, Approaching Bridge from the East

Key View #2 is located on Mineral King Road with a view of the Mineral King Road Bridge from

the east (see **Figure 4**). The dominant features in this viewpoint are Mineral King Road and the dense vegetation surrounding the bridge. The visible portion of the bridge is limited to the bridge railings; the arch structure is not visible. The bridge, in particular the bridge pylons, are the focal point in the viewshed, framed by the surrounding vegetation. The colors of the landscape consist of various shades of green of the vegetation and the muted gray of the bridge structure and roadway. In addition, the texture of the landscape varies from the relatively smooth roadway to the coarser textures of the vegetation. The bridge railing provides a contrasting pattern to the surrounding vegetation and diversity is moderate. The roadway leads the eye towards the bridge and the continuity of the viewshed is moderate.

Key View #3 – Mineral King Road Bridge

Key View #3 is of the Mineral King Road Bridge railing and has views of the Kaweah River upstream of the bridge (see **Figure 4**). The color, form, and texture of the bridge railing provide a stark contrast against the varying colors and textures of the vegetation upstream of the bridge. Views of the Kaweah River are minimal; however, water rushing downstream along boulder-lined banks can be seen through the gaps in the bridge railing. There is no clear pattern to the landscape because the bridge railing and vegetation contrast, and the eye is not drawn to one particular area. Diversity and continuity of the viewshed are low.

Visual Quality

Visual quality is evaluated by identifying the vividness, intactness, and unity in the existing visual setting. Public attitudes validate the assessed level of quality and predict how changes to the project corridor can affect these attitudes. This process assists with identification of appropriate measures to address visual impacts that may result from a project. The three criteria for evaluating visual quality are defined below:

- **Vividness**: The extent to which the landscape is memorable and is associated with distinctive, contrasting, and diverse visual elements;
- **Intactness**: The integrity of visual features in the landscape and the extent to which the existing landscape is free from non-typical visual intrusions; and
- **Unity:** is the extent to which all visual elements combine to form a coherent, harmonious visual pattern.

The undisturbed hillsides create a memorable view along Mineral King Road therefore, vividness within the project corridor is considered high. Development and visual intrusions within the project corridor is limited and intactness of the viewshed is considered high. The bridge is a focal point in the viewshed; however, the vegetation forms a coherent visual pattern surrounding the bridge. Therefore, the unity within the project corridor is considered moderate. Visual quality in this landscape unit is considered high.

Key View #1 – Mineral King Road Approaching Bridge from the West

Key View #1 is located on Mineral King Road with a view of the Mineral King Road Bridge from the west. Vividness at this key view point is considered high. The undisturbed hillsides and decorative structure of the bridge create a memorable view at this viewpoint. Development within

this key view is limited and intactness is considered high. The vegetation along the hillsides is mostly uniform and the bridge and roadway are the only elements that detract from the unity of the corridor; therefore, unity is considered moderately high.

Key View #2 – Mineral King Road Approaching Bridge from the East

Key View #2 is located on Mineral King Road with a view of the Mineral King Road Bridge from the east. Vividness at this key view point is considered moderate. Vegetation does not stand out from other views along the Mineral King Road corridor and is not considered more memorable than other views in the viewshed. Views of the bridge are limited to the bridge railings which are limited in height and blend with the surroundings; therefore, intactness is considered moderately high. This key view is divided by the roadway and bridge in the foreground and middle ground, and vegetation in the background and framing the view; therefore, unity at this key view is considered moderately high.

Key View #3 – Mineral King Road Bridge

Key View #3 is of the Mineral King Road Bridge railing and has views of the Kaweah River upstream of the bridge and surrounding hillsides. The bridge railing consists of concrete posts with views of the Kaweah River between the gaps of the railing. The railing partially blocks views of the river; therefore, vividness is considered moderately high. There is no development upstream of the bridge and the intactness of the landscape at this key view is considered moderately high. The lines of the bridge railing are perpendicular to the bridge, and break the unity of the landscape; therefore, unity is considered moderate.

VII. VIEWERS AND VIEWER RESPONSE

The population affected by a project is composed of “viewers.” Viewers are people whose views of the landscape may be affected by a project because the landscape itself has changed, or because their perception of the landscape has changed. Viewer response, defined as the response viewers have to changes in their visual environment, is one of two variables that determine the extent of visual impacts that would result from a project. The other variable is the change to visual resources discussed earlier in *Section VI Visual Resources and Resource Change*.

Types of Viewers

There are various types of viewer groups, depending on the type of project and project setting. Each viewer group has their own particular level of “viewer exposure” and “viewer sensitivity,” resulting in distinct and predictable visual concerns for each group, which help to predict their responses to visual changes.

Viewers of the Project Area

Viewers of the project area are people who have views of the Mineral King Road Bridge. For this project, viewers have been subdivided into different viewer groups by associated activity, because different uses may generate viewer groups with distinct reasons for being in the project area and distinct responses to changes in visual resources. The following viewers of the project area were considered for the project:

- ***Visitors/Recreational Users:*** This viewer group includes visitors or recreational users within the project area, primarily those visiting Sequoia National Park and cyclists. In addition, many people visit the bridge specifically based on its reputation as a scenic resource.
- ***Residents/Employees:*** This viewer group includes residents in the project area and National Park Service employees. The nearest residence is more than 700 feet northeast of the bridge, and there are no direct views of the bridge.

Viewers from the Project Area

Viewers from the project area are people who have views from the Mineral King Road Bridge. For this project, viewers have been subdivided into viewer groups by reason for travel. The following viewers from the project area were considered for the project:

- ***Visitors/Recreational Users:*** This viewer group includes visitors in the project area, including recreational users and other travelers that may be passing through or staying in the area.
- ***Residents/Employees:*** This viewer group includes residents or National Park Service employees traveling along Mineral King Road.

Viewer Response

Viewer response is a measure or prediction of the viewer's reaction to changes in the visual environment, and has two dimensions as previously mentioned: viewer exposure and viewer sensitivity.

Viewer Exposure

Viewer exposure is a measure of the viewer's ability to see a particular object. Viewer exposure has three attributes: location, quantity, and duration. "Location" relates to the position of the viewer in relationship to the object being viewed. The closer the viewer is to the object, the more exposure. "Quantity" refers to how many people see the object. The more people who can see an object or the greater frequency an object is seen, the more exposure the object has to viewers. "Duration" refers to how long a viewer is able to keep an object in view. The longer an object can be kept in view, the more exposure it has. High viewer exposure helps predict that viewers will have a response to a visual change. Narrative ratings have been used to assess viewer exposure. Narrative ratings range from low (larger distance, fewer viewers, and/or short duration), moderate (moderate distance, moderate number of viewers, and/or moderate duration), and high (proximal location, large number of viewers, and/or long duration of exposure).

Viewer Sensitivity

Viewer sensitivity is a measure of the viewer's recognition of a particular object. Viewer sensitivity has three attributes: activity, awareness, and local values. "Activity" relates to the pre-occupation of viewers, whether they are preoccupied, thinking of something else, or are they truly engaged in observing their surroundings. The more they are actually observing their surroundings, the more sensitivity viewers will have of changes to visual resources. "Awareness" relates to the focus of view, whether the focus is wide and the view general or the focus is narrow and the view specific. The more specific the awareness, the more sensitive a viewer is to change. "Local values" and attitudes also affect viewer sensitivity. If the viewer group values aesthetics in general

or if a specific visual resource has been protected by local, state, or national designation, it is likely that viewers will be more sensitive to visible changes. High viewer sensitivity helps predict that viewers will have a high concern for any visual change.

The Mineral King Road Bridge is considered a scenic resource because it is visually impressive and historically significant and serves as a gateway to Sequoia National Park. Therefore, overall viewer sensitivity is expected to be high. Chapter 7 of the County's 2030 General Plan identifies Mineral King Road as a County Scenic Road, a road that has been "identified by the County as important to tourism and the rural travel experience in valley, foothill, and mountain landscapes."

Viewers of the Project Area

Visitors/Recreational Users

There would be many viewers in this viewer group as Mineral King Road serves as a gateway to Mineral King Valley in Sequoia National Park. Because of the winding nature of the roadway and dense vegetation along the hillsides, viewers would have short-term exposure to views in the project area when traveling along Mineral King Road or stopping at the bridge. Overall exposure for this viewer group would be moderate.

Most viewers in this group would be traveling to view the bridge, traveling through the area on a bicycle, or traveling to Sequoia National Park for recreation. Awareness of the visual setting would be high for drivers, because the speed limit on Mineral King Road is low and there are turnouts on either side of the bridge for drivers to pull over. Awareness of the visual setting would also be high for passengers and cyclists, who would be engaged in passive activities and would be focused on their surroundings. Therefore, overall sensitivity of this viewer group to visual changes in the project area is expected to be moderately high.

Residents/National Park Service Employees

There would be limited viewers in this viewer group, because there are minimal residences within the project vicinity and the only employees would be those working for the National Park Service. The closest residence is more than 700 feet northeast of the bridge and because of the rolling hillsides and dense vegetation, the nearest resident does not have a view of the project area from their residence. National Park Service employees would have views of the bridge as they travel to or from work, but they may have these views daily. Overall exposure for this viewer group would be moderate.

Most viewers in this group would be traveling to or from their homes or work. Awareness of existing visual setting and sensitivity to visual changes would be high for these viewers because they would be familiar with the existing appearance of the area, and would notice the changes. Therefore, overall sensitivity of this viewer group to visual changes in the project area is expected to be moderately high.

Viewers from the Project Area

Visitors/Recreational Users

Most viewers in the group would be traveling to view the bridge or traveling to Sequoia National Park. There are turn-outs on either side of the bridge so viewers can access the bridge and scenic vistas by foot. There are scenic vistas from the bridge and surrounding areas that include the project area and river gorge. Visitors stopping at the bridge would have close-up views of the project area, but they would not be at the site for long or very often. Overall exposure for this viewer group would be moderate.

Awareness of the visual setting would be high for drivers since the speed limit on Mineral King Road is low, and would also be high for passengers and cyclists who would be engaged in passive activities and would be focused on their surroundings. For visitors stopping at the bridge, focus would be entirely on the views. Therefore, overall sensitivity of this viewer group to visual changes in the project area is expected to be moderately high.

Residents/National Park Service Employees

There would be a limited number of viewers in this viewer group. This viewer group would have views that would be relatively distant from their homes and place of employment. Viewers would see the changes when traveling to or from their homes or Sequoia National Park; residents would not have views of the project area from their homes. This viewer group would have short-term exposure to views in the project area when traveling over the bridge along Mineral King Road; however, exposure would be often, potentially daily. Overall exposure for this viewer group would be moderately high.

Most viewers in this group would be traveling to or from work or home. Awareness of the visual setting would be moderate for drivers, who would be focused on driving. Therefore, overall sensitivity of this viewer group to visual changes in the project area is expected to be moderately high.

Viewer Response

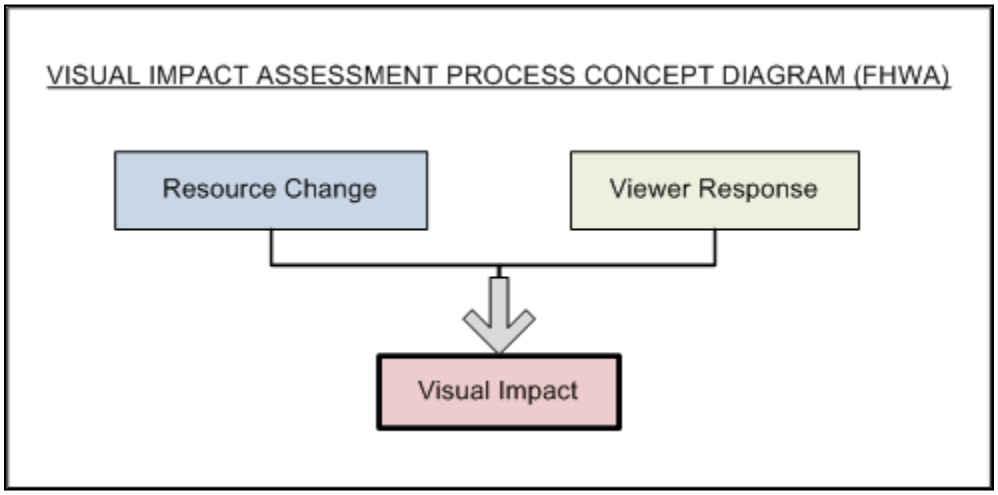
The narrative descriptions of viewer exposure and viewer sensitivity for each viewer group have been combined and averaged to establish the overall predicted viewer response of each group to visual changes resulting from the project (see **Table 1**). Overall predicted viewer response would be moderately high.

Table 1 - Predicted Viewer Response

Viewer Group	Exposure	Sensitivity	Viewer Response
Viewers of the Project Area			
Visitors/Recreational Users	Moderate	High	Moderately High
Residents/Employees	Moderate	High	Moderately High
Viewers from the Project Area			
Visitors/Recreational Users	Moderate	High	Moderately High
Residents/Employees	Moderately High	Moderate	Moderately High

VIII. VISUAL IMPACTS

Visual impacts have been determined by assessing changes to the visual resources and predicting viewer response to those changes. Cumulative impacts and temporary impacts associated with construction activities have also been considered. A generalized overview of the visual impact assessment process is illustrated in the following diagram:



Resource Change

Resource change includes changes to existing visual resources that would result from the project, in particular the changes to the existing visual character and visual quality. The overall level of resource change has been assessed and quantified for each alternative by assigning one of five resource change levels: low, moderately low, moderate, moderately high, or high. **Table 2** provides a reference for determining levels of visual impact by combining resource change and viewer response.

Table 2 - Visual Impact Ratings Using Resource Change and Viewer Response

		Viewer Response				
		Low (L)	Moderate-Low (ML)	Moderate (M)	Moderate-High (MH)	High (H)
Resource Change	Low (L)	L	ML	ML	M	M
	Moderate-Low (ML)	ML	ML	M	M	MH
	Moderate (M)	ML	M	M	MH	MH
	Moderate-High (MH)	M	M	MH	MH	H
	High (H)	M	MH	MH	H	H

Visual Impacts

No Build Alternative

The No Build Alternative would not include any improvements to the existing facility other than routine maintenance; therefore, it would not result in any direct changes to existing visual resources or visual impacts.

Build Alternative

Visual Assessment Unit/Key View #1 – Mineral King Road, Approaching Bridge from the West

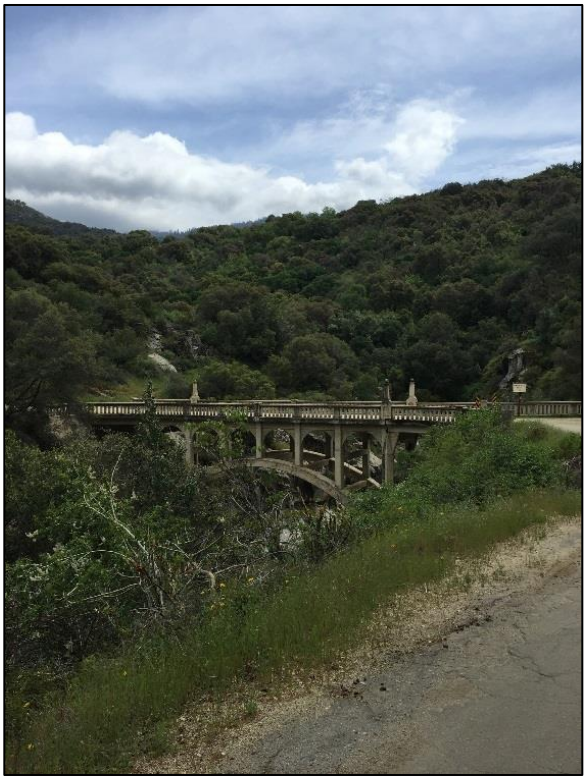
The primary elements of Alternative 1 visible at Key View #21 would be the arch spandrels and bridge railings. Alternative 1 would include rehabilitating the existing bridge structure and no new features would be added to the landscape. The form, line, texture, pattern, and scale of the bridge would remain the same as the existing bridge (see **Figure 8** and **Figure 9**). The visual character of Alternative 1 would be compatible with the existing visual character of the corridor within Key View #1. Alternative 1 would require tree and vegetation removal/trimming in order access the construction area and rehabilitate the existing bridge structure; however, over time the vegetation would grow back.

Because Alternative 1 would maintain a similar bridge structure as the existing bridge, the vividness, intactness, and unity of the project corridor would remain the same. Because the physical changes in views at Key View #1 would be minor, Alternative 1 would result in a low change to visual character and quality (resource change). Viewer response to these changes would be moderately high, based on analysis provided above in Section VII. Therefore, visual impacts at Key View #1 would be considered moderate.

Visual Assessment Unit/Key View #2 – Mineral King Road Approaching Bridge from the East

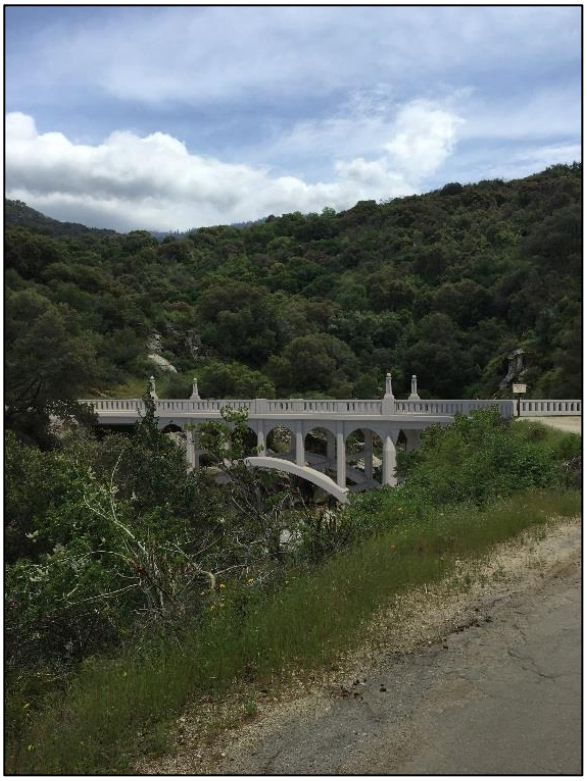
The primary element of Alternative 1 visible at Key View #2 would be the bridge deck and railings. Alternative 1 would include rehabilitating the existing bridge structure and no new features would be added to the landscape. The form, line, texture, pattern, and scale of the bridge would remain the same as the existing bridge (see **Figure 10** and **Figure 11**). The visual character of Alternative 1 would be compatible with the existing visual character of the corridor within Key View #2. Alternative 1 would require tree and vegetation removal/trimming in order access the construction area and rehabilitate the existing bridge structure; however, over time the vegetation would grow back.

Because Alternative 1 would maintain a similar concrete barrier railing as the existing bridge, the vividness, intactness, and unity of the project corridor would remain the same. Because the physical changes in views at Key View #2 would be minor, Alternative 1 would result in a low change to visual character and quality (resource change). Viewer response to these changes would be moderately high, based on analysis provided above in Section VII. Therefore, visual impacts at Key View #2 would be considered moderate.



Source: GPA Consulting, 2015

Figure 8. Key View #1 Prior to Project Implementation



Source: Cornerstone, 2017

Figure 9. Simulation of Key View #1 with Implementation of Alternative 1



Source: GPA Consulting, 2015

Figure 10. Key View #2 Prior to Project Implementation



Source: Cornerstone, 2017

Figure 11. Simulation of Key View #2 with Implementation of Alternative 1

Visual Assessment Unit/Key View #3– Mineral King Road Bridge

The primary element of Alternative 1 that would be visible at Key View #3 would be the concrete barrier railing. Alternative 1 would include rehabilitating the existing bridge structure and no new features would be added to the landscape. The form, line, texture, pattern, and scale of the bridge would remain the same as the existing bridge (see **Figure 12** and **Figure 13**). The visual character of Alternative 1 would be compatible with the existing visual character of the corridor within Key View #2. The spacing between the rails would be slightly larger than the existing concrete barrier railing, but would not result in a substantial change in the character of the bridge.

Because Alternative 1 would maintain similar bridge railings as the existing bridge, the vividness, intactness, and unity of the project corridor would remain the same. Alternative 1 would result in a moderately low change to visual character and quality (resource change). Viewer response to these changes would be moderately high, based on analysis provided above in Section VII. Therefore, visual impacts at Key View #3 would be considered moderate.

IX. PROJECT VISUAL IMPACT SUMMARY

Visual impacts are determined by assessing changes to the visual resources and predicting viewer response to those changes. Two alternatives were assessed: the No Build Alternative and Alternative 1. The No Build Alternative would not include any improvements to the existing bridge, other than routine maintenance; therefore, the No Build Alternative would not result in any direct changes to existing visual resources or visual impacts. Alternative 1 would require rehabilitation/retofit of the exiting bridge and vegetation removal/trimming in order access the construction area. Although the average viewer response of all viewer groups would be moderately high, the project would result in a moderately low to low change to visual character and quality (resource change); therefore, the visual impacts would be considered moderate (see **Table 3**).

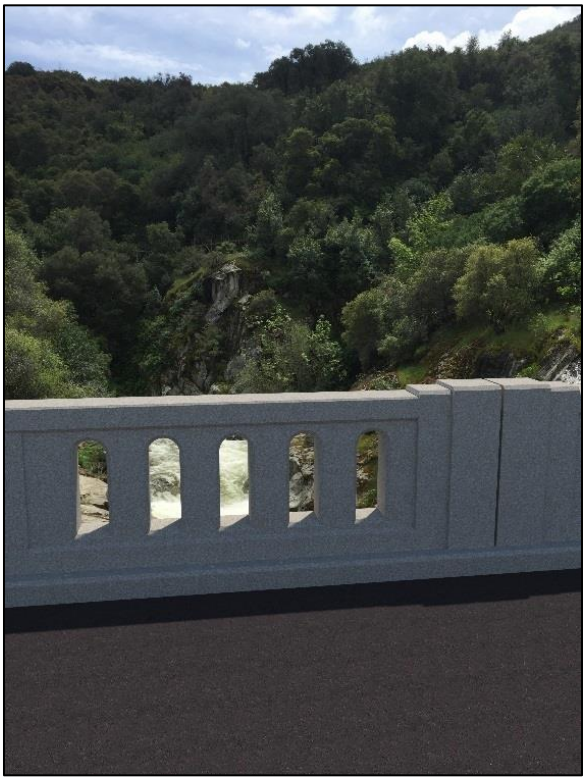
Table 3 – Summary of Key View Narrative Ratings

Visual Assessment Unit/ Key View	Alternative 1		
	Resource Change	**View Response**	**Visual Impact**
#1 – Mineral King Road Assessing the Bridge from the West	Low	Moderately High	Moderate
#2 – Mineral King Road Assessing the Bridge from the East	Low	Moderately High	Moderate
#3 – Mineral King Road Bridge	Moderately Low	Moderately High	Moderate
Overall Project Area	Moderately Low	Moderately High	Moderate



Source: GPA Consulting, 2015

Figure 12 - Key View #3 Prior to Project Implementation



Source: Cornerstone, 2017

Figure 13 - Simulation of Key View #3 with Implementation of Alternative 1

Table 4 – Summary of Key View Narrative Ratings

Visual Assessment Unit/ Key View	Alternative 1		
	Resource Change	**View Response**	**Visual Impact**
#1 – Mineral King Road Assessing the Bridge from the West	Low	Moderately High	Moderate
#2 – Mineral King Road Assessing the Bridge from the East	Low	Moderately High	Moderate
#3 – Mineral King Road Bridge	Moderately Low	Moderately High	Moderate
Overall Project Area	Moderately Low	Moderately High	Moderate

The bridge rehabilitation/retrofit would include removal and replacement of the bridge deck, spandrel columns, spandrel crossbeams, arch fins, transverse deck beams, and longitudinal exterior beam over the main arch span; repair of carbonated concrete at the pier spandrel columns and arch; replacement of the existing deficient concrete barrier rails with new concrete barrier rails meeting current federal barrier rail safety standards; and application of silane waterproofing treatment to all remaining exposed concrete surfaces. Alternative 1 would maintain the same size and shape of the original bridge structure and the current aesthetics of the structure would remain the same. Therefore, the project would not result in impacts on the visual character of the existing bridge.

The Mineral King Road Bridge is considered a scenic resource because it is visually impressive, historically significant, and serves as a gateway for visitors to Sequoia National Park. The project would maintain the current aesthetics of the existing bridge and would preserve the historic integrity of the bridge.

The existing sources of lighting in the project area are primarily associated with roadway vehicles; there is no lighting on the bridge or roadway. The project would consist of retrofitting the bridge with materials that would match the color and texture of the existing bridge and would not create new sources of light or glare that would affect day or nighttime views in the area.

The project would maintain the existing visual character and visual quality of the landscape, but would result in a temporary visual impact from tree trimming and vegetation removal. Therefore, the overall visual impacts of Alterative 1 would be moderate and would be reduced over time as the vegetation is reestablished.

Temporary Construction Impacts

Project construction would result in temporary visual impacts, including vegetation removal and equipment staging. In addition, a temporary scaffolding system would be required to make the necessary repairs to the bridge. Because the existing bridge would be closed during construction, a temporary bridge would be required downstream of the existing bridge to maintain traffic during construction. The temporary bridge would be supported on temporary cast-in-place abutments that would be removed following rehabilitation of the existing bridge. Construction activities could also result in the generation of dust, night lighting, and other visual intrusions. The construction is

anticipated to last approximately six to nine months, and the majority of impacts would be limited to this period. Vegetation removal would result in impacts lasting for a longer period.

X. CUMULATIVE IMPACTS

Cumulative impacts are those resulting from past, present and reasonably foreseeable future actions, combined with the potential visual impacts of this project. For this project, cumulative visual impacts could result if the project, in combination with other nearby projects, were to result in substantial cumulative impacts. No other projects are planned in or near the project area that would contribute to cumulative visual impacts similar to those of the project. Therefore, the project is not expected to result in cumulatively considerable impacts.

XI. AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The following measures to avoid and minimize visual impacts would be incorporated into the project:

- Staging areas would be located away from the public view where feasible. These areas would be fenced to reduce visibility, and would be kept clean and orderly.
- Vegetation removal would be minimized to the extent feasible. Vegetated areas temporarily disturbed by the project would be restored following project construction using a context sensitive design that is visually compatible with the surrounding landscape.
- Barriers, fencing, and other hardscape elements would be designed using materials and aesthetic treatments that are compatible with the existing bridge features and surrounding landscape features.

XII. CONCLUSIONS

Visual impacts resulting from operation of the project, including cumulative impacts, are anticipated to be moderate. Minimization measures would be incorporated into the project to minimize temporary impacts resulting from construction activities, including vegetation removal and staging. These minimization measures would reduce temporary project impacts as seen from Mineral King Road. With implementation of these proposed measures, moderate short-term visual impacts would remain from vegetation removal, until the replacement landscaping is established and matured.

REFERENCES

County of Tulare.2012. 2030 Update Tulare County General Plan. August 2012.

Federal Highway Administration. 2015. Guidelines for Visual Impact Assessment of Highway Projects. January 2015.

Appendix A

Project Plans


5+00
4+00
4+00
Temp. Access Path
Temp. Bridge Abutment (Soldier Pile or MSE Wall)
3+00
3+00
Area where Temp. Bridge Erection Supports may be located
Temp. Bridge Abutment (Soldier Pile or MSE Wall)
2+80
1+00
DESIGN SPEED = 60 mi/h
STA 1+00.00

ATTACHMENT "B"

AIR QUALITY AND GREENHOUSE GASES:

Emissions Data and Report (2021)

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Mineral King Bridge

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.50	15.99	14.38	10.51	0.51	10.00	2.47	0.39	2.08	0.04	4,338.29	0.79	0.25	4,431.59
Grading/Excavation	8.50	68.24	76.29	12.21	2.21	10.00	4.03	1.95	2.08	0.17	17,011.12	4.78	0.41	17,252.49
Drainage/Utilities/Sub-Grade	5.41	46.98	46.02	11.35	1.35	10.00	3.26	1.18	2.08	0.12	11,357.35	2.72	0.25	11,501.09
Paving	1.01	14.33	11.59	0.46	0.46	0.00	0.31	0.31	0.00	0.04	4,527.48	0.57	0.38	4,653.67
Maximum (pounds/day)	8.50	68.24	76.29	12.21	2.21	10.00	4.03	1.95	2.08	0.17	17,011.12	4.78	0.41	17,252.49
Total (tons/construction project)	1.10	9.31	9.93	1.95	0.30	1.65	0.60	0.26	0.34	0.02	2,351.46	0.61	0.07	2,387.35

Notes:

Project Start Year ->	2022
Project Length (months) ->	18
Total Project Area (acres) ->	5
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	30	20	160	80	800	100
Grading/Excavation	40	40	160	160	800	100
Drainage/Utilities/Sub-Grade	20	20	80	80	800	100
Paving	60	60	240	240	800	100

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Mineral King Bridge

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.05	0.53	0.47	0.35	0.02	0.33	0.08	0.01	0.07	0.00	143.16	0.03	0.01	132.67
Grading/Excavation	0.84	6.76	7.55	1.21	0.22	0.99	0.40	0.19	0.21	0.02	1,684.10	0.47	0.04	1,549.48
Drainage/Utilities/Sub-Grade	0.18	1.55	1.52	0.37	0.04	0.33	0.11	0.04	0.07	0.00	374.79	0.09	0.01	344.31
Paving	0.03	0.47	0.38	0.02	0.02	0.00	0.01	0.01	0.00	0.00	149.41	0.02	0.01	139.32
Maximum (tons/phase)	0.84	6.76	7.55	1.21	0.22	0.99	0.40	0.19	0.21	0.02	1684.10	0.47	0.04	1,549.48
Total (tons/construction project)	1.10	9.31	9.93	1.95	0.30	1.65	0.60	0.26	0.34	0.02	2351.46	0.61	0.07	2,165.79

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Mineral King Bridge	
Construction Start Year	2022	Enter a Year between 2014 and 2040 (inclusive)
Project Type	3	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	18.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.25	miles
Total Project Area	4.50	acres
Maximum Area Disturbed/Day	1.00	acre
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	20.00	0.00	30.00
	Grading/Excavation	20.00	20.00	20.00
	Drainage/Utilities/Sub-Grade	20.00	0.00	20.00
	Paving	20.00	30.00	30.00
Asphalt	Grubbing/Land Clearing	20.00	0.00	20.00
	Grading/Excavation	20.00	20.00	20.00
	Drainage/Utilities/Sub-Grade	20.00	0.00	20.00
	Paving	20.00	30.00	30.00

Mitigation Options

On-road Fleet Emissions Mitigation	No Mitigation	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	20% NOx and 45% Exhaust PM reduction	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	3.00	1.80		1/1/2022
Grading/Excavation	9.00	8.10		4/3/2022
Drainage/Utilities/Sub-Grade	3.00	5.40		1/2/2023
Paving	3.00	2.70		4/4/2023
Totals (Months)	18			

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions **User Input**	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	80.00	30.00		2	160.00
Miles/round trip: Grading/Excavation	80.00	30.00		2	160.00
Miles/round trip: Drainage/Utilities/Sub-Grade	80.00	30.00		1	80.00
Miles/round trip: Paving	80.00	30.00		3	240.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.18	0.66	4.71	0.14	0.08	0.02	1,793.76	0.01	0.28	1,877.99
Grading/Excavation (grams/mile)	0.18	0.66	4.70	0.14	0.08	0.02	1,793.33	0.01	0.28	1,877.54
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.43	3.54	0.12	0.05	0.02	1,726.74	0.00	0.27	1,807.67
Paving (grams/mile)	0.04	0.43	3.54	0.12	0.05	0.02	1,726.74	0.00	0.27	1,807.67
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.06	0.23	1.68	0.05	0.03	0.01	632.73	0.00	0.10	662.44
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.06	0.00	0.00	0.00	20.88	0.00	0.00	21.86
Pounds per day - Grading/Excavation	0.06	0.23	1.68	0.05	0.03	0.01	632.58	0.00	0.10	662.28
Tons per const. Period - Grading/Excavation	0.01	0.02	0.17	0.00	0.00	0.00	62.63	0.00	0.01	65.57
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.08	0.63	0.02	0.01	0.00	304.54	0.00	0.05	318.82
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.02	0.00	0.00	0.00	10.05	0.00	0.00	10.52
Pounds per day - Paving	0.02	0.23	1.90	0.06	0.03	0.01	913.63	0.00	0.14	956.46
Tons per const. Period - Paving	0.00	0.01	0.06	0.00	0.00	0.00	30.15	0.00	0.00	31.56
Total tons per construction project	0.01	0.04	0.31	0.01	0.00	0.00	123.71	0.00	0.02	129.51

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions **User Input**	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	80.00	30.00		1	80.00
Miles/round trip: Grading/Excavation	80.00	30.00		2	160.00
Miles/round trip: Drainage/Utilities/Sub-Grade	80.00	30.00		1	80.00
Miles/round trip: Paving	80.00	30.00		3	240.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.18	0.66	4.71	0.14	0.08	0.02	1,793.76	0.01	0.28	1,877.99
Grading/Excavation (grams/mile)	0.18	0.66	4.70	0.14	0.08	0.02	1,793.33	0.01	0.28	1,877.54
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.43	3.54	0.12	0.05	0.02	1,726.74	0.00	0.27	1,807.67
Paving (grams/mile)	0.04	0.43	3.54	0.12	0.05	0.02	1,726.74	0.00	0.27	1,807.67
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.03	0.12	0.84	0.03	0.01	0.00	316.37	0.00	0.05	331.22
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.03	0.00	0.00	0.00	10.44	0.00	0.00	10.93
Pounds per day - Grading/Excavation	0.06	0.23	1.68	0.05	0.03	0.01	632.58	0.00	0.10	662.28
Tons per const. Period - Grading/Excavation	0.01	0.02	0.17	0.00	0.00	0.00	62.63	0.00	0.01	65.57
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.08	0.63	0.02	0.01	0.00	304.54	0.00	0.05	318.82
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.02	0.00	0.00	0.00	10.05	0.00	0.00	10.52
Pounds per day - Paving	0.02	0.23	1.90	0.06	0.03	0.01	913.63	0.00	0.14	956.46
Tons per const. Period - Paving	0.00	0.01	0.06	0.00	0.00	0.00	30.15	0.00	0.00	31.56
Total tons per construction project	0.01	0.04	0.28	0.01	0.00	0.00	113.27	0.00	0.02	118.58

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	40	20	Calculated Daily Trips	Calculated Daily VMT
One-way trips/day		2		
No. of employees: Grubbing/Land Clearing	10	5	20	800.00
No. of employees: Grading/Excavation	10	28	20	800.00
No. of employees: Drainage/Utilities/Sub-Grade	10	18	20	800.00
No. of employees: Paving	10	8	20	800.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grading/Excavation (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.65	0.00	0.01	330.89
Draining/Utilities/Sub-Grade (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Paving (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grubbing/Land Clearing (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Grading/Excavation (grams/trip)	1.10	2.85	0.32	0.00	0.00	0.00	70.52	0.08	0.03	82.41
Draining/Utilities/Sub-Grade (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Paving (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.08	1.89	0.16	0.08	0.03	0.01	582.87	0.01	0.01	587.34
Tons per const. Period - Grubbing/Land Clearing	0.00	0.06	0.01	0.00	0.00	0.00	19.23	0.00	0.00	19.38
Pounds per day - Grading/Excavation	0.08	1.89	0.16	0.08	0.03	0.01	582.75	0.01	0.01	587.22
Tons per const. Period - Grading/Excavation	0.01	0.19	0.02	0.01	0.00	0.00	57.69	0.00	0.00	58.13
Pounds per day - Drainage/Utilities/Sub-Grade	0.07	1.73	0.14	0.08	0.03	0.01	563.27	0.01	0.01	567.33
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.06	0.00	0.00	0.00	0.00	18.59	0.00	0.00	18.72
Pounds per day - Paving	0.07	1.73	0.14	0.08	0.03	0.01	563.27	0.01	0.01	567.33
Tons per const. Period - Paving	0.00	0.06	0.00	0.00	0.00	0.00	18.59	0.00	0.00	18.72
Total tons per construction project	0.02	0.36	0.03	0.02	0.01	0.00	114.10	0.00	0.00	114.96

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust		1		5	5	20.00	8.00	100.00
Grading/Excavation - Exhaust		1		5	5	20.00	8.00	100.00
Drainage/Utilities/Subgrade		1		5	5	20.00	8.00	100.00
Paving		1		5	5	20.00	8.00	100.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.18	0.66	4.71	0.14	0.08	0.02	1,793.76	0.01	0.28	1,877.99
Grading/Excavation (grams/mile)	0.18	0.66	4.70	0.14	0.08	0.02	1,793.33	0.01	0.28	1,877.54
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.43	3.54	0.12	0.05	0.02	1,726.74	0.00	0.27	1,807.67
Paving (grams/mile)	0.04	0.43	3.54	0.12	0.05	0.02	1,726.74	0.00	0.27	1,807.67
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.04	0.15	1.08	0.03	0.02	0.00	395.46	0.00	0.06	414.03
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.04	0.00	0.00	0.00	13.05	0.00	0.00	13.66
Pounds per day - Grading/Excavation	0.04	0.15	1.08	0.03	0.02	0.00	395.36	0.00	0.06	413.93
Tons per const. Period - Grading/Excavation	0.00	0.01	0.11	0.00	0.00	0.00	39.14	0.00	0.01	40.98
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.09	0.83	0.03	0.01	0.00	380.68	0.00	0.06	398.52
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.03	0.00	0.00	0.00	12.56	0.00	0.00	13.15
Pounds per day - Paving	0.01	0.09	0.83	0.03	0.01	0.00	380.68	0.00	0.06	398.52
Tons per const. Period - Paving	0.00	0.00	0.03	0.00	0.00	0.00	12.56	0.00	0.00	13.15
Total tons per construction project	0.01	0.03	0.20	0.01	0.00	0.00	77.32	0.00	0.01	80.94

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		1.00	10.00	0.33	2.08	0.07
Fugitive Dust - Grading/Excavation		1.00	10.00	0.99	2.08	0.21
Fugitive Dust - Drainage/Utilities/Subgrade		1.00	10.00	0.33	2.08	0.07

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Override of	Default		Emissions reflect reduction due to 20% NOx and 45% Exhaust PM reduction Mitigation Option Selected									
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.49	2.31	4.81	0.12	0.11	0.01	759.03	0.25	0.01	767.22
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Excavators	0.40	6.51	2.84	0.09	0.09	0.01	1,000.03	0.32	0.01	1,010.81
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Signal Boards	0.06	0.30	0.29	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Tractors/Loaders/Backhoes	0.33	4.48	2.68	0.10	0.09	0.01	602.48	0.19	0.01	608.96
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
Grubbing/Land Clearing	pounds per day		1.28	13.60	10.62	0.33	0.30	0.03	2,410.86	0.77	0.02	2,436.56
Grubbing/Land Clearing	tons per phase		0.04	0.45	0.35	0.01	0.01	0.00	79.56	0.03	0.00	80.41

Grading/Excavation	Default Number of Vehicles	Override of	Default		Emissions reflect reduction due to 20% NOx and 45% Exhaust PM reduction Mitigation Option Selected									
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Cranes	0.37	1.89	3.35	0.10	0.09	0.01	558.83	0.18	0.01	564.85
	2		Model Default Tier	Crawler Tractors	0.98	4.63	9.60	0.25	0.23	0.02	1,518.06	0.49	0.01	1,534.43
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4		Model Default Tier	Excavators	0.81	13.02	5.68	0.19	0.17	0.02	2,000.07	0.65	0.02	2,021.63
2.00			Model Default Tier	Forklifts	0.23	2.31	1.69	0.08	0.07	0.00	296.06	0.10	0.00	299.26
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Graders	0.83	3.44	8.41	0.18	0.17	0.01	1,282.55	0.41	0.01	1,296.37
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Rollers	0.50	5.58	4.14	0.16	0.15	0.01	762.31	0.25	0.01	770.53
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Rubber Tired Loaders	0.87	4.59	7.25	0.17	0.15	0.02	1,816.99	0.59	0.02	1,836.61
	4		Model Default Tier	Scrapers	3.28	25.50	28.61	0.77	0.71	0.06	5,881.18	1.90	0.05	5,944.57
	1		Model Default Tier	Signal Boards	0.06	0.30	0.29	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Tractors/Loaders/Backhoes	0.33	4.48	2.68	0.10	0.09	0.01	602.48	0.19	0.01	608.97
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation		pounds per day		8.26	65.74	71.69	2.00	1.84	0.15	14,767.85	4.77	0.13	14,926.77
Grading/Excavation		tons per phase		0.82	6.51	7.10	0.20	0.18	0.02	1,462.02	0.47	0.01	1,477.75

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Emissions reflect reduction due to 20% NOx and 45% Exhaust PM reduction Mitigation Option Selected: Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Air Compressors	0.26	2.41	1.39	0.05	0.05	0.00	375.26	0.02	0.00	376.67
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Generator Sets	0.31	3.67	2.17	0.07	0.07	0.01	623.04	0.03	0.00	625.12
	2		Model Default Tier	Graders	0.77	3.39	7.44	0.17	0.15	0.01	1,281.71	0.41	0.01	1,295.52
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Plate Compactors	0.04	0.21	0.20	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pumps	0.33	3.73	2.20	0.07	0.07	0.01	623.04	0.03	0.00	625.14
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rough Terrain Forklifts	0.11	2.29	1.12	0.02	0.02	0.00	333.80	0.11	0.00	337.40
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4		Model Default Tier	Scrapers	3.15	24.55	26.51	0.71	0.66	0.06	5,880.52	1.90	0.05	5,943.88
	1		Model Default Tier	Signal Boards	0.06	0.30	0.29	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Tractors/Loaders/Backhoes	0.30	4.46	2.46	0.08	0.08	0.01	603.15	0.20	0.01	609.64
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade		pounds per day		5.31	45.00	43.78	1.20	1.12	0.10	9,804.32	2.71	0.09	9,897.59
Drainage/Utilities/Sub-Grade		tons per phase		0.18	1.49	1.44	0.04	0.04	0.00	323.54	0.09	0.00	326.62

Paving	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Emissions reflect reduction due to 20% NOx and 45% Exhaust PM reduction Mitigation Option Selected: Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pavers	0.19	2.88	1.51	0.05	0.04	0.00	455.22	0.15	0.00	460.13
	1		Model Default Tier	Paving Equipment	0.17	2.56	1.28	0.04	0.04	0.00	394.47	0.13	0.00	398.72
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rollers	0.15	1.85	1.29	0.05	0.04	0.00	254.11	0.08	0.00	256.85
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Signal Boards	0.06	0.30	0.29	0.01	0.01	0.00	49.31	0.01	0.00	49.56
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Tractors/Loaders/Backhoes	0.30	4.46	2.46	0.08	0.08	0.01	603.15	0.20	0.01	609.64
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab											
Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving		pounds per day	0.88	12.06	6.82	0.23	0.21	0.02	1,756.26	0.56	0.02	1,774.90
	Paving		tons per phase	0.03	0.40	0.23	0.01	0.01	0.00	57.96	0.02	0.00	58.57
Total Emissions all Phases (tons per construction period) =>				1.06	8.84	9.12	0.26	0.24	0.02	1,923.07	0.60	0.02	1,943.35

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day	Horsepower	Load Factor adjustment
Aerial Lifts		63		8	63.00	0.31
Air Compressors		78		8	78.00	0.48
Bore/Drill Rigs		221		8	221.00	0.50
Cement and Mortar Mixers		9		8	9.00	0.56
Concrete/Industrial Saws		81		8	81.00	0.73
Cranes		231		8	231.00	0.29
Crawler Tractors		212		8	212.00	0.43
Crushing/Proc. Equipment		85		8	85.00	0.78
Excavators		158		8	158.00	0.38
Forklifts		89		8	89.00	0.20
Generator Sets		84		8	84.00	0.74
Graders		187		8	187.00	0.41
Off-Highway Tractors		124		8	124.00	0.44
Off-Highway Trucks		402		8	402.00	0.38
Other Construction Equipment		172		8	172.00	0.42
Other General Industrial Equipment		88		8	88.00	0.34
Other Material Handling Equipment		168		8	168.00	0.40
Pavers		130		8	130.00	0.42
Paving Equipment		132		8	132.00	0.36
Plate Compactors		8		8	8.00	0.43
Pressure Washers		13		8	13.00	0.30
Pumps		84		8	84.00	0.74
Rollers		80		8	80.00	0.38
Rough Terrain Forklifts		100		8	100.00	0.40
Rubber Tired Dozers		247		8	247.00	0.40
Rubber Tired Loaders		203		8	203.00	0.36
Scrapers		367		8	367.00	0.48
Signal Boards		6		8	6.00	0.82
Skid Steer Loaders		65		8	65.00	0.37
Surfacing Equipment		263		8	263.00	0.30
Sweepers/Scrubbers		64		8	64.00	0.46
Tractors/Loaders/Backhoes		97		8	97.00	0.37
Trenchers		78		8	78.00	0.50
Welders		46		8	46.00	0.45

END OF DATA ENTRY SHEET

ATTACHMENT "C"

BIOLOGICAL RESOURCES:

Supplemental Natural Environment Study (2020)

Natural Environment Study (2018)

Supplemental Natural Environment Study



Supplemental Natural Environment Study

Tulare County, California

6-TUL-Mineral King Road

Bridge No. 46C-0196

Federal Project Number: HBP 5946 (106)

November 2020

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Supplemental Natural Environment Study

STATE OF CALIFORNIA

Department of Transportation

Tulare County

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Summary

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans) proposes to construct a new bridge upstream of the existing Mineral King Road Bridge (aka Historic Oak Grove Bridge) (#46-0916) on Mineral King Road over the east fork of the Kaweah River (project). The project is located approximately six miles east of the census designated place of Three Rivers near the entrance to Sequoia National Park in the county of Tulare, California. The purpose of the project is to correct seismic deficiencies to meet current seismic standards; resolve structural deficiencies to enhance public safety; and maintain access over the East Fork of the Kaweah River.

Construction activities including construction of the abutments of the new bridge, retaining walls, retaining wall footing, and concrete drainage behind the retaining wall would result in permanent impacts on approximately 0.031 acre under jurisdiction of the CDFW. Construction personnel and equipment accessing the banks of the river would result in temporary impacts on approximately 0.340 acre of waters under jurisdiction of the CDFW. In addition, construction materials, dust, and debris could result in temporary indirect impacts on water quality if they were to enter flowing water within the channel. However, with implementation of the proposed avoidance and minimization measures, adverse impacts on jurisdictional features are not expected. A California Fish and Game Code Section 1602 Streambed Alteration Agreement (SAA) would be required for the project.

Vehicle storage and operation, vegetation removal, rock removal, grading, and paving within the BSA could result in direct impacts on plants in the area. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, with implementation of avoidance, minimization, and mitigation measures, adverse impacts on special-status plants are not anticipated. Vehicle storage and operation, vegetation removal, excavation, grading, paving, bridge work, and vegetation removal within the BSA could result in direct and indirect impacts on wildlife in the area. However, with implementation of avoidance and minimization measures, adverse impacts on special-status wildlife species are not anticipated.

There is potential for the federally Threatened California condor to be in the BSA. The BSA is not within any critical habitat for federally listed threatened or endangered species. Based on project analysis, the project is expected to have no effect on the California condor; therefore, consultation with the USFWS and an incidental take permit (ITP) are not required. There is also potential for the state Fully Protected golden eagle, state endangered California condor, state candidate endangered Crotch bumble bee, and state candidate threatened western bumble bee to be in the BSA. Based on project analysis, the project is not expected to result in adverse impacts on the golden eagle, California condor, Crotch bumble bee, or western bumble bee including take; therefore, consultation with the CDFW and an ITP are not required.

Invasive plant species were observed within the BSA. Invasive species are often found in disturbed areas, and project activities would have the potential to spread invasive species through further disturbance of the BSA. These species could also be spread through the improper disposal of the graded and excavated soils on site or off site, or through landscaping with invasive species. However, standard measures would be implemented to prevent the spread of invasive species

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List of Abbreviated Terms

BIOS	Biogeographical Information and Observation System
BMP	Best Management Practices
BSA	Biological Study Area
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	County of Tulare
CWA	Clean Water Act
EFH	Essential Fish Habitat
EPA	Environmental Protection Areas
FESA	Federal Endangered Species Act
FTIP	Federal Transportation Improvement Program
HBP	Highway Bridge Program
ITP	Incidental Take Permit
MBTA	Migratory Bird Treaty Act
msl	Mean Sea Level
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWM	Ordinary High Water Mark
RMA	Resource Management Agency
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SWRCB	State Water Resources Control Board
TCAG	Tulare County Association of Governments
U.S.	United States
USACE	United States Army Corps of Engineers

USFWS	United States Fish and Wildlife Service
WDR	Waste Discharge Requirements

Chapter 1 – Introduction

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans) proposes to construct a new bridge upstream of the existing Mineral King Road Bridge (aka Historic Oak Grove Bridge) (#46-0916) on Mineral King Road over the east fork of the Kaweah River (project). The project is located approximately six miles east of the census designated place of Three Rivers near the entrance to Sequoia National Park in the county of Tulare, California (see **Figure 1** and **Figure 2**).

1.1 Project History

In August 2010, the bridge was programmed in the Tulare County Association of Governments (TCAG) 2010/2011 Federal Transportation Improvement Program (FTIP) for rehabilitation/replacement funding through the Highway Bridge Program (HBP). Based on the bridge load rating and seismic analysis conducted for the project, the bridge has the following deficiencies (Cornerstone Structural Engineering Group, 2015):

- The existing bridge deck over the main arch span has insufficient strength under the load from a 20-ton semi-trailer truck (HS20-44 loading) resulting from inadequate reinforcing steel.
- The existing barrier rails are in poor condition and do not meet current standards.
- The existing transverse cap beams in the main arch span are insufficient under HS20-44 loading.
- Six of the 10 existing spandrel columns are projected to fail during a seismic event.
- Concrete core samples taken from the bridge deck, arch, and wingwalls were tested, and chemical reactions (alkali-silica reactivity and carbonation) were detected that have resulted in the deterioration of the concrete. Moderate to large cracks (up to 0.25 inch thick) are present in both the substructure and superstructure of the bridge.

The purpose of this project is to:

- Correct seismic deficiencies to meet current seismic standards;
- Resolve structural deficiencies to enhance public safety; and
- Maintain access over the East Fork of the Kaweah River.

A Natural Environment Study (NES), hereafter referred to as the original NES, was prepared as part of the original environmental analysis and approved by Caltrans in July 2018. The original NES considered two alternatives, including the Rehabilitation Alternative (Alternative 1) and the No Build Alternative. Following an additional corrosion assessment of the existing bridge, a Corrosion Assessment Report was prepared in February 2020 that concluded the Alkali Silica Reactivity (ASR) in the existing concrete bridge arches was in a severe state, and ASR was observed throughout the depth of the coring samples, indicating the ASR extended throughout the entire structural section of the arches. Based on these findings, Caltrans determined that rehabilitation of the bridge is no longer feasible. Alternative 2B, described in more detail below, is analyzed in this Supplemental NES.

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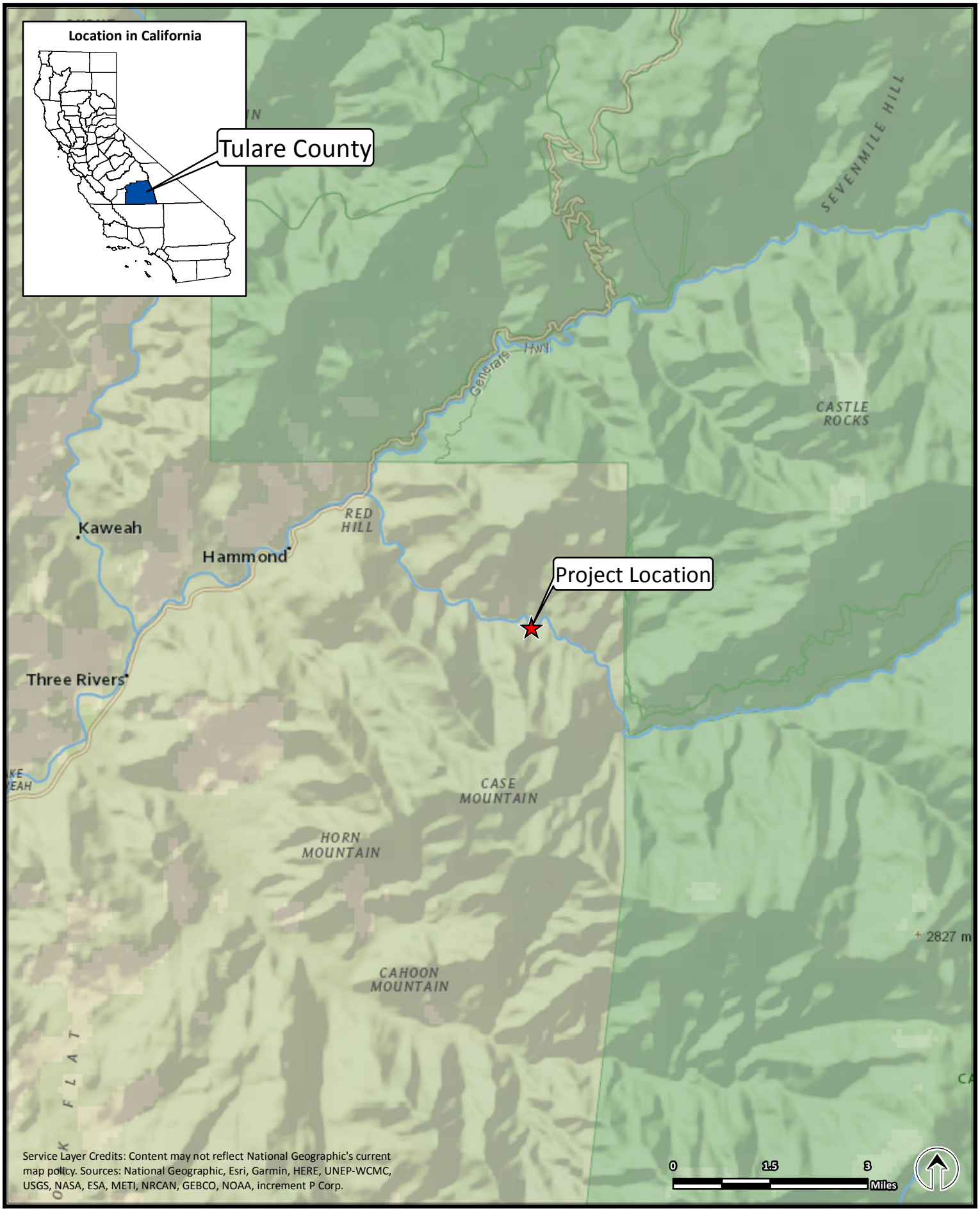


FIGURE 1: REGIONAL LOCATION MAP
Mineral King Road Bridge Project

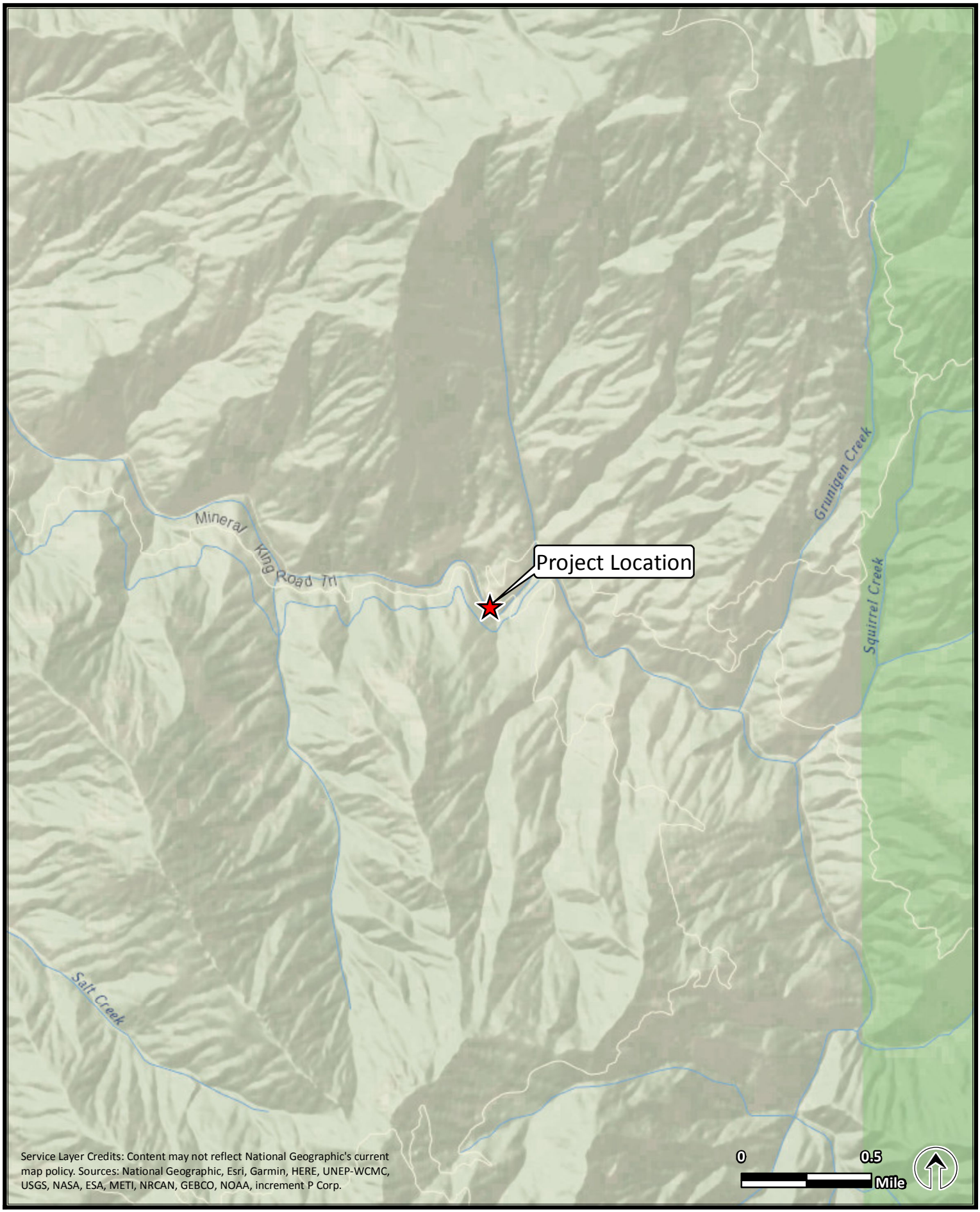


FIGURE 2: PROJECT LOCATION
Mineral King Road Bridge Project

1.2 Project Description

1.2.1 ALTERNATIVE 2B: REPLACEMENT (PRESERVE EXISTING BRIDGE)

Alternative 2B would construct a new steel plate girder bridge on a new alignment located upstream of existing bridge. The proposed new structure would be located far enough upstream to not require any of the historic elements of the existing bridge to be removed. Traffic will be maintained on the existing bridge during construction of the new structure. The new alignment will require cutting into the existing hillside at both bridge approaches as well as the construction of rock anchor retaining walls. Specialized rock removal will be required in order to construct the proposed bridge abutments and rock anchor retaining walls.

Two methods of specialized rock removal are anticipated. The first would utilize expansive rock breaking non-explosive demolition agents, such as expanding grout, to facilitate the excavation of the proposed roadway. This method eliminates fly rock, limits the amount of noise produced by this operation, and is a vibration-free excavation method ideal for environmentally sensitive areas or areas adjacent to existing structures. Due to the higher cost and increased construction duration associated with expansive rock breaking non-explosive demolition agents, it is anticipated the contractor may also utilize controlled fracturing of rock using minimal quantities of explosive chemical compounds placed in judiciously spaced predetermined drilled holes. Fly rock, dust, and noise transmission associated with this method would be reduced through the use of large, rubber mats placed over the area prior to fracturing.

The existing bridge, as well as the existing viewshed of the historic structure while approaching the crossing along Mineral King Road, will be preserved as part of this alternative. It is anticipated that the existing structure may still be used as a pedestrian crossing. Natural boulders would be placed at the ends of the bridge deck in lieu of bollards to prevent vehicular access to the historic bridge, but it will still be visually apparent that the Oak Grove Bridge had served as part of the highway. Furthermore, the Federal HBP program allows the funds not spent on removing the existing bridge to be used to perform minor rehabilitation work on the existing structure in order to maximize its remaining life. Such work may include replacing the joint seals, applying methacrylate to the existing bridge deck, and epoxy injecting larger cracks in the arch ribs and pier spandrel columns.

Superstructure

The proposed replacement bridge superstructure consists of a new 100-foot-long clear span steel plate girder bridge. The depth of the steel plate girder superstructure is five feet, six inches. Advantages of a steel plate girder superstructure include its relatively low cost, long span length, shallow superstructure depth, ease of maintenance, and familiarity with this type of construction among a variety of contractors.

Substructure

The new bridge abutments are anticipated to consist of seat type abutments. Depending upon the depth to bedrock, the abutments will be supported on either cast-in-drilled-hole concrete piles with concrete rock sockets or spread footings cast directly on bedrock. In the case that spread footings are selected and dead load of the structure prove insufficient to resist uplift due to overturning, post tensioned rock anchors will be used to provide additional resistance. Specialized

rock removal is anticipated at the abutments to provide a level surface to construct the abutment foundations. In addition, new cantilever retaining walls will be required at the abutments to support the proposed roadway approaches.

Staging Areas

Three possible construction staging areas have been identified. The first is located approximately 800 feet northeast of the existing bridge. The second is located immediately north of Mineral King Road approximately 1.3 miles west of the existing bridge. The third staging area is approximately 400 feet northeast of the existing bridge. Temporary construction easements would be required, and right-of-way acquisitions may be required to accommodate construction of the project. There would be no utility relocation required as part of the project.

1.2.2 NO BUILD ALTERNATIVE

The No Build Alternative would not include construction of a replacement bridge or any improvements to the existing facility other than routine maintenance

Chapter 2 – Study Methods

The following discussion provides a summary of state and federal laws and regulations pertaining to the project, environmental permits that are required for the project, and study methods that were undertaken as required by resource agencies and environmental laws.

2.1 Regulatory Requirements

2.1.1 CLEAN WATER ACT

Clean Water Act Section 404

The U.S. Army Corps of Engineers (USACE) Regulatory Program regulates activities within federal wetlands and waters of the U.S. pursuant to Section 404 of the CWA. No discharge of dredged or fill material into jurisdictional features is permitted unless authorized under an USACE Nationwide Permit or Individual Permit.

Federal wetlands are transitional areas between well-drained upland habitats and permanently flooded (deepwater) aquatic habitats and are defined differently by different resource agencies. The USACE and the U.S. Environmental Protection Areas (EPA) define wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 Code of Federal Regulations [CFR] Section 328.3[c]).

Clean Water Act Section 401

The Regional Water Quality Control Board (RWQCB) is responsible for the administration of Section 401 of the CWA. Under Section 401 of the CWA, applicants for federal licenses or permits must provide a Water Quality Certification that any discharges from a project will comply with the CWA, including state-established water quality standard requirements. For all work subject to an USACE Section 404 permit, project proponents must obtain a Water Quality Certification from the applicable RWQCB under CWA Section 401 stating that the project would comply with applicable water quality regulations.

The State Water Resources Control Board (SWRCB) defines wetlands as “an area is deemed a wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area’s vegetation is dominated by hydrophytes or the area lacks vegetation.” This report uses the current definition of wetlands.

2.1.2 FEDERAL ENDANGERED SPECIES ACT

The Federal Endangered Species Act (FESA) was established in 1973 to provide a framework to conserve and protect endangered and threatened species and their habitat. Section 7 of the FESA requires federal agencies to ensure that actions they engage in, permit, or fund, do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of designated critical habitat for these species. Section 7 consultation provides for the “incidental take” of endangered and threatened wildlife species by federal entities

if adverse effects to species cannot be avoided. Incidental take is defined by the FESA as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. The term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

2.1.3 MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA) (50 CFR Part 10 and Part 21) protects migratory birds, their occupied nests, and their eggs from disturbance and/or destruction. “Migratory birds” under the MBTA include all bird species listed in 50 CFR Part 10.13, as updated in December 2013 (United States Fish and Wildlife Service, 2013). In accordance with the Migratory Bird Treaty Reform Act of 2004 the United States Fish and Wildlife Service (USFWS) included all species native to the U.S. (or U.S. territories) that are known to be present as a result of natural biological or ecological processes. In addition, the USFWS provided clarification that the MBTA does not apply to any nonnative species whose presence in the U.S. are solely the result of intentional or unintentional human-assisted introduction (United States Fish and Wildlife Service, 2018). Nonnative bird species not protected by the MBTA include, but is not limited to, the house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), and rock pigeon (*Columba livia*).

2.1.4 EXECUTIVE ORDER 13112

Executive Order 13112 directs all federal agencies to refrain from authorizing, funding, or carrying out actions or projects that may spread invasive species. This order further directs federal agencies to prevent the introduction of invasive species, control and monitor existing invasive species populations, restore native species to invaded ecosystems, research and develop prevention and control methods for invasive species, and promote public education on invasive species.

2.1.5 PORTER-COLOGNE ACT

The RWQCB also asserts authority over waters of the state under the Porter-Cologne Act, which establishes a regulatory program to protect water quality and to protect beneficial uses of state waters. The Porter-Cologne Act empowers the RWQCB to formulate and adopt a Water Quality Control Plan that designates beneficial uses and establishes such water quality objectives that in its judgment will ensure reasonable protection of beneficial uses. Each RWQCB establishes water quality objectives that will ensure the reasonable protection of beneficial uses and the prevention of water quality degradation. Dredge or fill activities with the potential to affect water quality in these waters must comply with Waste Discharge Requirements (WDR) issued by the RWQCB.

The term “waters of the state,” under jurisdiction of the RWQCB, is defined by California Water Code as “any surface water or groundwater, including saline waters, within the boundaries of the state” (California Water Code Section 13050(e)).

2.1.6 CALIFORNIA FISH AND GAME CODE

Under the California Fish and Game Code Section 1602, the limits of California Department of Fish and Wildlife’s (CDFW) jurisdiction within streams and other drainages extends from the top of the stream bank to the top of the opposite bank, to the outer drip line in areas containing riparian vegetation, and/or within the 100-year floodplain of a stream or river system containing fish or

wildlife resources. Under Section 1602, a Streambed Alteration Agreement must be issued by the CDFW prior to the initiation of construction activities that may substantially divert or obstruct the natural flow of any river, stream, or lake; substantially change or use any material from the bed, channel, or bank, of any river, stream, or lake; or deposit debris, waste, or other materials that could pass into any river, stream, or lake under CDFW's jurisdiction.

The CDFW has jurisdictional authority over waters of the state, including wetlands. In practice, CDFW follows the USFWS definition of wetlands in Cowardin's Classification of Wetlands and Deepwater Habitats of the United States: "Wetlands are lands transitional between terrestrial and aquatic systems 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" (Cowardin, Carter, Golet, & LaRoe, 1979).

Section 2126 of the California Fish and Game Code states that it is unlawful for any person to take any mammal that are identified within Section 2118, including all species of bats.

Sections 3503, 3513, and 3800 of the California Fish and Game Code prohibit the take of birds protected under the MBTA and protects their occupied nests. In addition, Section 3503.5 of the California Fish and Game Code prohibits the take of any birds in the order Falconiformes or Strigiformes (birds-of-prey) and protects their occupied nests. Pursuant to Section 3801 and 3800, the only species authorized for take without prior authorization from the CDFW is the English sparrow and European starling.

State-listed species and those petitioned for listing by the CDFW are fully protected under the California Endangered Species Act (CESA). Under Section 2080.1 of the California Fish and Game Code, if a project would result in take of a species that is both federally and state listed, a consistency determination may be completed in lieu of undergoing a separate CESA consultation. Under Section 2081, if a project would result in take of a species that is state-only listed as threatened or endangered, then an incidental take permit from the CDFW is required.

Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code prohibit the take or possession of 37 fully protected bird, mammal, reptile, amphibian, and fish species. Each of the statutes states that no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to "take" the species, and states that no previously issued permit or licenses for take of the species "shall have any force or effect" for authorizing take or possession. The CDFW will not authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species.

2.2 Studies Required

2.2.1 LITERATURE SEARCH

Prior to conducting the biological survey, available literature was reviewed to identify any special-status plants, wildlife, and/or sensitive habitats previously recorded within or near the Biological Study Area (BSA). Sources used to identify special-status species and/or habitats with potential to be in or near the BSA include the following:

- The Natural Resources Conservation Service (NRCS) Custom Soil Resource Report for Tulare County, California, Central Part (NRCS, 2016).
- The CDFW's California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife, 2020) for the Case Mountain, Chickencoop Canyon, Dennison Peak, Giant Forest, Kaweah, Lodgepole, Moses Mtn, Shadequarter Mtn., and Silver City 7.5-minute series topographic quadrangles (see **Appendix A**);
- The California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants (California Native Plant Society, 2020) (see **Appendix A**);
- USFWS Information for Planning and Conservation Database (USFWS, 2020) (see **Appendix A**);
- USFWS National Wetlands Inventory (NWI) Mapper (USFWS, 2018b); and
- CDFW Biogeographic Information and Observation System (BIOS) (CDFW, 2020).

2.2.2 FIELD REVIEWS

After a review of the results of the CNDDB query and related information described above, biological surveys were conducted of the BSA by senior associate biologist Marieka Schrader, senior biologist Sheri Mayta, and senior biologist Stan Glowacki on April 9 and April 10, 2015, Ms. Schrader and Ms. Mayta on July 25 and July 26, 2016, Ms. Schrader and Ms. Mayta on May 2, 2017, and Ms. Mayta and associate biologist Katherine Warner on May 21 and May 22, 2020. The April 9 and 10, 2015 biological surveys covered the bridge area and Staging Areas 1 and 2. On July 25 and 26, 2016, follow up biological surveys were conducted at the bridge site and Staging Areas 1 and 2. On May 2, 2017, a biological survey was conducted at Staging Area 3, which was added to the project after initial surveys were complete. Bat emergence surveys were conducted on the evenings of April 9, 2015, and July 25, 2016. On May 21 and May 22, 2020, biological surveys were conducted at the bridge and Staging Areas 1, 2, and 3.

2.2.3 BIOLOGICAL STUDY AREA

The BSA includes areas that could be directly impacted by the project, either temporarily or permanently. The limits of the BSA were determined by reviewing project plans and aerial photography, and evaluating potential jurisdictional areas during field visits. The BSA covers three distinctive sites; the project area and Staging Areas 1, 2, and 3 (see **Figure 3**).

2.2.4 SURVEY METHODS

The BSA was visually surveyed on foot, to the extent feasible, and all plant and animal species within the BSA were identified to determine the potential for protected species to be in the BSA. Some areas within the river channel were not accessible because of extremely steep slopes. Based on the existing conditions within the BSA, no focused plant or wildlife surveys were completed. Nomenclature for common, widespread plants and animals conforms to the Jepson eFlora (Jepson Flora Project, 2018) and the CNDDB. Species observed in the BSA during the April 9 and April 10, 2015, July 25 and July 26, 2016, May 2, 2017, May 21 and May 22, 2020 biological surveys are included in **Appendix B**.



FIGURE 3. BIOLOGICAL STUDY AREA AND PROJECT IMPACT AREA
Mineral King Road Bridge Project

2.3 Personnel and Survey Dates

Biological surveys were conducted in the BSA by senior associate biologist Marieka Schrader, senior biologist Sheri Mayta, and senior biologist Stan Glowacki on April 9 and April 10, 2015, by Ms. Schrader and Ms. Mayta on July 25 and July 26, 2016, and May 2, 2017, and by Ms. Warner and Ms. Mayta on May 21 and May 22, 2020. Representative photographs of the BSA were taken during the surveys and are included in **Appendix C**.

2.4 Agency Coordination and Professional Contacts

No agency coordination has been conducted other than the online database literature searches. No professional inquiries beyond internal staff have been made regarding this project.

2.5 Limitations That May Influence Results

The botanical surveys conducted in 2015 and 2016 were conducted during a drought period. Although the vegetation blooms were high in the BSA, some species of plants may have had their germination and blooms affected by the drought therefore lowering the probability of detecting those plants in the field. The 2017 botanical surveys were conducted during a period of above average precipitation, and results of these surveys are expected to be more conclusive. The 2020 surveys were also conducted during an abnormally dry year and some species may have had their germination and blooms affected.

Chapter 3 – Results: Environmental Setting

3.1 Description of the Existing Biological and Physical Conditions

3.1.1 BIOLOGICAL STUDY AREA

The project area is located three miles southeast of State Route 198 (SR-198), near the community of Three Rivers in Tulare County, California. According to the County, the land use surrounding the project area is zoned as foothill agricultural (County of Tulare, August 2017). The bridge spans the East Fork Kaweah River. Land use surrounding the BSA is generally undeveloped, with several residential properties nearby.

3.1.2 PHYSICAL CONDITIONS

Topography

Tulare County is divided into two major geologic regions: the Sierra Nevada Mountains and the Central Valley. The area between these two sections comprises the Sierra Nevada Foothills. The BSA is within the Sierra Nevada foothills, and the bridge serves as the gateway to Mineral King Valley in Sequoia National Park, approximately 1.45 miles east of the project area. The elevation in the BSA is approximately 2,515 feet above mean sea level (msl).

Climate

The BSA receives an average of 25.07 inches of rainfall annually and the average temperature ranges from a low of 36.3 degrees Fahrenheit in winter to a high of 94.4 degrees Fahrenheit in summer National Oceanic and Atmospheric Administration (NOAA), 2017). The climate is classified as Mediterranean and the rainy season is October through April.

Soils

Data obtained from the Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA NRCS, 2014) show that there are two soil units mapped within the BSA: Fallbrook Sandy Loam, 30 to 50 Percent Slopes and Blasingame Sandy Loam, 15 to 30 Percent Slopes. These soils are well drained and the depth to water table is more than 80 inches.

Hydrology

The project area is within the Upper Kaweah Watershed (HUC 18030007) (United States Geological Survey, 2018). The Upper Kaweah Watershed includes the headwaters and main stems of the Kaweah River. The Kaweah River originates in the Sierra Nevada Mountains within Sequoia National Park and drains the west face of the Sierra Nevada Mountains.

Within the project area, the East Form Kaweah River has a natural bottom lined with boulders and flows southwest to Lake Kaweah. The river flows southwest to southwest through the BSA. The bank slopes are very steep. The river flows to Kaweah Lake, which flows to the Tulare Lake Basin complex several miles downstream of the BSA. The river falls under jurisdiction of the USACE, RWQCB, and CDFW.

3.1.3 BIOLOGICAL CONDITIONS IN THE BIOLOGICAL STUDY AREA

Vegetation Communities and Cover Classes

Vegetation communities within the BSA include *Quercus Douglasii* Woodland Alliance, *Quercus Wislizeni* Woodland Alliance, Eriodictyon Californicum Shrubland Alliance, *Bromus Diandrus-Brachypodium Distachyon* Semi-Natural Herbaceous Stand, and ruderal (see **Figure 4**). Cover classes within the BSA include Open Water, Bare Ground, and Developed. The vegetation communities and cover classes are generally the same as the Original NES; however, Staging Area 1 was classified as ruderal but based on new surveys the vegetation communities within this area is now classified as Eriodictyon Californicum Shrubland Alliance. This community is described below. Descriptions of the other vegetation communities and cover classes can be found in the Original NES (GPA Consulting, 2018).

***Eriodictyon Californicum* Shrubland Alliance**

This community is classified as *Eriodictyon Californicum* Shrubland Alliance in the CNPS Manual of California Vegetation. This community is a disturbance-stimulated type dominated by California yerba santa (*Eriodictyon californicum*) or is co-dominant with chamise (*Adenostoma fasiculatum*). This community is most commonly found in lower to middle slopes of serpentine, metavolcanic, and plutonic substrates on loamy soils. California yerba santa is an evergreen, rhizomatous shrub that readily germinates after low- to moderate severity fire. Chamise is an evergreen shrub that is fire-hardy. Within the BSA, this community is within and along the edges of Staging Area 1.

Wildlife

Habitat in the area is fairly intact and abundant. Dominant plant species found in the BSA include blue oak, interior live oak, California buckeye, and ripgut brome. The only aquatic resource is the East Fork Kaweah River. Within the project area, the Kaweah River has a natural bottom lined with boulders and flows southwest to Lake Kaweah. A description of the wildlife and invasive species observed in the BSA as well as the habitat connectivity of the BSA can be found in the original NES (GPA Consulting, 2018).

3.2 Regional Species and Habitats and Natural Communities of Concern

CNDDB species lists were obtained on March 10, 2015, May 13, 2016, July 30, 2017, May 20, 2020, and updated on September 9, 2020 to identify federally and state listed species with the potential to be in the BSA based on their geographical range (see **Appendix A**). USFWS species lists were also obtained on March 10, 2015, March 2, 2016, August 1, 2017, May 20, 2020, and updated on September 9, 2020 for the same purpose. The following discussion describes the special-status plant and wildlife species with potential to be within the BSA based on their geographical range, presence of suitable habitat, and survey results (see **Table 1**).

Determinations on whether special status and other sensitive resources could be in the BSA are based on: 1) a record reported in the CNDDB and USFWS species lists, 2) the presence of suitable habitat, and 3) survey results.

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FIGURE 4a. BIOLOGICAL RESOURCES FOR STAGING AREA 1
Mineral King Road Bridge Project



FIGURE 4b. BIOLOGICAL RESOURCES FOR STAGING AREA 2
Mineral King Road Bridge Project



FIGURE 4c. BIOLOGICAL RESOURCES FOR PROJECT AREA AND STAGING AREA 3
Mineral King Road Bridge Project

3.2.1 NATURAL COMMUNITIES

According to the CNDDB search, two special-status natural communities have the potential to be in the BSA based on geographical location, Big Tree Forest and Central Valley Drainage Hardhead/Squawfish stream (see **Appendix A**). However, based on habitat requirements and negative survey results, special-status vegetation communities are not within the BSA, and are not discussed further. A full list of communities and a discussion of the potential for each community to be within the BSA is in **Table 1**.

3.2.2 SPECIAL-STATUS PLANTS

According to the CNDDB and USFWS search, 52 special-status plant species have the potential to be in the BSA based on recorded geographical distribution. Based on habitat requirements and survey results, 15 special-status plant species have the potential to be in the BSA, and are discussed further in Chapter 4. California Native Plant Society status rankings of these species include:

- 1B: Rare, threatened, or endangered in California and elsewhere;
- 2B: Rare, threatened, or endangered in California, but more common elsewhere;
- 3: Plants about which we need more information;
- 4: Plants of limited distribution;
- 0.2: Moderately threatened in California; and
- 0.3: Not very threatened in California.

A full species list with a discussion of the potential for each species to be within the BSA is in **Table 1**.

3.2.3 SPECIAL-STATUS ANIMALS

According to the CNDDB and USFWS searches, 48 special-status animal species have the potential to be in the BSA based on recorded geographical distribution (see **Appendix A**). Based on habitat requirements and survey results, 18 special-status wildlife species have the potential to be in the BSA, and are discussed further in Chapter 4. Several of these species are listed as threatened or endangered under the FESA or CESA. In addition, CDFW status rankings of these species include:

- S1: Critically imperiled in the state because of extreme rarity or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state
- S2: Imperiled in the state because of rarity because of restricted range, very few populations, steep declines, or other factors making it very vulnerable to extirpation from the nation or state
- S3: Vulnerable in the state because of a restricted range, relatively few populations, recent or widespread declines, or other factors making it vulnerable to extirpation
- S4: Uncommon but not rare; some cause for long-term concern because of declines or other factors

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Table 1. Special-Status Species and Habitat with the Potential to be in the BSA

Common and Scientific Names	Status			General Habitat Description*	Habitat Present/ Absent	Rationale for Species Presence/Absence
	Federal USFWS	State CDFW	CNPS			
Plants						
Allium abramsii Abrams' onion	--	--	1B.2	The Abrams' onion is a perennial bulbiferous herb found in lower and upper montane coniferous forest. This species is often found in granitic sand. Typical blooming period: May to July Typical elevation range: 2,903 to 10,006 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Agrostis humilis Mountain bent grass	--	--	2B.3	The mountain bent grass is found in alpine boulder and rock fields, meadows and seeps, subalpine forests and sometimes on calcareous substrates. Typical blooming period: July to September Typical elevation range: 5,000 to 11,200 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Angelica callii Call's angelica	--	--	4.3	Call's angelica is found in cismontane woodlands, lower montane coniferous forest, along creek borders. Typical blooming period: June to July Typical elevation range: 3,608 to 6,561 feet	A	The BSA is substantially outside of the known elevation range for this species; therefore, it is not expected to be in the BSA. In addition, it was not observed during the biological surveys, which was conducted during the typical blooming period for this species.
Botrychium minganense Mingan moonwort	--	--	2B.2	The Mingan moonwort is a perennial rhizomatous herb found on creekbanks in lower montane	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In

				coniferous forest, upper montane coniferous forest, bogs, and fens. Typical blooming period: July to September Typical elevation range: 4,774 to 7,152 feet		addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Brodiaea insignis Kaweah brodiaea	--	SE	1B.2	The Kaweah brodiaea is a perennial bulbiferous herb found in foothill woodland, meadows, and seeps, and valley and foothill grassland. This species is often found in granitic or clay soils. Known occurrences are in the foothills of the Tulare basin. Typical blooming period: April to June Typical elevation range: 492 to 4,593 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Bruchia bolanderi Bolander's bruchia	--	--	4.2	Bolander's bruchia is found in lower montane coniferous forests, meadows, seeps, and upper montane coniferous forests. Seems to colonize bare soil along streambanks, meadows, fens, and springs. This species has an ephemeral nature and is disturbance adapted. Typically blooming period: N/A Typical elevation range: 5,282 to 10,958 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Calochortus westonii Shirley Meadows star-tulip	--	--	1B.2	The Shirley Meadows star-tulip is a perennial bulbiferous herb found in broad-leafed upland forest, lower montane coniferous forest, and meadows and seeps. Typical blooming period: May to June	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for

				Typical elevation range: 4,920 to 6,906 feet		this species.
Calystegia malacophylla var. *berryi* Berry's morning-glory	--	--	3.3	The Berry's morning-glory is a perennial rhizomatous herb found in chaparral and lower montane coniferous forest habitats. Typical blooming period: July to August Typical elevation range: 2,001 to 8,005 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Carlquistia muirii Muir's tarplant	--	--	1B.3	The Muir's tarplant is a perennial rhizomatous herb found in chaparral (montane) and lower and upper montane coniferous forest habitats. Typical blooming period: July to October Typical elevation range: 3,608 to 8,202 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Cinna bolanderi Bolander's woodreed	--	--	1B.2	The Bolander's woodreed is a perennial herb found in meadows and seeps and upper montane coniferous forest in mesic, streamsides. Typical blooming period: July to September Typical elevation range: 5,479 to 8,005 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Clarkia springvillensis Springville clarkia	FT	SE	1B.2	The Springville clarkia is an annual herb found in chaparral, cismontane woodland, and valley and foothill grassland habitats. According to the USFWS 5-year review (USFWS, 2009), the known range of this species lies entirely near Springville along the	A	The BSA is outside of the known range for this species; therefore, it is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species. The project would have

				Tule River drainage, which is within a separate watershed from the BSA. There are 18 recorded occurrences of this species in the CNDDB database, 17 of which are near Springville. The other recorded occurrence is near Three Rivers, but this in stated to be a misidentification in the 5-year review. Typical blooming period: April to July Typical elevation range: 803 to 4,002 feet		no effect on this species.
Claytonia palustris Marsh claytonia	--	--	4.3	Marsh claytonia is found is meadows, seeps, marshes, swamps, upper montane coniferous forest. Sunny areas in meadows, marshy slopes, and streamside veg. Typical blooming period: May to October Typical elevation range: 3,280 to 8,202 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Claytonia parviflora ssp. *grandiflora* Streambank spring beauty	--	--	4.2	Streambank spring beauty is found in cismontane woodlands and pine/blue oak woodlands in the Sierra foothills. Typical blooming period: February to May Typical elevation range: 820 to 3,937 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Cryptantha circumscissa var. *rosulata* Rosette cushion	--	--	1B.2	The rosette cushion cryptantha is an annual herb found in Alpine boulder and rock fields and subalpine coniferous forest habitats.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological

cryptantha				Typical blooming period: July to August Typical elevation range: 9,678 to 12,007 feet		surveys, which were conducted during the typical blooming period for this species.
Cuscuta jepsonii Jepson's dodder	--	--	1B.2	The Jepson's dodder is an annual vine (parasitic) found in North Coast coniferous forest habitats. Typical blooming period: July to September Typical elevation range: 3,937 to 7,545 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Delphinium purpusii Rose-flowered larkspur	--	--	1B.3	The rose-flowered larkspur is a perennial herb found in chaparral, cismontane woodland, and pinyon and juniper woodland habitats. This species is often found in rocky, often carbonate soils. Typical blooming period: March to May Typical elevation range: 984 to 4,396 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Delphinium recurvatum Recurved larkspur	--	--	1B.2	The recurved larkspur is a perennial herb found in chenopod scrub, valley and foothill grassland, and cismontane woodland. This species grows on poorly drained, fine textured alkaline soils. Typical blooming period: March to June Typical elevation range: 10 to 2,592 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Dicentra nevadensis Tulare County	--	--	4.3	Tulare County bleeding heart is found in subalpine coniferous forest, alpine boulder, and rock	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In

bleeding heart				field in gravelly openings. Typical blooming period: June to August Typical elevation range: 7,217 to 10,006 feet		addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Diplacus pictus Calico monkeyflower	--	--	1B.2	The calico monkeyflower is an annual herb found in broadleaved upland forests, cismontane woodlands, disturbed areas, and found in granitic areas. Typical blooming period: March to May Typical elevation range: 328 to 4,691 feet	HP	There is cismontane woodland habitat and disturbed areas; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Dudleya cymosa ssp. *costatifolia* Pierpoint Springs dudleya	--	--	1B.2	The Pierpoint Springs dudleya is a perennial herb found in chaparral and cismontane woodlands in carbonate soils. Typical blooming period: May to July Typical elevation range: 4,708 to 5,249 feet	A	The BSA is substantially outside of the known elevation range for this species; therefore, it is not expected to be in the BSA. In addition, it was not observed during the biological surveys, which was conducted during the typical blooming period for this species.
Eriogonum nudum var. *murinum* Mouse buckwheat	--	--	1B.2	The mouse buckwheat is a perennial herb found in chaparral, cismontane woodlands, and valley and foothill grassland habitats in sandy soils. Typical blooming period: June to November Typical elevation range: 1,197 to 3,707 feet	HP	There are cismontane woodland and non-native grassland habitats; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Eryngium spinosepalum Spiny-sepaled button-celery	--	--	1B.2	The spiny-sepaled button-celery is an annual/perennial herb found in vernal pools and valley and foothill grassland. This species may be found in some sites on	A	The BSA is substantially outside of the known elevation range for this species; therefore, it is not expected to be in the BSA. In addition, it was not observed during the biological

				clay soil of granitic origin. Typical blooming period: April to June Typical elevation range: 262 to 837 feet		surveys, which was conducted during the typical blooming period for this species.
Erythranthe acutidens Kings River monkeyflower	--	--	3	The Kings River monkeyflower is found in moist places in cismontane woodlands and lower montane coniferous forests. Typical blooming period: April to July Typical elevation range: 1,000 to 4,002 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Erythranthe grayi Gray's monkeyflower	--	--	4.3	The Gray's monkeyflower is found in lower montane coniferous forests, upper montane coniferous forests, in moist places, sandy soil, often along streams. Typical blooming period: May to July Typical elevation range: 1,804 to 9,514 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Erythranthe inconspicua Small-flowered monkeyflower	--	--	4.3	The small-flowered monkeyflower is found in cismontane woodland, lower montane coniferous forest, and chaparral in moist or shaded places. Typical blooming period: May to June Typical elevation range: 900 to 2,493 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Erythranthe laciniata Cut-leaved	--	--	4.3	The cut-leaved monkeyflower is found in lower montane coniferous forests, upper montane coniferous forests, and	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not

monkeyflower				chaparral in decomposed granite, wet, and sandy places. Typical blooming period: April to July Typical elevation range: 1,600 to 8,690 feet		observed during the biological surveys, which were conducted during the typical blooming period for this species.
Erythranthe norrisii Kaweah monkeyflower	--	--	1B.3	The Kaweah monkeyflower is an annual herb found in chaparral and cismontane woodlands. This species is found in carbonate and rocky areas. Typical blooming period: March to May Typical elevation range: 1,198 to 4,265 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Erythranthe sierrae Sierra Nevada monkeyflower	--	--	4.2	The Sierra Nevada monkeyflower is found in cismontane woodlands, lower montane coniferous forest, meadows, and sweeps. This species is found primarily in decomposed granite in vernally wet depressions, swales, at the edges of streams, dry meadows, and in openings of pine forest and oak woodland in sandy to gravelly soils. Typical blooming period: March to July Typical elevation range: 600 to 7,496 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Erythronium pusaterii Kaweah fawn lily	--	--	1B.3	The Kaweah fawn lily is a perennial bulbiferous herb found in meadows and seeps and subalpine coniferous forest in granitic or metamorphic soils. Typical blooming period: May to	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for

				July Typical elevation range: 6,889 to 9,104 feet		this species.
Fritillaria brandegeei Greenhorn fritillary	--	--	1B.3	The greenhorn fritillary is a perennial bulbiferous herb found in lower montane coniferous forest in granitic soils. Typical blooming period: April to June Typical elevation range: 4,363 to 6,889 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Fritillaria pinetorum Pine fritillary	--	--	4.3	The pine fritillary is found in chaparral, lower montane coniferous forest, pinyon-juniper woodland, subalpine coniferous forest, and upper montane coniferous forest. Typical blooming period: May to July Typical elevation range: 5.962 to 10,824 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Fritillaria striata Striped adobe-lily	--	ST	1B.1	The striped adobe-lily is a perennial bulbiferous herb found in cismontane woodland and valley and foothill grassland habitats. This species is usually found in clay soils. Known occurrences are only in foothills on adobe clay soils. Apparently more or less edaphically restricted to these distinctive clay soils, which are found on limited scattered sites within the species' generalized range (possibly as a remnant from uplifted metamorphic deposits which was not eroded away).	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.

				Typical blooming period: February to April Typical elevation range: 442 to 4,773 feet		
Glyceria grandis American manna grass	--	--	2B.3	The American manna grass is a perennial rhizomatous herb found in bogs and ferns, meadows and seeps, and marshes and swamps (streambanks and lake margins). Typical blooming period: June to August Typical elevation range: 49 to 6,496 feet	HP	There are streambanks; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Greeneocharis circumscissa var. *rosulata* Rosette cushion cryptantha	--	--	1B.2	The rosette cushion cryptantha is an annual herb found in subalpine coniferous forests and alpine boulder and rock fields. This species is found in gravelly and granitic sites. Typical blooming period: July to August Typical elevation range: 9,678 to 12,008 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Hosackia oblongifolia var. *cuprea* Copper-flowered bird's-foot trefoil	--	--	1B.3	The copper-flowered bird's-foot trefoil is a perennial rhizomatous herb found in meadows and seeps (edges) and upper montane coniferous forest. Typical blooming period: June to August Typical elevation range: 7,874 to 9,022 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Iris munzii Munz's iris	--	--	1B.3	The Munz's iris is a perennial rhizomatous herb found in cismontane woodland. Typical blooming period: March to	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were

				May Typical elevation range: 1,000 to 2,624 feet		conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Ivesia campestris Field ivesia	--	--	1B.2	The field ivesia is a perennial herb found in meadows and seeps (edges), subalpine coniferous forest, and upper montane coniferous forest. Typical blooming period: June to August Typical elevation range: 6,479 to 11,138 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Jensia yosemitana Yosemite tarplant	--	--	3.2	The Yosemite tarplant is found in meadows, seeps, and lower montane coniferous forest. Typical blooming period: May to July Typical elevation range: 3,937 to 7,545 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Leptosiphon oblanceolatus Sierra Nevada leptosiphon	--	--	4.3	The Sierra Nevada leptosiphon is found in subalpine coniferous forests and mountain flats near meadows and lakes. Typical blooming period: July to August Typical elevation range: 9,200 to 12,100 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Leptosiphon serrulatus Madera leptosiphon	--	--	1B.2	The Madera leptosiphon is an annual herb found in cismontane woodland and lower montane coniferous forest habitats. Typical blooming period: April to May Typical elevation range: 984 to	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the

				4,265 feet		BSA.
Lupinus lepidus var. *culbertsonii* Hockett Meadows lupine	--	--	1B.3	The Hockett Meadows lupine is a perennial herb found in meadows and seeps and upper montane coniferous forest (mesic, rocky). Typical blooming period: July to August Typical elevation range: 8,005 to 9,842 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Meesia triquetra Three-ranked hump moss	--	--	4.2	The three-ranked hump moss is found in bogs and fens, meadows and seeps, subalpine coniferous forest, and upper montane coniferous forest (mesic). Typical blooming period: July Typical elevation range: 4,265 to 9,688 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Mielichhoferia elongata Elongate copper moss	--	--	4.3	The elongate copper moss is found in broad-leafed upland forest, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, and subalpine coniferous forest. Typical elevation range: Zero to 6,430 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, there is potential for this species to be in the BSA.
Oreonana purpurascens Purple mountain-parsley	--	--	1B.2	The purple mountain-parsley is a perennial herb found in broadleaved upland forest, subalpine coniferous forest, and upper montane coniferous forest. This species is usually found in metamorphic soils. Typical blooming period: May to June Typical elevation range: 7,857 to	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.

				9,399 feet		
Orthotrichum holzingeri Holzinger's orthotrichum moss	--	--	1B.3	The Holzinger's orthortrichum moss is found in cismontane woodland, lower montane coniferous forest, pinyon and juniper woodland, and upper montane coniferous forest habitats. This species is usually on rock in and along streams and rarely on tree limbs. Typical elevation range: 2,345 to 5,905 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Pseudobahia peirsonii San Joaquin adobe sunburst	FT	SE	1B.1	The San Joaquin adobe sunburst in an annual herb found in cismontane woodland and valley and foothill grasslands habitats in adobe clay soils. Typical blooming period: February to April Typical elevation range: 295 to 2,624 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species. The project would have no effect on this species.
Ribes menziesii var. *ixoderme* Aromatic canyon gooseberry	--	--	1B.2	The aromatic canyon gooseberry is a perennial deciduous shrub found in chaparral and cismontane woodland habitats. Typical blooming period: April Typical elevation range: 2,001 to 3,805 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Ribes tularense Sequoia gooseberry	--	--	1B.3	The Sequoia gooseberry is a perennial deciduous shrub found in lower and upper montane coniferous forest. Typical blooming period: May Typical elevation range: 4,921 to 6,807 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.

Silene aperta Tulare campion	--	--	4.3	The Tulare campion is found in lower montane coniferous forests, subalpine coniferous forest, and upper montane coniferous forest. Typical blooming period: July to August Typical elevation range: 5,905 to 9,826 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Trichodon cylindricus Cylindrical trichodon	--	--	2B.2	The cylindrical trichodon is a moss found in broadleaved upland forest, meadows and seeps, and upper montane coniferous forest in sandy, exposed soils and on road banks. Typical elevation range: 164 to 6,568 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Viola pinetorum ssp. *grisea* *Grey-leaved violet*	--	--	1B.3	Grey-leaved violets are found in subalpine coniferous forests, upper montane coniferous forests, meadows, and seeps. Typical blooming period: April to July Typical elevation range: 4,000 to 11,000 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Invertebrates						
Atractelmis wawona Wawona riffle beetle	--	S1S2		The Wawona beetle is found from Mariposa County in central California to Crook County in central Oregon. This species spends most of its lifecycle in rapid streams from 2,000 to 5,000 feet in elevation. The larvae and adult life stages are aquatic and crawl on underwater plants and debris. This species is found in cool, small to medium sized	HP	There is cold, fast-running water within the portion of the Kaweah River flowing through the BSA. Therefore, there is potential for this species to be in the BSA.

			mountain streams and rivers. They are most abundant in aquatic mosses and are typically found clinging to stones or beneath rocks in cold, fast-running water.		
Bombus caliginosus Obscure bumble bee	--	S1S2	The obscure bumble bee inhabits open grassy coastal prairies and coast range meadows. This species nests underground as well as above ground in abandoned bird nests. This species is classified as a medium long-tongued species, whose food plants include *Ceanothus*, *Cirsium*, *Clarkia*, *Keckiella*, *Lathyrus*, *Lotus*, *Lupinus*, *Rhododendron*, *Rubus*, *Trifolium*, and *Vaccinium*.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Bombus crotchii Crotch bumble bee	--	Candidate Endangered	The Crotch bumble bee is found in open grassland and scrub habitats in coastal California east to the Sierra-Cascade crest and south into Mexico. This species nests underground in abandoned rodent burrows. Food plant genera for the Crotch bumblebee include *Antirrhinum* sp., *Phacelia sp.*, *Clarkia* sp., *Dendromecon* sp., *Eschscholzia* sp., and *Eriogonum* sp.	HP	There is non-native grassland habitat and suitable plant genera; therefore, there is potential for this species to be in the BSA.
Bombus occidentalis Western bumble bee	--	Candidate Endangered	The western bumble bee is a generalist forager and does not depend on one flower type. This species was once common and widespread within northwest America, but has declined precipitously perhaps from disease.	HP	There are suitable plant genera; therefore, there is potential for this species to be in the BSA.

Calicina cloughensis Clough Cave harvestman	--	S1	The Clough cave harvestman is found in limestone caves.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Cryptochia denningi Denning's cryptic caddisfly	--	S1S2	The Denning's cryptic caddisfly is found in riverine habitats in small, cool, streams. Larvae are often found above the water surface on damp wood or in wet leaves at the water's edge.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	FT	S2	The valley elderberry longhorn beetle is found only in the Central Valley of California, in association with blue elderberry (*Sambucus Mexicana* ssp. *caerulea*). This species prefers to lay eggs in elderberries two to eight inches in diameter; some preference is shown for "stressed" elderberries.	A	The BSA is outside of the known range for this species; therefore, this species is not expected to be in the BSA. The project would have no effect on this species.
Lytta moesta Moestan blister beetle	--	S2	The moestan blister beetle inhabits the valley and foothill grassland habitat in Central Valley, from Contra Costa County to Kern and Tulare counties.	HP	There is non-native grassland habitat; therefore, there is potential for this species to be in the BSA.
Lytta morrisoni Morrison's blister beetle	--	S1S2	The Morrison's blister beetle is found in the southern Central Valley in valley and foothill grassland habitats.	HP	There is non-native grassland habitat; therefore, there is potential for this species to be in the BSA.
Mollusks					
Bowmanasellus sequoia Sequoia cave isopod	--	S1	The Sequoia cave isopod is found in aquatic habitats in caves.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Branchinecta	FT	S3	The vernal pool fairy shrimp is	A	The habitat preferred by this species

lynchi Vernal pool fairy shrimp			endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, found in astatic rain-filled pools. This species inhabits small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.		is absent; therefore, this species is not expected to be in the BSA. The project would have no effect on this species.
Fish					
Hypomesus transpacificus Delta smelt	FT	SE	The Delta smelt is found in the Sacramento-San Joaquin Delta. This species is found seasonally in Suisun Bay, Carquinez Strait, and San Pablo Bay. The Delta smelt is most often found at salinities less than two parts per thousand and seldom at salinities greater than 10 parts per thousand.	A	The BSA is outside of the known range for this species; therefore, this species is not expected to be in the BSA. The project would have no effect on this species.
Amphibians					
Batrachoseps altasierrae Greenhorn Mountains slender salamander	--	S3S4	The Greenhorn Mountains slender salamander is found in mixed coniferous forest habitat at high elevations in the southern Sierra Nevada mountains from the northern side of the Lower Kern River to the Tule River and upper portions of the Little Kern River. This species is also found on the western edge of the Kern Plateau. The Greenhorn Mountains slender salamander is found under leaf litter, rocks, logs, and debris, especially in spring and seep areas.	A	The habitat preferred by this species is not in the BSA; therefore, this species is not expected to be in the BSA.
Batrachoseps	--	S2S3	The Kings River slender	A	The habitat preferred by this species

regius Kings River slender salamander			salamander is found in mixed chaparral habitat with buckeye, laurel, canyon oak, blue oak, ponderosa pine, and lowland pine and is often found under rocks.		is absent; therefore, this species is not expected to be in the BSA.
Batrachoseps relictus Relictual slender salamander	--	SSC	The relictual slender salamander is found in heavily forested areas with oaks and pines. This species is found the edge of seepages and springs in rocky areas.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Hydromantes platycephalus Mount Lyell salamander	--	WL	The Mount Lyell salamander can be found in Great Basin scrub, meadows, seeps, subalpine coniferous forests, upper montane coniferous forests, and wetlands, massive rock areas in mixed conifer, red fir, lodgepole pine, and subalpine habitats.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Rana boylii Foothill yellow-legged frog	--	SE	The foothill yellow-legged frog is found in partly shaded, shallow streams and riffles with rocky substrate in a variety of habitats. This species requires cobble-sized substrate for egg-laying and needs at least 15 weeks to attain metamorphosis.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Rana draytonii California red-legged frog	FT	SSC	The California red-legged frog is found in lowlands and foothills in or near permanent sources of deep water with dense, shrubby, or emergent riparian vegetation. Suitable habitat includes freshwater ponds or streams with calm stable water, and good water quality. Seasonal water for egg laying, hatching, and metamorphosis has to last for three to five months.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. The project would have no effect on this species.

Rana muscosa Southern mountain yellow-legged frog	FE	SE	The southern mountain yellow-legged frog (southern DPS) is found in rocky streams in narrow canyons and in chaparral habitat in the San Gabriel, San Jacinto, and San Bernardino Mountains. This species is always encountered within a few feet of water. Tadpoles may require two to four years to complete their aquatic development. This species historically inhabited lakes, ponds, marshes, meadows, and streams at elevations typically ranging from about 4,500 to 12,000 feet, but may be found as low as 3,500 feet in the northern portions of its range.	A	The habitat preferred by this species is absent. The BSA is below the elevation range where this species is generally found. In addition, the flow in river in BSA appears to be strong, and not favorable for this species. There are also rainbow trout in the river, which are predators of the southern mountain yellow-legged frog. Therefore, this species is not expected to be in the BSA. The project would have no effect on this species.
Taricha torosa Coast range newt	--	SSC	The coast range newt is found primarily in coastal drainages from Mendocino County to San Diego County. This species nests along margins of bushes or on twigs projecting into pathways, usually willow, *Baccharis* sp., and mesquite in wet forests, oak forests, chaparral, and grasslands. Breeding takes place in ponds, reservoirs, and streams. Terrestrial individuals will migrate up to 0.25 mile to upland habitat.	HP	There are oak woodland and non-native grassland habitats, and a river for breeding; therefore, there is potential for this species to be in the BSA. In addition, unidentified newts were observed along Mineral King Road during surveys in April 2014.
Reptiles					
Anniella pulchra Northern California legless lizard	--	SSC	Legless lizards are found in suitable habitats in the Coast Ranges from Antioch in Contra Costa County south to the Mexican border. This species is less common in the rest of their	HP	There is oak woodland habitat with sandy soils and leaf litter; therefore, there is potential for this species to be in the BSA.

			range, which includes the floor of the San Joaquin Valley from San Joaquin County south, the west slope of the southern Sierras, the Tehachapi Mountains west of the desert, and the mountains of southern California. This species is found primarily in areas with sandy or loose organic soils or where there is plenty of leaf litter. This lizard usually forages at the base of shrubs or other vegetation either on the surface or just below it in leaf litter or sandy soil. Legless lizards eat insect larvae, small adult insects, and spiders.		
Emys marmorata Western pond turtle	--	SSC	The western pond turtle is found in slow moving rivers, streams, lakes, ponds, wetlands, reservoirs, and brackish estuarine waters. This species prefers areas that provide logs, algae, or vegetation for cover, and boulders, partially submerged logs, vegetation mats, or open mud banks for basking, and is typically found below 6,000 feet elevation.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Phrynosoma blainvillii Coast horned lizard	--	S3S4	The coast horned lizard is found in open areas of sandy soil and low vegetation in valleys, foothills, and semiarid mountains. This species is also found in grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose soil. Preferred plant species are either chaparral or a	HP	There is woodland habitat with sandy soils; therefore, there is potential for this species to be in the BSA.

			chaparral/coastal sage scrub mix with bare ground coverage averaging 20 to 40 percent. California buckwheat (*Eriogonum fasiculatum*) is considered to be a primary indicator species for favorable soil and climatic conditions. Key habitat elements for this species are the presence of loose, fine soils, with a high sand content; an abundance of native ants; open areas for basking; and areas with low dense shrubs for refuge.		
Birds					
Accipiter gentilis Northern goshawk	--	SSC	The northern goshawk is found within, and near, coniferous forest. This species uses old nests, and maintains alternate sites, usually nesting on north slopes, near water. Red fir, lodgepole pine, Jeffrey pine, and aspens are typical nest trees.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Aquila chrysaetos Golden eagle	--	FP	The golden eagle is found in open and semi-open country with native vegetation and primarily found in mountains, canyons, and riverside cliffs and bluffs. This species avoids developed areas and uninterrupted stretches of forest. Cliff-walled canyons and large trees provide nesting habitat in most parts of their range.	HP (Nesting) HP (Foraging)	There are large trees for nesting and open areas and grassland for foraging; therefore, there is potential for this species to nest and forage in the BSA.
Ardea herodias Great blue heron	--	S4	The great blue heron nests colonially in tall trees, cliff sides, and sequestered spots on marshes. This species forages in marshes, lake margins, tide flats,	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.

			rivers, streams, and wet meadows. The rookery sites are in close proximity to foraging areas.		
Centrocercus urophasianus Greater sage-grouse	--	SSC	The greater sage-grouse is found in the northeastern, Great Basin portion of the state. Restricted to flat/rolling terrain vegetated by sage-brush, upon which it depends for both food and shelter.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Cypseloides niger Black swift	--	SSC	The black swift is found in the coastal belt of Santa Cruz and Monterey County, Central and Southern Sierra Nevada Mountains, San Bernardino Mountains, and the San Jacinto Mountains. This species breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and on sea-bluffs above the surf.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Gymnogyps californianus California condor	FE	SE	The California condor has been reintroduced to mountains of southern and central California, Arizona, Utah, and Baja California. Nesting habitats range from scrubby chaparral to forested mountain regions up to about 6,000 feet elevation. Condors live in rocky shrubland, coniferous forests, and oak savannas. Foraging areas are in open grasslands and can be far from primary nesting sites.	A (Nesting) HP (Foraging)	The nesting habitat preferred by this species is absent from the BSA; however, there is non-native grassland for foraging. Therefore, this species is not expected to nest in the BSA, but may forage in the BSA. The project would have no effect on this species.
Haliaeetus leucocephalus	FD	SE	The bald eagle is found in old growth lower montane coniferous forest along ocean shore, lake	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.

Bald eagle			margins, and rivers for both nesting and wintering. Most nests are within one mile of water. This species nests in large, old-growth, or dominant live trees with open branches, especially ponderosa pine. The bald eagle roosts communally in winter. The nearest bald eagle occurrences were at Bravo Lake in Woodlake, CA and at Lake Kaweah, which are 10 miles and 5 miles away respectively. Therefore, this species is not expected to be in the BSA.		
Melanerpes lewis Lewis' woodpecker	--	S4	The Lewis' Woodpecker requires open habitat with scattered or edge trees. Large open areas are necessary for foraging. Trees are used as hawking perches and for nesting. Large-diameter trees, either living, with partial decay, or dead, with more advanced decay, are especially valuable for nest sites. A diverse ground cover of low shrubs, grasses, and herbaceous plants that produce berries or provide habitat for insects is an important habitat component. Three distinct habitats are used by the species: open forest or grassland with scattered trees, riparian forests adjacent to open areas, and burns.	HP (Nesting) HP (Foraging)	There are woodlands for nesting and open areas and grassland for foraging; therefore, there is potential for this species to nest and forage in the BSA.
Pica nuttalli Yellow-billed magpie	--	S3S4	The yellow-billed magpie is colony bird found in open oak woodlands of central and southern California. This species	A	The BSA is outside of the known range for this species; therefore, this species is not expected to be in the BSA.

			nests are made primarily of sticks and mud, which are high up in large trees.		
Sphyrapicus ruber Red-breasted sapsucker	--	S4	The red-breasted sapsucker is found in mixed coniferous and mixed deciduous-coniferous forests and woodlands. This species requires snags or hollow tree cavities for nesting. They can also be found in riparian habitats with large cottonwoods.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Strix nebulosa Great gray owl	--	SE	The great gray owl is found in mixed conifer or red fir forest habitat, in or on the edge of meadows. This species requires large diameter snags in a forest with high canopy closure, which provide a cool sub-canopy microclimate.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Strix occidentalis occidentalis California spotted owl	--	SSC	The California spotted owl is found in the Sierra Nevada Mountains, the mountains of central coastal California, and the peninsular and Transverse Ranges of southern California. Spotted owls are territorial and exhibit strong fidelity to their territory. This species is found in mature forests and nest in cavities, broken tree tops, and occasionally on nests of other species, or in mistletoe.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Mammals					
Antrozous pallidus Pallid bat	--	SSC	The pallid bat is found year around in a variety of low-elevation habitats in most areas of California, including	HP	There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential

			grasslands, shrub lands, woodlands and forests. This species is thought to prefer open, dry habitats with rocky areas for roosting. The pallid bat day roosts in caves, crevices, mines, and hollow trees, buildings, and bridges, and night roosts in more open sites, such as porches, open buildings and bridges. Roosts must protect bats from high temperatures, and this species will move deeper into cover if temperatures rise. The pallid bat is highly sensitive to disturbance.		for this species to be in the BSA.
Aplodontia rufa californica Sierra Nevada mountain beaver	--	SSC	The Sierra Nevada mountain beaver is found in dense growth of small deciduous trees and shrubs, wet soil, and abundance of forbs in the Sierra Nevada and east slope. This species requires dense understory for food and cover. The Sierra Nevada mountain beaver burrows into soft soil and needs an abundant supply of water.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Corynorhinus townsendii Townsend's big-eared bat	--	SSC	The Townsend's big-eared bat is found in a variety of habitat types, including coniferous forests, deserts, native prairies, riparian communities, agricultural areas, and coastal habitats. It is thought to be most abundant in mesic habitats. This species roosts in caves and cave-like structures, such as exposed cavity-forming rock and mines. This species will also roost in human structures	HP	There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

			such as attics and barns, and has been found on occasion in bridges. Townsend's big-eared bats prefer to roost in large rooms and do not use crevices. The Townsend's big-eared bat is extremely sensitive to human disturbance, and is thought to be uncommon in California.		
Euderma maculatum Spotted bat	--	SSC	The spotted bat occupies a wide variety of habitats from arid deserts and grasslands through mixed conifer forests in eastern and southern California. This species feeds over water and along washes, feeding almost entirely on moths. The spotted bat typically roosts in rock crevices in cliffs or caves. This species has not been documented in bridges, but some potential exists for roosting in this type of structure.	HP	There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.
Eumops perotis californicus Western mastiff bat	--	SSC	The western mastiff bat is found in many open, semi-arid, and arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban areas. This species roosts in crevices on high vertical cliffs or surfaces (including buildings), trees, or tunnels. Because of their large size, they typically require a larger drop distance from roosting sites.	HP	There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.
Gulo gulo California	Proposed Threatened	Threatened	The California wolverine is found in the north coast mountains and the Sierra Nevada and may occur	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. The

wolverine			in a wide variety of high elevation habitats. This species requires a water source and uses caves, logs, and burrows for cover and den area. The California wolverine hunts in more open areas and can travel long distances.		project would have no effect on this species.
Myotis ciliolabrum Western small-footed myotis	--	S3	The western small-footed myotis is found mostly in arid wooded and brushy uplands near water. This species seeks cover in caves, buildings, mines, and crevices, and prefers open stands in forests and woodlands.	HP	There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.
Myotis evotis Long-eared myotis	--	S3	The long-eared myotis is found in all brush, woodland, and forest habitats from sea level to about 9,000 feet. This species prefers coniferous woodlands and forests. Nursery colonies may be located in buildings, crevices, spaces under bark, and snags. Caves are used primarily as night roosts.	HP	There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.
Myotis thysanodes Fringed myotis	--	S3	The fringed myotis is found in a wide variety of habitats. Optimal habitats are pinyon-juniper, valley foothill hardwood, and hardwood-conifer. This species uses caves, mines, buildings, or crevices for maternity colonies and roosts.	HP	There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.
Ochotona princeps schisticeps Gray-headed pika	--	S2S4	The gray-headed pika is found in mountainous areas, generally at higher elevations, often above the treeline up to the limit of vegetation. This species may be found on talus slopes, occasionally on mine tailings. It	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.

			prefers talus-meadow interface. At lower elevations it is found in rocky areas within forests or near lakes.		
Pekania pennanti Fisher – West Coast DPS	FE	ST	The fisher inhabits intermediate to large-tree stages of coniferous forests and deciduous-riparian areas with a high percent canopy closure. This species uses cavities, snags, logs, and rocky areas for cover and denning. The fisher requires large areas of mature, dense forest.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. The project would have no effect on this species.
Vulpes vulpes necator Sierra Nevada red fox	Proposed Endangered	ST	Historically found from the Cascades down to the Sierra Nevada, the Sierra Nevada red fox is found in a variety of habitats from wet meadows to forested areas. This species uses dense vegetation and rocky areas for cover and den sites and prefers forests interspersed with meadows or alpine fell-fields.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. The project would have no effect on this species.
Natural Communities					
Big Tree Forest	S3.2 = threatened (10,000 to 50,000 acres)		Big Tree Forest is a lower montane coniferous forest community. Elevation range: 3,280 to 8,000 feet	A	There are no coniferous trees in the BSA; therefore, the Big Tree Forest community is absent from the BSA.
Central Valley Drainage Hardhead/Squawfish Stream	SNR		Central Valley Drainage Hardhead/Squawfish Stream communities are perennial low to med-elevation streams with deep bedrock pools, low temperatures, and clear water. Elevation range: 750 to 2,960 feet	A	There are no deep bedrock pools in the BSA; therefore, the Central Valley Drainage Hardhead/Squawfish Stream community is absent from the BSA.

Table Key: Absent [A] - no habitat present and no further work needed. Habitat Present [HP] -habitat is, or may be present. The species may be present. Present [P] - the species is present. Status: Federal Endangered (FE); Federal Threatened (FT); State Endangered (SE); State Threatened (ST); Fully Protected (FP); Federally Delisted (FD); Watch List (WL); State Species of Special Concern (SSC); California Native Plant Society (CNPS), etc. 1A = Plants presumed extirpated in California and either rare, or extinct elsewhere;1B= Plant species that are rare, threatened, or endangered in California and elsewhere; 2B= Plant species that are rare, threatened, or endangered in California, but are more common elsewhere; 3= Plants about which we need more information; 4 = Plants of limited distribution;0.1=seriously threatened in California; 0.2 = moderately threatened in California; 0.3 = Not very threatened in California; S1 = critically imperiled, less than 1,000 individuals; S2 = imperiled, 1,000 to 3,000 individuals; S3 = vulnerable, 3,000 to 10,000 individuals; S4 = apparently secure within California, there is narrow habitat.

**Information for the habitat requirements was obtained from CNPS Rare and Endangered Plant Inventory, developed and maintained by the CNPS Rare Plant Program; the California Natural Diversity Database species habitat descriptions, updated and maintained by the CDFW; California Herps online database; Cornell Lab of Ornithology All About Birds; Audubon Guide to North American Birds; iNaturalist.org, and Preliminary Descriptions of the Terrestrial Natural Communities of California by Robert F. Holland (1986) were consulted during preparation of the species table and area listed in the references.*

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- Species of Special Concern: Extirpated from the state or, in the case of birds, is extirpated in its primary season or breeding role; 2) listed as federally threatened or endangered; meets the state definition of threatened or endangered but not formally listed; 3) is experiencing, or formerly experienced, serious population declines or range retractions that, if continued or resumed, could qualify it for state threatened or endangered status; 4) has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for state threatened or endangered status.
- Fully Protected: Species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

No other special-status animal species are expected to be within the BSA. A full species list with a discussion on the potential for each species to be in the BSA is in **Table 1**.

Chapter 4 - RESULTS: BIOLOGICAL RESOURCES, DISCUSSION OF IMPACTS AND MITIGATION

4.1 Habitats and Natural Communities of Special Concern

4.1.1 JURISDICTIONAL FEATURES

Survey Results

United States Army Corps of Engineers

The BSA was evaluated for waters under jurisdiction of the USACE by determining the ordinary high water mark (OHWM) of the river, and determining connectivity of waterways within the BSA to navigable waters. The river is a natural waterway that is expected to fall under USACE jurisdiction. The USACE will have final authority and discretion as to whether this area meets the "significant nexus" criteria required to establish USACE jurisdiction over these waterways.

Regional Water Quality Control Board

The BSA was evaluated for waters under jurisdiction of the RWQCB by delineating the OHWM of the river. The river had surface waters at the time of the surveys; therefore, it is expected to fall under RWQCB jurisdiction.

California Department of Fish and Wildlife

The BSA was evaluated for waters under jurisdiction of the CDFW by delineating the areas within the river channel from the top of bank to top of bank. There was no riparian vegetation outside of the creek banks. The river had a defined bed and bank and supported vegetation at the time of the surveys; therefore, it is expected to fall under CDFW jurisdiction.

Project Impacts

The project would include installation of a replacement bridge upstream of the existing bridge and would result in permanent and temporary impacts on CDFW jurisdiction (see **Figure 5**). Work would be conducted outside of the OHWM, and there would be no impacts on waters under jurisdiction of the USACE or RWQCB. There is year-round water flow in the river; however, work would be conducted outside of the wetted portion of the channel, and a water diversion is not anticipated. Construction activities including construction of the abutments of the new bridge, retaining walls, retaining wall footing, and concrete drainage behind the retaining wall would result in permanent impacts on approximately 0.031 acre under jurisdiction of the CDFW. Construction personnel and equipment accessing the banks of the river would result in temporary impacts on approximately 0.34 acre of waters under jurisdiction of the CDFW. In addition, construction materials, dust, and debris could result in temporary indirect impacts on water quality if they were to enter flowing water within the river. However, the project would be conducted in compliance with applicable water quality and dust control regulations, and regulatory permits, and with implementation of the proposed avoidance and minimization measures listed below, there would be no adverse impacts on jurisdictional features.

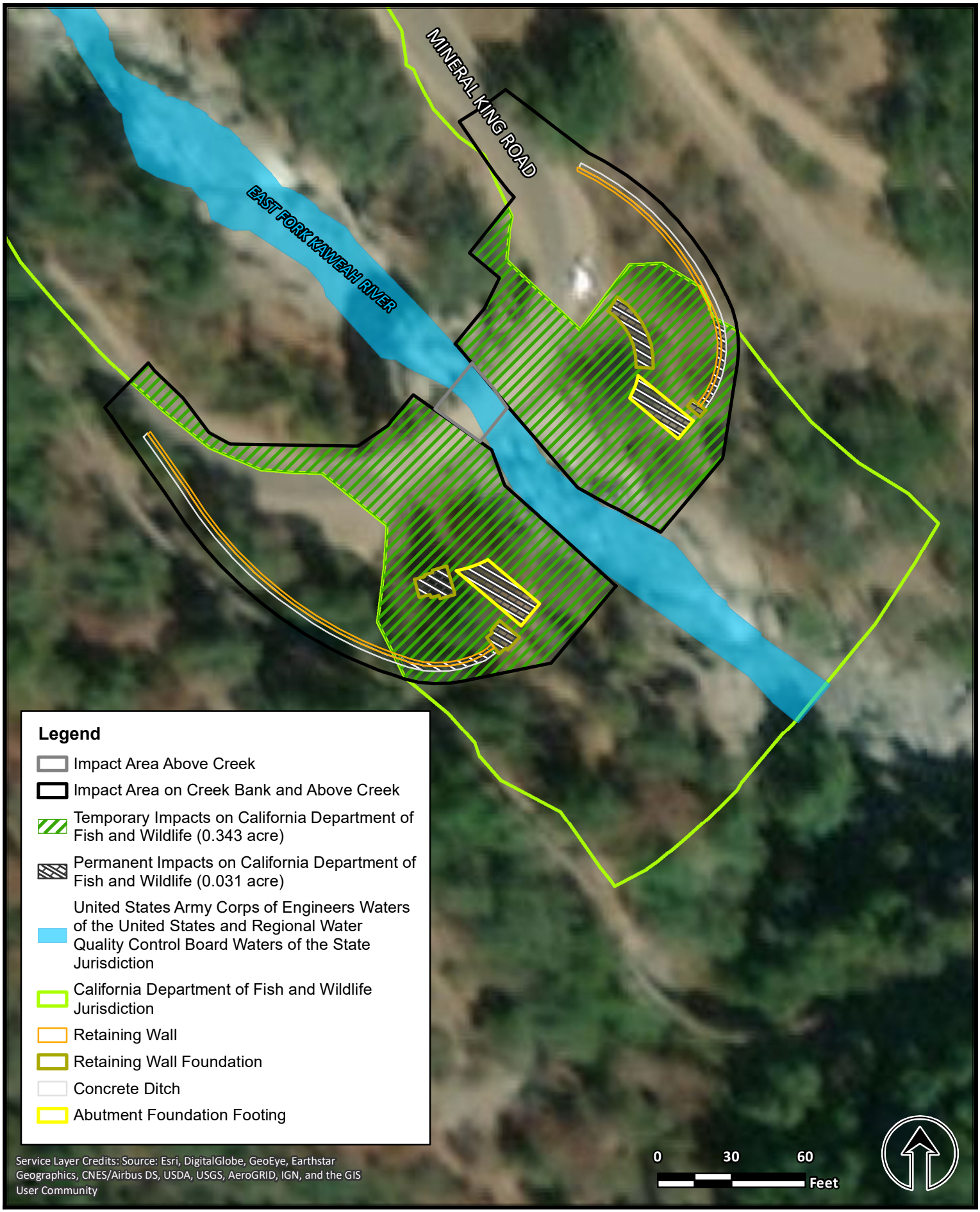


FIGURE 5. IMPACTS MAP
Mineral King Road Bridge Project

Avoidance and Minimization Efforts

To avoid and/or minimize potential impacts on jurisdictional features, the following measures would be implemented:

- Work areas would be reduced to the maximum extent feasible, and staging areas would be located away from the river.
- Best management practices (BMP), such as silt fencing, fiber rolls, straw bales, or other measures would be implemented during construction to minimize dust, dirt, and construction debris from entering the river and/or leaving the construction area. Construction would also be in compliance with San Joaquin Valley Air Pollution Control District Regulation VIII – Fugitive Dust, which requires a number of measure to control fugitive dust during construction activities.
- Appropriate hazardous material BMPs would be implemented to reduce the potential for chemical spills or contaminant releases into the river, including any non-stormwater discharge.
- All equipment refueling and maintenance would be conducted in the staging area away from the river. In addition, vehicles and equipment would be checked daily for fluid and fuel leaks, and drip pans would be placed under all equipment that is parked and not in operation.
- Temporarily disturbed areas would be re-contoured and re-vegetated using native species. Any re-vegetation or erosion control implemented would be completed using non-invasive species.

Compensatory Mitigation

With the implementation of avoidance and minimization measures listed above, no adverse impacts on jurisdictional features are anticipated, and no mitigation is proposed.

4.1.2 OAK WOODLANDS

Survey Results

There are two native woodland communities in the BSA, including the *Quercus Douglasii* Woodland Alliance on the edges of Staging Areas 2 and 3, and *Quercus Wislizeni* Woodland Alliance, on both sides of the East Fork Kaweah River near the bridge.

Project Impacts

The project would require some tree and vegetation removal and trimming to allow equipment access and construction of the new bridge approaches and retaining walls. In addition, it is anticipated that oaks trees would be removed to allow for construction of the retaining walls. Equipment use and storage in the staging areas could also result in disturbance of existing vegetation, including removal and trampling. However, with the implementation of the proposed avoidance and minimization measures, and compensatory mitigation discussed below, adverse impacts on oak trees are not anticipated.

Avoidance and Minimization Measures

To avoid and/or minimize impacts on the oak trees, the following measures would be

implemented:

- Removal of oak trees would be avoided, if feasible. If avoidance is feasible, protective fencing would be installed beyond the dripline of the tree(s) during construction to prevent construction staff or equipment from entering this area.

Compensatory Mitigation

To mitigate for impacts on oak woodland, the following measure will be implemented:

- Native oak trees measuring six inches in diameter at breast height or greater and requiring removal, will be replaced onsite at a minimum 3:1 ratio.

4.2 Special-Status Plant Species Occurrences

Survey Results

Streambank Spring Beauty

The streambank spring beauty (*Claytonia parviflora* ssp. *grandiflora*) is ranked 4.2 by the CNPS. This species is found in cismontane woodlands and pine/blue oak woodlands in the Sierra Nevada foothills. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Rose-flowered Larkspur

The rose-flowered larkspur (*Delphinium purpusii*) is ranked 1B.3 by the CNPS. This species is a perennial herb found in chaparral, cismontane woodland, and pinyon and juniper woodland habitats, and is often found in rocky, often carbonate soils. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Recurved Larkspur

The recurved larkspur (*Delphinium recurvatum*) is ranked 1B.2 by the CNPS. This species is a perennial herb found in chenopod scrub, valley and foothill grassland, and cismontane woodland. This species grows on poorly drained, fine textured alkaline soils. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Calico Monkeyflower

The calico monkeyflower (*Diplacus pictus*) is ranked 1B.2 by the CNPS. This species is an annual herb found in broadleaved upland forests, cismontane woodlands, disturbed areas, and granitic areas. There is cismontane woodland habitat and disturbed areas in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Mouse Buckwheat

The mouse buckwheat (*Eriogonum nudum* var. *murinum*) is ranked 1B.2 by the CNPS. This species is a perennial herb found in chaparral, cismontane woodland, and valley and foothill grassland habitats in sandy soils. There are cismontane woodland and non-native grassland habitats in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Kings River Monkeyflower

The Kings River monkeyflower (*Erythranthe acutidens*) is ranked 3 by the CNPS. This species is found in moist places in cismontane woodlands and lower montane coniferous forests. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Small-flowered Monkeyflower

The small-flowered monkeyflower (*Erythranthe inconspicua*) is ranked 4.3 by the CNPS. This species is found in cismontane woodland, lower montane coniferous forest, and chaparral in moist or shaded places. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Kaweah Monkeyflower

The Kaweah monkeyflower (*Erythranthe norrisii*) is ranked 1B.3 by the CNPS. This species is an annual herb found in chaparral and cismontane woodlands. The Kaweah monkeyflower is found in carbonate and rocky areas. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Sierra Nevada Monkeyflower

The Sierra Nevada monkeyflower (*Erythranthe sierra*) is ranked 4.2 by the CNPS. This species is found in cismontane woodlands, lower montane coniferous forest, meadows, and sweeps. The Sierra Nevada monkeyflower is found primarily in decomposed granite in vernally wet depressions, swales, at the edges of streams, dry meadows, and in openings of pine forest and oak woodland in sandy to gravelly soils. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

American Manna Grass

The American manna grass (*Glyceria grandis*) is ranked 2B.3 by the CNPS. This species is a perennial rhizomatous herb found in bogs and ferns, meadows and seeps, and marshes and swamps (streambanks and lake margins). There are streambanks in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Munz's Iris

The Munz's iris (*Iris munzii*) is ranked 1B.3 by the CNPS. This species is a perennial rhizomatous herb found in cismontane woodland. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Madera Leptosiphon

The Madera leptosiphon (*Leptosiphon serrulatus*) is ranked 1B.2 by the CNPS. This species is an annual herb found in cismontane woodland and lower montane coniferous forest habitats. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Elongate Copper Moss

The elongate copper moss (*Mielichhoferia elongata*) is ranked 4.3 by the CNPS. This species is found in broad-leafed upland forest, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, and subalpine coniferous forest. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, there is potential for this species to be in the BSA.

Holzinger's Orthortrichum Moss

The Holzinger's orthortrichum moss (*Orthotrichum holzingeri*) is ranked 1B.3 by the CNPS. This species is found in cismontane woodland, lower montane coniferous forest, pinyon and juniper woodland, and upper montane coniferous forest habitats. This species is usually found on rocks in and along streams and rarely on tree limbs. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Aromatic Canyon Gooseberry

The aromatic canyon gooseberry (*Ribes menziesii* var. *ixoderme*) is ranked 1B.2 by the CNPS. This species is a perennial deciduous shrub found in chaparral and cismontane woodland habitats. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Project Impacts

Construction would include vehicle storage and operation, vegetation removal, rock removal, grading, and paving within the BSA, which could result in direct impacts on plants in the area. If present, special-status plants could be directly impacted if they were to be trampled or removed during construction activities. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, the project would be in compliance with dust control regulations, and with implementation of avoidance, minimization, and mitigation measures listed below, adverse impacts on special-status plants are not anticipated.

Avoidance and minimization Efforts

To avoid and/or minimize impacts on special-status plants, the following measure would be implemented:

- Prior to construction, a qualified botanist would conduct plant surveys within the construction area. Surveys would be conducted during the appropriate blooming period for species with potential to be in the project area, to the extent feasible. If special-status plant species are found during surveys, avoidance measures would be developed and implemented based on recommendations from the qualified botanist. If surveys cannot be conducted within the appropriate blooming period, if presence of species cannot be ruled out for any other reason, or if species present cannot be avoided, appropriate mitigation would be developed and implemented.

Compensatory Mitigation

To mitigate for impacts on special-status plants, the following measure will be implemented:

- If it is determined that special-status plants would be impacted as a result of the project, an on-site or off-site restoration plan will be prepared by a qualified botanist. The plan will include, at a minimum, the following: receiver locations; number of plants to be replanted and the methods of replanting; maintenance and monitoring requirements; and measures necessary for the establishment of self-sustaining populations in suitable open space areas to ensure the long-term survivability of the species in the vicinity. The restoration plan will be implemented prior to the completion of the project.

4.3 Special Status Animal Species Occurrences

4.3.1 INVERTEBRATES

Survey Results

Wawona Riffle Beetle

The Wawona riffle beetle (*Atractelmis wawona*) is ranked as S1S2. This species is from Mariposa County in central California to Crook County in central Oregon. This species spends most of its lifecycle in rapid streams from 2,000 to 5,000 feet in elevation. The larvae and adult life stages are aquatic and crawl on underwater plants and debris. This species is found in cool, small to medium sized mountain streams and rivers. They are most abundant in aquatic mosses and are typically found clinging to stones or beneath rocks in cold, fast-running water. There is cold, fast-running water within the portion of the Kaweah River flowing through the BSA. Therefore, there is potential for this species to be in the BSA.

Crotch Bumble Bee

The Crotch bumble bee (*Bombus crotchii*) is a state candidate endangered species. This species is found in open grassland and scrub habitats in coastal California east to the Sierra-Cascade crest and south into Mexico. This species nests underground in abandoned rodent burrows. Food plant genera for the Crotch bumble bee include *Antirrhinum* sp., *Phacelia sp.*, *Clarkia* sp., *Dendromecon* sp., *Eschscholzia* sp., and *Eriogonum* sp. There is non-native grassland habitat and suitable plant genera in the BSA; therefore, there is potential for this species to be in the BSA.

Western Bumble Bee

The western bumble bee (*Bombus occidentalis*) is state candidate endangered species. This species is a generalist forager and does not depend on one flower type. This species was once common and widespread within northwest America, but has declined precipitously perhaps from disease. There are suitable plant genera in the BSA; therefore, there is potential for this species to be in the BSA.

Moestan Blister Beetle

The moestan blister beetle (*Lytta moesta*) is ranked as S2. This species inhabits the valley and foothill grassland habitat in the Central Valley, from Contra Costa County to Kern and Tulare counties. There is non-native grassland habitat in the BSA; therefore, there is potential for this species to be in the BSA.

Morrison's Blister Beetle

The Morrison's blister beetle (*Lytta morrisoni*) is ranked as S1S2. This species is found in the southern Central Valley in valley and foothill grassland habitats. There is non-native grassland habitat in the BSA; therefore, there is potential for this species to be in the BSA.

Project Impacts

Construction would include vehicle storage and operation, vegetation removal, rock removal, grading, and paving within the BSA, which could result in direct impacts on nesting bees and other invertebrates in the area. In addition, the existing bridge structure and trees and vegetation would be impacted, which could directly impact bees nesting in these structures. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, the project would be in compliance with dust control regulations, and with the implementation of proposed avoidance and minimization measures included below, adverse impacts on invertebrates, including take, are not anticipated.

Avoidance and Minimization Efforts

To avoid and/or minimize impacts on invertebrates, the following measures would be implemented:

- Vegetation removal and excavation would be reduced to the extent feasible.
- Within the spring season (May to June) prior to construction, a qualified biologist would survey areas where vegetation removal and excavation would be conducted to confirm the presence/absence of Crotch bumble bee or western bumble bee nests.
- If a Crotch bumble bee or western bumble bee nest is identified in the BSA, efforts would be taken to avoid the nest, and an appropriate buffer would be installed as determined by a qualified biologist.
- Ground disturbance would not be conducted during the winter months, if feasible, to avoid impacting overwintering bees.
- Pesticide/insecticide would not be used as part of the project.
- Areas temporarily impacted during construction would be restored using native species,

including one or more of the food plant genera for the Crotch bumble bee and western bumble bee (*Antirrhinum* sp., *Phacelia sp.*, *Clarkia* sp., *Dendromecon* sp., *Eschscholzia* sp., and *Eriogonum* sp.) if appropriate for the region.

Compensatory Mitigation

With the implementation of avoidance and minimization measures, adverse impacts are not anticipated; therefore, no mitigation is proposed.

4.3.2 AMPHIBIANS

Survey Results

Coast Range Newt

The coast range newt (*Taricha torosa*) is listed as a state Species of Special Concern. This species is found primarily in coastal drainages from Mendocino County to San Diego County, and along margins of bushes or on twigs projecting into pathways, usually willow, *Baccharis* sp., and mesquite in wet forests, oak forests, chaparral, and grasslands. Breeding takes place in ponds, reservoirs, and streams. Terrestrial individuals will migrate up to 0.25 mile to upland habitat. There are oak woodland and non-native grassland habitats in the BSA, and a river for breeding; therefore, there is potential for this species to be in the BSA. In addition, unidentified newts were observed along Mineral King Road during surveys conducted in April 2014.

Project Impacts

Construction would include vehicle storage and operation, vegetation removal, rock removal, grading, and paving within the BSA, which could result in direct impacts on amphibians in the area. These activities could result in direct impacts on amphibians if they were to be crushed or injured during construction activities. In particular, construction vehicles using Mineral King Road could injure or kill amphibians crossing the roadway. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, the project would be in compliance with dust control regulations, and with the implementation of avoidance and minimization measures listed below, adverse impacts on newts are not expected.

Avoidance and Minimization Efforts

To avoid and minimize potential impacts on amphibians, the following avoidance and minimization measures would be implemented:

- Vegetation removal and excavation would be reduced to the extent feasible.
- Within 48 hours of construction, a qualified biologist would survey the construction area to confirm the presence/absence of amphibians.
- If any amphibians are identified within the BSA, all efforts would be taken to avoid the individual, and an appropriate buffer would be installed as determined by a qualified biologist. If avoidance cannot be accomplished, the individual would be safely relocated by a qualified biologist.
- Pesticide/insecticide would not be used as part of the project.

Compensatory Mitigation

With the implementation of avoidance and minimization measures, adverse impacts are not anticipated; therefore, no mitigation is proposed.

4.3.2 REPTILES

Survey Results

Northern California Legless Lizard

The northern California legless lizard (*Anniella pulchra*) is listed as a state Species of Special Concern. This species is found in suitable habitats in the Coast Ranges from Antioch in Contra Costa County south to the Mexican border, and is less common in the rest of its range, which includes the floor of the San Joaquin Valley from San Joaquin County south, the west slope of the southern Sierras, the Tehachapi Mountains west of the desert, and the mountains of southern California. This species is found primarily in areas with sandy or loose organic soils or where there is plenty of leaf litter. This lizard usually forages at the base of shrubs or other vegetation either on the surface or just below it in leaf litter or sandy soil. Legless lizards eat insect larvae, small adult insects, and spiders. There is oak woodland habitat with sandy soils and leaf litter in the BSA; therefore, there is potential for this species to be in the BSA.

Coast Horned Lizard

The coast horned lizard (*Phrynosoma blainvillii*) is ranked S3S4. This species is found in open areas of sandy soil and low vegetation in valleys, foothills, and semiarid mountains, and is also found in grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose soil. Preferred plant communities are either chaparral or a chaparral/coastal sage scrub mix with bare ground coverage averaging 20 to 40 percent. California buckwheat (*Eriogonum fasiculatum*) is considered to be a primary indicator species for favorable soil and climatic conditions. Key habitat elements for this species are the presence of loose, fine soils, with a high sand content; an abundance of native ants; open areas for basking; and areas with low dense shrubs for refuge. There is woodland habitat with sandy soils in the BSA; therefore, there is potential for this species to be in the BSA.

Project Impacts

Construction would include vehicle storage and operation, vegetation removal, rock removal, grading, and paving within the BSA, which could result in direct impacts on reptiles in the area. These activities could result in direct impacts on reptiles if they were to be crushed or injured during construction activities. In particular, construction vehicles using Mineral King Road could injure or kill reptiles crossing the roadway. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, with the implementation of avoidance and minimization measures discussed below adverse impacts on special-status reptile species are not anticipated.

Avoidance and Minimization Efforts

To avoid and minimize potential impacts on reptiles, the following avoidance and minimization measures would be implemented:

- Vegetation removal and excavation would be reduced to the extent feasible.
- Pre-construction surveys for reptiles would be conducted by a qualified biologist in the upland portions of the construction area no more than 48 hours prior to construction. Surveys would be repeated if construction activities are suspended for five days or more. If these species, or other reptiles, are observed within the construction area, a qualified biologist would capture and relocate them to suitable habitat at least 100 feet outside of the construction area.
- Temporarily disturbed areas would be restored following construction.

Compensatory Mitigation

With the implementation of avoidance and minimization measures, adverse impacts are not anticipated; therefore, no mitigation is proposed.

4.3.2 BIRDS

Survey Results

Golden Eagle

The golden eagle (*Aquila chrysaetos*) is a state Fully Protected species. This species is found in open and semi-open country with native vegetation and primarily found in mountains, canyons, and riverside cliffs and bluffs, and avoids developed areas and uninterrupted stretches of forest. Cliff-walled canyons and large trees provide nesting habitat in most parts of their range. There are large trees for nesting and open areas and grassland for foraging; therefore, there is potential for this species to nest and forage in the BSA.

California Condor

The California condor (*Gymnogyps californianus*) is listed as federally threatened under FESA and state endangered under CESA. This species has been reintroduced to mountains of southern and central California, Arizona, Utah, and Baja California. Nesting habitats range from scrubby chaparral to forested mountain regions up to about 6,000 feet elevation. Condors live in rocky shrubland, coniferous forests, and oak savannas. Foraging areas are in open grasslands and can be far from primary nesting sites. The nesting habitat preferred by this species is absent from the BSA; however, there is non-native grassland for foraging. Therefore, this species is not expected to nest in the BSA, but may forage in the BSA.

Lewis' Woodpecker

The Lewis' Woodpecker (*Melanerpes lewis*) is ranked as S4. This species requires open habitat with scattered or edge trees, and large open areas are necessary for foraging. Trees are used as hawking perches and for nesting. Large-diameter trees, either living, with partial decay, or dead, with more advanced decay, are especially valuable for nest sites. A diverse ground cover of low shrubs, grasses, and herbaceous plants that produce berries or provide habitat for insects is an important habitat component. Three distinct habitats are used by the Lewis' woodpecker: open forest or grassland with scattered trees, riparian forests adjacent to open areas, and burns. There are woodlands for nesting and open areas and grassland for foraging; therefore, there is potential for this species to nest and forage in the BSA.

Project Impacts

Construction would include vehicle storage and operation, vegetation and tree removal, rock removal, grading, and paving within the BSA, which could result in direct and indirect impacts on birds in the area. Vegetation removal could result in direct impacts on nesting birds if they were to be nesting in the vegetation or trees to be removed. Construction noise, vibration, and dust could also result in indirect impacts on nesting birds and disrupt foraging behavior. However, once construction is initiated, any birds foraging in the vicinity would be expected to move away, and there are other foraging areas available nearby. In addition, the project would be in compliance with dust control regulations, and regulatory permits. Because the California condor is not expected to nest in the BSA, the project would be expected to have no effect on this species. The golden eagle and Lewis' woodpecker could be nesting in the BSA; however, with the implementation of avoidance and minimization measures listed below, adverse impacts on these species, including take, are not anticipated.

Avoidance and Minimization Efforts

To avoid and/or minimize potential impacts on avian species, the following measures would be implemented:

- Construction in areas that include trees, vegetation, and structures that may provide nesting habitats for birds and raptors would be reduced to the maximum extent feasible.
- Trimming and removal of vegetation and trees would be minimized and performed outside of the nesting season (February 1 to September 30), to the extent feasible.
- In the event that trimming or removal of vegetation and trees must be conducted during the nesting season, nesting bird surveys would be completed within 500 feet of the construction area by a qualified biologist no more than 48 hours prior to trimming or clearing activities to determine if nesting birds are within the affected vegetation. Nesting bird surveys would be repeated if trimming or removal activities are suspended for five days or more.
- If nesting birds are found within 500 feet of the construction area, appropriate buffers consisting of orange flagging/fencing or similar (typically 300 feet for birds and 500 feet for raptors) would be installed and maintained until nesting activity has ended, as determined in coordination with the project biologist and regulatory agencies, as appropriate.
- Prior to construction, any inactive swallow nests and other nests would be removed under supervision of a qualified biologist during the non-breeding season (October 1 to January 31). The inactive nests would also be checked for bats prior to removal. During the nesting season (February 1 to September 30), the BSA would be monitored as necessary to ensure that no new nests are built, and any partially-built nests would be removed from the bridge during construction to prevent swallows from nesting on the bridge structure. Monitoring and nesting deterrence would continue until birds no longer attempt to nest.
- In the event that any bird species is observed foraging within the construction site, it would be allowed to move away from the site prior to initiating any construction activities that could result in direct injury or disturbance of the individual.
- Construction would also be in compliance with San Joaquin Valley Air Pollution Control District

Regulation VIII – Fugitive Dust, which requires a number of measure to control fugitive dust during construction activities.

Compensatory Mitigation

With the implementation of avoidance and minimization measures, adverse impacts are not anticipated; therefore, no mitigation is proposed.

4.3.2 MAMMALS

Survey Results

Bats were observed roosting in expansion joints within the bridge structure during the biological surveys, and were detected acoustically during evening emergence surveys. There was a large amount of staining around the joints, as well as in other areas of the bridge, suggesting night roosting. In addition, there were large amounts of guano under the bridge. Based on the number of bats using the bridge, there is a high probability that there is a maternal colony present, as well as night roosting. Based on acoustic recordings, most of the bats appear to be Mexican freetail bats (*Tadarida brasiliensis*), which is not a special-status species. However, there is potential that other species may be roosting alongside this species, and other species could also be using trees and rocky areas near the bridge.

Pallid Bat

The pallid bat (*Antrozous pallidusis*) is listed as a state Species of Special Concern. This species is found year around in a variety of low-elevation habitats in most areas of California, including grasslands, shrub lands, woodlands and forests. This species is thought to prefer open, dry habitats with rocky areas for roosting. The pallid bat day roosts in caves, crevices, mines, and hollow trees, buildings, and bridges, and night roosts in more open sites, such as porches, open buildings and bridges. Roosts must protect bats from high temperatures, and this species will move deeper into cover if temperatures rise. The pallid bat is highly sensitive to disturbance. There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

Townsend's Big-eared Bat

The Townsend's big-eared bat (*Corynorhinus townsendii*) is listed as a state Species of Special Concern. This species is found in a variety of habitat types, including coniferous forests, deserts, native prairies, riparian communities, agricultural areas, and coastal habitats. It is thought to be most abundant in mesic habitats, and roosts in caves and cave-like structures, such as exposed cavity-forming rock and mines. This species will also roost in human structures such as attics and barns, and has been found on occasion in bridges. Townsend's big-eared bats prefer to roost in large rooms and do not use crevices. The Townsend's big-eared bat is extremely sensitive to human disturbance, and is thought to be uncommon in California. There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

Spotted Bat

The spotted bat (*Euderma maculatum*) is listed as a state Species of Special Concern. This species occupies a wide variety of habitats from arid deserts and grasslands through mixed

conifer forests in eastern and southern California. This species feeds over water and along washes, feeding almost entirely on moths. The spotted bat typically roosts in rock crevices in cliffs or caves. This species has not been documented in bridges, but some potential exists for roosting in this type of structure. There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

Western Mastiff Bat

The western mastiff bat (*Eumops perotis californicus*) is listed as a state Species of Special Concern. This species is found in many open, semi-arid and arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban areas. This species roosts in crevices on high vertical cliffs or surfaces (including buildings), trees, or tunnels. Because of their large size, they typically require a larger drop distance from roosting sites. There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

Western Small-footed Myotis

The western small-footed myotis (*Myotis ciliolabrum*) is ranked as S3. This species is found mostly in arid wooded and brushy uplands near water, and seeks cover in caves, buildings, mines, and crevices, and prefers open stands in forests and woodlands. There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

Long-eared Myotis

The long-eared myotis (*Myotis evotis*) is ranked as S3. This species is found in brush, woodland, and forest habitats from sea level to about 9,000 feet, but prefers coniferous woodlands and forests. Nursery colonies may be located in buildings, crevices, spaces under bark, and snags. Caves are used primarily as night roosts. There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

Fringed Myotis

The fringed myotis (*Myotis thysanodes*) is ranked as S3. This species is found in a wide variety of habitats. Optimal habitats are pinyon-juniper, valley foothill hardwood, and hardwood-conifer, and this species uses caves, mines, buildings, or crevices for maternity colonies and roosts. There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

Project Impacts

Construction would include vehicle storage and operation, vegetation and tree removal, rock removal, grading, and paving within the BSA, which could result in direct and indirect impacts on bats in the area. Work on the bridge could also impact bats roosting on this structure. Tree removal and bridge work could result in direct impacts on bats if they were to be roosting in these structures. Construction noise, vibration, and dust could also result in indirect impacts on roosting

bats. Bridge rehabilitation would include replacing the joint seals, applying methacrylate to the existing bridge deck, and epoxy injecting larger cracks in the arch ribs and pier spandrel columns. Re-sealing the joint would be expected to improve the existing habitat, since parts of the joints are currently open to the deck, and the new sealant would provide additional overhead protection. The project would be in compliance with dust control regulations, and with the implementation of avoidance and minimization measures included below, adverse impacts on bats are not expected.

Avoidance and Minimization Efforts

To avoid and minimize potential impacts on bats, the following avoidance and minimization measures would be implemented:

- Where feasible, tree removal would be conducted outside of the maternal and non-active seasons for bats (October).
- At least 30 days prior to construction, a thorough bat roosting habitat assessment would be conducted of all trees to be removed or otherwise impacted during construction. Visual and acoustic surveys would be conducted for at least two nights at all identified roosting habitat to assess the presence of roosting bats. If presence is detected, a count and species analysis would be completed to help assess the type of colony and usage.
- No less than two weeks prior to construction, and during the non-breeding and active season (typically October), bats would be safely evicted from roosts impacted by the project under the direction of a qualified biologist. Once bats have been safely evicted, exclusionary devices would be installed to prevent bats from returning and roosting in these areas prior to removal. Roosts that would not be impacted by the project would be left undisturbed.
- If the presence or absence of bats cannot be confirmed in potential roosting habitat, a qualified biologist would be onsite during removal or disturbance of this area. If the biologist determines that bats are being disturbed during this work, work would be suspended until bats have left the vicinity on their own, or can be safely excluded under direction of the biologist. Work would resume only once all bats have left the site and/or approval to resume work is given by a qualified biologist.
- In the event that a maternal colony of bats is found, no work would be conducted within 100 feet of the maternal roosting site until the maternal season is finished or the bats have left the site, or as otherwise directed by a qualified biologist. The site would be designated as a sensitive area and protected as such until the bats have left the site. No activities would be authorized adjacent to the roosting site. Combustion equipment, such as generators, pumps, and vehicles, would not to be parked nor operated under or adjacent to the roosting site. Construction personnel would not be authorized to enter areas beneath the colony, especially during the evening exodus (typically between 15 minutes prior to sunset and one hour following sunset).

Compensatory Mitigation

With the implementation of avoidance and minimization measures, adverse impacts are not anticipated; therefore, no mitigation is required.

4.4 Cumulative Impacts

For the purposes of this analysis, the cumulative setting for jurisdictional features is considered waters within the Upper Kaweah Watershed. The cumulative setting for plants and wildlife is considered suitable habitat within the known range of affected species. Existing and continuing development contributes to cumulative impacts on jurisdictional features. In addition, habitat removal from current and future development in the area is the biggest threat to plant and wildlife species, along with pesticide use for some species.

The project would include rehabilitating the existing bridge, and would not contribute to development in the area. The project would have no impacts on special-status natural communities. The project could result in temporary impacts on plant and wildlife species; however, the project would include avoidance, minimization, and mitigation measures to prevent adverse impacts. In addition, any additional measures required by regulatory permits would be implemented during construction.

There are no other known planned projects in the vicinity of the BSA; however, other planned projects would be expected to include similar measures. Therefore, the project would not be expected to result in cumulatively considerable impacts on biological resources.

Chapter 5 – Conclusions and Regulatory Determinations

5.1 Federal Endangered Species Act Consultation Summary

There is potential for the federally Threatened California condor to be in the BSA; however, based on project analysis, the project would have no effect on the California condor. Therefore, consultation with the USFWS is not required. The BSA is not within any critical habitat for federally listed threatened or endangered species, and would have no effect on federally threatened and endangered species (see **Table 2**).

Scientific Name	Common Name	Federal Status	Critical Habitat	Determination
Plants				
Clarkia springvillensis	Springville clarkia	Threatened	None	No effect
Pseudobahia peirsonii	San Joaquin adobe sunburst	Threatened	None	No effect
Invertebrates				
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	Threatened	None	No effect
Crustaceans				
Branchinecta lynchi	Vernal pool fairy shrimp	Threatened	None	No effect
Fish				
Hypomesus transpacificus	Delta smelt	Threatened	None	No effect
Amphibians				
Rana Draytonii	California red-legged frog	Threatened	None	No effect
Rana muscosa	Southern mountain yellow-legged frog	Endangered	None	No effect
Birds				
Gymnogyps californianus	California condor	Endangered	None	No effect
Mammals				
Gulo gulo	California wolverine	Proposed Threatened	None	No effect
Vulpes vulpes necator	Sierra Nevada red fox	Candidate	None	No effect

5.2 Essential Fish Habitat Consultation Summary

The National Marine Fisheries Service (NMFS) Essential Fish Habitat (EFH) mapper tool was accessed on April 24, 2018. The BSA is outside of NMFS jurisdiction; therefore, no consultation or effects determination is required.

5.3 California Endangered Species Act Consultation Summary

There is potential for the state Fully Protected golden eagle, state Endangered California condor, state candidate endangered Crotch bumble bee, and state candidate endangered western bumble bee to be in the BSA. Based on project analysis, the project is not expected to result in adverse impacts on the golden eagle, California condor, Crotch bumble bee, or western bumble bee including take; therefore, consultation with the CDFW and an ITP are not anticipated for these species.

5.4 Wetlands and Other Waters Coordination Summary

5.4.1 FEDERAL CLEAN WATER ACT

The project would not result in impacts on waters under jurisdiction of the USACE and RWQCB; therefore, a CWA Section 404 Pre-Construction Verification and CWA Section 401 Water Quality Certification are not anticipated for the project. However, if the construction limits are extended to be within the OHWM, the RWQCB and USACE would be notified and necessary permits would be obtained.

5.4.2 CALIFORNIA FISH AND GAME CODE

The project would result in permanent and temporary impacts on waters under jurisdiction of the CDFW; therefore, a California Fish and Game Code Section 1602 SAA would be required under the CWA. A Streambed Alteration Notification would be submitted prior to construction to obtain the SAA.

5.5 Invasive Species

There are several species growing in the BSA that are listed by the Invasive Species Council of California as invasive to California. A complete list of native, non-native, and invasive plant species observed in the BSA is included in **Appendix C**. Invasive species are often found in disturbed areas, and project activities would have the potential to spread invasive species through further disturbance of the BSA. These species could also be spread through the improper disposal of the graded and excavated soils on site or off site, or through landscaping with invasive species. However, the following standard measures would be implemented to prevent the spread of invasive species:

- Vegetation removed from the BSA would be treated and disposed of in a manner that would prevent the spread of invasive species onsite or offsite.
- New landscaping materials, including erosion control seed mixes and other plantings, would be composed of non-invasive species and would be clear of weeds, and all erosion control and landscape planting would be conducted in a manner that would not result in the spread of invasive species.
- Plants listed by the USDA in the Pest Ratings of Noxious Weed Species and Noxious Weed Seed (United States Department of Food and Agriculture, 2016) would not be used as part of the project.

With implementation of these measures, the project would be in compliance with Executive Order

13112.

5.6 Migratory Birds

During the biological survey performed on April 9 and April 10, 2015, July 25 and July 26, 2016, and May 2, 2017, no special-status bird species were observed within the BSA. However, many bird species were observed foraging in or flying over the BSA, including the mourning dove, American crow, ash-throated flycatcher, and California scrub jay. Nesting birds could be directly impacted by construction activities if they were to be nesting in structures or vegetation within the construction area. In addition, these species could be indirectly impacted by loss of habitat resulting from vegetation or structure removal. However, with implementation of measures included in Section 4.0, the project would be in compliance with the MBTA and California Fish and Game Code.

Chapter 6 – References

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Appendix A

Special-Status Species Lists

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Chickencoop Canyon (3611838) OR Case Mountain (3611847) OR Dennison Peak (3611837) OR Giant Forest (3611857) OR Kaweah (3611848) OR Lodgepole (3611856) OR Moses Mtn. (3611836) OR Shadequarter Mtn. (3611858) OR Silver City (3611846))

Mineral King Road Bridge CNDDB Report

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter gentilis northern goshawk	ABNKC12060	None	None	G5	S3	SSC
Allium abramsii Abrams' onion	PMLIL02360	None	None	G3	S3	1B.2
Anniella pulchra Northern California legless lizard	ARACC01020	None	None	G3	S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aplodontia rufa californica Sierra Nevada mountain beaver	AMAFA01013	None	None	G5T3T4	S2S3	SSC
Atractelmis wawona Wawona riffle beetle	IICOL58010	None	None	G3	S1S2	
Batrachoseps altasierrae Greenhorn Mountains slender salamander	AAAAD02200	None	None	G4	S3S4	
Batrachoseps regius Kings River slender salamander	AAAAD02140	None	None	G2	S2S3	
Big Tree Forest Big Tree Forest	CTT84250CA	None	None	G3	S3.2	
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
Botrychium minganense Mingan moonwort	PPOPH010R0	None	None	G4G5	S3	2B.2
Bowmanasellus sequoiae Sequoia cave isopod	ICMAL01210	None	None	G1	S1	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Brodiaea insignis Kaweah brodiaea	PMLIL0C060	None	Endangered	G1	S1	1B.2
Calicina cloughensis Clough Cave harvestman	ILARAU8090	None	None	G1	S1	
Calochortus westonii Shirley Meadows star-tulip	PMLIL0D1M0	None	None	G3	S3	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Calystegia malacophylla var. berryi Berry's morning-glory	PDCON040K2	None	None	G4G5T2Q	S2	3.3
Carlquistia muirii Muir's tarplant	PDASTDU010	None	None	G2	S2	1B.3
Central Valley Drainage Hardhead/Squawfish Stream Central Valley Drainage Hardhead/Squawfish Stream	CARA2443CA	None	None	GNR	SNR	
Cinna bolanderi Bolander's woodreed	PMPOA1H040	None	None	G2G3	S2S3	1B.2
Clarkia springvillensis Springville clarkia	PDONA05120	Threatened	Endangered	G2	S2	1B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Cryptochia denningi Denning's cryptic caddisfly	IITRI11030	None	None	G1G2	S1S2	
Cuscuta jepsonii Jepson's dodder	PDCUS011T0	None	None	G1	S1	1B.2
Cypseloides niger black swift	ABNUA01010	None	None	G4	S2	SSC
Delphinium purpusii rose-flowered larkspur	PDRAN0B1G0	None	None	G3	S3	1B.3
Delphinium recurvatum recurved larkspur	PDRAN0B1J0	None	None	G2?	S2?	1B.2
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	
Diplacus pictus calico monkeyflower	PDSCR1B240	None	None	G2	S2	1B.2
Dudleya cymosa ssp. costatifolia Pierpoint Springs dudleya	PDCRA040A2	None	None	G5T1	S1	1B.2
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eriogonum nudum var. murinum mouse buckwheat	PDPGN08495	None	None	G5T2	S2	1B.2
Eryngium spinosepalum spiny-sepaled button-celery	PDAPI0Z0Y0	None	None	G2	S2	1B.2
Erythranthe norrisii Kaweah monkeyflower	PDSCR1B2Y0	None	None	G2	S2	1B.3
Erythronium pusaterii Kaweah fawn lily	PMLIL0U0R0	None	None	G3	S3	1B.3
Euderma maculatum spotted bat	AMACC07010	None	None	G4	S3	SSC
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G5T4	S3S4	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Fritillaria brandegeei Greenhorn fritillary	PMLIL0V040	None	None	G2G3	S2S3	1B.3
Fritillaria striata striped adobe-lily	PMLIL0V0K0	None	Threatened	G1	S1	1B.1
Glyceria grandis American manna grass	PMPOA2Y080	None	None	G5	S3	2B.3
Greeneocharis circumscissa var. rosulata rosette cushion cryptantha	PDBOR0A0G3	None	None	G5T2	S2	1B.2
Gulo gulo California wolverine	AMAJF03010	Proposed Threatened	Threatened	G4	S1	FP
Gymnogyps californianus California condor	ABNKA03010	Endangered	Endangered	G1	S1	FP
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Hosackia oblongifolia var. cuprea copper-flowered bird's-foot trefoil	PDFAB2A0W1	None	None	G5T2	S2	1B.3
Iris munzii Munz's iris	PMIRI090M0	None	None	G2	S2	1B.3
Ivesia campestris field ivesia	PDROS0X050	None	None	G3	S3	1B.2
Leptosiphon serrulatus Madera leptosiphon	PDPLM09130	None	None	G3	S3	1B.2
Lupinus lepidus var. culbertsonii Hockett Meadows lupine	PDFAB2B171	None	None	G5T3	S3	1B.3
Lytta moesta moestan blister beetle	IICOL4C020	None	None	G2	S2	
Lytta morrisoni Morrison's blister beetle	IICOL4C040	None	None	G1G2	S1S2	
Meesia triquetra three-ranked hump moss	NBMUS4L020	None	None	G5	S4	4.2
Mielichhoferia elongata elongate copper moss	NBMUS4Q022	None	None	G5	S3S4	4.3
Myotis ciliolabrum western small-footed myotis	AMACC01140	None	None	G5	S3	
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Ochotona princeps schisticeps gray-headed pika	AMAEA0102L	None	None	G5T2T4	S2S4	
Oreonana purpurascens purple mountain-parsley	PDAPI1G020	None	None	G3	S3	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Orthotrichum holzingeri Holzinger's orthotrichum moss	NBMUS560E0	None	None	G3G4	S2	1B.3
Pekania pennanti fisher - West Coast DPS	AMAJF01021	Endangered	Threatened	G5T2T3Q	S2S3	SSC
Pseudobahia peirsonii San Joaquin adobe sunburst	PDAST7P030	Threatened	Endangered	G1	S1	1B.1
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
Rana muscosa southern mountain yellow-legged frog	AAABH01330	Endangered	Endangered	G1	S1	WL
Ribes menziesii var. ixoderme aromatic canyon gooseberry	PDGRO02104	None	None	G4T2	S2	1B.2
Ribes tularense Sequoia gooseberry	PDGRO021L0	None	None	G1	S1	1B.3
Strix nebulosa great gray owl	ABNSB12040	None	Endangered	G5	S1	
Trichodon cylindricus cylindrical trichodon	NBMUS7N020	None	None	G4G5	S2	2B.2
Viola pinetorum ssp. grisea grey-leaved violet	PDVIO04431	None	None	G4G5T3	S3	1B.2
Vulpes vulpes necator Sierra Nevada red fox	AMAJA03012	Proposed Endangered	Threatened	G5T1T2	S1	

Record Count: 71

CNPS California Native Plant Society

*The database used to provide updates to the Online Inventory is under construction. View updates and changes made since May 2019 here.

Plant List

43 matches found. *Click on scientific name for details*

Search Criteria

Found in Quads 3611858, 3611857, 3611856, 3611848, 3611847, 3611846, 3611838 3611837 and 3611836;

Modify Search Criteria | Export to Excel | Modify Columns | Modify Sort | Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Agrostis humilis	mountain bent grass	Poaceae	perennial herb	Jul-Sep	2B.3	S2	G4Q
Allium abramsii	Abram's onion	Alliaceae	perennial bulbiferous herb	May-Jul	1B.2	S3	G3
Angelica callii	Call's angelica	Apiaceae	perennial herb	Jun-Jul	4.3	S3	G3
Botrychium minganense	Mingan moonwort	Ophioglossaceae	perennial rhizomatous herb	Jul-Sep	2B.2	S3	G4G5
Brodiaea insignis	Kaweah brodiaea	Themidaceae	perennial bulbiferous herb	Apr-Jun	1B.2	S1	G1
Calochortus westonii	Shirley Meadows star-tulip	Liliaceae	perennial bulbiferous herb	May-Jun	1B.2	S3	G3
Calystegia malacophylla var. berryi	Berry's morning-glory	Convolvulaceae	perennial rhizomatous herb	Jul-Aug	3.3	S2	G4G5T2Q
Carex praticola	northern meadow sedge	Cyperaceae	perennial herb	May-Jul	2B.2	S2	G5
Carlquistia muirii	Muir's tarplant	Asteraceae	perennial rhizomatous herb	Jul-Aug(Oct)	1B.3	S2	G2
Cinna bolanderi	Bolander's woodreed	Poaceae	perennial herb	Jul-Sep	1B.2	S2S3	G2G3
Clarkia springvillensis	Springville clarkia	Onagraceae	annual herb	(Mar)Apr-Jul	1B.2	S2	G2
Claytonia palustris	marsh claytonia	Montiaceae	perennial herb	May-Oct	4.3	S4	G4
Claytonia parviflora ssp. grandiflora	streambank spring beauty	Montiaceae	annual herb	Feb-May	4.2	S3	G5T3
Cuscuta jepsonii	Jepson's dodder	Convolvulaceae	annual vine (parasitic)	(Jun)Jul-Sep	1B.2	S1	G1
Delphinium purpusii	rose-flowered larkspur	Ranunculaceae	perennial herb	(Mar)Apr-May	1B.3	S3	G3
Dicentra nevadensis	Tulare County bleeding heart	Papaveraceae	perennial rhizomatous	Jun-Aug(Oct)	4.3	S4?	G4?

			herb				
Diplacus pictus	calico monkeyflower	Phrymaceae	annual herb	Mar-May	1B.2	S2	G2
Dudleya cymosa ssp. costatifolia	Pierpoint Springs dudleya	Crassulaceae	perennial herb	May-Jul	1B.2	S1	G5T1
Eriogonum nudum var. murinum	mouse buckwheat	Polygonaceae	perennial herb	Jun-Nov	1B.2	S2	G5T2
Eryngium spinosepalum	spiny-sepaled button-celery	Apiaceae	annual / perennial herb	Apr-Jun	1B.2	S2	G2
Erythranthe norrisii	Kaweah monkeyflower	Phrymaceae	annual herb	Mar-May	1B.3	S2	G2
Erythranthe sierrae	Sierra Nevada monkeyflower	Phrymaceae	annual herb	Mar-Jul	4.2	S2	G2
Erythronium pusaterii	Kaweah fawn lily	Liliaceae	perennial bulbiferous herb	May-Jul	1B.3	S3	G3
Fritillaria brandegeei	Greenhorn fritillary	Liliaceae	perennial bulbiferous herb	Apr-Jun	1B.3	S2S3	G2G3
Fritillaria pinetorum	pine fritillary	Liliaceae	perennial bulbiferous herb	May-Jul(Sep)	4.3	S4	G4
Glyceria grandis	American manna grass	Poaceae	perennial rhizomatous herb	Jun-Aug	2B.3	S3	G5
Greeneocharis circumscissa var. rosulata	rosette cushion cryptantha	Boraginaceae	annual herb	Jul-Aug	1B.2	S2	G5T2
Hosackia oblongifolia var. cuprea	copper-flowered bird's-foot trefoil	Fabaceae	perennial rhizomatous herb	Jun-Aug	1B.3	S2	G5T2
Iris munzii	Munz's iris	Iridaceae	perennial rhizomatous herb	Mar-Apr(May)	1B.3	S2	G2
Ivesia campestris	field ivesia	Rosaceae	perennial herb	May-Aug	1B.2	S3	G3
Jensia yosemitana	Yosemite tarplant	Asteraceae	annual herb	(Apr)May-Jul	3.2	S3	G3
Leptosiphon oblanceolatus	Sierra Nevada leptosiphon	Polemoniaceae	annual herb	Jul-Aug	4.3	S4	G4
Leptosiphon serrulatus	Madera leptosiphon	Polemoniaceae	annual herb	Apr-May	1B.2	S3	G3
Lupinus lepidus var. culbertsonii	Hockett Meadows lupine	Fabaceae	perennial herb	Jul-Aug	1B.3	S3	G5T3
Meesia triquetra	three-ranked hump moss	Meesiaceae	moss	Jul	4.2	S4	G5
Mielichhoferia elongata	elongate copper moss	Mielichhoferiaceae	moss		4.3	S4	G5
Oreonana purpurascens	purple mountain-parsley	Apiaceae	perennial herb	May-Jun	1B.2	S3	G3
Orthotrichum holzingeri	Holzinger's orthotrichum moss	Orthotrichaceae	moss		1B.3	S2	G3
Ribes menziesii var. ixoderme	aromatic canyon gooseberry	Grossulariaceae	perennial deciduous shrub	Apr	1B.2	S1	G4T1
Ribes tularense	Sequoia gooseberry	Grossulariaceae	perennial deciduous shrub	May	1B.3	S1	G1
Silene aperta	Tulare campion	Caryophyllaceae	perennial herb	Jul-Aug	4.3	S4	G4
Trichodon cylindricus	cylindrical trichodon	Ditrichaceae	moss		2B.2	S2	G4

Viola pinetorum ssp. grisea	grey-leaved violet	Violaceae	perennial herb	Apr-Jul	1B.2	S3	G4G5T3

Suggested Citation

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Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: September 09, 2020
Consultation Code: 08ESMF00-2020-SLI-1963
Event Code: 08ESMF00-2020-E-08724
Project Name: Mineral King Bridge over the East Fork of the Kaweah River

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

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2020-SLI-1963

Event Code: 08ESMF00-2020-E-08724

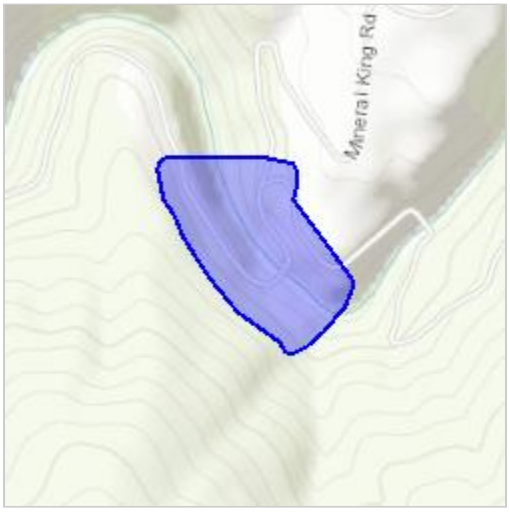
Project Name: Mineral King Bridge over the East Fork of the Kaweah River

Project Type: TRANSPORTATION

Project Description: The County of Tulare Resource Management Agency in cooperation with the California Department of Transportation, proposes to rehabilitate the existing Mineral King Bridge or provide a new bridge on Mineral King Road of the east fork of the Kaweah River.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/36.44955902210194N118.7932384828407W



Counties: Tulare, CA

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fisher *Pekania pennanti* Population: SSN DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3651	Endangered

Birds

NAME	STATUS
California Condor *Gymnogyps californianus* Population: U.S.A. only, except where listed as an experimental population There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/205/office/11420.pdf	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/321

Flowering Plants

NAME	STATUS
Springville Clarkia *Clarkia springvillensis*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/8309

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix B

Species Observed in Biological Study Area

Mineral King Road Bridge- List of Species Observed in BSA			
Plants			
Family	**Scientific Name**	**Common Name**	**Native/Non-Native/Invasive**
Amaranthaceae			
	Amaranthus sp.	pigweed	
Anacardiaceae			
	Rhus aromatica	fragrant sumac	native
	Toxicodendron diversilobum	poison oak	native
Apiaceae			
	Anthriscus caucalis	bur-chervil	non-native
	Torilis sp.	hedge parsley	
Asteraceae			
	Centaurea melitensis	tocalote	invasive
	Centaurea solstitialis	yellow star thistle	invasive
	Cirsium occidentale	western thistle	native
	Gnaphalium sp.	cudweed	
	Lasthenia sp.	goldfields	
	Madia elegans	common madia	native
	Matricaria discoidea	pineapple weed	native
	Micropus californicus	Q-tips	native
	Stephanomeria sp.	wirelettuce	native
	Uropappus lindleyi	silver puffs	native
Boraginaceae			
	Amsinckia menziesii	fiddleneck	native
	Cryptantha sp.	popcorn flower	native
	Eriodictyon californicum	yerba Santa	native
	Plagiobothrys sp.	popcorn flower	native
Brassicaceae			
	Capsella bursa-pastoris	shepherd's purse	non-native
	Descurainia pinnata	western tansy mustard	native
	Erysimum capitatum	wallflower	native
	Hirschfeldia incana	wild mustard	invasive
	Lepidium nitidium	shining pepper grass	native
	Thysanocarpus curvipes	common fringe pod	native
Calycanthaceae			
	Calycanthus occidentalis	spicebush	native
Caprifoliaceae			
	Lonicera interrupta	chaparral honeysuckle	native
	Lonicera sp.	honeysuckle	
	Sambucus nigra	black elderberry	native
Caryophyllaceae			
	Silene gallica	common catchfly	non-native
	Stellaria media	chickweed	non-native
Convolvulaceae			
	Calystegia sp.		
	Convolvulus sp.	bindweed	
Crassulaceae			
	Dudleya cymosa	rock lettuce	native
Cucurbitaceae			
	Marah horrida	Sierra manroot	native
Ericaceae			
	Arctostaphylos sp.	manzanita	native
	Arctostaphylos viscida ssp. *viscida*	smooth white leaf manzanita	native
Fabaceae			
	Acmispon americanus	Spanish lotus	native
	Cercis occidentalis	western redbud	native
	Lupinus nanus	sky lupine	native
	Lupinus sp.	lupine	native
	Melilotus indicus	annual yellow sweetclover	non-native
Fagaceae			
	Quercus berberidifolia	inland scrub oak	native
	Quercus chrysolepis	canyon oak	
	Quercus douglasii	blue oak	native
	Quercus wislizeni	interior live oak	native
Geraniaceae			
	Erodium botrys	long-beaked storksbill	non-native
	Erodium brachycarpum	White stemmed filaree	non-native
	Erodium cicutarium	red stemmed filaree	invasive
	Geranium dissectum	cranesbill	invasive
	Geranium molle	crane's-bill geranium	non-native
Grossulariaceae			
	Ribes roezlii	sierra gooseberry	native
Hydrophyllaceae			

	Phacelia cicutaria var. *cicutaria*	caterpillar phacelia	native
	Phacelia sp.	phacelia	
	Pholistoma auritum	fiesta flower	native
Lamiaceae			
	Marrubium vulgare	white horehound	invasive
	Umbellularia californica	California bay	native
Liliaceae			
	Chlorogalum pomeridianum	soap plant	native
	Dichelostemma capitatum	blue dicks	native
	Dichelostemma volubile	twining snake lily	native
	Triteleia ixioides	golden brodiaea	native
	Triteleia laxa	Ithuriel's spear	native
	Calochortus amoenus	purple fairy lantern	native
Myrsinaceae			
	Lysimachia arvensis	scarlett pimpernel	non-native
Onagraceae			
	Epilobium canum	California fuschia	native
	Epilobium ciliatum	slender willow herb	native
Papaveraceae			
	Eschscholzia californica	California poppy	native
Phrymaceae			
	Diplacus aurantiacus	sticky monkey flower	native
	Erythranthe guttata	seep monkeyflower	native
Plantaginaceae			
	Keckiella sp.		
	Penstemon sp.	beardtongue	native
	Plantago lanceolata	English plantain	invasive
Poaceae			
	Avena barbata	slim oat	non-native
	Bromus diandrus	ripgut brome	invasive
	Bromus hordeaceus	soft chess	invasive
	Bromus madritensis	foxtail chess	non-native
	Bromus sp.		
	Bromus tectorum	downy chess	invasive
	Calamagrostis canadensis	Canada Reedgrass	native
	Cynodon dactylon	Bermuda grass	invasive
	Festuca myuros	rattail six weeks grass	invasive
	Hordeum murinum	foxtail barley	invasive
	Melica californica	California melic	native
	Poa annua	annual blue grass	non-native
	Poa bulbosa	bulbous blue grass	non-native
Polemoniaceae			
	Gilia tricolor	bird's eyes gilia	native
	Gilia tricolor ssp. *diffusa*	bird's eyes	native
	Leptosiphon bicolor	true babystars	native
	Leptosiphon montanus	mustang clover	native
Polygonaceae			
	Rumex sp.		
Portulacaceae			
	Calandrinia menziesii	red maids	native
	Claytonia perfoliata	miner's lettuce	native
Pteridaceae			
	Aspidotis californica	California lace fern	native
	Pellaea andromedifolia	coffee fern	native
	Pentagramma triangularis	goldenback fern	native
Ranunculaceae			
	Clematis lasiantha	pipestem	native
Rhamnaceae			
	Ceanothus cuneatus	buck brush	native
	Ceanothus leucodermis	chaparral Whitethorn	native
	Ceanothus sp.	California lilac	native
Rosaceae			
	Adenostoma fasciculatum	chamise	native
	Cercocarpus betuloides	mountain mahogany	native
	Fragaria californica	wild strawberry	native
	Fragaria vesca	California strawberry	native
	Rubus armeniacus	Himalayan blackberry	invasive
	Rubus ursinus	California blackberry	native
Rubiaceae			
	Galium aparine	common bedstraw	native
	Galium sp.		native
Sapindaceae			
	Aesculus californica	California buckeye	native
Scrophulariaceae			

	Scrophularia californica	California bee plant	native
	Collinsia heterophylla var. *heterophylla*	purple Chinese house	native
Selaginellaceae			
	Selaginella sp.	spike moss	
Solanaceae			
	Datura sp.	jimson weed	native
Solanaceae			
	Solanum sp.		
Sterculiaceae			
	Fremontodendron californicum	California Fremontia	native
Verbenaceae			
	Verbena lasiostachys	western vervain	native
Vitaceae			
	Vitis californica	California wild grape	native
	Wildlife		
Family	**Scientific Name**	**Common Name**	**Native/Non-Native**
Accipitridae			
	Buteo jamaicensis	red-tailed hawk	native
Acrididae			
		locust	
Anguidae			
	Elgaria multicarinata	alligator lizard	native
Cardinalidae			
	Pheucticus melanocephalus	black-headed grosbeak	native
Cathartidae			
	Cathartes aura	turkey vulture	native
Cinclidae			
	Cinclus mexicanus	American dipper	native
Columbidae			
	Zenaida macroura	mourning dove	native
Corvidae			
	Aphelocoma californica	California scrub jay	native
	Corvus brachyrhynchos	American crow	native
Emberizidae			
	Melozone crissalis	California towhee	native
Meloidae			
		blister beetle	
Mutillidae			
		velvet ant	
Myrmeleontidae			
	Suborder *Myrmeleontiformia*	antlion	
Papilionidae			
	Papilio eurymedon	pale swallowtail	native
	Papilio rutulus	tiger swallowtail	native
Paridae			
	Baeolophus inornatus	oak titmouse	native
Picidae			
	Dryobates nuttallii	Nuttall's woodpecker	native
	Melanerpes formicivorus	acorn woodpecker	native
Salmonidae			
	Oncorhynchus mykiss	rainbow trout	native
Sciuridae			
	Otospermophilus beecheyi	California ground squirrel	native
Suborder Anisoptera			
		zebra-striped dragonfly	
Troglodytidae			
	Catherpes mexicanus	canyon wren	native
Tyrannidae			
	Myiarchus cinerascens	ash-throated flycatcher	native
	Sayornis sp.	phoebe	native

Appendix C

Photographs of the Biological Study Area



Figure 1. Mineral King Road Bridge from Mineral King Road, Eastbound Approach



Figure 2. Mineral King Road Bridge from Northeast Slope



Figure 3. Mineral King Road Bridge



Figure 4. Mineral King Road Bridge and Kaweah River Channel

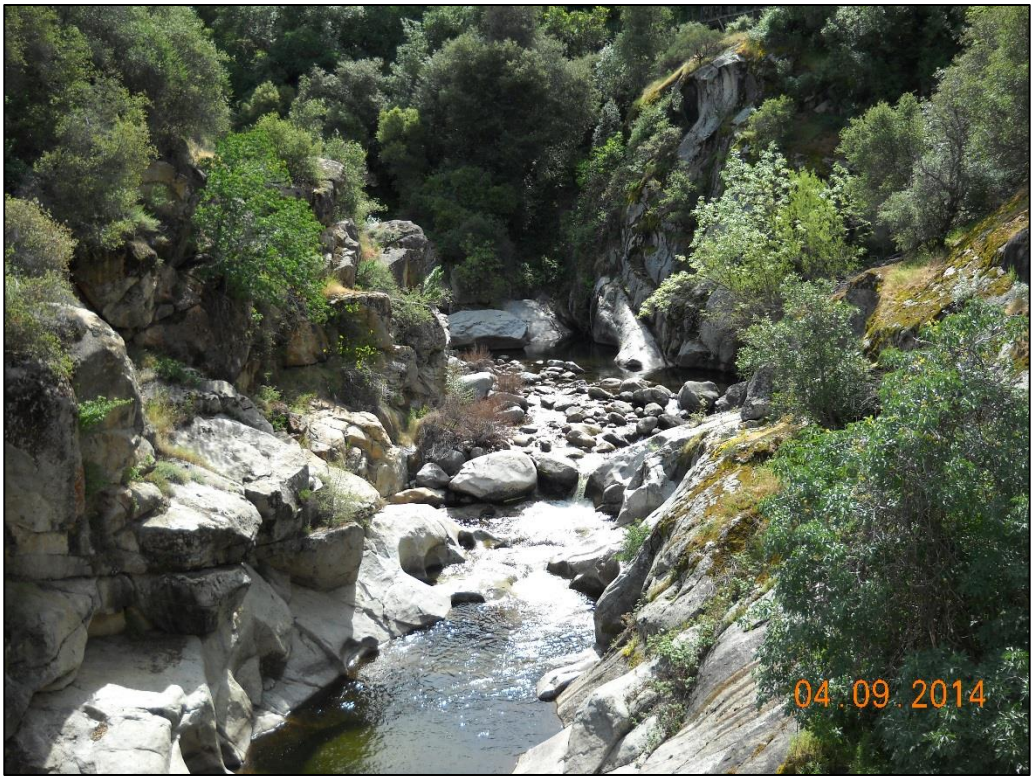


Figure 7. Kaweah River Channel Upstream of Bridge

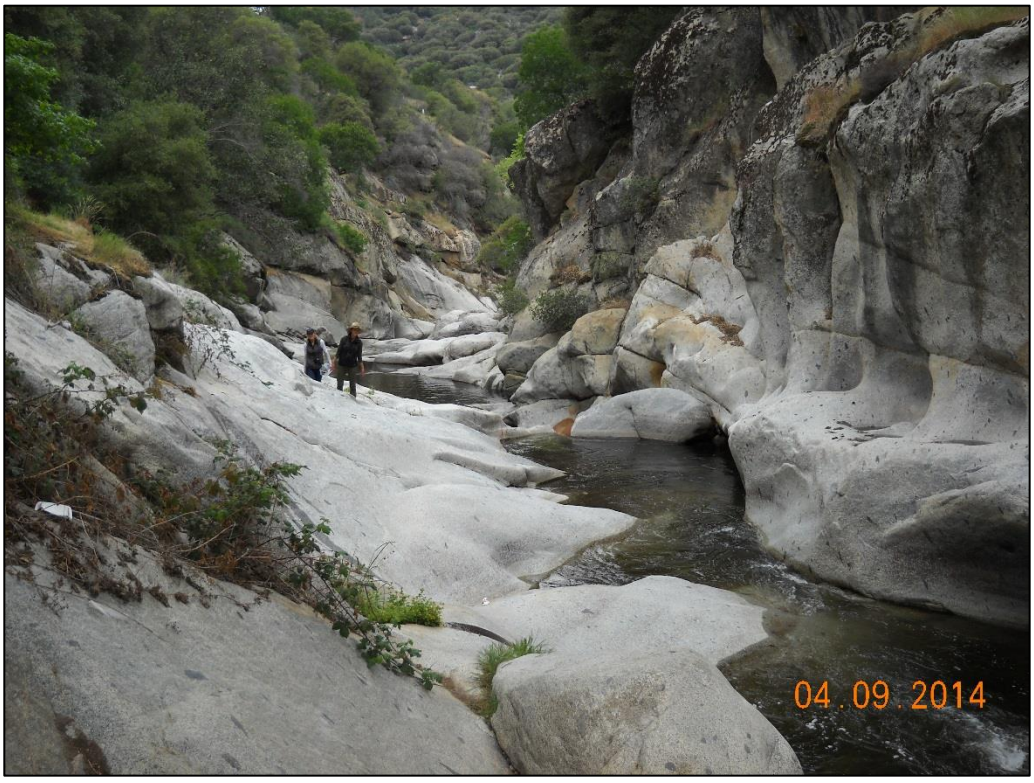


Figure 8. Kaweah River Channel Downstream of Bridge



Figure 9. Mineral King Roadside and Slope



Figure 10. Staging Area 1



Figure 11. Staging Area 2



Figure 12. Staging Area 3



Figure 14. Staining from Bat Roosting On Underside of Bridge



Figure 15. Bats Roosting in Bridge Joint on Southern End of Bridge

Natural Environment Study (2018)



Natural Environment Study

Tulare County, California

6-TUL-Mineral King Road

Bridge No. 46C-0196

Federal Project Number: HBP 5946 (106)

July 2018

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Natural Environment Study

STATE OF CALIFORNIA

Department of Transportation

Tulare County

Prepared By: Marieka Schrader Date: July 12, 2018

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District 6

For individuals with sensory disabilities, this document is available in Braille, large print, on audiocassette, or computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, Attn: Shane Gunn, Department of Transportation, District 6, 1352 West Olive Avenue, P.O. Box 12616, Fresno, CA 93778; [(559) 488-4066] Voice, or use the California Relay Service TTY number 1 (800) 735-2929 (TTY), 1 (800) 735-2929 (Voice) or 711.

Summary

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans) proposes to rehabilitate the existing Mineral King Road Bridge (aka Historic Oak Grove Bridge) (#46-0916) on Mineral King Road over the east fork of the Kaweah River (project). The project is located approximately six miles east of the census designated place of Three Rivers near the entrance to Sequoia National Park in the county of Tulare, California. The purpose of the project is to correct seismic deficiencies to meet current seismic standards; resolve structural deficiencies to enhance public safety; and maintain access over the East Fork of the Kaweah River.

Construction activities would result in temporary impacts on approximately 0.02 acre of waters of under jurisdiction of the USACE, approximately 0.02 acre of waters under jurisdiction of the RWQCB, and approximately 0.31 acre of waters under jurisdiction of the CDFW. In addition, construction materials, dust, and debris could result in temporary indirect impacts on water quality if they were to enter flowing water within the channel. However, with implementation of the proposed avoidance and minimization measures, adverse impacts on jurisdictional features are not expected.

Vehicle storage and operation, vegetation removal, excavation, grading, and paving within the BSA could result in direct impacts on plants in the area. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, with implementation of avoidance, minimization, and mitigation measures, adverse impacts on special-status plants are not anticipated. Vehicle storage and operation, vegetation removal, excavation, grading, paving, bridge work, and vegetation removal within the BSA could result in direct and indirect impacts on wildlife in the area. However, with implementation of avoidance and minimization measures, adverse impacts on special-status wildlife species are not anticipated.

There is potential for the federally Threatened California condor to be in the BSA. The BSA is not within any critical habitat for federally listed threatened or endangered species. Based on project analysis, the project is expected to have no effect on the California condor; therefore, consultation with the USFWS and an incidental take permit (ITP) are not required. There is also potential for the state Fully Protected golden eagle and state Endangered California condor to be in the BSA. Based on project analysis, the project is not expected to result in adverse impacts on the golden eagle or California condor, including take; therefore, consultation with the CDFW and an ITP are not required. A Clean Water Act (CWA) Section 404 Pre-Construction Verification, and CWA Section 401 Water Quality Certification would be required under the CWA, and a California Fish and Game Code Section 1602 Streambed Alteration Agreement (SAA) would be required under the CWA.

Invasive plant species were observed within the BSA. Invasive species are often found in disturbed areas, and project activities would have the potential to spread invasive species through further disturbance of the BSA. These species could also be spread through the improper disposal of the graded and excavated soils on site or off site, or through landscaping with invasive species. However, standard measures would be implemented to prevent the spread of invasive species

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Appendix A Special-status Species Lists

Appendix B List of Species Observed

Appendix C Photographs of the Biological Study Area

List of Abbreviated Terms

BIOS	Biogeographical Information and Observation System
BMP	Best Management Practices
BSA	Biological Study Area
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	County of Tulare
CWA	Clean Water Act
EFH	Essential Fish Habitat
FESA	Federal Endangered Species Act
FTIP	Federal Transportation Improvement Program
HBP	Highway Bridge Program
ITP	Incidental Take Permit
MBTA	Migratory Bird Treaty Act
msl	Mean Sea Level
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWM	Ordinary High Water Mark
RMA	Resource Management Agency
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
TCAG	Tulare County Association of Governments
U.S.	United States
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service

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Chapter 1 – Introduction

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans) proposes to rehabilitate the existing Mineral King Road Bridge (aka Historic Oak Grove Bridge) (#46-0916) on Mineral King Road over the east fork of the Kaweah River (project). The project is located approximately six miles east of the census designated place of Three Rivers near the entrance to Sequoia National Park in the county of Tulare, California (see **Figure 1** and **Figure 2**).

1.1 Project History

In August 2010, the bridge was programmed in the Tulare County Association of Governments (TCAG) 2010/2011 Federal Transportation Improvement Program (FTIP) for rehabilitation/replacement funding through the Highway Bridge Program (HBP). Based on the bridge load rating and seismic analysis conducted for the project, the bridge has the following deficiencies (Cornerstone Structural Engineering Group, 2015):

- The existing bridge deck over the main arch span has insufficient strength under the load from a 20-ton semi-trailer truck (HS20-44 loading) resulting from inadequate reinforcing steel.
- The existing barrier rails are in poor condition and do not meet current standards.
- The existing transverse cap beams in the main arch span are insufficient under HS20-44 loading.
- Six of the 10 existing spandrel columns are projected to fail during a seismic event.
- Concrete core samples taken from the bridge deck, arch, and wingwalls were tested, and chemical reactions (alkali-silica reactivity and carbonation) were detected that have resulted in the deterioration of the concrete. Moderate to large cracks (up to 0.25 inch thick) are present in both the substructure and superstructure of the bridge.

The purpose of this project is to:

- Correct seismic deficiencies to meet current seismic standards;
- Resolve structural deficiencies to enhance public safety; and
- Maintain access over the East Fork of the Kaweah River.

1.2 Project Description

1.2.1 ALTERNATIVE 1: REHABILITATION/RETROFIT

The Rehabilitation/Retrofit Alternative would include removal and replacement of the bridge deck, spandrel columns, spandrel crossbeams, arch fins, transverse deck beams, and longitudinal exterior beam over the main arch span; repair of carbonated concrete at the pier spandrel columns and arch; replacement of the existing deficient concrete barrier rails with new concrete barrier rails meeting current federal barrier rail safety standards; and application of silane waterproofing treatment to all remaining exposed concrete surfaces.

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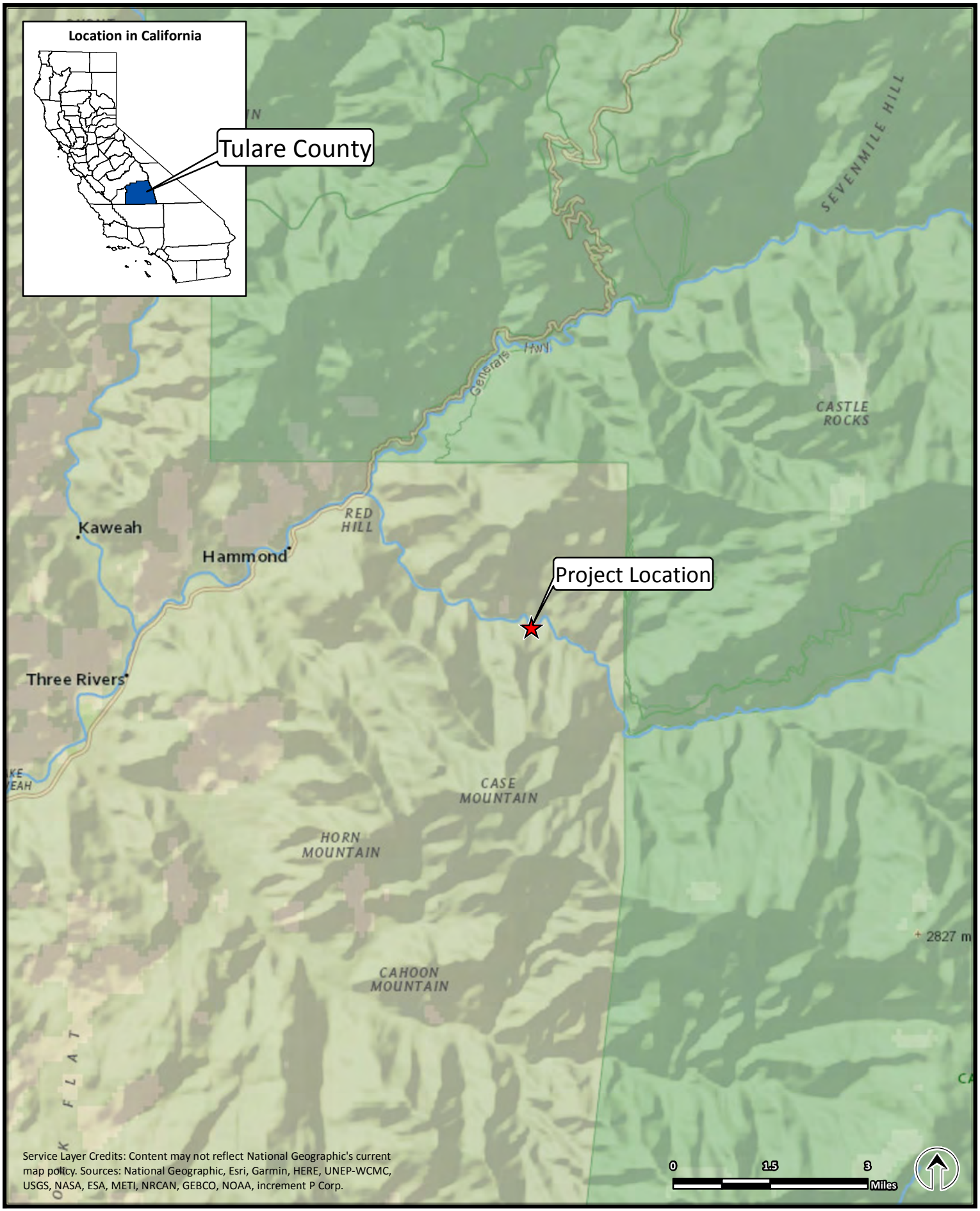


FIGURE 1: REGIONAL LOCATION MAP
Mineral King Road Bridge Rehabilitation



FIGURE 2: PROJECT LOCATION
Mineral King Road Bridge Rehabilitation

To make the necessary repairs, a temporary scaffolding system would be required. The scaffolding would be placed within the creek. Because the existing bridge would be closed during construction, a temporary bridge would be required downstream of the existing bridge to maintain traffic during construction. The centerline of the temporary bridge would be located approximately 50 feet north of the existing bridge's northern edge of deck. The span length of the temporary bridge would be approximately 120 to 130 feet. The temporary bridge would be supported on temporary cast-in-place abutments that would be removed following rehabilitation of the existing bridge. Because of limitations on the size of equipment that can access the site, the temporary bridge would likely be placed in three or more sections on two temporary supports in the channel.

Three potential staging areas are being considered: Staging Area 1, located immediately north of Mineral King Road, approximately 1.3 miles west of the existing bridge; Staging Area 2, located approximately 800 feet northeast of the existing bridge; and Staging Area 3, located approximately 370 feet northeast of the existing bridge.

1.2.2 NO BUILD ALTERNATIVE

The No Build Alternative would not include any improvements to the existing facility other than routine maintenance.

Chapter 2 – Study Methods

The following discussion provides a summary of state and federal laws and regulations pertaining to the project, environmental permits that are required for the project, and study methods that were undertaken as required by resource agencies and environmental laws.

2.1 Regulatory Requirements

2.1.1 CLEAN WATER ACT

The United State Army Corps of Engineers (USACE) regulates the placement of dredged and fill material into waters of the United States (U.S.), including wetlands, under Section 404 of the Clean Water Act (CWA). No discharge of dredged or fill material into jurisdictional features is permitted unless authorized under an USACE Nationwide Permit or Individual Permit. For all work subject to an USACE Section 404 permit, project proponents must obtain a Water Quality Certification from the applicable Regional Water Quality Control Board (RWQCB) under CWA Section 401 stating that the project would comply with applicable water quality regulations.

2.1.2 FEDERAL ENDANGERED SPECIES ACT

The Federal Endangered Species Act (FESA) was established in 1973 to provide a framework to conserve and protect endangered and threatened species and their habitat. Section 10 of the FESA allows for the "incidental take" of endangered and threatened wildlife species by non-federal entities. Incidental take is defined by the FESA as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Section 7 of the FESA authorizes incidental take by federal entities (federal action, federal funding, federal permit authorization) for otherwise lawful activities.

2.1.3 MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA) (50 CFR Part 10 and Part 21) protects migratory birds, their occupied nests, and their eggs from disturbance and/or destruction. "Migratory birds" include all nongame, wild birds found in the U.S. except for the house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), and rock pigeon (*Columba livia*).

2.1.4 EXECUTIVE ORDER 13112

Executive Order 13112 directs all federal agencies to refrain from authorizing, funding, or carrying out actions or projects that may spread invasive species. This order further directs federal agencies to prevent the introduction of invasive species, control and monitor existing invasive species populations, restore native species to invaded ecosystems, research and develop prevention and control methods for invasive species, and promote public education on invasive species.

2.1.5 PORTER-COLOGNE ACT

The RWQCB also asserts authority over waters of the state under the Porter-Cologne Act, which establishes a regulatory program to protect water quality and to protect beneficial uses of state waters. The Porter-Cologne Act empowers the RWQCB to formulate and adopt a Water Quality Control Plan that designates beneficial uses and establishes such water quality objectives that in

its judgment will ensure reasonable protection of beneficial uses. Each RWQCB establishes water quality objectives that will ensure the reasonable protection of beneficial uses and the prevention of water quality degradation. Dredge or fill activities with the potential to affect water quality in these waters must comply with Waste Discharge Requirements issued by the RWQCB. Waters of the state are defined by the Porter-Cologne Act as any surface or subsurface water or groundwater, including saline waters, within the boundaries of the state.

2.1.6 CALIFORNIA FISH AND GAME CODE

Section 1602 of the California Fish and Game Code governs construction activities that substantially divert or obstruct natural stream flow or substantially change the bed, channel, or bank of any river, stream, or lake under the jurisdiction of the California Department of Fish and Wildlife (CDFW). Under the California Fish and Game Code, the limits of CDFW's jurisdiction within streams and other drainages extends from the top of the stream bank to the top of the opposite bank, to the outer drip line in areas containing riparian vegetation, and/or within the 100-year floodplain of a stream or river system containing fish or wildlife resources. Streams are defined in the California Code of Regulations (CCR) (14 CCR Section 1.72) as "a body of water that follows at least periodically or intermittently through a bed or channel having banks and that support fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." Under Section 1602, a Streambed Alteration Agreement (SAA) must be issued by the CDFW prior to the initiation of construction activities that may substantially divert or obstruct the natural flow of any river, stream, or lake; substantially change or use any material from the bed, channel, or bank, of any river, stream, or lake; or deposit debris, waste, or other materials that could pass into any river, stream, or lake under CDFW's jurisdiction.

The CDFW has jurisdictional authority over waters of the state, including wetlands. In practice, CDFW follows the United States Fish and Wildlife Service (USFWS) definition of wetlands in Cowardin's Classification of Wetlands and Deepwater Habitats of the United States: "Wetlands are lands transitional between terrestrial and aquatic systems 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" (Cowardin et al. 1979).

Section 2126 of the California Fish and Game Code states that it is unlawful for any person to take any mammal that is identified within Section 2118, including all species of bats.

Sections 3503, 3513, and 3800 of the California Fish and Game Code prohibit the take of birds protected under the MBTA, and protects their occupied nests. In addition, Section 3503.5 of the California Fish and Game Code prohibits the take of any birds in the order Falconiformes or Strigiformes (birds-of-prey), and protects their occupied nests. State-listed species and those petitioned for listing by the CDFW are fully protected under the California Endangered Species Act (CESA). Under Section 2080.1 of the California Fish and Game Code, if a project would result in take of a species that is both federally and state listed, a consistency determination with the findings of the FESA determination is required. Under Section 2081, if a project would result in

take of a species that is state-only listed as threatened or endangered, then an incidental take permit from the CDFW is required.

Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code prohibit the take or possession of 37 fully protected bird, mammal, reptile, amphibian, and fish species. Each of the statutes states that no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to "take" the species, and states that no previously issued permit or licenses for take of the species "shall have any force or effect" for authorizing take or possession. The CDFW will not authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species.

2.2 Studies Required

2.2.1 LITERATURE SEARCH

Prior to conducting the biological survey, available literature was reviewed to identify any special-status plants, wildlife, and/or sensitive habitats previously recorded within or near the Biological Study Area (BSA). Sources used to identify special-status species and/or habitats with potential to be in or near the BSA include the following:

- The Natural Resources Conservation Service (NRCS) Custom Soil Resource Report for Tulare County, California, Central Part (NRCS, 2016).
- The CDFW's California Natural Diversity Database (CNDDB) (CDFW, 2018) for the Case Mountain, Chickencoop Canyon, Dennison Peak, Giant Forest, Kaweah, Lodgepole, Moses Mtn, Shadequarter Mtn., and Silver City 7.5-minute series topographic quadrangles (see **Appendix A**);
- USFWS Information for Planning and Conservation Database (USFWS, 2018) (see **Appendix A**);
- USFWS National Wetlands Inventory (NWI) Mapper (USFWS, 2018b); and
- CDFW Biogeographic Information and Observation System (BIOS) (CDFW, 2018).

2.2.2 FIELD REVIEWS

After a review of the results of the CNDDB query and related information described above, biological surveys were conducted of the BSA by senior associate biologist Marieka Schrader, senior biologist Sheri Mayta, and senior biologist Stan Glowacki on April 9 and April 10, 2015, Ms. Schrader and Ms. Mayta on July 25 and July 26, 2016, and Ms. Schrader and Ms. Mayta on May 2, 2017. The April 9 and 10, 2015 biological surveys covered the bridge area and Staging Areas 1 and 2. On July 25 and 26, 2016, follow up biological surveys were conducted at the bridge site and Staging Areas 1 and 2. On May 2, 2017, a biological survey was conducted at Staging Area 3, which was added to the project after initial surveys were complete. Bat emergence surveys were conducted on the evenings of April 9, 2015, and July 25, 2016.

2.2.3 BIOLOGICAL STUDY AREA

The Biological Study Area (BSA) includes areas that could be directly impacted by the project, either temporarily or permanently. The limits of the BSA were determined by reviewing project

plans and aerial photography, and evaluating potential jurisdictional areas during field visits. The BSA covers three distinctive sites; the project area and Staging Areas 1, 2, and 3 (see **Figure 3**).

2.2.4 SURVEY METHODS

The BSA was visually surveyed on foot, to the extent feasible, and all plant and animal species within the BSA were identified to determine the potential for protected species to be in the BSA. Some areas within the river channel were not accessible because of extremely steep slopes. Based on the existing conditions within the BSA, no focused plant or wildlife surveys were completed. Nomenclature for common, widespread plants and animals conforms to the Jepson eFlora (Jepson Flora Project, 2018) and the CNDDB. Species observed in the BSA during the April 9 and April 10, 2015, July 25 and July 26, 2016, and May 2, 2017 biological surveys are included in **Appendix B**.

2.3 Personnel and Survey Dates

Biological surveys were conducted in the BSA by senior associate biologist Marieka Schrader, senior biologist Sheri Mayta, and senior biologist Stan Glowacki on April 9 and April 10, 2015, and by Ms. Schrader and Ms. Mayta on July 25 and July 26, 2016, and May 2, 2017. Representative photographs of the BSA were taken during the surveys and are included in **Appendix C**.

2.4 Agency Coordination and Professional Contacts

No agency coordination has been conducted other than the online database literature searches. No professional inquiries beyond internal staff have been made regarding this project.

2.5 Limitations That May Influence Results

The botanical surveys conducted in 2015 and 2016 were conducted during a drought period. Although the vegetation blooms were high in the BSA, some species of plants may have had their germination and blooms affected by the drought therefore lowering the probability of detecting those plants in the field. The 2017 botanical surveys were conducted during a period of above average precipitation, and results of these surveys are expected to be more conclusive.

Chapter 3 – Results: Environmental Setting

3.1 Description of the Existing Biological and Physical Conditions

3.1.1 BIOLOGICAL STUDY AREA

The project area is located three miles southeast of State Route 198 (SR-198), near the community of Three Rivers in Tulare County, California. According to the County, the land use surrounding the project area is zoned as foothill agricultural (County of Tulare, August 2017). The bridge spans the East Fork Kaweah River. Land use surrounding the BSA is generally undeveloped, with several residential properties nearby.

3.1.2 PHYSICAL CONDITIONS

Topography

Tulare County is divided into two major geologic regions: the Sierra Nevada Mountains and the Central Valley. The area between these two sections comprises the Sierra Nevada Foothills. The BSA is within the Sierra Nevada foothills, and the bridge serves as the gateway to Mineral King Valley in Sequoia National Park, approximately 1.45 miles east of the project area. The elevation in the BSA is approximately 2,515 feet above mean sea level (msl).

Climate

The BSA receives an average of 25.07 inches of rainfall annually and the average temperature ranges from a low of 36.3 degrees Fahrenheit in winter to a high of 94.4 degrees Fahrenheit in summer National Oceanic and Atmospheric Administration (NOAA), 2017). The climate is classified as Mediterranean and the rainy season is October through April.

Soils

Data obtained from the Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA NRCS, 2014) show that there are two soil units mapped within the BSA: Fallbrook Sandy Loam, 30 to 50 Percent Slopes and Blasingame Sandy Loam, 15 to 30 Percent Slopes. These soils are well drained and the depth to water table is more than 80 inches.

Hydrology

The project area is within the Upper Kaweah Watershed (HUC 18030007) (United States Geological Survey, 2018). The Upper Kaweah Watershed includes the headwaters and main stems of the Kaweah River. The Kaweah River originates in the Sierra Nevada Mountains within Sequoia National Park and drains the west face of the Sierra Nevada Mountains.

Within the project area, the East Form Kaweah River has a natural bottom lined with boulders and flows southwest to Lake Kaweah. The river flows southwest to southwest through the BSA. The bank slopes are very steep. The river flows to Kaweah Lake, which flows to the Tulare Lake Basin complex several miles downstream of the BSA. The river falls under jurisdiction of the USACE, RWQCB, and CDFW.

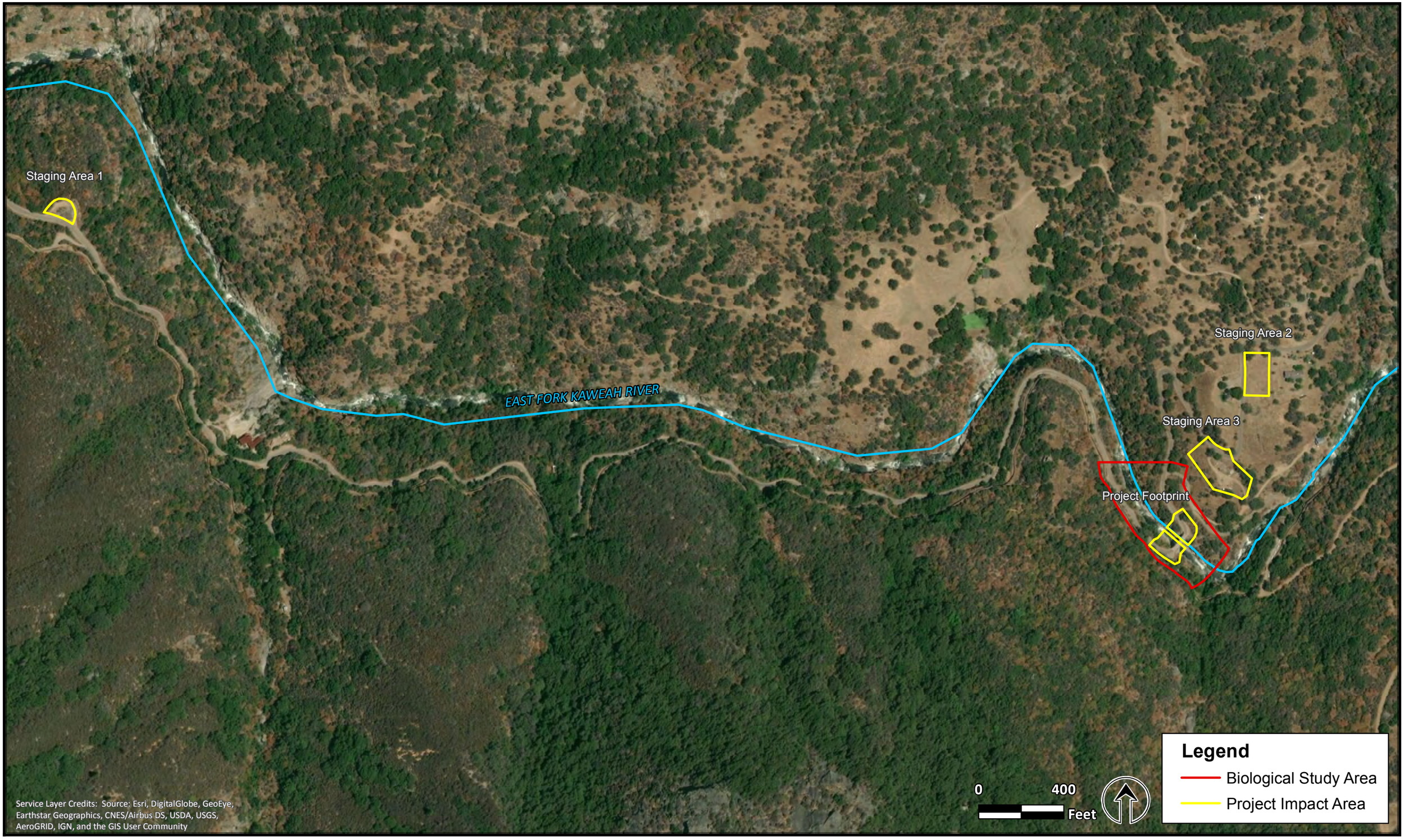


FIGURE 3. BIOLOGICAL STUDY AREA AND PROJECT IMPACT AREA
Mineral King Road Bridge Rehabilitation

3.1.3 BIOLOGICAL CONDITIONS IN THE BIOLOGICAL STUDY AREA

Vegetation Communities and Cover Classes

Vegetation communities within the BSA include *Quercus Douglasii* Woodland Alliance, *Quercus Wislizeni* Woodland Alliance, and *Bromus Diandrus-Brachypodium Distachyon* Semi-Natural Herbaceous Stand (see **Figure 4**). Each of these habitat types, as well as other vegetation communities and cover classes, are described below.

***Quercus Douglasii* Woodland Alliance**

This community is classified as *Quercus Douglasii* Woodland Alliance in the California Native Plant Society (CNPS) Manual of California Vegetation (Sawyer et. al, 2009). This community is dominated by blue oak (*Quercus douglasii*). This species is most commonly found in valley bottoms, lower western foothills of the Sierra Nevada, and rocky outcrops. Blue oaks are short trees with an open canopy that are drought tolerant and fire adapted. Within the BSA, this community is on the edges of Staging Areas 2 and 3.

***Quercus Wislizeni* Woodland Alliance**

This community is classified as *Quercus Wislizeni* Woodland Alliance in the CNPS Manual of California Vegetation. This community is dominated by interior live oak (*Quercus wislizeni*) or is co-dominant with California buckeye (*Aesculus californica*) or mountain mahogany (*Cercocarpus betuloides*). This community is most commonly found in upland slopes, valley bottoms, and terraces. Interior live oaks are short trees with an open canopy that are drought tolerant and fire adapted. California buckeyes are long-lived trees that have adapted to the state's Mediterranean climate. The mountain mahogany is an evergreen shrub valuable for erosion control and wildlife. Within the BSA, this community is on both sides of the East Fork Kaweah River near the bridge site.

***Bromus Diandrus-Brachypodium Distachyon* Semi-Natural Herbaceous Stand**

This community is classified as *Bromus Diandrus-Brachypodium Distachyon* Semi-Natural Herbaceous Stand in the CNPS Manual of California Vegetation. This community is dominated by ripgut brome (*Bromus diandrus*). Ripgut brome is most commonly found in all topographic settings in foothills, rangelands, and openings in woodlands. This species is an invasive species that is widespread throughout California. Within the BSA, this community is dominant in Staging Areas 2 and 3.

Ruderal

Ruderal communities are typical in early successional stages following extreme human disturbance, or recurrent natural disturbance. This vegetation community is dominated by annual and perennial, introduced/non-native, pioneering, herbaceous plants that readily colonize disturbed ground. Ruderal communities often exist along roadsides and fence lines, near developments, and in other areas where vegetation has been substantially altered by mowing or herbicide. Within in the BSA, ruderal habitats are adjacent to the paved roads and staging areas.

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FIGURE 4a. BIOLOGICAL RESOURCES FOR STAGING AREA 1
Mineral King Road Bridge Rehabilitation



FIGURE 4b. BIOLOGICAL RESOURCES FOR STAGING AREA 2
Mineral King Road Bridge Rehabilitation



FIGURE 4c. BIOLOGICAL RESOURCES FOR PROJECT AREA AND STAGING AREA 3
Mineral King Road Bridge Rehabilitation

Open Water

Within the BSA, the East Fork Kaweah River has limited to no vegetation because of hydrologic scouring processes and the natural bottom lined with boulders. Although there may be some individual plants in these areas, they are mapped as open water to distinguish them from true vegetation communities and to differentiate them when identifying non-wetland waters of the U.S. and state versus wetlands.

Bare Ground

Bare Ground areas are mostly devoid of vegetation. Bare Ground areas are the result of human disturbance and compaction of the soil from frequent vehicle traffic. Within the BSA, the Bare Ground is predominately along the paved roads.

Developed

Developed areas are areas where human disturbance has resulted in permanent impacts on natural communities. These areas provide limited to no benefits to wildlife because of a high degree of human disturbance to soil and vegetation. Within the BSA, Developed areas include paved areas, buildings, bridges, and other structures.

Wildlife

Habitat in the area is fairly intact and abundant. Dominant plant species found in the BSA include blue oak, interior live oak, California buckeye, and ripgut brome. The only aquatic resource is the East Fork Kaweah River. The East Fork Kaweah River originates in the Sierra Nevada Mountains within Sequoia National Park and drains the west face of the Sierra Nevada Mountains. Within the project area, the Kaweah River has a natural bottom lined with boulders and flows southwest to Lake Kaweah.

Many of the animal species observed include those commonly found in developed areas, including mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), ash-throated flycatcher (*Myiarchus cinerascens*), California scrub jay (*Aphelocoma californica*), and rainbow trout (*Oncorhynchus mykiss*). Several species found in more natural settings were observed, including the American dipper (*Cinclus mexicanus*) and oak titmouse (*Baeolophus inornatus*). In addition, several rainbow trout were seen in the deep pools beneath the bridge and along the river.

Invasive Species

Invasive species can negatively impact natural habitats by displacing native species, reducing native wildlife, and out competing native plants for resources like water. Invasive plant species, listed by the Invasive Species Council of California as invasive to California, observed within the BSA include tocalote (*Centaurea melitensis*), yellow star thistle (*Centaurea solstitialis*), wild mustard (*Hirschfeldia incana*), red stemmed filaree (*Erodium cicutarium*), cranesbill (*Geranium dissectum*), white horehound (*Marrubium vulgare*), ripgut brome, soft chess (*Bromus hordeaceus*), downy chess (*Bromus tectorum*), Bermuda grass (*Cynodon dactylon*), rattail six weeks grass (*Festuca myuros*), foxtail barley (*Hordeum murinum*), and Himalayan blackberry (*Rubus armeniacus*). A complete list of species observed in the BSA is included in **Appendix B**.

Habitat Connectivity

A migration or wildlife corridor is an area that connects two or more patches of habitat that would otherwise be isolated from each other. Wildlife corridors are typically adjacent to urban areas. A functional wildlife corridor allows for ease of movement between habitat patches and is important in preventing habitat fragmentation. Habitat fragmentation is typically caused by human development and can lead to a decrease in biodiversity and ecosystem functionality.

According to BIOS, there are essential wildlife connectivity areas and natural landscape blocks in the BSA. In addition, the BSA could be a corridor for bat migration based on habitat and proximity to the river. Therefore, the BSA is likely to be used as a migration or travel corridor for wildlife. There are downstream fish passage barriers; therefore, the BSA is not likely used for fish migration, although there may be some localized fish species in the area.

3.2 Regional Species and Habitats and Natural Communities of Concern

CNDDB species lists were obtained on March 10, 2015, and May 13, 2016, and updated on July 30, 2017 to identify federally and state listed species with the potential to be in the BSA based on their geographical range (see **Appendix A**). USFWS species lists were also obtained on March 10, 2015 and March 2, 2016, and updated on August 1, 2017 for the same purpose. The following discussion describes the special-status plant and wildlife species with potential to be within the BSA based on their geographical range, presence of suitable habitat, and survey results (see **Table 1**).

Determinations on whether special status and other sensitive resources could be in the BSA are based on: 1) a record reported in the CNDDB and USFWS species lists, 2) the presence of suitable habitat, and 3) survey results.

3.2.1 NATURAL COMMUNITIES

According to the CNDDB search, two special-status natural communities have the potential to be in the BSA based on geographical location, Big Tree Forest and Central Valley Drainage Hardhead/Squawfish stream (see **Appendix A**). However, based on habitat requirements and negative survey results, special-status vegetation communities are not within the BSA, and are not discussed further. A full list of communities and a discussion of the potential for each community to be within the BSA is in **Table 1**.

Table 1. Special-Status Species and Habitat with the Potential to be in the BSA

Common and Scientific Names	Status			General Habitat Description*	Habitat Present/ Absent	Rationale for Species Presence/Absence
	Federal USFWS	State CDFW	CNPS			
Plants						
Allium abramsii Abrams' onion	--	--	1B.2	The Abrams' onion is a perennial bulbiferous herb found in lower and upper montane coniferous forest. This species is often found in granitic sand. Typical blooming period: May to July Typical elevation range: 2,903 to 10,006 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Agrostis humilis Mountain bent grass	--	--	2B.3	The mountain bent grass is found in alpine boulder and rock fields, meadows and seeps, subalpine forests and sometimes on calcareous substrates. Typical blooming period: July to September Typical elevation range: 5,000 to 11,200 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Angelica callii Call's angelica	--	--	4.3	Call's angelica is found in cismontane woodlands, lower montane coniferous forest, along creek borders. Typical blooming period: June to July Typical elevation range: 3,608 to 6,561 feet	A	The BSA is substantially outside of the known elevation range for this species; therefore, it is not expected to be in the BSA. In addition, it was not observed during the biological surveys, which was conducted during the typical blooming period for this species.
Botrychium minganense Mingan moonwort	--	--	2B.2	The Mingan moonwort is a perennial rhizomatous herb found on creekbanks in lower montane	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition,

				coniferous forest, upper montane coniferous forest, bogs, and fens. Typical blooming period: July to September Typical elevation range: 4,774 to 7,152 feet		this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Brodiaea insignis Kaweah brodiaea	--	SE	1B.2	The Kaweah brodiaea is a perennial bulbiferous herb found in foothill woodland, meadows, and seeps, and valley and foothill grassland. This species is often found in granitic or clay soils. Known occurrences are in the foothills of the Tulare basin. Typical blooming period: April to June Typical elevation range: 492 to 4,593 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Bruchia bolanderi Bolander's bruchia	--	--	4.2	Bolander's bruchia is found in lower montane coniferous forests, meadows, seeps, and upper montane coniferous forests. Seems to colonize bare soil along streambanks, meadows, fens, and springs. This species has an ephemeral nature and is disturbance adapted. Typically blooming period: N/A Typical elevation range: 5,282 to 10,958 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Calochortus westonii Shirley Meadows star-tulip	--	--	1B.2	The Shirley Meadows star-tulip is a perennial bulbiferous herb found in broad-leafed upland forest, lower montane coniferous forest, and meadows and seeps. Typical blooming period: May to June	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.

				Typical elevation range: 4,920 to 6,906 feet		
Calystegia malacophylla var. *berryi* Berry's morning-glory	--	--	3.3	The Berry's morning-glory is a perennial rhizomatous herb found in chaparral and lower montane coniferous forest habitats. Typical blooming period: July to August Typical elevation range: 2,001 to 8,005 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Carlquistia muirii Muir's tarplant	--	--	1B.3	The Muir's tarplant is a perennial rhizomatous herb found in chaparral (montane) and lower and upper montane coniferous forest habitats. Typical blooming period: July to October Typical elevation range: 3,608 to 8,202 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Cinna bolanderi Bolander's woodreed	--	--	1B.2	The Bolander's woodreed is a perennial herb found in meadows and seeps and upper montane coniferous forest in mesic, streamsides. Typical blooming period: July to September Typical elevation range: 5,479 to 8,005 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Clarkia springvillensis Springville clarkia	FT	SE	1B.2	The Springville clarkia is an annual herb found in chaparral, cismontane woodland, and valley and foothill grassland habitats. According to the USFWS 5-year review (USFWS, 2009), the known range of this species lies entirely near Springville along the	A	The BSA is outside of the known range for this species; therefore, it is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species. The project would have no effect on this species.

				Tule River drainage, which is within a separate watershed from the BSA. There are 18 recorded occurrences of this species in the CNDDB database, 17 of which are near Springville. The other recorded occurrence is near Three Rivers, but this in stated to be a misidentification in the 5-year review. Typical blooming period: April to July Typical elevation range: 803 to 4,002 feet		
Claytonia palustris Marsh claytonia	--	--	4.3	Marsh claytonia is found is meadows, seeps, marshes, swamps, upper montane coniferous forest. Sunny areas in meadows, marshy slopes, and streamside veg. Typical blooming period: May to October Typical elevation range: 3,280 to 8,202 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Claytonia parviflora ssp. *grandiflora* Streambank spring beauty	--	--	4.2	Streambank spring beauty is found in cismontane woodlands and pine/blue oak woodlands in the Sierra foothills. Typical blooming period: February to May Typical elevation range: 820 to 3,937 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Cryptantha circumscissa var. *rosulata* Rosette cushion	--	--	1B.2	The rosette cushion cryptantha is an annual herb found in Alpine boulder and rock fields and subalpine coniferous forest habitats.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were

cryptantha				Typical blooming period: July to August Typical elevation range: 9,678 to 12,007 feet		conducted during the typical blooming period for this species.
Cuscuta jepsonii Jepson's dodder	--	--	1B.2	The Jepson's dodder is an annual vine (parasitic) found in North Coast coniferous forest habitats. Typical blooming period: July to September Typical elevation range: 3,937 to 7,545 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Delphinium purpusii Rose-flowered larkspur	--	--	1B.3	The rose-flowered larkspur is a perennial herb found in chaparral, cismontane woodland, and pinyon and juniper woodland habitats. This species is often found in rocky, often carbonate soils. Typical blooming period: March to May Typical elevation range: 984 to 4,396 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Dicentra nevadensis Tulare County bleeding heart	--	--	4.3	Tulare County bleeding heart is found in subalpine coniferous forest, alpine boulder, and rock field in gravelly openings. Typical blooming period: June to August Typical elevation range: 7,217 to 10,006 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Diplacus pictus Calico monkeyflower	--	--	1B.2	The calico monkeyflower is an annual herb found in broadleaved upland forests, cismontane woodlands, disturbed areas, and found in granitic areas. Typical blooming period: March to	HP	There is cismontane woodland habitat and disturbed areas; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

				May Typical elevation range: 328 to 4,691 feet		
Dudleya cymosa ssp. *costatifolia* Pierpoint Springs dudleya	--	--	1B.2	The Pierpoint Springs dudleya is a perennial herb found in chaparral and cismontane woodlands in carbonate soils. Typical blooming period: May to July Typical elevation range: 4,708 to 5,249 feet	A	The BSA is substantially outside of the known elevation range for this species; therefore, it is not expected to be in the BSA. In addition, it was not observed during the biological surveys, which was conducted during the typical blooming period for this species.
Eriogonum nudum var. *murinum* Mouse buckwheat	--	--	1B.2	The mouse buckwheat is a perennial herb found in chaparral, cismontane woodlands, and valley and foothill grassland habitats in sandy soils. Typical blooming period: June to November Typical elevation range: 1,197 to 3,707 feet	HP	There are cismontane woodland and non-native grassland habitats; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Eryngium spinosepalum Spiny-sepaled button-celery	--	--	1B.2	The spiny-sepaled button-celery is an annual/perennial herb found in vernal pools and valley and foothill grassland. This species may be found in some sites on clay soil of granitic origin. Typical blooming period: April to June Typical elevation range: 262 to 837 feet	A	The BSA is substantially outside of the known elevation range for this species; therefore, it is not expected to be in the BSA. In addition, it was not observed during the biological surveys, which was conducted during the typical blooming period for this species.
Erythranthe acutidens Kings River monkeyflower	--	--	3	The Kings River monkeyflower is found in moist places in cismontane woodlands and lower montane coniferous forests. Typical blooming period: April to	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the

				July Typical elevation range: 1,000 to 4,002 feet		BSA.
Erythranthe grayi Gray's monkeyflower	--	--	4.3	The Gray's monkeyflower is found in lower montane coniferous forests, upper montane coniferous forests, in moist places, sandy soil, often along streams. Typical blooming period: May to July Typical elevation range: 1,804 to 9,514 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Erythranthe inconspicua Small-flowered monkeyflower	--	--	4.3	The small-flowered monkeyflower is found in cismontane woodland, lower montane coniferous forest, and chaparral in moist or shaded places. Typical blooming period: May to June Typical elevation range: 900 to 2,493 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Erythranthe laciniata Cut-leaved monkeyflower	--	--	4.3	The cut-leaved monkeyflower is found in lower montane coniferous forests, upper montane coniferous forests, and chaparral in decomposed granite, wet, and sandy places. Typical blooming period: April to July Typical elevation range: 1,600 to 8,690 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Erythranthe norrisii Kaweah monkeyflower	--	--	1B.3	The Kaweah monkeyflower is an annual herb found in chaparral and cismontane woodlands. This species is found in carbonate and	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical

				rocky areas. Typical blooming period: March to May Typical elevation range: 1,198 to 4,265 feet		blooming period for this species, there is potential for this species to be in the BSA.
Erythranthe sierrae Sierra Nevada monkeyflower	--	--	4.2	The Sierra Nevada monkeyflower is found in cismontane woodlands, lower montane coniferous forest, meadows, and sweeps. This species is found primarily in decomposed granite in vernally wet depressions, swales, at the edges of streams, dry meadows, and in openings of pine forest and oak woodland in sandy to gravelly soils. Typical blooming period: March to July Typical elevation range: 600 to 7,496 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Erythronium pusaterii Kaweah fawn lily	--	--	1B.3	The Kaweah fawn lily is a perennial bulbiferous herb found in meadows and seeps and subalpine coniferous forest in granitic or metamorphic soils. Typical blooming period: May to July Typical elevation range: 6,889 to 9,104 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Fritillaria brandegeei Greenhorn fritillary	--	--	1B.3	The greenhorn fritillary is a perennial bulbiferous herb found in lower montane coniferous forest in granitic soils. Typical blooming period: April to June Typical elevation range: 4,363 to	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.

				6,889 feet		
Fritillaria pinetorum Pine fritillary	--	--	4.3	The pine fritillary is found in chaparral, lower montane coniferous forest, pinyon-juniper woodland, subalpine coniferous forest, and upper montane coniferous forest. Typical blooming period: May to July Typical elevation range: 5.962 to 10,824 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Fritillaria striata Striped adobe-lily	--	ST	1B.1	The striped adobe-lily is a perennial bulbiferous herb found in cismontane woodland and valley and foothill grassland habitats. This species is usually found in clay soils. Known occurrences are only in foothills on adobe clay soils. Apparently more or less edaphically restricted to these distinctive clay soils, which are found on limited scattered sites within the species' generalized range (possibly as a remnant from uplifted metamorphic deposits which was not eroded away). Typical blooming period: February to April Typical elevation range: 442 to 4,773 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Glyceria grandis American manna grass	--	--	2B.3	The American manna grass is a perennial rhizomatous herb found in bogs and ferns, meadows and seeps, and marshes and swamps (streambanks and lake margins). Typical blooming period: June to	HP	There are streambanks; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

				August Typical elevation range: 49 to 6,496 feet		
Greeneocharis circumscissa var. *rosulata* Rosette cushion cryptantha	--	--	1B.2	The rosette cushion cryptantha is an annual herb found in subalpine coniferous forests and alpine boulder and rock fields. This species is found in gravelly and granitic sites. Typical blooming period: July to August Typical elevation range: 9,678 to 12,008 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Hosackia oblongifolia var. *cuprea* Copper-flowered bird's-foot trefoil	--	--	1B.3	The copper-flowered bird's-foot trefoil is a perennial rhizomatous herb found in meadows and seeps (edges) and upper montane coniferous forest. Typical blooming period: June to August Typical elevation range: 7,874 to 9,022 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Iris munzii Munz's iris	--	--	1B.3	The Munz's iris is a perennial rhizomatous herb found in cismontane woodland. Typical blooming period: March to May Typical elevation range: 1,000 to 2,624 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Ivesia campestris Field ivesia	--	--	1B.2	The field ivesia is a perennial herb found in meadows and seeps (edges), subalpine coniferous forest, and upper montane coniferous forest. Typical blooming period: June to	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.

				August Typical elevation range: 6,479 to 11,138 feet		
Jensia yosemitana Yosemite tarplant	--	--	3.2	The Yosemite tarplant is found in meadows, seeps, and lower montane coniferous forest. Typical blooming period: May to July Typical elevation range: 3,937 to 7,545 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Leptosiphon oblanceolatus Sierra Nevada leptosiphon	--	--	4.3	The Sierra Nevada leptosiphon is found in subalpine coniferous forests and mountain flats near meadows and lakes. Typical blooming period: July to August Typical elevation range: 9,200 to 12,100 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Leptosiphon serrulatus Madera leptosiphon	--	--	1B.2	The Madera leptosiphon is an annual herb found in cismontane woodland and lower montane coniferous forest habitats. Typical blooming period: April to May Typical elevation range: 984 to 4,265 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Lupinus lepidus var. *culbertsonii* Hockett Meadows lupine	--	--	1B.3	The Hockett Meadows lupine is a perennial herb found in meadows and seeps and upper montane coniferous forest (mesic, rocky). Typical blooming period: July to August Typical elevation range: 8,005 to 9,842 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Meesia triquetra	--	--	4.2	The three-ranked hump moss is	A	The habitat preferred by this species is

Three-ranked hump moss				found in bogs and fens, meadows and seeps, subalpine coniferous forest, and upper montane coniferous forest (mesic). Typical blooming period: July Typical elevation range: 4,265 to 9,688 feet		absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Mielichhoferia elongata Elongate copper moss	--	--	4.3	The elongate copper moss is found in broad-leafed upland forest, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, and subalpine coniferous forest. Typical elevation range: Zero to 6,430 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, there is potential for this species to be in the BSA.
Oreonana purpurascens Purple mountain-parsley	--	--	1B.2	The purple mountain-parsley is a perennial herb found in broadleaved upland forest, subalpine coniferous forest, and upper montane coniferous forest. This species is usually found in metamorphic soils. Typical blooming period: May to June Typical elevation range: 7,857 to 9,399 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Orthotrichum holzingeri Holzinger's orthotrichum moss	--	--	1B.3	The Holzinger's orthortrichum moss is found in cismontane woodland, lower montane coniferous forest, pinyon and juniper woodland, and upper montane coniferous forest habitats. This species is usually on rock in and along streams and rarely on tree limbs. Typical elevation range: 2,345 to	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

				5,905 feet		
Pseudobahia peirsonii San Joaquin adobe sunburst	FT	SE	1B.1	The San Joaquin adobe sunburst in an annual herb found in cismontane woodland and valley and foothill grasslands habitats in adobe clay soils. Typical blooming period: February to April Typical elevation range: 295 to 2,624 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species. The project would have no effect on this species.
Ribes menziesii var. *ixoderme* Aromatic canyon gooseberry	--	--	1B.2	The aromatic canyon gooseberry is a perennial deciduous shrub found in chaparral and cismontane woodland habitats. Typical blooming period: April Typical elevation range: 2,001 to 3,805 feet	HP	There is cismontane woodland habitat; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.
Ribes tularense Sequoia gooseberry	--	--	1B.3	The Sequoia gooseberry is a perennial deciduous shrub found in lower and upper montane coniferous forest. Typical blooming period: May Typical elevation range: 4,921 to 6,807 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Silene aperta Tulare campion	--	--	4.3	The Tulare campion is found in lower montane coniferous forests, subalpine coniferous forest, and upper montane coniferous forest. Typical blooming period: July to August Typical elevation range: 5,905 to 9,826 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Trichodon cylindricus Cylindrical trichodon	--	--	2B.2	The cylindrical trichodon is a moss found in broadleaved upland forest, meadows and	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition,

				seeps, and upper montane coniferous forest in sandy, exposed soils and on road banks. Typical elevation range: 164 to 6,568 feet		this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Viola pinetorum ssp. *grisea* *Grey-leaved violet*	--	--	1B.3	Grey-leaved violets are found in subalpine coniferous forests, upper montane coniferous forests, meadows, and seeps. Typical blooming period: April to July Typical elevation range: 4,000 to 11,000 feet	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. In addition, this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species.
Invertebrates						
Bombus caliginosus Obscure bumble bee	--	S1S2		The obscure bumble bee inhabits open grassy coastal prairies and coast range meadows. This species nests underground as well as above ground in abandoned bird nests. This species is classified as a medium long-tongued species, whose food plants include *Ceanothus*, *Cirsium*, *Clarkia*, *Keckiella*, *Lathyrus*, *Lotus*, *Lupinus*, *Rhododendron*, *Rubus*, *Trifolium*, and *Vaccinium*.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Bombus crotchii Crotch bumble bee	--	S1S2		The Crotch bumble bee is found in open grassland and scrub habitats in coastal California east to the Sierra-Cascade crest and south into Mexico. This species nests underground in abandoned rodent burrows. Food plant genera for the Crotch bumblebee include *Antirrhinum* sp., *Phacelia sp.*, *Clarkia* sp., *Dendromecon* sp., *Eschscholzia* sp., and	HP	There is non-native grassland habitat and suitable plant genera; therefore, there is potential for this species to be in the BSA.

			Eriogonum sp.		
Bombus occidentalis Western bumble bee	--	S1	The western bumble bee is a generalist forager and does not depend on one flower type. This species was once common and widespread within northwest America, but has declined precipitously perhaps from disease.	HP	There are suitable plant genera; therefore, there is potential for this species to be in the BSA.
Calicina cloughensis Clough Cave harvestman	--	S1	The Clough cave harvestman is found in limestone caves.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Cryptochia denningi Denning's cryptic caddisfly	--	S1S2	The Denning's cryptic caddisfly is found in riverine habitats in small, cool, streams. Larvae are often found above the water surface on damp wood or in wet leaves at the water's edge.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	FT	S2	The valley elderberry longhorn beetle is found only in the Central Valley of California, in association with blue elderberry (*Sambucus Mexicana* ssp. *caerulea*). This species prefers to lay eggs in elderberries two to eight inches in diameter; some preference is shown for "stressed" elderberries.	A	The BSA is outside of the known range for this species; therefore, this species is not expected to be in the BSA. The project would have no effect on this species.
Lytta moesta Moestan blister beetle	--	S2	The moestan blister beetle inhabits the valley and foothill grassland habitat in Central Valley, from Contra Costa County to Kern and Tulare counties.	HP	There is non-native grassland habitat; therefore, there is potential for this species to be in the BSA.
Lytta morrisoni Morrison's blister beetle	--	S1S2	The Morrison's blister beetle is found in the southern Central Valley in valley and foothill grassland habitats.	HP	There is non-native grassland habitat; therefore, there is potential for this species to be in the BSA.

Mollusks					
Bowmanasellus sequoia Sequoia cave isopod	--	S1	The Sequoia cave isopod is found in aquatic habitats in caves.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Branchinecta lynchi Vernal pool fairy shrimp	FT	S3	The vernal pool fairy shrimp is endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, found in astatic rain-filled pools. This species inhabits small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. The project would have no effect on this species.
Fish					
Hypomesus transpacificus Delta smelt	FT	SE	The Delta smelt is found in the Sacramento-San Joaquin Delta. This species is found seasonally in Suisun Bay, Carquinez Strait, and San Pablo Bay. The Delta smelt is most often found at salinities less than two parts per thousand and seldom at salinities greater than 10 parts per thousand.	A	The BSA is outside of the known range for this species; therefore, this species is not expected to be in the BSA. The project would have no effect on this species.
Amphibians					
Batrachoseps altasierrae Greenhorn Mountains slender salamander	--	S3S4	The Greenhorn Mountains slender salamander is found in mixed coniferous forest habitat at high elevations in the southern Sierra Nevada mountains from the northern side of the Lower Kern River to the Tule River and upper portions of the Little Kern River. This species is also found	A	The habitat preferred by this species is not in the BSA; therefore, this species is not expected to be in the BSA.

			on the western edge of the Kern Plateau. The Greenhorn Mountains slender salamander is found under leaf litter, rocks, logs, and debris, especially in spring and seep areas.		
Batrachoseps kawia Sequoia slender salamander	--	S2	The Sequoia slender salamander is found in damp areas shaded by oaks, sycamore, white alder, buckeye, cottonwood, and redbud, riparian woodlands, and mixed coniferous forests in the western Sierras. It is known only from the Kaweah River drainage in Tulare County.	HP	There is oak woodland habitat; therefore, there is potential for this species to be in the BSA.
Batrachoseps regius Kings River slender salamander	--	S2S3	The Kings River slender salamander is found in mixed chaparral habitat with buckeye, laurel, canyon oak, blue oak, ponderosa pine, and lowland pine and is often found under rocks.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Batrachoseps relictus Relictual slender salamander	--	SSC	The relictual slender salamander is found in heavily forested areas with oaks and pines. This species is found the edge of seepages and springs in rocky areas.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Hydromantes platycephalus Mount Lyell salamander	--	WL	The Mount Lyell salamander can be found in Great Basin scrub, meadows, seeps, subalpine coniferous forests, upper montane coniferous forests, and wetlands, massive rock areas in mixed conifer, red fir, lodgepole pine, and subalpine habitats.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Rana boylii Foothill yellow-legged frog	--	Candidate Threatened	The foothill yellow-legged frog is found in partly shaded, shallow streams and riffles with rocky	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.

			substrate in a variety of habitats. This species requires cobble-sized substrate for egg-laying and needs at least 15 weeks to attain metamorphosis.		
Rana draytonii California red-legged frog	FT	SSC	The California red-legged frog is found in lowlands and foothills in or near permanent sources of deep water with dense, shrubby, or emergent riparian vegetation. Suitable habitat includes freshwater ponds or streams with calm stable water, and good water quality. Seasonal water for egg laying, hatching, and metamorphosis has to last for three to five months.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. The project would have no effect on this species.
Rana muscosa Southern mountain yellow-legged frog	FE	SE	The southern mountain yellow-legged frog (southern DPS) is found in rocky streams in narrow canyons and in chaparral habitat in the San Gabriel, San Jacinto, and San Bernardino Mountains. This species is always encountered within a few feet of water. Tadpoles may require two to four years to complete their aquatic development. This species historically inhabited lakes, ponds, marshes, meadows, and streams at elevations typically ranging from about 4,500 to 12,000 feet, but may be found as low as 3,500 feet in the northern portions of its range.	A	The habitat preferred by this species is absent. The BSA is below the elevation range where this species is generally found. In addition, the flow in river in BSA appears to be strong, and not favorable for this species. There are also rainbow trout in the river, which are predators of the southern mountain yellow-legged frog. Therefore, this species is not expected to be in the BSA. The project would have no effect on this species.
Taricha torosa Coast range newt	--	SSC	The coast range newt is found primarily in coastal drainages from Mendocino County to San	HP	There are oak woodland and non-native grassland habitats, and a river for breeding; therefore, there is potential for

			Diego County. This species nests along margins of bushes or on twigs projecting into pathways, usually willow, *Baccharis* sp., and mesquite in wet forests, oak forests, chaparral, and grasslands. Breeding takes place in ponds, reservoirs, and streams. Terrestrial individuals will migrate up to 0.25 mile to upland habitat.		this species to be in the BSA. In addition, unidentified newts were observed along Mineral King Road during surveys in April 2014.
Reptiles					
Anniella pulchra Northern California legless lizard	--	SSC	Legless lizards are found in suitable habitats in the Coast Ranges from Antioch in Contra Costa County south to the Mexican border. This species is less common in the rest of their range, which includes the floor of the San Joaquin Valley from San Joaquin County south, the west slope of the southern Sierras, the Tehachapi Mountains west of the desert, and the mountains of southern California. This species is found primarily in areas with sandy or loose organic soils or where there is plenty of leaf litter. This lizard usually forages at the base of shrubs or other vegetation either on the surface or just below it in leaf litter or sandy soil. Legless lizards eat insect larvae, small adult insects, and spiders.	HP	There is oak woodland habitat with sandy soils and leaf litter; therefore, there is potential for this species to be in the BSA.
Emys marmorata Western pond turtle	--	SSC	The western pond turtle is found in slow moving rivers, streams, lakes, ponds, wetlands, reservoirs, and brackish estuarine waters. This species prefers	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.

			areas that provide logs, algae, or vegetation for cover, and boulders, partially submerged logs, vegetation mats, or open mud banks for basking, and is typically found below 6,000 feet elevation.		
Phrynosoma blainvillii Coast horned lizard	--	S3S4	The coast horned lizard is found in open areas of sandy soil and low vegetation in valleys, foothills, and semiarid mountains. This species is also found in grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose soil. Preferred plant species are either chaparral or a chaparral/coastal sage scrub mix with bare ground coverage averaging 20 to 40 percent. California buckwheat (*Eriogonum fasiculatum*) is considered to be a primary indicator species for favorable soil and climatic conditions. Key habitat elements for this species are the presence of loose, fine soils, with a high sand content; an abundance of native ants; open areas for basking; and areas with low dense shrubs for refuge.	HP	There is woodland habitat with sandy soils; therefore, there is potential for this species to be in the BSA.
Birds					
Accipiter gentilis Northern goshawk	--	SSC	The northern goshawk is found within, and near, coniferous forest. This species uses old nests, and maintains alternate sites, usually nesting on north slopes, near water. Red fir,	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.

			lodgepole pine, Jeffrey pine, and aspens are typical nest trees.		
Aquila chrysaetos Golden eagle	--	FP	The golden eagle is found in open and semi-open country with native vegetation and primarily found in mountains, canyons, and riverside cliffs and bluffs. This species avoids developed areas and uninterrupted stretches of forest. Cliff-walled canyons and large trees provide nesting habitat in most parts of their range.	HP (Nesting) HP (Foraging)	There are large trees for nesting and open areas and grassland for foraging; therefore, there is potential for this species to nest and forage in the BSA.
Ardea herodias Great blue heron	--	S4	The great blue heron nests colonially in tall trees, cliff sides, and sequestered spots on marshes. This species forages in marshes, lake margins, tide flats, rivers, streams, and wet meadows. The rookery sites are in close proximity to foraging areas.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Centrocercus urophasianus Greater sage-grouse	--	SSC	The greater sage-grouse is found in the northeastern, Great Basin portion of the state. Restricted to flat/rolling terrain vegetated by sage-brush, upon which it depends for both food and shelter.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Cypseloides niger Black swift	--	SSC	The black swift is found in the coastal belt of Santa Cruz and Monterey County, Central and Southern Sierra Nevada Mountains, San Bernardino Mountains, and the San Jacinto Mountains. This species breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and on sea-bluffs above	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.

			the surf.		
Gymnogyps californianus California condor	FE	SE	The California condor has been reintroduced to mountains of southern and central California, Arizona, Utah, and Baja California. Nesting habitats range from scrubby chaparral to forested mountain regions up to about 6,000 feet elevation. Condors live in rocky shrubland, coniferous forests, and oak savannas. Foraging areas are in open grasslands and can be far from primary nesting sites.	A (Nesting) HP (Foraging)	The nesting habitat preferred by this species is absent from the BSA; however, there is non-native grassland for foraging. Therefore, this species is not expected to nest in the BSA, but may forage in the BSA. The project would have no effect on this species.
Haliaeetus leucocephalus Bald eagle	FD	SE	The bald eagle is found in old growth lower montane coniferous forest along ocean shore, lake margins, and rivers for both nesting and wintering. Most nests are within one mile of water. This species nests in large, old-growth, or dominant live trees with open branches, especially ponderosa pine. The bald eagle roosts communally in winter. The nearest bald eagle occurrences were at Bravo Lake in Woodlake, CA and at Lake Kaweah, which are 10 miles and 5 miles away respectively. Therefore, this species is not expected to be in the BSA.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Melanerpes lewis Lewis' woodpecker	--	S4	The Lewis' Woodpecker requires open habitat with scattered or edge trees. Large open areas are necessary for foraging. Trees are used as hawking perches and for nesting. Large-diameter trees,	HP (Nesting) HP (Foraging)	There are woodlands for nesting and open areas and grassland for foraging; therefore, there is potential for this species to nest and forage in the BSA.

			either living, with partial decay, or dead, with more advanced decay, are especially valuable for nest sites. A diverse ground cover of low shrubs, grasses, and herbaceous plants that produce berries or provide habitat for insects is an important habitat component. Three distinct habitats are used by the species: open forest or grassland with scattered trees, riparian forests adjacent to open areas, and burns.		
Pica nuttalli Yellow-billed magpie	--	S3S4	The yellow-billed magpie is colony bird found in open oak woodlands of central and southern California. This species nests are made primarily of sticks and mud, which are high up in large trees.	A	The BSA is outside of the known range for this species; therefore, this species is not expected to be in the BSA.
Sphyrapicus ruber Red-breasted sapsucker	--	S4	The red-breasted sapsucker is found in mixed coniferous and mixed deciduous-coniferous forests and woodlands. This species requires snags or hollow tree cavities for nesting. They can also be found in riparian habitats with large cottonwoods.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Strix nebulosa Great gray owl	--	SE	The great gray owl is found in mixed conifer or red fir forest habitat, in or on the edge of meadows. This species requires large diameter snags in a forest with high canopy closure, which provide a cool sub-canopy microclimate.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Strix occidentalis	--	SSC	The California spotted owl is	A	The habitat preferred by this species is

occidentalis California spotted owl			found in the Sierra Nevada Mountains, the mountains of central coastal California, and the peninsular and Transverse Ranges of southern California. Spotted owls are territorial and exhibit strong fidelity to their territory. This species is found in mature forests and nest in cavities, broken tree tops, and occasionally on nests of other species, or in mistletoe.		absent; therefore, this species is not expected to be in the BSA.
Mammals					
Antrozous pallidus Pallid bat	--	SSC	The pallid bat is found year around in a variety of low-elevation habitats in most areas of California, including grasslands, shrub lands, woodlands and forests. This species is thought to prefer open, dry habitats with rocky areas for roosting. The pallid bat day roosts in caves, crevices, mines, and hollow trees, buildings, and bridges, and night roosts in more open sites, such as porches, open buildings and bridges. Roosts must protect bats from high temperatures, and this species will move deeper into cover if temperatures rise. The pallid bat is highly sensitive to disturbance.	HP	There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.
Aplodontia rufa californica Sierra Nevada mountain beaver	--	SSC	The Sierra Nevada mountain beaver is found in dense growth of small deciduous trees and shrubs, wet soil, and abundance of forbs in the Sierra Nevada and	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.

			east slope. This species requires dense understory for food and cover. The Sierra Nevada mountain beaver burrows into soft soil and needs an abundant supply of water.		
Corynorhinus townsendii Townsend's big-eared bat	--	SSC	The Townsend's big-eared bat is found in a variety of habitat types, including coniferous forests, deserts, native prairies, riparian communities, agricultural areas, and coastal habitats. It is thought to be most abundant in mesic habitats. This species roosts in caves and cave-like structures, such as exposed cavity-forming rock and mines. This species will also roost in human structures such as attics and barns, and has been found on occasion in bridges. Townsend's big-eared bats prefer to roost in large rooms and do not use crevices. The Townsend's big-eared bat is extremely sensitive to human disturbance, and is thought to be uncommon in California.	HP	There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.
Euderma maculatum Spotted bat	--	SSC	The spotted bat occupies a wide variety of habitats from arid deserts and grasslands through mixed conifer forests in eastern and southern California. This species feeds over water and along washes, feeding almost entirely on moths. The spotted bat typically roosts in rock crevices in cliffs or caves. This species has not been documented in bridges,	HP	There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

			but some potential exists for roosting in this type of structure.		
Eumops perotis californicus Western mastiff bat	--	SSC	The western mastiff bat is found in many open, semi-arid, and arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban areas. This species roosts in crevices on high vertical cliffs or surfaces (including buildings), trees, or tunnels. Because of their large size, they typically require a larger drop distance from roosting sites.	HP	There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.
Gulo gulo California wolverine	Proposed Threatened	Threatened	The California wolverine is found in the north coast mountains and the Sierra Nevada and may occur in a wide variety of high elevation habitats. This species requires a water source and uses caves, logs, and burrows for cover and den area. The California wolverine hunts in more open areas and can travel long distances.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. The project would have no effect on this species.
Myotis ciliolabrum Western small-footed myotis	--	S3	The western small-footed myotis is found mostly in arid wooded and brushy uplands near water. This species seeks cover in caves, buildings, mines, and crevices, and prefers open stands in forests and woodlands.	HP	There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.
Myotis evotis Long-eared myotis	--	S3	The long-eared myotis is found in all brush, woodland, and forest habitats from sea level to about 9,000 feet. This species prefers coniferous woodlands and	HP	There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this

			forests. Nursery colonies may be located in buildings, crevices, spaces under bark, and snags. Caves are used primarily as night roosts.		species to be in the BSA.
Myotis thysanodes Fringed myotis	--	S3	The fringed myotis is found in a wide variety of habitats. Optimal habitats are pinyon-juniper, valley foothill hardwood, and hardwood-conifer. This species uses caves, mines, buildings, or crevices for maternity colonies and roosts.	HP	There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.
Ochotona princeps schisticeps Gray-headed pika	--	S2S4	The gray-headed pika is found in mountainous areas, generally at higher elevations, often above the treeline up to the limit of vegetation. This species may be found on talus slopes, occasionally on mine tailings. It prefers talus-meadow interface. At lower elevations it is found in rocky areas within forests or near lakes.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA.
Pekania pennanti Fisher – West Coast DPS	--	Candidate Threatened	The fisher inhabits intermediate to large-tree stages of coniferous forests and deciduous-riparian areas with a high percent canopy closure. This species uses cavities, snags, logs, and rocky areas for cover and denning. The fisher requires large areas of mature, dense forest.	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. The project would have no effect on this species.
Vulpes vulpes necator Sierra Nevada red fox	Candidate	ST	Historically found from the Cascades down to the Sierra Nevada, the Sierra Nevada red fox is found in a variety of habitats from wet meadows to forested areas. This species uses dense	A	The habitat preferred by this species is absent; therefore, this species is not expected to be in the BSA. The project would have no effect on this species.

			vegetation and rocky areas for cover and den sites and prefers forests interspersed with meadows or alpine fell-fields.		
Natural Communities					
Big Tree Forest	S3.2 = threatened (10,000 to 50,000 acres)		Big Tree Forest is a lower montane coniferous forest community. Elevation range: 3,280 to 8,000 feet	A	There are no coniferous trees in the BSA; therefore, the Big Tree Forest community is absent from the BSA.
Central Valley Drainage Hardhead/Squawfish Stream	SNR		Central Valley Drainage Hardhead/Squawfish Stream communities are perennial low to med-elevation streams with deep bedrock pools, low temperatures, and clear water. Elevation range: 750 to 2,960 feet	A	There are no deep bedrock pools in the BSA; therefore, the Central Valley Drainage Hardhead/Squawfish Stream community is absent from the BSA.

Table Key: Absent [A] - no habitat present and no further work needed. Habitat Present [HP] -habitat is, or may be present. The species may be present. Present [P] - the species is present. Status: Federal Endangered (FE); Federal Threatened (FT); State Endangered (SE); State Threatened (ST); Fully Protected (FP); Federally Delisted (FD); Watch List (WL); State Species of Special Concern (SSC); California Native Plant Society (CNPS), etc. 1A = Plants presumed extirpated in California and either rare, or extinct elsewhere;1B= Plant species that are rare, threatened, or endangered in California and elsewhere; 2B= Plant species that are rare, threatened, or endangered in California, but are more common elsewhere; 3= Plants about which we need more information; 4 = Plants of limited distribution;0.1=seriously threatened in California; 0.2 = moderately threatened in California; 0.3 = Not very threatened in California; S1 = critically imperiled, less than 1,000 individuals; S2 = imperiled, 1,000 to 3,000 individuals; S3 = vulnerable, 3,000 to 10,000 individuals; S4 = apparently secure within California, there is narrow habitat.

**Information for the habitat requirements was obtained from CNPS Rare and Endangered Plant Inventory, developed and maintained by the CNPS Rare Plant Program; the California Natural Diversity Database species habitat descriptions, updated and maintained by the CDFW; California Herps online database; Cornell Lab of Ornithology All About Birds; Audubon Guide to North American Birds; iNaturalist.org, and Preliminary Descriptions of the Terrestrial Natural Communities of California by Robert F. Holland (1986) were consulted during preparation of the species table and area listed in the references.*

3.2.2 SPECIAL-STATUS PLANTS

According to the CNDDB and USFWS search, 51 special-status plant species have the potential to be in the BSA based on recorded geographical distribution. Based on habitat requirements and survey results, 14 special-status plant species have the potential to be in the BSA, and are discussed further in Chapter 4. California Native Plant Society status rankings of these species include:

- 1B: Rare, threatened, or endangered in California and elsewhere;
- 2B: Rare, threatened, or endangered in California, but more common elsewhere;
- 3: Plants about which we need more information;
- 4: Plants of limited distribution;
- 0.2: Moderately threatened in California; and
- 0.3: Not very threatened in California.

A full species list with a discussion of the potential for each species to be within the BSA is in **Table 1**.

3.2.3 SPECIAL-STATUS ANIMALS

According to the CNDDB and USFWS searches, 47 special-status animal species have the potential to be in the BSA based on recorded geographical distribution (see **Appendix A**). Based on habitat requirements and survey results, 18 special-status wildlife species have the potential to be in the BSA, and are discussed further in Chapter 4. Several of these species are listed as threatened or endangered under the FESA or CESA. In addition, CDFW status rankings of these species include:

- S1: Critically imperiled in the state because of extreme rarity or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state
- S2: Imperiled in the state because of rarity because of restricted range, very few populations, steep declines, or other factors making it very vulnerable to extirpation from the nation or state
- S3: Vulnerable in the state because of a restricted range, relatively few populations, recent or widespread declines, or other factors making it vulnerable to extirpation
- S4: Uncommon but not rare; some cause for long-term concern because of declines or other factors
- Species of Special Concern: Extirpated from the state or, in the case of birds, is extirpated in its primary season or breeding role; 2) listed as federally threatened or endangered; meets the state definition of threatened or endangered but not formally listed; 3) is experiencing, or formerly experienced, serious population declines or range retractions that, if continued or resumed, could qualify it for state threatened or endangered status; 4) has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for state threatened or endangered status.
- Fully Protected: Species may not be taken or possessed at any time and no licenses or

permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

No other special-status animal species are expected to be within the BSA. A full species list with a discussion on the potential for each species to be in the BSA is in **Table 1**.

Chapter 4 - RESULTS: BIOLOGICAL RESOURCES, DISCUSSION OF IMPACTS AND MITIGATION

4.1 Habitats and Natural Communities of Special Concern

4.1.1 JURISDICTIONAL FEATURES

Survey Results

United States Army Corps of Engineers

The BSA was evaluated for waters under jurisdiction of the USACE by determining the ordinary high water mark (OHWM) of the river, and determining connectivity of waterways within the BSA to navigable waters. The river is a natural waterway that is expected to fall under USACE jurisdiction. The USACE will have final authority and discretion as to whether this area meets the "significant nexus" criteria required to establish USACE jurisdiction over these waterways.

Regional Water Quality Control Board

The BSA was evaluated for waters under jurisdiction of the RWQCB by delineating the OHWM of the river. The river had surface waters at the time of the surveys; therefore, it is expected to fall under RWQCB jurisdiction.

California Department of Fish and Wildlife

The BSA was evaluated for waters under jurisdiction of the CDFW by delineating the areas within the river channel from the top of bank to top of bank. There was no riparian vegetation outside of the creek banks. The river had a defined bed and bank and supported vegetation at the time of the surveys; therefore, it is expected to fall under CDFW jurisdiction.

Project Impacts

Because the project would include rehabilitation of the existing bridge, there would be no permanent impacts on the river. Project construction would result in temporary impacts on the river, including waters of the U.S. and state (see **Figure 5**). There is year-round water flow in the river; however, work would be conducted outside of the wetted portion of the channel, and a water diversion is not anticipated. Construction activities would be within the OHWM of the river, and would result in temporary impacts on approximately 0.02 acre of waters of under jurisdiction of the USACE (within the OHWM), approximately 0.02 acre of waters under jurisdiction of the RWQCB, and 0.31 acre of waters under jurisdiction of the CDFW. In addition, construction materials, dust, and debris could result in temporary indirect impacts on water quality if they were to enter flowing water within the channel. However, the project would be conducted in compliance with applicable water quality and dust control regulations, and regulatory permits, and with implementation of the proposed avoidance and minimization measures listed below, there would be no adverse impacts on jurisdictional features.

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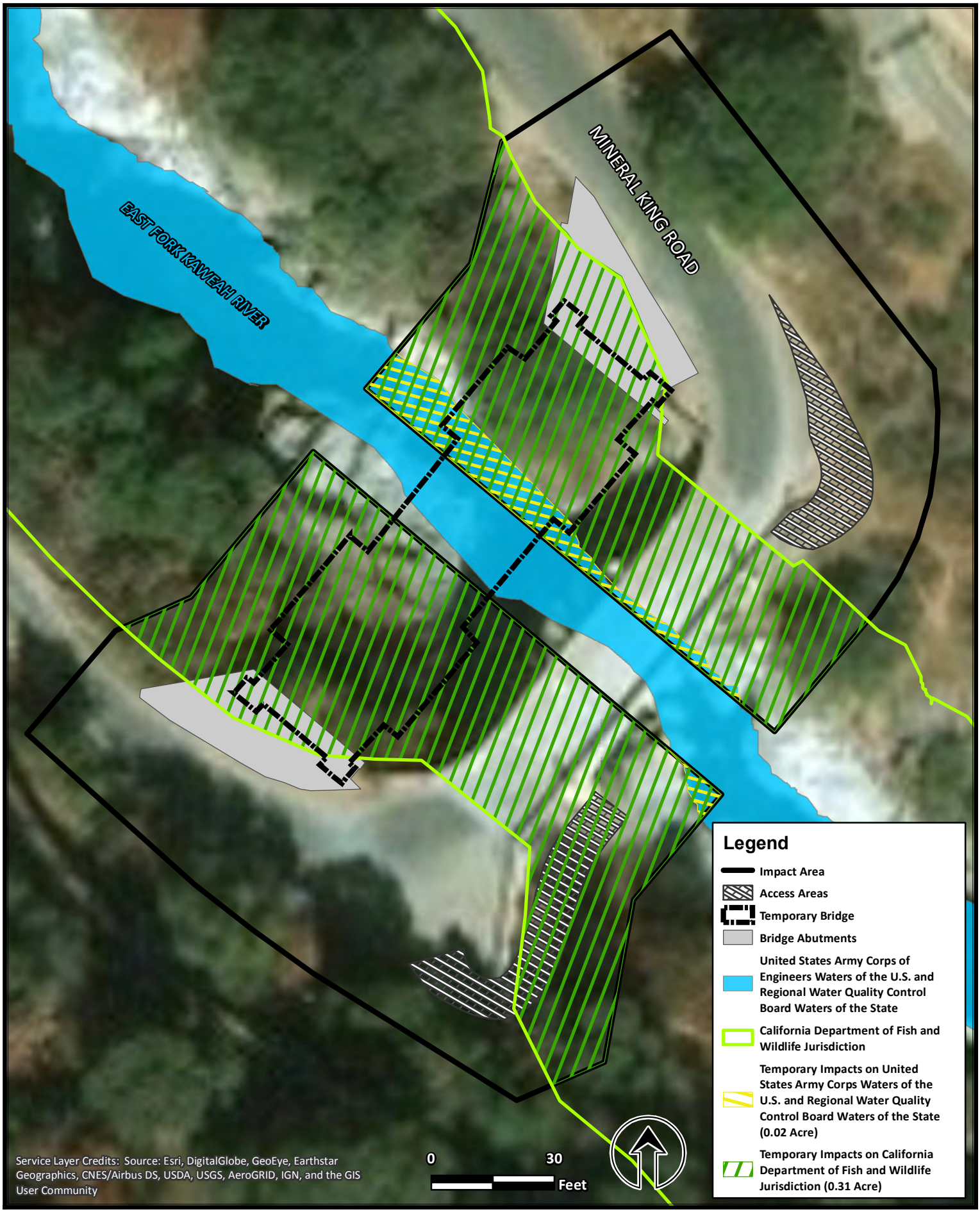


FIGURE 5. IMPACTS MAP
Mineral King Road Bridge Rehabilitation

Avoidance and Minimization Efforts

To avoid and/or minimize potential impacts on jurisdictional features, the following measures would be implemented:

- Work areas would be reduced to the maximum extent feasible, and staging areas would be located away from the river.
- Best management practices (BMP), such as silt fencing, fiber rolls, straw bales, or other measures would be implemented during construction to minimize dust, dirt, and construction debris from entering the river and/or leaving the construction area. Construction would also be in compliance with San Joaquin Valley Air Pollution Control District Regulation VIII – Fugitive Dust, which requires a number of measure to control fugitive dust during construction activities.
- Appropriate hazardous material BMPs would be implemented to reduce the potential for chemical spills or contaminant releases into the river, including any non-stormwater discharge.
- All equipment refueling and maintenance would be conducted in the staging area away from the river. In addition, vehicles and equipment would be checked daily for fluid and fuel leaks, and drip pans would be placed under all equipment that is parked and not in operation.
- Temporarily disturbed areas would be re-contoured and re-vegetated using native species. Any re-vegetation or erosion control implemented would be completed using non-invasive species.

Compensatory Mitigation

With the implementation of avoidance and minimization measures listed above, no adverse impacts on jurisdictional features are anticipated, and no mitigation is proposed.

4.1.2 OAK WOODLANDS

Survey Results

There are two native woodland communities in the BSA, including the *Quercus Douglasii* Woodland Alliance on the edges of Staging Areas 2 and 3, and *Quercus Wislizeni* Woodland Alliance, on both sides of the East Fork Kaweah River near the bridge.

Project Impacts

The project would require some tree and vegetation removal and trimming to allow equipment access, construction of the detour bridge, and rehabilitation of the existing bridge. Equipment use and storage in the staging areas could also result in disturbance of existing vegetation, including removal and trampling. However, with the implementation of the proposed avoidance and minimization measures, and compensatory mitigation discussed below, adverse impacts on oak trees are not anticipated.

Avoidance and Minimization Measures

To avoid and/or minimize impacts on the oak trees, the following measures would be implemented:

- Removal of oak trees would be avoided, if feasible. If avoidance is feasible, protective fencing would be installed beyond the dripline of the tree(s) during construction to prevent construction staff or equipment from entering this area.

Compensatory Mitigation

- Native oak trees measuring six inches in diameter at breast height or greater and requiring removal, will be replaced onsite at a minimum 3:1 ratio.

4.2 Special-Status Plant Species Occurrences

4.2.1 SURVEY RESULTS

Streambank Spring Beauty

The streambank spring beauty (*Claytonia parviflora* ssp. *grandiflora*) is ranked 4.2 by the CNPS. This species is found in cismontane woodlands and pine/blue oak woodlands in the Sierra Nevada foothills. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Rose-flowered Larkspur

The rose-flowered larkspur (*Delphinium purpusii*) is ranked 1B.3 by the CNPS. This species is a perennial herb found in chaparral, cismontane woodland, and pinyon and juniper woodland habitats, and is often found in rocky, often carbonate soils. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Calico Monkeyflower

The calico monkeyflower (*Diplacus pictus*) is ranked 1B.2 by the CNPS. This species is an annual herb found in broadleaved upland forests, cismontane woodlands, disturbed areas, and granitic areas. There is cismontane woodland habitat and disturbed areas in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Mouse Buckwheat

The mouse buckwheat (*Eriogonum nudum* var. *murinum*) is ranked 1B.2 by the CNPS. This species is a perennial herb found in chaparral, cismontane woodland, and valley and foothill grassland habitats in sandy soils. There are cismontane woodland and non-native grassland habitats in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Kings River Monkeyflower

The Kings River monkeyflower (*Erythranthe acutidens*) is ranked 3 by the CNPS. This species is found in moist places in cismontane woodlands and lower montane coniferous forests. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed

during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Small-flowered Monkeyflower

The small-flowered monkeyflower (*Erythranthe inconspicua*) is ranked 4.3 by the CNPS. This species is found in cismontane woodland, lower montane coniferous forest, and chaparral in moist or shaded places. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Kaweah Monkeyflower

The Kaweah monkeyflower (*Erythranthe norrisii*) is ranked 1B.3 by the CNPS. This species is an annual herb found in chaparral and cismontane woodlands. The Kaweah monkeyflower is found in carbonate and rocky areas. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Sierra Nevada Monkeyflower

The Sierra Nevada monkeyflower (*Erythranthe sierra*) is ranked 4.2 by the CNPS. This species is found in cismontane woodlands, lower montane coniferous forest, meadows, and sweeps. The Sierra Nevada monkeyflower is found primarily in decomposed granite in vernally wet depressions, swales, at the edges of streams, dry meadows, and in openings of pine forest and oak woodland in sandy to gravelly soils. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

American Manna Grass

The American manna grass (*Glyceria grandis*) is ranked 2B.3 by the CNPS. This species is a perennial rhizomatous herb found in bogs and ferns, meadows and seeps, and marshes and swamps (streambanks and lake margins). There are streambanks in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Munz's Iris

The Munz's iris (*Iris munzii*) is ranked 1B.3 by the CNPS. This species is a perennial rhizomatous herb found in cismontane woodland. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Madera Leptosiphon

The Madera leptosiphon (*Leptosiphon serrulatus*) is ranked 1B.2 by the CNPS. This species is an annual herb found in cismontane woodland and lower montane coniferous forest habitats.

There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Elongate Copper Moss

The elongate copper moss (*Mielichhoferia elongata*) is ranked 4.3 by the CNPS. This species is found in broad-leafed upland forest, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, and subalpine coniferous forest. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, there is potential for this species to be in the BSA.

Holzinger's Orthortrichum Moss

The Holzinger's orthortrichum moss (*Orthotrichum holzingeri*) is ranked 1B.3 by the CNPS. This species is found in cismontane woodland, lower montane coniferous forest, pinyon and juniper woodland, and upper montane coniferous forest habitats. This species is usually found on rocks in and along streams and rarely on tree limbs. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

Aromatic Canyon Gooseberry

The aromatic canyon gooseberry (*Ribes menziesii* var. *ixoderme*) is ranked 1B.2 by the CNPS. This species is a perennial deciduous shrub found in chaparral and cismontane woodland habitats. There is cismontane woodland habitat in the BSA; therefore, although this species was not observed during the biological surveys, which were conducted during the typical blooming period for this species, there is potential for this species to be in the BSA.

4.2.2 PROJECT IMPACTS

Construction would include vehicle storage and operation, vegetation removal, excavation, grading, and paving within the BSA, which could result in direct impacts on plants in the area. If present, special-status plants could be directly impacted if they were to be trampled or removed during construction activities. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, the project would be in compliance with dust control regulations, and with implementation of avoidance, minimization, and mitigation measures listed below, adverse impacts on special-status plants are not anticipated.

4.2.3 AVOIDANCE AND MINIMIZATION EFFORTS

To avoid and/or minimize impacts on special-status plants, the following measure would be implemented:

- Prior to construction, a qualified botanist would conduct plant surveys within the construction area. Surveys would be conducted during the appropriate blooming period for species with potential to be in the project area, to the extent feasible. If special-status plant species are found during surveys, avoidance measures would be developed and implemented based on recommendations from the qualified botanist. If surveys cannot be conducted within the appropriate blooming period, if presence of species cannot be ruled out for any other reason,

or if species present cannot be avoided, appropriate mitigation would be developed and implemented.

4.2.4 COMPENSATORY MITIGATION

To mitigate for impacts on special-status plants, the follow measure will be implemented:

- If it is determined that special-status plants would be impacted as a result of the project, an on-site or off-site restoration plan will be prepared by a qualified botanist. The plan will include, at a minimum, the following: receiver locations; number of plants to be replanted and the methods of replanting; maintenance and monitoring requirements; and measures necessary for the establishment of self-sustaining populations in suitable open space areas to ensure the long-term survivability of the species in the vicinity. The restoration plan will be implemented prior to the completion of the project.

4.3 Special Status Animal Species Occurrences

4.3.1 INVERTEBRATES

Survey Results

Crotch Bumble Bee

The Crotch bumble bee (*Bombus crotchii*) is ranked as S1S2. This species is found in open grassland and scrub habitats in coastal California east to the Sierra-Cascade crest and south into Mexico. This species nests underground in abandoned rodent burrows. Food plant genera for the Crotch bumble bee include *Antirrhinum* sp., *Phacelia sp.*, *Clarkia* sp., *Dendromecon* sp., *Eschscholzia* sp., and *Eriogonum* sp. There is non-native grassland habitat and suitable plant genera in the BSA; therefore, there is potential for this species to be in the BSA.

Western Bumble Bee

The western bumble bee (*Bombus occidentalis*) is ranked as S1. This species is a generalist forager and does not depend on one flower type. This species was once common and widespread within northwest America, but has declined precipitously perhaps from disease. There are suitable plant genera in the BSA; therefore, there is potential for this species to be in the BSA.

Moestan Blister Beetle

The moestan blister beetle (*Lytta moesta*) is ranked as S2. This species inhabits the valley and foothill grassland habitat in the Central Valley, from Contra Costa County to Kern and Tulare counties. There is non-native grassland habitat in the BSA; therefore, there is potential for this species to be in the BSA.

Morrison's Blister Beetle

The Morrison's blister beetle (*Lytta morrisoni*) is ranked as S1S2. This species is found in the southern Central Valley in valley and foothill grassland habitats. There is non-native grassland habitat in the BSA; therefore, there is potential for this species to be in the BSA.

Project Impacts

Construction would include vehicle storage and operation, vegetation removal, excavation, grading, and paving within the BSA, which could result in direct impacts on nesting bees and other invertebrates in the area. In addition, the existing bridge structure and multiple trees would be impacted, which could directly impact bees nesting in these structures. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, the project would be in compliance with dust control regulations, and with the implementation of proposed avoidance and minimization measures included below, adverse impacts on invertebrates are not anticipated.

Avoidance and Minimization Efforts

To avoid and/or minimize impacts on invertebrates, the following measures would be implemented:

- Vegetation removal and excavation would be reduced to the extent feasible.
- Within 48 hours of construction, a qualified biologist would survey the construction area to confirm the presence/absence of bumble bee nests and other invertebrates.
- If a nest is identified within the BSA, all efforts would be taken to avoid the nest, and an appropriate buffer would be installed as determined by a qualified biologist. If avoidance cannot be accomplished, the nest would be safely relocated by a qualified biologist.
- Pesticide/insecticide would not be used as part of the project.
- Areas temporarily impacted during construction would be restored using native species, including one or more of the food plant genera for the Crotch bumble bee (*Antirrhinum* sp., *Phacelia sp.*, *Clarkia* sp., *Dendromecon* sp., *Eschscholzia* sp., and *Eriogonum* sp.) if appropriate for the region.

Compensatory Mitigation

With the implementation of avoidance and minimization measures, adverse impacts are not anticipated; therefore, no mitigation is proposed.

4.3.2 AMPHIBIANS

Survey Results

Sequoia Slender Salamander

The Sequoia slender salamander (*Batrachoseps kawia*) is ranked as S2. This species is found in damp areas shaded by oak, sycamore, white alder, buckeye, cottonwood, and redbud, riparian woodlands, and mixed coniferous forests in the western Sierras. It is known only from the Kaweah River drainage in Tulare County. There is oak woodland habitat in the BSA; therefore, there is potential for this species to be in the BSA.

Coast Range Newt

The coast range newt (*Taricha torosa*) is listed as a state Species of Special Concern. This species is found primarily in coastal drainages from Mendocino County to San Diego County, and along margins of bushes or on twigs projecting into pathways, usually willow, *Baccharis* sp., and

mesquite in wet forests, oak forests, chaparral, and grasslands. Breeding takes place in ponds, reservoirs, and streams. Terrestrial individuals will migrate up to 0.25 mile to upland habitat. There are oak woodland and non-native grassland habitats in the BSA, and a river for breeding; therefore, there is potential for this species to be in the BSA. In addition, unidentified newts were observed along Mineral King Road during surveys conducted in April 2014.

Project Impacts

Construction would include vehicle storage and operation, vegetation removal, excavation, grading, and paving within the BSA, which could result in direct impacts on amphibians in the area. These activities could result in direct impacts on amphibians if they were to be crushed or injured during construction activities. In particular, construction vehicles using Mineral King Road could injure or kill amphibians crossing the roadway. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, the project would be in compliance with dust control regulations, and with the implementation of avoidance and minimization measures listed below, adverse impacts on newts are not expected.

Avoidance and Minimization Efforts

To avoid and minimize potential impacts on amphibians, the following avoidance and minimization measures would be implemented:

- Vegetation removal and excavation would be reduced to the extent feasible.
- Within 48 hours of construction, a qualified biologist would survey the construction area to confirm the presence/absence of amphibians.
- If any amphibians are identified within the BSA, all efforts would be taken to avoid the individual, and an appropriate buffer would be installed as determined by a qualified biologist. If avoidance cannot be accomplished, the individual would be safely relocated by a qualified biologist.
- Pesticide/insecticide would not be used as part of the project.

Compensatory Mitigation

With the implementation of avoidance and minimization measures, adverse impacts are not anticipated; therefore, no mitigation is proposed.

4.3.2 REPTILES

Survey Results

Northern California Legless Lizard

The northern California legless lizard (*Anniella pulchra*) is listed as a state Species of Special Concern. This species is found in suitable habitats in the Coast Ranges from Antioch in Contra Costa County south to the Mexican border, and is less common in the rest of its range, which includes the floor of the San Joaquin Valley from San Joaquin County south, the west slope of the southern Sierras, the Tehachapi Mountains west of the desert, and the mountains of southern California. This species is found primarily in areas with sandy or loose organic soils or where there is plenty of leaf litter. This lizard usually forages at the base of shrubs or other vegetation either

on the surface or just below it in leaf litter or sandy soil. Legless lizards eat insect larvae, small adult insects, and spiders. There is oak woodland habitat with sandy soils and leaf litter in the BSA; therefore, there is potential for this species to be in the BSA.

Coast Horned Lizard

The coast horned lizard (*Phrynosoma blainvillii*) is ranked S3S4. This species is found in open areas of sandy soil and low vegetation in valleys, foothills, and semiarid mountains, and is also found in grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose soil. Preferred plant communities are either chaparral or a chaparral/coastal sage scrub mix with bare ground coverage averaging 20 to 40 percent. California buckwheat (*Eriogonum fasiculatum*) is considered to be a primary indicator species for favorable soil and climatic conditions. Key habitat elements for this species are the presence of loose, fine soils, with a high sand content; an abundance of native ants; open areas for basking; and areas with low dense shrubs for refuge. There is woodland habitat with sandy soils in the BSA; therefore, there is potential for this species to be in the BSA.

Project Impacts

Construction would include vehicle storage and operation, vegetation removal, excavation, grading, and paving within the BSA, which could result in direct impacts on reptiles in the area. These activities could result in direct impacts on reptiles if they were to be crushed or injured during construction activities. In particular, construction vehicles using Mineral King Road could injure or kill reptiles crossing the roadway. Indirect impacts on these species could result from dust and/or pesticide use, and from habitat loss. However, with the implementation of avoidance and minimization measures discussed below adverse impacts on special-status reptile species are not anticipated.

Avoidance and Minimization Efforts

To avoid and minimize potential impacts on reptiles, the following avoidance and minimization measures would be implemented:

- Vegetation removal and excavation would be reduced to the extent feasible.
- Pre-construction surveys for reptiles would be conducted by a qualified biologist in the upland portions of the construction area no more than 48 hours prior to construction. Surveys would be repeated if construction activities are suspended for five days or more. If these species, or other reptiles, are observed within the construction area, a qualified biologist would capture and relocate them to suitable habitat at least 100 feet outside of the construction area.
- Temporarily disturbed areas would be restored following construction.

Compensatory Mitigation

With the implementation of avoidance and minimization measures, adverse impacts are not anticipated; therefore, no mitigation is proposed.

4.3.2 BIRDS

Survey Results

Golden Eagle

The golden eagle (*Aquila chrysaetos*) is a state Fully Protected species. This species is found in open and semi-open country with native vegetation and primarily found in mountains, canyons, and riverside cliffs and bluffs, and avoids developed areas and uninterrupted stretches of forest. Cliff-walled canyons and large trees provide nesting habitat in most parts of their range. There are large trees for nesting and open areas and grassland for foraging; therefore, there is potential for this species to nest and forage in the BSA.

California Condor

The California condor (*Gymnogyps californianus*) is listed as federally threatened under FESA and state endangered under CESA. This species has been reintroduced to mountains of southern and central California, Arizona, Utah, and Baja California. Nesting habitats range from scrubby chaparral to forested mountain regions up to about 6,000 feet elevation. Condors live in rocky shrubland, coniferous forests, and oak savannas. Foraging areas are in open grasslands and can be far from primary nesting sites. The nesting habitat preferred by this species is absent from the BSA; however, there is non-native grassland for foraging. Therefore, this species is not expected to nest in the BSA, but may forage in the BSA.

Lewis' Woodpecker

The Lewis' Woodpecker (*Melanerpes lewis*) is ranked as S4. This species requires open habitat with scattered or edge trees, and large open areas are necessary for foraging. Trees are used as hawking perches and for nesting. Large-diameter trees, either living, with partial decay, or dead, with more advanced decay, are especially valuable for nest sites. A diverse ground cover of low shrubs, grasses, and herbaceous plants that produce berries or provide habitat for insects is an important habitat component. Three distinct habitats are used by the Lewis' woodpecker: open forest or grassland with scattered trees, riparian forests adjacent to open areas, and burns. There are woodlands for nesting and open areas and grassland for foraging; therefore, there is potential for this species to nest and forage in the BSA.

Project Impacts

Construction would include vehicle storage and operation, vegetation removal, excavation, grading, and paving within the BSA, which could result in direct and indirect impacts on birds in the area. Work on the bridge could also impact birds nesting on this structure. Vegetation removal and bridge work would could result in direct impacts on nesting birds if they were to be nesting in these structures. Construction noise, vibration, and dust could also result in indirect impacts on nesting birds and foraging behavior. However, once construction is initiated, any birds foraging in the vicinity would be expected to move away, and there are other foraging areas available nearby. In addition, the project would be in compliance with dust control regulations, and regulatory permits. Because the California condor is not expected to nest in the BSA, the project would be expected to have no effect on this species. The golden eagle and Lewis' woodpecker could be nesting in the BSA; however, with the implementation of avoidance and minimization measures

listed below, adverse impacts on these species, including take, are not anticipated.

Avoidance and Minimization Efforts

To avoid and/or minimize potential impacts on avian species, the following measures would be implemented:

- Construction in areas that include trees, vegetation, and structures that may provide nesting habitats for birds and raptors would be reduced to the maximum extent feasible.
- Trimming and removal of vegetation and trees would be minimized and performed outside of the nesting season (February 1 to September 30), to the extent feasible.
- In the event that trimming or removal of vegetation and trees must be conducted during the nesting season, nesting bird surveys would be completed within 500 feet of the construction area by a qualified biologist no more than 48 hours prior to trimming or clearing activities to determine if nesting birds are within the affected vegetation. Nesting bird surveys would be repeated if trimming or removal activities are suspended for five days or more.
- If nesting birds are found within 500 feet of the construction area, appropriate buffers consisting of orange flagging/fencing or similar (typically 300 feet for birds and 500 feet for raptors) would be installed and maintained until nesting activity has ended, as determined in coordination with the project biologist and regulatory agencies, as appropriate.
- Prior to construction, any inactive swallow nests and other nests would be removed under supervision of a qualified biologist during the non-breeding season (October 1 to January 31). The inactive nests would also be checked for bats prior to removal. During the nesting season (February 1 to September 30), the BSA would be monitored as necessary to ensure that no new nests are built, and any partially-built nests would be removed from the bridge during construction to prevent swallows from nesting on the bridge structure. Monitoring and nesting deterrence would continue until birds no longer attempt to nest.
- In the event that any bird species is observed foraging within the construction site, it would be allowed to move away from the site prior to initiating any construction activities that could result in direct injury or disturbance of the individual.
- Construction would also be in compliance with San Joaquin Valley Air Pollution Control District Regulation VIII – Fugitive Dust, which requires a number of measure to control fugitive dust during construction activities.

Compensatory Mitigation

With the implementation of avoidance and minimization measures, adverse impacts are not anticipated; therefore, no mitigation is proposed.

4.3.2 MAMMALS

Survey Results

Bats were observed roosting in expansion joints within the bridge structure during the biological surveys, and were detected acoustically during evening emergence surveys. There was a large amount of staining around the joints, as well as in other areas of the bridge, suggesting night

roosting. In addition, there were large amounts of guano under the bridge. Based on the number of bats using the bridge, there is a high probability that there is a maternal colony present, as well as night roosting. Based on acoustic recordings, most of the bats appear to be Mexican freetail bats (*Tadarida brasiliensis*), which is not a special-status species. However, there is potential that other species may be roosting alongside this species, and other species could also be using trees and rocky areas near the bridge.

Pallid Bat

The pallid bat (*Antrozous pallidusis*) is listed as a state Species of Special Concern. This species is found year around in a variety of low-elevation habitats in most areas of California, including grasslands, shrub lands, woodlands and forests. This species is thought to prefer open, dry habitats with rocky areas for roosting. The pallid bat day roosts in caves, crevices, mines, and hollow trees, buildings, and bridges, and night roosts in more open sites, such as porches, open buildings and bridges. Roosts must protect bats from high temperatures, and this species will move deeper into cover if temperatures rise. The pallid bat is highly sensitive to disturbance. There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

Townsend's Big-eared Bat

The Townsend's big-eared bat (*Corynorhinus townsendii*) is listed as a state Species of Special Concern. This species is found in a variety of habitat types, including coniferous forests, deserts, native prairies, riparian communities, agricultural areas, and coastal habitats. It is thought to be most abundant in mesic habitats, and roosts in caves and cave-like structures, such as exposed cavity-forming rock and mines. This species will also roost in human structures such as attics and barns, and has been found on occasion in bridges. Townsend's big-eared bats prefer to roost in large rooms and do not use crevices. The Townsend's big-eared bat is extremely sensitive to human disturbance, and is thought to be uncommon in California. There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

Spotted Bat

The spotted bat (*Euderma maculatum*) is listed as a state Species of Special Concern. This species occupies a wide variety of habitats from arid deserts and grasslands through mixed conifer forests in eastern and southern California. This species feeds over water and along washes, feeding almost entirely on moths. The spotted bat typically roosts in rock crevices in cliffs or caves. This species has not been documented in bridges, but some potential exists for roosting in this type of structure. There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

Western Mastiff Bat

The western mastiff bat (*Eumops perotis californicus*) is listed as a state Species of Special Concern. This species is found in many open, semi-arid and arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban areas. This species roosts in crevices on high vertical cliffs or surfaces

(including buildings), trees, or tunnels. Because of their large size, they typically require a larger drop distance from roosting sites. There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

Western Small-footed Myotis

The western small-footed myotis (*Myotis ciliolabrum*) is ranked as S3. This species is found mostly in arid wooded and brushy uplands near water, and seeks cover in caves, buildings, mines, and crevices, and prefers open stands in forests and woodlands. There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

Long-eared Myotis

The long-eared myotis (*Myotis evotis*) is ranked as S3. This species is found in brush, woodland, and forest habitats from sea level to about 9,000 feet, but prefers coniferous woodlands and forests. Nursery colonies may be located in buildings, crevices, spaces under bark, and snags. Caves are used primarily as night roosts. There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

Fringed Myotis

The fringed myotis (*Myotis thysanodes*) is ranked as S3. This species is found in a wide variety of habitats. Optimal habitats are pinyon-juniper, valley foothill hardwood, and hardwood-conifer, and this species uses caves, mines, buildings, or crevices for maternity colonies and roosts. There is a bridge, rocky formations, and trees in the BSA, which are suitable roosting habitat for this species. Therefore, there is potential for this species to be in the BSA.

Project Impacts

Construction would include vehicle storage and operation, vegetation removal, excavation, grading, and paving within the BSA, which could result in direct and indirect impacts on bats in the area. Work on the bridge could also impact bats roosting on this structure. Tree removal and bridge work could result in direct impacts on bats if they were to be roosting in these structures. Construction noise, vibration, and dust could also result in indirect impacts on roosting bats. Bridge rehabilitation would include re-sealing the top portion of the existing bridge joints; however, the lower portion would remain open, and would be available for bat roosting following construction. Re-sealing the joint would be expected to improve the existing habitat, since parts of the joints are currently open to the deck, and the new sealant would provide additional overhead protection. The project would be in compliance with dust control regulations, and with the implementation of avoidance and minimization measures included below, adverse impacts on bats are not expected.

Avoidance and Minimization Efforts

To avoid and minimize potential impacts on bats, the following avoidance and minimization measures would be implemented:

- Where feasible, tree and structure removal would be conducted outside of the maternal and non-active seasons for bats (October).
- At least 30 days prior to construction, a thorough bat roosting habitat assessment would be conducted of all trees and structures to be removed or otherwise impacted during construction. Visual and acoustic surveys would be conducted for at least two nights at all identified roosting habitat to assess the presence of roosting bats. If presence is detected, a count and species analysis would be completed to help assess the type of colony and usage.
- No less than two weeks prior to construction, and during the non-breeding and active season (typically October), bats would be safely evicted from roosts impacted by the project under the direction of a qualified biologist. Once bats have been safely evicted, exclusionary devices would be installed to prevent bats from returning and roosting in these areas prior to removal. Roosts that would not be impacted by the project would be left undisturbed.
- If the presence or absence of bats cannot be confirmed in potential roosting habitat, a qualified biologist would be onsite during removal or disturbance of this area. If the biologist determines that bats are being disturbed during this work, work would be suspended until bats have left the vicinity on their own, or can be safely excluded under direction of the biologist. Work would resume only once all bats have left the site and/or approval to resume work is given by a qualified biologist.
- In the event that a maternal colony of bats is found, no work would be conducted within 100 feet of the maternal roosting site until the maternal season is finished or the bats have left the site, or as otherwise directed by a qualified biologist. The site would be designated as a sensitive area and protected as such until the bats have left the site. No activities would be authorized adjacent to the roosting site. Combustion equipment, such as generators, pumps, and vehicles, would not to be parked nor operated under or adjacent to the roosting site. Construction personnel would not be authorized to enter areas beneath the colony, especially during the evening exodus (typically between 15 minutes prior to sunset and one hour following sunset).

Compensatory Mitigation

With the implementation of avoidance and minimization measures, adverse impacts are not anticipated; therefore, no mitigation is required.

4.4 Cumulative Impacts

For the purposes of this analysis, the cumulative setting for jurisdictional features is considered waters within the Upper Kaweah Watershed. The cumulative setting for plants and wildlife is considered suitable habitat within the known range of affected species. Existing and continuing development contributes to cumulative impacts on jurisdictional features. In addition, habitat removal from current and future development in the area is the biggest threat to plant and wildlife species, along with pesticide use for some species.

The project would include rehabilitating the existing bridge, and would not contribute to development in the area. The project would have no impacts on special-status natural communities. The project could result in temporary impacts on plant and wildlife species;

however, the project would include avoidance, minimization, and mitigation measures to prevent adverse impacts. In addition, any additional measures required by regulatory permits would be implemented during construction.

There are no other known planned projects in the vicinity of the BSA; however, other planned projects would be expected to include similar measures. Therefore, the project would not be expected to result in cumulatively considerable impacts on biological resources.

Chapter 5 – Conclusions and Regulatory Determinations

5.1 Federal Endangered Species Act Consultation Summary

There is potential for the federally Threatened California condor to be in the BSA; however, based on project analysis, the project would have no effect on the California condor. Therefore, consultation with the USFWS is not required. The BSA is not within any critical habitat for federally listed threatened or endangered species, and would have no effect on federally threatened and endangered species (see **Table 2**).

Scientific Name	Common Name	Federal Status	Critical Habitat	Determination
Plants				
Clarkia springvillensis	Springville clarkia	Threatened	None	No effect
Pseudobahia peirsonii	San Joaquin adobe sunburst	Threatened	None	No effect
Invertebrates				
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	Threatened	None	No effect
Crustaceans				
Branchinecta lynchi	Vernal pool fairy shrimp	Threatened	None	No effect
Fish				
Hypomesus transpacificus	Delta smelt	Threatened	None	No effect
Amphibians				
Rana Draytonii	California red-legged frog	Threatened	None	No effect
Rana muscosa	Southern mountain yellow-legged frog	Endangered	None	No effect
Birds				
Gymnogyps californianus	California condor	Endangered	None	No effect
Mammals				
Gulo gulo	California wolverine	Proposed Threatened	None	No effect
Vulpes vulpes necator	Sierra Nevada red fox	Candidate	None	No effect

5.2 Essential Fish Habitat Consultation Summary

The National Marine Fisheries Service (NMFS) Essential Fish Habitat (EFH) mapper tool was accessed on April 24, 2018. The BSA is outside of NMFS jurisdiction; therefore, no consultation or effects determination is required.

5.3 California Endangered Species Act Consultation Summary

There is potential for the state Fully Protected golden eagle and state Endangered California condor to be in the BSA. Based on project analysis, the project is not expected to result in adverse impacts on the golden eagle or California condor, including take; therefore, consultation with the CDFW and an ITP are not anticipated for these species.

5.4 Wetlands and Other Waters Coordination Summary

5.4.1 FEDERAL CLEAN WATER ACT

The project would result in temporary impacts on waters under jurisdiction of the USACE and RWQCB; therefore, a CWA Section 404 Pre-Construction Verification, and CWA Section 401 Water Quality Certification would be required under the CWA. A Pre-construction Notification would be submitted to the USACE prior to construction to receive verification on Nationwide Permit 14. Because a Section 404 permit would be required, a CWA Section 401 Water Quality Certification would also be required from the RWQCB. A Section 401 Water Quality Certification application would be submitted to the RWQCB prior to construction.

5.4.2 CALIFORNIA FISH AND GAME CODE

The project would result in temporary impacts on waters under jurisdiction of the CDFW; therefore, a California Fish and Game Code Section 1602 SAA would be required under the CWA. A Streambed Alteration Notification would be submitted prior to construction to obtain the SAA.

5.5 Invasive Species

There are several species growing in the BSA that are listed by the Invasive Species Council of California as invasive to California. A complete list of native, non-native, and invasive plant species observed in the BSA is included in **Appendix C**. Invasive species are often found in disturbed areas, and project activities would have the potential to spread invasive species through further disturbance of the BSA. These species could also be spread through the improper disposal of the graded and excavated soils on site or off site, or through landscaping with invasive species. However, the following standard measures would be implemented to prevent the spread of invasive species:

- Vegetation removed from the BSA would be treated and disposed of in a manner that would prevent the spread of invasive species onsite or offsite.
- New landscaping materials, including erosion control seed mixes and other plantings, would be composed of non-invasive species and would be clear of weeds, and all erosion control and landscape planting would be conducted in a manner that would not result in the spread of invasive species.
- Plants listed by the USDA in the Pest Ratings of Noxious Weed Species and Noxious Weed Seed (United States Department of Food and Agriculture, 2016) would not be used as part of the project.

With implementation of these measures, the project would be in compliance with Executive Order 13112.

5.6 Migratory Birds

During the biological survey performed on April 9 and April 10, 2015, July 25 and July 26, 2016, and May 2, 2017, no special-status bird species were observed within the BSA. However, many bird species were observed foraging in or flying over the BSA, including the mourning dove, American crow, ash-throated flycatcher, and California scrub jay. Nesting birds could be directly impacted by construction activities if they were to be nesting in structures or vegetation within the construction area. In addition, these species could be indirectly impacted by loss of habitat resulting from vegetation or structure removal. However, with implementation of measures included in Section 4.0, the project would be in compliance with the MBTA and California Fish and Game Code.

Chapter 6 – References

California Department of Fish and Wildlife. Biogeographic Information and Observation System. Accessed April 24, 2018 at https://www.wildlife.ca.gov/Data/BIOS.

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Appendix A

Special-Status Species Lists

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: April 05, 2018
Consultation Code: 08ESMF00-2016-SLI-0978
Event Code: 08ESMF00-2018-E-05107
Project Name: Mineral King Bridge over the East Fork of the Kaweah River

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

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2016-SLI-0978

Event Code: 08ESMF00-2018-E-05107

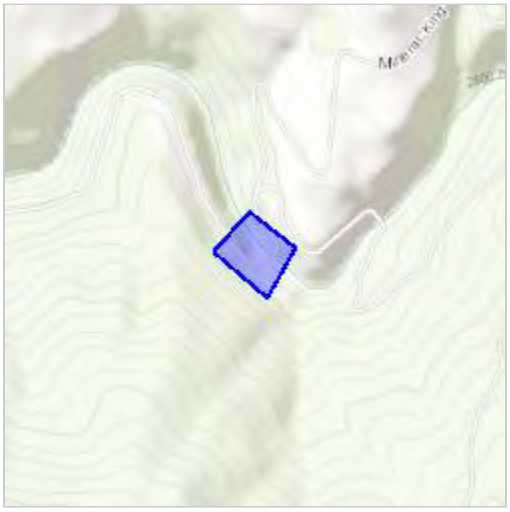
Project Name: Mineral King Bridge over the East Fork of the Kaweah River

Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

Project Description: The County of Tulare Resource Management Agency in cooperation with the California Department of Transportation, proposes to rehabilitate the existing Mineral King Bridge or provide a new bridge on Mineral King Road of the east fork of the Kaweah River.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/36.449417284304545N118.79329756700784W



Counties: Tulare, CA

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
California Condor *Gymnogyps californianus* Population: U.S.A. only, except where listed as an experimental population There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Flowering Plants

NAME	STATUS
Springville Clarkia *Clarkia springvillensis*	Threatened

No critical habitat has been designated for this species.

Species profile: https://ecos.fws.gov/ecp/species/8309

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Case Mountain (3611847) OR Chickencoop Canyon (3611838) OR Dennison Peak (3611837) OR Giant Forest (3611857) OR Kaweah (3611848) OR Lodgepole (3611856) OR Moses Mtn. (3611836) OR Shadequarter Mtn. (3611858) OR Silver City (3611846))

Mineral King Road Bridge

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter gentilis northern goshawk	ABNKC12060	None	None	G5	S3	SSC
Allium abramsii Abrams' onion	PMLIL02360	None	None	G3	S3	1B.2
Anniella pulchra northern California legless lizard	ARACC01020	None	None	G3	S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aplodontia rufa californica Sierra Nevada mountain beaver	AMAFA01013	None	None	G5T3T4	S2S3	SSC
Batrachoseps altasierrae Greenhorn Mountains slender salamander	AAAAD02200	None	None	G4	S3S4	
Batrachoseps regius Kings River slender salamander	AAAAD02140	None	None	G2	S2S3	
Big Tree Forest Big Tree Forest	CTT84250CA	None	None	G3	S3.2	
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Botrychium minganense Mingan moonwort	PPOPH010R0	None	None	G4G5	S3	2B.2
Bowmanasellus sequoiae Sequoia cave isopod	ICMAL01210	None	None	G1	S1	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Brodiaea insignis Kaweah brodiaea	PMLIL0C060	None	Endangered	G1	S1	1B.2
Calicina cloughensis Clough Cave harvestman	ILARAU8090	None	None	G1	S1	
Calochortus westonii Shirley Meadows star-tulip	PMLIL0D1M0	None	None	G3	S3	1B.2
Calystegia malacophylla var. berryi Berry's morning-glory	PDCON040K2	None	None	G4G5T2T3Q	S2S3	3.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Carlquistia muirii Muir's tarplant	PDASTDU010	None	None	G2	S2	1B.3
Central Valley Drainage Hardhead/Squawfish Stream Central Valley Drainage Hardhead/Squawfish Stream	CARA2443CA	None	None	GNR	SNR	
Cinna bolanderi Bolander's woodreed	PMPOA1H040	None	None	G2	S2	1B.2
Clarkia springvillensis Springville clarkia	PDONA05120	Threatened	Endangered	G2	S2	1B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Cryptochia denningi Denning's cryptic caddisfly	IITRI11030	None	None	G1G2	S1S2	
Cuscuta jepsonii Jepson's dodder	PDCUS011T0	None	None	GH	SH	1B.2
Cypseloides niger black swift	ABNUA01010	None	None	G4	S2	SSC
Delphinium purpusii rose-flowered larkspur	PDRAN0B1G0	None	None	G3	S3	1B.3
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	
Diplacus pictus calico monkeyflower	PDSCR1B240	None	None	G2	S2	1B.2
Dudleya cymosa ssp. costatifolia Pierpoint Springs dudleya	PDCRA040A2	None	None	G5T1	S1	1B.2
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eriogonum nudum var. murinum mouse buckwheat	PDPGN08495	None	None	G5T2	S2	1B.2
Eryngium spinosepalum spiny-sepaled button-celery	PDAPI0Z0Y0	None	None	G2	S2	1B.2
Erythranthe norrisii Kaweah monkeyflower	PDSCR1B2Y0	None	None	G2	S2	1B.3
Erythronium pusaterii Kaweah fawn lily	PMLIL0U0R0	None	None	G3	S3	1B.3
Euderma maculatum spotted bat	AMACC07010	None	None	G4	S3	SSC
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G5T4	S3S4	SSC
Fritillaria brandegeei Greenhorn fritillary	PMLIL0V040	None	None	G2G3	S2S3	1B.3
Fritillaria striata striped adobe-lily	PMLIL0V0K0	None	Threatened	G2?	S2?	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Glyceria grandis American manna grass	PMPOA2Y080	None	None	G5	S3	2B.3
Greeneocharis circumscissa var. rosulata rosette cushion cryptantha	PDBOR0A0G3	None	None	G5T2	S2	1B.2
Gulo gulo California wolverine	AMAJF03010	Proposed Threatened	Threatened	G4	S1	FP
Gymnogyps californianus California condor	ABNKA03010	Endangered	Endangered	G1	S1	FP
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Hosackia oblongifolia var. cuprea copper-flowered bird's-foot trefoil	PDFAB2A0W1	None	None	G5T2	S2	1B.3
Iris munzii Munz's iris	PMIRI090M0	None	None	G2	S2	1B.3
Ivesia campestris field ivesia	PDROS0X050	None	None	G3	S3	1B.2
Leptosiphon serrulatus Madera leptosiphon	PDPLM09130	None	None	G3	S3	1B.2
Lupinus lepidus var. culbertsonii Hockett Meadows lupine	PDFAB2B171	None	None	G5T3	S3	1B.3
Lytta moesta moestan blister beetle	IICOL4C020	None	None	G2	S2	
Lytta morrisoni Morrison's blister beetle	IICOL4C040	None	None	G1G2	S1S2	
Meesia triquetra three-ranked hump moss	NBMUS4L020	None	None	G5	S4	4.2
Mielichhoferia elongata elongate copper moss	NBMUS4Q022	None	None	G5	S4	4.3
Myotis ciliolabrum western small-footed myotis	AMACC01140	None	None	G5	S3	
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Ochotona princeps schisticeps gray-headed pika	AMAEA0102H	None	None	G5T2T4	S2S4	
Oreonana purpurascens purple mountain-parsley	PDAPI1G020	None	None	G3	S3	1B.2
Orthotrichum holzingeri Holzinger's orthotrichum moss	NBMUS560E0	None	None	G3	S2	1B.3
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Candidate Threatened	G5T2T3Q	S2S3	SSC

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Pseudobahia peirsonii San Joaquin adobe sunburst	PDAST7P030	Threatened	Endangered	G1	S1	1B.1
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rana muscosa southern mountain yellow-legged frog	AAABH01330	Endangered	Endangered	G1	S1	WL
Ribes menziesii var. ixoderme aromatic canyon gooseberry	PDGRO02104	None	None	G4T1	S1	1B.2
Ribes tularense Sequoia gooseberry	PDGRO021L0	None	None	G1	S1	1B.3
Strix nebulosa great gray owl	ABNSB12040	None	Endangered	G5	S1	
Trichodon cylindricus cylindrical trichodon	NBMUS7N020	None	None	G4	S2	2B.2
Viola pinetorum ssp. grisea grey-leaved violet	PDVIO04431	None	None	G4G5T3	S3	1B.3
Vulpes vulpes necator Sierra Nevada red fox	AMAJA03012	Candidate	Threatened	G5T1T2	S1	

Record Count: 69

CNDDB 9-Quad Species List 211 records.

Element Type	Scientific Name	Common Name	Element Code	Federal Status	State Status	CDFW Status	CA Rare Plant Rank	Quad Code	Quad Name	Data Status	Taxonomic Sort
Animals - Amphibians	Batrachoseps altasierrae	Greenhorn Mountains slender salamander	AAAAD02200	None	None	-	-	3611836	Moses Mtn.	Mapped	Animals - Amphibians - Plethodontidae - Batrachoseps altasierrae
Animals - Amphibians	Batrachoseps altasierrae	Greenhorn Mountains slender salamander	AAAAD02200	None	None	-	-	3611837	Dennison Peak	Mapped	Animals - Amphibians - Plethodontidae - Batrachoseps altasierrae
Animals - Amphibians	Batrachoseps kawia	Sequoia slender salamander	AAAAD02150	None	None	-	-	3611836	Moses Mtn.	Unprocessed	Animals - Amphibians - Plethodontidae - Batrachoseps kawia
Animals - Amphibians	Batrachoseps kawia	Sequoia slender salamander	AAAAD02150	None	None	-	-	3611837	Dennison Peak	Unprocessed	Animals - Amphibians - Plethodontidae - Batrachoseps kawia
Animals - Amphibians	Batrachoseps kawia	Sequoia slender salamander	AAAAD02150	None	None	-	-	3611847	Case Mountain	Unprocessed	Animals - Amphibians - Plethodontidae - Batrachoseps kawia
Animals - Amphibians	Batrachoseps kawia	Sequoia slender salamander	AAAAD02150	None	None	-	-	3611856	Lodgepole	Unprocessed	Animals - Amphibians - Plethodontidae - Batrachoseps kawia
Animals - Amphibians	Batrachoseps kawia	Sequoia slender salamander	AAAAD02150	None	None	-	-	3611857	Giant Forest	Unprocessed	Animals - Amphibians - Plethodontidae - Batrachoseps kawia
Animals - Amphibians	Batrachoseps kawia	Sequoia slender salamander	AAAAD02150	None	None	-	-	3611858	Shadequarter Mtn.	Unprocessed	Animals - Amphibians - Plethodontidae - Batrachoseps kawia
Animals - Amphibians	Batrachoseps regius	Kings River slender salamander	AAAAD02140	None	None	-	-	3611858	Shadequarter Mtn.	Mapped and Unprocessed	Animals - Amphibians - Plethodontidae - Batrachoseps regius
Animals - Amphibians	Batrachoseps regius	Kings River slender salamander	AAAAD02140	None	None	-	-	3611857	Giant Forest	Mapped and Unprocessed	Animals - Amphibians - Plethodontidae - Batrachoseps regius
Animals - Amphibians	Batrachoseps regius	Kings River slender salamander	AAAAD02140	None	None	-	-	3611856	Lodgepole	Unprocessed	Animals - Amphibians - Plethodontidae - Batrachoseps regius
Animals - Amphibians	Batrachoseps regius	Kings River slender salamander	AAAAD02140	None	None	-	-	3611847	Case Mountain	Mapped and Unprocessed	Animals - Amphibians - Plethodontidae - Batrachoseps regius
Animals - Amphibians	Batrachoseps relictus	relictual slender salamander	AAAAD02070	None	None	SSC	-	3611836	Moses Mtn.	Unprocessed	Animals - Amphibians - Plethodontidae - Batrachoseps relictus
Animals - Amphibians	Hydromantes platycephalus	Mount Lyell salamander	AAAAD09020	None	None	WL	-	3611856	Lodgepole	Unprocessed	Animals - Amphibians - Plethodontidae - Hydromantes platycephalus
Animals - Amphibians	Rana boylii	foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	SSC	-	3611856	Lodgepole	Unprocessed	Animals - Amphibians - Ranidae - Rana boylii
Animals - Amphibians	Rana boylii	foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	SSC	-	3611848	Kaweah	Mapped and Unprocessed	Animals - Amphibians - Ranidae - Rana boylii
Animals - Amphibians	Rana boylii	foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	SSC	-	3611837	Dennison Peak	Mapped	Animals - Amphibians - Ranidae - Rana boylii
Animals - Amphibians	Rana boylii	foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	SSC	-	3611838	Chickencoop Canyon	Mapped	Animals - Amphibians - Ranidae - Rana boylii

Animals - Amphibians	Rana boylii	foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	SSC	-	3611847	Case Mountain	Mapped and Unprocessed	Animals - Amphibians - Ranidae - Rana boylii
Animals - Amphibians	Rana boylii	foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	SSC	-	3611857	Giant Forest	Unprocessed	Animals - Amphibians - Ranidae - Rana boylii
Animals - Amphibians	Rana boylii	foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	SSC	-	3611858	Shadequarter Mtn.	Mapped and Unprocessed	Animals - Amphibians - Ranidae - Rana boylii
Animals - Amphibians	Rana muscosa	southern mountain yellow-legged frog	AAABH01330	Endangered	Endangered	WL	-	3611857	Giant Forest	Mapped	Animals - Amphibians - Ranidae - Rana muscosa
Animals - Amphibians	Rana muscosa	southern mountain yellow-legged frog	AAABH01330	Endangered	Endangered	WL	-	3611847	Case Mountain	Mapped	Animals - Amphibians - Ranidae - Rana muscosa
Animals - Amphibians	Rana muscosa	southern mountain yellow-legged frog	AAABH01330	Endangered	Endangered	WL	-	3611846	Silver City	Mapped	Animals - Amphibians - Ranidae - Rana muscosa
Animals - Amphibians	Rana muscosa	southern mountain yellow-legged frog	AAABH01330	Endangered	Endangered	WL	-	3611836	Moses Mtn.	Mapped	Animals - Amphibians - Ranidae - Rana muscosa
Animals - Amphibians	Rana muscosa	southern mountain yellow-legged frog	AAABH01330	Endangered	Endangered	WL	-	3611856	Lodgepole	Mapped	Animals - Amphibians - Ranidae - Rana muscosa
Animals - Amphibians	Taricha torosa	Coast Range newt	AAAAF02032	None	None	SSC	-	3611848	Kaweah	Unprocessed	Animals - Amphibians - Salamandridae - Taricha torosa
Animals - Amphibians	Taricha torosa	Coast Range newt	AAAAF02032	None	None	SSC	-	3611857	Giant Forest	Unprocessed	Animals - Amphibians - Salamandridae - Taricha torosa
Animals - Arachnids	Calicina cloughensis	Clough Cave harvestman	ILARAU8090	None	None	-	-	3611837	Dennison Peak	Mapped	Animals - Arachnids - Phalangodidae - Calicina cloughensis
Animals - Birds	Accipiter gentilis	northern goshawk	ABNKC12060	None	None	SSC	-	3611846	Silver City	Mapped	Animals - Birds - Accipitridae - Accipiter gentilis
Animals - Birds	Accipiter gentilis	northern goshawk	ABNKC12060	None	None	SSC	-	3611856	Lodgepole	Mapped	Animals - Birds - Accipitridae - Accipiter gentilis
Animals - Birds	Accipiter gentilis	northern goshawk	ABNKC12060	None	None	SSC	-	3611857	Giant Forest	Mapped	Animals - Birds - Accipitridae - Accipiter gentilis
Animals - Birds	Aquila chrysaetos	golden eagle	ABNKC22010	None	None	FP , WL	-	3611848	Kaweah	Unprocessed	Animals - Birds - Accipitridae - Aquila chrysaetos
Animals - Birds	Aquila chrysaetos	golden eagle	ABNKC22010	None	None	FP , WL	-	3611838	Chickencoop Canyon	Unprocessed	Animals - Birds - Accipitridae - Aquila chrysaetos
Animals - Birds	Haliaeetus leucocephalus	bald eagle	ABNKC10010	Delisted	Endangered	FP	-	3611848	Kaweah	Mapped and Unprocessed	Animals - Birds - Accipitridae - Haliaeetus leucocephalus
Animals - Birds	Cypseloides niger	black swift	ABNUA01010	None	None	SSC	-	3611856	Lodgepole	Mapped	Animals - Birds - Apodidae - Cypseloides niger
Animals - Birds	Cypseloides niger	black swift	ABNUA01010	None	None	SSC	-	3611857	Giant Forest	Mapped	Animals - Birds - Apodidae - Cypseloides niger
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3611848	Kaweah	Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Gymnogyps californianus	California condor	ABNKA03010	Endangered	Endangered	FP	-	3611848	Kaweah	Mapped	Animals - Birds - Cathartidae - Gymnogyps californianus
Animals - Birds	Gymnogyps californianus	California condor	ABNKA03010	Endangered	Endangered	FP	-	3611838	Chickencoop Canyon	Mapped	Animals - Birds - Cathartidae - Gymnogyps californianus

Animals - Birds	Gymnogyps californianus	California condor	ABNKA03010	Endangered	Endangered	FP	-	3611837	Dennison Peak	Mapped	Animals - Birds - Cathartidae - Gymnogyps californianus
Animals - Birds	Pica nuttalli	yellow-billed magpie	ABPAV09020	None	None	-	-	3611848	Kaweah	Unprocessed	Animals - Birds - Corvidae - Pica nuttalli
Animals - Birds	Centrocercus urophasianus	greater sage-grouse	ABNLC12010	None	None	SSC	-	3611848	Kaweah	Unprocessed	Animals - Birds - Phasianidae - Centrocercus urophasianus
Animals - Birds	Melanerpes lewis	Lewis' woodpecker	ABNYF04010	None	None	-	-	3611848	Kaweah	Unprocessed	Animals - Birds - Picidae - Melanerpes lewis
Animals - Birds	Sphyrapicus ruber	red-breasted sapsucker	ABNYF05020	None	None	-	-	3611848	Kaweah	Unprocessed	Animals - Birds - Picidae - Sphyrapicus ruber
Animals - Birds	Strix nebulosa	great gray owl	ABNSB12040	None	Endangered	-	-	3611856	Lodgepole	Mapped and Unprocessed	Animals - Birds - Strigidae - Strix nebulosa
Animals - Birds	Strix occidentalis occidentalis	California spotted owl	ABNSB12013	None	None	SSC	-	3611857	Giant Forest	Unprocessed	Animals - Birds - Strigidae - Strix occidentalis occidentalis
Animals - Crustaceans	Bowmanasellus sequoiae	Sequoia cave isopod	ICMAL01210	None	None	-	-	3611857	Giant Forest	Mapped and Unprocessed	Animals - Crustaceans - Asellidae - Bowmanasellus sequoiae
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3611838	Chickencoop Canyon	Mapped	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Insects	Bombus caliginosus	obscure bumble bee	IIHYM24380	None	None	-	-	3611856	Lodgepole	Mapped	Animals - Insects - Apidae - Bombus caliginosus
Animals - Insects	Bombus caliginosus	obscure bumble bee	IIHYM24380	None	None	-	-	3611857	Giant Forest	Mapped	Animals - Insects - Apidae - Bombus caliginosus
Animals - Insects	Bombus crotchii	Crotch bumble bee	IIHYM24480	None	None	-	-	3611857	Giant Forest	Mapped	Animals - Insects - Apidae - Bombus crotchii
Animals - Insects	Bombus crotchii	Crotch bumble bee	IIHYM24480	None	None	-	-	3611848	Kaweah	Mapped	Animals - Insects - Apidae - Bombus crotchii
Animals - Insects	Bombus crotchii	Crotch bumble bee	IIHYM24480	None	None	-	-	3611847	Case Mountain	Mapped	Animals - Insects - Apidae - Bombus crotchii
Animals - Insects	Bombus crotchii	Crotch bumble bee	IIHYM24480	None	None	-	-	3611838	Chickencoop Canyon	Mapped	Animals - Insects - Apidae - Bombus crotchii
Animals - Insects	Bombus occidentalis	western bumble bee	IIHYM24250	None	None	-	-	3611857	Giant Forest	Mapped and Unprocessed	Animals - Insects - Apidae - Bombus occidentalis
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3611857	Giant Forest	Mapped	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3611847	Case Mountain	Mapped	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3611848	Kaweah	Mapped	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Cryptochia denningi	Denning's cryptic caddisfly	IITRI11030	None	None	-	-	3611847	Case Mountain	Mapped	Animals - Insects - Limnephilidae - Cryptochia denningi
Animals - Insects	Lytta moesta	moestan blister beetle	IICOL4C020	None	None	-	-	3611848	Kaweah	Mapped	Animals - Insects - Meloidae - Lytta moesta
Animals - Insects	Lytta moesta	moestan blister beetle	IICOL4C020	None	None	-	-	3611857	Giant Forest	Mapped	Animals - Insects - Meloidae - Lytta moesta
Animals - Insects	Lytta morrisoni	Morrison's blister beetle	IICOL4C040	None	None	-	-	3611848	Kaweah	Mapped	Animals - Insects - Meloidae - Lytta morrisoni

Animals - Mammals	Aplodontia rufa californica	Sierra Nevada mountain beaver	AMAFA01013	None	None	SSC	-	3611856	Lodgepole	Mapped	Animals - Mammals - Aplodontiidae - Aplodontia rufa californica
Animals - Mammals	Aplodontia rufa californica	Sierra Nevada mountain beaver	AMAFA01013	None	None	SSC	-	3611846	Silver City	Unprocessed	Animals - Mammals - Aplodontiidae - Aplodontia rufa californica
Animals - Mammals	Aplodontia rufa californica	Sierra Nevada mountain beaver	AMAFA01013	None	None	SSC	-	3611857	Giant Forest	Unprocessed	Animals - Mammals - Aplodontiidae - Aplodontia rufa californica
Animals - Mammals	Vulpes vulpes necator	Sierra Nevada red fox	AMAJA03012	Candidate	Threatened	-	-	3611857	Giant Forest	Mapped	Animals - Mammals - Canidae - Vulpes vulpes necator
Animals - Mammals	Vulpes vulpes necator	Sierra Nevada red fox	AMAJA03012	Candidate	Threatened	-	-	3611846	Silver City	Mapped	Animals - Mammals - Canidae - Vulpes vulpes necator
Animals - Mammals	Vulpes vulpes necator	Sierra Nevada red fox	AMAJA03012	Candidate	Threatened	-	-	3611836	Moses Mtn.	Mapped	Animals - Mammals - Canidae - Vulpes vulpes necator
Animals - Mammals	Vulpes vulpes necator	Sierra Nevada red fox	AMAJA03012	Candidate	Threatened	-	-	3611856	Lodgepole	Mapped	Animals - Mammals - Canidae - Vulpes vulpes necator
Animals - Mammals	Eumops perotis californicus	western mastiff bat	AMACD02011	None	None	SSC	-	3611848	Kaweah	Mapped	Animals - Mammals - Molossidae - Eumops perotis californicus
Animals - Mammals	Eumops perotis californicus	western mastiff bat	AMACD02011	None	None	SSC	-	3611847	Case Mountain	Mapped	Animals - Mammals - Molossidae - Eumops perotis californicus
Animals - Mammals	Gulo gulo	California wolverine	AMAJF03010	Proposed Threatened	Threatened	FP	-	3611856	Lodgepole	Mapped	Animals - Mammals - Mustelidae - Gulo gulo
Animals - Mammals	Gulo gulo	California wolverine	AMAJF03010	Proposed Threatened	Threatened	FP	-	3611837	Dennison Peak	Mapped	Animals - Mammals - Mustelidae - Gulo gulo
Animals - Mammals	Gulo gulo	California wolverine	AMAJF03010	Proposed Threatened	Threatened	FP	-	3611846	Silver City	Mapped	Animals - Mammals - Mustelidae - Gulo gulo
Animals - Mammals	Gulo gulo	California wolverine	AMAJF03010	Proposed Threatened	Threatened	FP	-	3611857	Giant Forest	Mapped	Animals - Mammals - Mustelidae - Gulo gulo
Animals - Mammals	Pekania pennanti	fisher - West Coast DPS	AMAJF01021	None	Candidate Threatened	SSC	-	3611857	Giant Forest	Mapped	Animals - Mammals - Mustelidae - Pekania pennanti
Animals - Mammals	Pekania pennanti	fisher - West Coast DPS	AMAJF01021	None	Candidate Threatened	SSC	-	3611846	Silver City	Mapped and Unprocessed	Animals - Mammals - Mustelidae - Pekania pennanti
Animals - Mammals	Pekania pennanti	fisher - West Coast DPS	AMAJF01021	None	Candidate Threatened	SSC	-	3611837	Dennison Peak	Mapped	Animals - Mammals - Mustelidae - Pekania pennanti
Animals - Mammals	Pekania pennanti	fisher - West Coast DPS	AMAJF01021	None	Candidate Threatened	SSC	-	3611836	Moses Mtn.	Mapped	Animals - Mammals - Mustelidae - Pekania pennanti
Animals - Mammals	Pekania pennanti	fisher - West Coast DPS	AMAJF01021	None	Candidate Threatened	SSC	-	3611856	Lodgepole	Mapped	Animals - Mammals - Mustelidae - Pekania pennanti
Animals - Mammals	Pekania pennanti	fisher - West Coast DPS	AMAJF01021	None	Candidate Threatened	SSC	-	3611847	Case Mountain	Mapped	Animals - Mammals - Mustelidae - Pekania pennanti
Animals - Mammals	Ochotona princeps schisticeps	gray-headed pika	AMAEA0102H	None	None	-	-	3611856	Lodgepole	Mapped	Animals - Mammals - Ochotonidae - Ochotona princeps schisticeps
Animals - Mammals	Antrozous pallidus	pallid bat	AMACC10010	None	None	SSC	-	3611837	Dennison Peak	Mapped	Animals - Mammals - Vespertilionidae - Antrozous pallidus
Animals - Mammals	Corynorhinus townsendii	Townsend's big-eared bat	AMACC08010	None	None	SSC	-	3611837	Dennison Peak	Mapped	Animals - Mammals - Vespertilionidae - Corynorhinus townsendii
Animals - Mammals	Corynorhinus townsendii	Townsend's big-eared bat	AMACC08010	None	None	SSC	-	3611847	Case Mountain	Mapped and Unprocessed	Animals - Mammals - Vespertilionidae - Corynorhinus townsendii

Animals - Mammals	Corynorhinus townsendii	Townsend's big-eared bat	AMACC08010	None	None	SSC	-	3611857	Giant Forest	Mapped	Animals - Mammals - Vespertilionidae - Corynorhinus townsendii
Animals - Mammals	Euderma maculatum	spotted bat	AMACC07010	None	None	SSC	-	3611857	Giant Forest	Mapped	Animals - Mammals - Vespertilionidae - Euderma maculatum
Animals - Mammals	Myotis ciliolabrum	western small-footed myotis	AMACC01140	None	None	-	-	3611847	Case Mountain	Mapped	Animals - Mammals - Vespertilionidae - Myotis ciliolabrum
Animals - Mammals	Myotis evotis	long-eared myotis	AMACC01070	None	None	-	-	3611847	Case Mountain	Mapped	Animals - Mammals - Vespertilionidae - Myotis evotis
Animals - Mammals	Myotis thysanodes	fringed myotis	AMACC01090	None	None	-	-	3611847	Case Mountain	Mapped	Animals - Mammals - Vespertilionidae - Myotis thysanodes
Animals - Reptiles	Anniella pulchra	northern California legless lizard	ARACC01020	None	None	SSC	-	3611856	Lodgepole	Mapped	Animals - Reptiles - Anniellidae - Anniella pulchra
Animals - Reptiles	Anniella pulchra	northern California legless lizard	ARACC01020	None	None	SSC	-	3611848	Kaweah	Mapped and Unprocessed	Animals - Reptiles - Anniellidae - Anniella pulchra
Animals - Reptiles	Anniella pulchra	northern California legless lizard	ARACC01020	None	None	SSC	-	3611857	Giant Forest	Mapped and Unprocessed	Animals - Reptiles - Anniellidae - Anniella pulchra
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3611858	Shadequarter Mtn.	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3611848	Kaweah	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3611847	Case Mountain	Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3611838	Chickencoop Canyon	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Phrynosoma blainvillii	coast horned lizard	ARACF12100	None	None	SSC	-	3611846	Silver City	Unprocessed	Animals - Reptiles - Phrynosomatidae - Phrynosoma blainvillii
Community - Aquatic	Central Valley Drainage Hardhead/Squawfish Stream	Central Valley Drainage Hardhead/Squawfish Stream	CARA2443CA	None	None	-	-	3611837	Dennison Peak	Mapped	Community - Aquatic - Central Valley Drainage Hardhead/Squawfish Stream
Community - Aquatic	Central Valley Drainage Hardhead/Squawfish Stream	Central Valley Drainage Hardhead/Squawfish Stream	CARA2443CA	None	None	-	-	3611847	Case Mountain	Mapped	Community - Aquatic - Central Valley Drainage Hardhead/Squawfish Stream
Community - Aquatic	Central Valley Drainage Hardhead/Squawfish Stream	Central Valley Drainage Hardhead/Squawfish Stream	CARA2443CA	None	None	-	-	3611848	Kaweah	Mapped	Community - Aquatic - Central Valley Drainage Hardhead/Squawfish Stream
Community - Terrestrial	Big Tree Forest	Big Tree Forest	CTT84250CA	None	None	-	-	3611856	Lodgepole	Mapped	Community - Terrestrial - Big Tree Forest
Community - Terrestrial	Big Tree Forest	Big Tree Forest	CTT84250CA	None	None	-	-	3611847	Case Mountain	Mapped	Community - Terrestrial - Big Tree Forest
Community - Terrestrial	Big Tree Forest	Big Tree Forest	CTT84250CA	None	None	-	-	3611837	Dennison Peak	Mapped	Community - Terrestrial - Big Tree Forest
Community - Terrestrial	Big Tree Forest	Big Tree Forest	CTT84250CA	None	None	-	-	3611836	Moses Mtn.	Mapped	Community - Terrestrial - Big Tree Forest
Community - Terrestrial	Big Tree Forest	Big Tree Forest	CTT84250CA	None	None	-	-	3611846	Silver City	Mapped	Community - Terrestrial - Big Tree Forest
Community - Terrestrial	Big Tree Forest	Big Tree Forest	CTT84250CA	None	None	-	-	3611857	Giant Forest	Mapped	Community - Terrestrial - Big Tree Forest
Plants - Bryophytes	Bruchia bolanderi	Bolander's bruchia	NBMUS13010	None	None	-	4.2	3611856	Lodgepole	Unprocessed	Plants - Bryophytes - Bruchiaceae - Bruchia bolanderi

Plants - Bryophytes	Trichodon cylindricus	cylindrical trichodon	NBMUS7N020	None	None	-	2B.2	3611856	Lodgepole	Mapped	Plants - Bryophytes - Ditrichaceae - Trichodon cylindricus
Plants - Bryophytes	Meesia triquetra	three-ranked hump moss	NBMUS4L020	None	None	-	4.2	3611856	Lodgepole	Mapped and Unprocessed	Plants - Bryophytes - Meesiaceae - Meesia triquetra
Plants - Bryophytes	Mielichhoferia elongata	elongate copper moss	NBMUS4Q022	None	None	-	4.3	3611857	Giant Forest	Mapped	Plants - Bryophytes - Mielichhoferiaceae - Mielichhoferia elongata
Plants - Bryophytes	Orthotrichum holzingeri	Holzinger's orthotrichum moss	NBMUS560E0	None	None	-	1B.3	3611857	Giant Forest	Mapped	Plants - Bryophytes - Orthotrichaceae - Orthotrichum holzingeri
Plants - Vascular	Allium abramsii	Abrams' onion	PMLIL02360	None	None	-	1B.2	3611856	Lodgepole	Mapped	Plants - Vascular - Alliaceae - Allium abramsii
Plants - Vascular	Allium abramsii	Abrams' onion	PMLIL02360	None	None	-	1B.2	3611847	Case Mountain	Mapped	Plants - Vascular - Alliaceae - Allium abramsii
Plants - Vascular	Allium abramsii	Abrams' onion	PMLIL02360	None	None	-	1B.2	3611846	Silver City	Mapped	Plants - Vascular - Alliaceae - Allium abramsii
Plants - Vascular	Allium abramsii	Abrams' onion	PMLIL02360	None	None	-	1B.2	3611836	Moses Mtn.	Mapped	Plants - Vascular - Alliaceae - Allium abramsii
Plants - Vascular	Allium abramsii	Abrams' onion	PMLIL02360	None	None	-	1B.2	3611837	Dennison Peak	Unprocessed	Plants - Vascular - Alliaceae - Allium abramsii
Plants - Vascular	Angelica callii	Call's angelica	PDAPI07060	None	None	-	4.3	3611846	Silver City	Unprocessed	Plants - Vascular - Apiaceae - Angelica callii
Plants - Vascular	Angelica callii	Call's angelica	PDAPI07060	None	None	-	4.3	3611847	Case Mountain	Unprocessed	Plants - Vascular - Apiaceae - Angelica callii
Plants - Vascular	Angelica callii	Call's angelica	PDAPI07060	None	None	-	4.3	3611856	Lodgepole	Unprocessed	Plants - Vascular - Apiaceae - Angelica callii
Plants - Vascular	Angelica callii	Call's angelica	PDAPI07060	None	None	-	4.3	3611857	Giant Forest	Unprocessed	Plants - Vascular - Apiaceae - Angelica callii
Plants - Vascular	Eryngium spinosepalum	spiny-sepaled button-celery	PDAPI0Z0Y0	None	None	-	1B.2	3611857	Giant Forest	Mapped	Plants - Vascular - Apiaceae - Eryngium spinosepalum
Plants - Vascular	Eryngium spinosepalum	spiny-sepaled button-celery	PDAPI0Z0Y0	None	None	-	1B.2	3611848	Kaweah	Mapped	Plants - Vascular - Apiaceae - Eryngium spinosepalum
Plants - Vascular	Eryngium spinosepalum	spiny-sepaled button-celery	PDAPI0Z0Y0	None	None	-	1B.2	3611838	Chickencoop Canyon	Mapped and Unprocessed	Plants - Vascular - Apiaceae - Eryngium spinosepalum
Plants - Vascular	Oreonana purpurascens	purple mountain-parsley	PDAPI1G020	None	None	-	1B.2	3611836	Moses Mtn.	Mapped	Plants - Vascular - Apiaceae - Oreonana purpurascens
Plants - Vascular	Carlquistia muirii	Muir's tarplant	PDASTDU010	None	None	-	1B.3	3611856	Lodgepole	Mapped and Unprocessed	Plants - Vascular - Asteraceae - Carlquistia muirii
Plants - Vascular	Jensia yosemitana	Yosemite tarplant	PDAST650J0	None	None	-	3.2	3611856	Lodgepole	Unprocessed	Plants - Vascular - Asteraceae - Jensia yosemitana
Plants - Vascular	Jensia yosemitana	Yosemite tarplant	PDAST650J0	None	None	-	3.2	3611847	Case Mountain	Unprocessed	Plants - Vascular - Asteraceae - Jensia yosemitana
Plants - Vascular	Jensia yosemitana	Yosemite tarplant	PDAST650J0	None	None	-	3.2	3611857	Giant Forest	Unprocessed	Plants - Vascular - Asteraceae - Jensia yosemitana
Plants - Vascular	Pseudobahia peirsonii	San Joaquin adobe sunburst	PDAST7P030	Threatened	Endangered	-	1B.1	3611838	Chickencoop Canyon	Mapped	Plants - Vascular - Asteraceae - Pseudobahia peirsonii
Plants - Vascular	Greeneocharis circumscissa var. rosulata	rosette cushion cryptantha	PDBOR0A0G3	None	None	-	1B.2	3611846	Silver City	Mapped	Plants - Vascular - Boraginaceae - Greeneocharis circumscissa var. rosulata

Plants - Vascular	Greeneocharis circumscissa var. rosulata	rosette cushion cryptantha	PDBOR0A0G3	None	None	-	1B.2	3611836	Moses Mtn.	Mapped	Plants - Vascular - Boraginaceae - Greeneocharis circumscissa var. rosulata
Plants - Vascular	Silene aperta	Tulare campion	PDCAR0U050	None	None	-	4.3	3611846	Silver City	Unprocessed	Plants - Vascular - Caryophyllaceae - Silene aperta
Plants - Vascular	Calystegia malacophylla var. berryi	Berry's morning-glory	PDCON040K2	None	None	-	3.3	3611837	Dennison Peak	Mapped	Plants - Vascular - Convolvulaceae - Calystegia malacophylla var. berryi
Plants - Vascular	Calystegia malacophylla var. berryi	Berry's morning-glory	PDCON040K2	None	None	-	3.3	3611856	Lodgepole	Mapped	Plants - Vascular - Convolvulaceae - Calystegia malacophylla var. berryi
Plants - Vascular	Calystegia malacophylla var. berryi	Berry's morning-glory	PDCON040K2	None	None	-	3.3	3611857	Giant Forest	Mapped	Plants - Vascular - Convolvulaceae - Calystegia malacophylla var. berryi
Plants - Vascular	Cuscuta jepsonii	Jepson's dodder	PDCUS011T0	None	None	-	1B.2	3611847	Case Mountain	Mapped	Plants - Vascular - Convolvulaceae - Cuscuta jepsonii
Plants - Vascular	Cuscuta jepsonii	Jepson's dodder	PDCUS011T0	None	None	-	1B.2	3611836	Moses Mtn.	Mapped	Plants - Vascular - Convolvulaceae - Cuscuta jepsonii
Plants - Vascular	Cuscuta jepsonii	Jepson's dodder	PDCUS011T0	None	None	-	1B.2	3611846	Silver City	Mapped	Plants - Vascular - Convolvulaceae - Cuscuta jepsonii
Plants - Vascular	Dudleya cymosa ssp. costatifolia	Pierpoint Springs dudleya	PDCRA040A2	None	None	-	1B.2	3611846	Silver City	Mapped	Plants - Vascular - Crassulaceae - Dudleya cymosa ssp. costatifolia
Plants - Vascular	Dudleya cymosa ssp. costatifolia	Pierpoint Springs dudleya	PDCRA040A2	None	None	-	1B.2	3611847	Case Mountain	Mapped	Plants - Vascular - Crassulaceae - Dudleya cymosa ssp. costatifolia
Plants - Vascular	Hosackia oblongifolia var. cuprea	copper-flowered bird's-foot trefoil	PDFAB2A0W1	None	None	-	1B.3	3611846	Silver City	Mapped	Plants - Vascular - Fabaceae - Hosackia oblongifolia var. cuprea
Plants - Vascular	Hosackia oblongifolia var. cuprea	copper-flowered bird's-foot trefoil	PDFAB2A0W1	None	None	-	1B.3	3611836	Moses Mtn.	Mapped	Plants - Vascular - Fabaceae - Hosackia oblongifolia var. cuprea
Plants - Vascular	Lupinus lepidus var. culbertsonii	Hockett Meadows lupine	PDFAB2B171	None	None	-	1B.3	3611836	Moses Mtn.	Mapped	Plants - Vascular - Fabaceae - Lupinus lepidus var. culbertsonii
Plants - Vascular	Lupinus lepidus var. culbertsonii	Hockett Meadows lupine	PDFAB2B171	None	None	-	1B.3	3611846	Silver City	Mapped	Plants - Vascular - Fabaceae - Lupinus lepidus var. culbertsonii
Plants - Vascular	Dicentra nevadensis	Tulare County bleeding heart	PDFUM04060	None	None	-	4.3	3611846	Silver City	Unprocessed	Plants - Vascular - Fumariaceae - Dicentra nevadensis
Plants - Vascular	Dicentra nevadensis	Tulare County bleeding heart	PDFUM04060	None	None	-	4.3	3611836	Moses Mtn.	Unprocessed	Plants - Vascular - Fumariaceae - Dicentra nevadensis
Plants - Vascular	Dicentra nevadensis	Tulare County bleeding heart	PDFUM04060	None	None	-	4.3	3611856	Lodgepole	Unprocessed	Plants - Vascular - Fumariaceae - Dicentra nevadensis
Plants - Vascular	Dicentra nevadensis	Tulare County bleeding heart	PDFUM04060	None	None	-	4.3	3611857	Giant Forest	Unprocessed	Plants - Vascular - Fumariaceae - Dicentra nevadensis
Plants - Vascular	Ribes menziesii var. ixoderme	aromatic canyon gooseberry	PDGRO02104	None	None	-	1B.2	3611847	Case Mountain	Mapped	Plants - Vascular - Grossulariaceae - Ribes menziesii var. ixoderme
Plants - Vascular	Ribes tularense	Sequoia gooseberry	PDGRO021L0	None	None	-	1B.3	3611847	Case Mountain	Mapped	Plants - Vascular - Grossulariaceae - Ribes tularense
Plants - Vascular	Ribes tularense	Sequoia gooseberry	PDGRO021L0	None	None	-	1B.3	3611856	Lodgepole	Mapped	Plants - Vascular - Grossulariaceae - Ribes tularense

Plants - Vascular	Ribes tularense	Sequoia gooseberry	PDGRO021L0	None	None	-	1B.3	3611846	Silver City	Mapped	Plants - Vascular - Grossulariaceae - Ribes tularense
Plants - Vascular	Ribes tularense	Sequoia gooseberry	PDGRO021L0	None	None	-	1B.3	3611857	Giant Forest	Mapped	Plants - Vascular - Grossulariaceae - Ribes tularense
Plants - Vascular	Iris munzii	Munz's iris	PMIRI090M0	None	None	-	1B.3	3611857	Giant Forest	Mapped	Plants - Vascular - Iridaceae - Iris munzii
Plants - Vascular	Iris munzii	Munz's iris	PMIRI090M0	None	None	-	1B.3	3611847	Case Mountain	Unprocessed	Plants - Vascular - Iridaceae - Iris munzii
Plants - Vascular	Calochortus westonii	Shirley Meadows star-tulip	PMLIL0D1M0	None	None	-	1B.2	3611847	Case Mountain	Mapped	Plants - Vascular - Liliaceae - Calochortus westonii
Plants - Vascular	Erythronium pusaterii	Kaweah fawn lily	PMLIL0U0R0	None	None	-	1B.3	3611836	Moses Mtn.	Mapped and Unprocessed	Plants - Vascular - Liliaceae - Erythronium pusaterii
Plants - Vascular	Fritillaria brandegeei	Greenhorn fritillary	PMLIL0V040	None	None	-	1B.3	3611836	Moses Mtn.	Mapped	Plants - Vascular - Liliaceae - Fritillaria brandegeei
Plants - Vascular	Fritillaria pinetorum	pine fritillary	PMLIL0V0E0	None	None	-	4.3	3611836	Moses Mtn.	Unprocessed	Plants - Vascular - Liliaceae - Fritillaria pinetorum
Plants - Vascular	Fritillaria striata	striped adobe-lily	PMLIL0V0K0	None	Threatened	-	1B.1	3611838	Chickencoop Canyon	Mapped	Plants - Vascular - Liliaceae - Fritillaria striata
Plants - Vascular	Claytonia palustris	marsh claytonia	PDPOR030S0	None	None	-	4.3	3611846	Silver City	Unprocessed	Plants - Vascular - Montiaceae - Claytonia palustris
Plants - Vascular	Claytonia palustris	marsh claytonia	PDPOR030S0	None	None	-	4.3	3611856	Lodgepole	Unprocessed	Plants - Vascular - Montiaceae - Claytonia palustris
Plants - Vascular	Claytonia palustris	marsh claytonia	PDPOR030S0	None	None	-	4.3	3611857	Giant Forest	Unprocessed	Plants - Vascular - Montiaceae - Claytonia palustris
Plants - Vascular	Claytonia parviflora ssp. grandiflora	streambank spring beauty	PDPOR030D1	None	None	-	4.2	3611847	Case Mountain	Unprocessed	Plants - Vascular - Montiaceae - Claytonia parviflora ssp. grandiflora
Plants - Vascular	Clarkia springvillensis	Springville clarkia	PDONA05120	Threatened	Endangered	-	1B.2	3611847	Case Mountain	Mapped	Plants - Vascular - Onagraceae - Clarkia springvillensis
Plants - Vascular	Clarkia springvillensis	Springville clarkia	PDONA05120	Threatened	Endangered	-	1B.2	3611837	Dennison Peak	Mapped	Plants - Vascular - Onagraceae - Clarkia springvillensis
Plants - Vascular	Botrychium minganense	Mingan moonwort	PPOPH010R0	None	None	-	2B.2	3611836	Moses Mtn.	Mapped	Plants - Vascular - Ophioglossaceae - Botrychium minganense
Plants - Vascular	Botrychium minganense	Mingan moonwort	PPOPH010R0	None	None	-	2B.2	3611846	Silver City	Mapped	Plants - Vascular - Ophioglossaceae - Botrychium minganense
Plants - Vascular	Botrychium minganense	Mingan moonwort	PPOPH010R0	None	None	-	2B.2	3611856	Lodgepole	Mapped	Plants - Vascular - Ophioglossaceae - Botrychium minganense
Plants - Vascular	Diplacus pictus	calico monkeyflower	PDSCR1B240	None	None	-	1B.2	3611838	Chickencoop Canyon	Mapped	Plants - Vascular - Phrymaceae - Diplacus pictus
Plants - Vascular	Erythranthe acutidens	Kings River monkeyflower	PDSCR1B010	None	None	-	3	3611847	Case Mountain	Unprocessed	Plants - Vascular - Phrymaceae - Erythranthe acutidens
Plants - Vascular	Erythranthe acutidens	Kings River monkeyflower	PDSCR1B010	None	None	-	3	3611857	Giant Forest	Unprocessed	Plants - Vascular - Phrymaceae - Erythranthe acutidens
Plants - Vascular	Erythranthe acutidens	Kings River monkeyflower	PDSCR1B010	None	None	-	3	3611858	Shadequarter Mtn.	Unprocessed	Plants - Vascular - Phrymaceae - Erythranthe acutidens
Plants - Vascular	Erythranthe grayi	Gray's monkeyflower	PDSCR1B1D0	None	None	-	4.3	3611857	Giant Forest	Unprocessed	Plants - Vascular - Phrymaceae - Erythranthe grayi

Plants - Vascular	Erythranthe grayi	Gray's monkeyflower	PDSCR1B1D0	None	None	-	4.3	3611847	Case Mountain	Unprocessed	Plants - Vascular - Phrymaceae - Erythranthe grayi
Plants - Vascular	Erythranthe grayi	Gray's monkeyflower	PDSCR1B1D0	None	None	-	4.3	3611846	Silver City	Unprocessed	Plants - Vascular - Phrymaceae - Erythranthe grayi
Plants - Vascular	Erythranthe inconspicua	small-flowered monkeyflower	PDSCR1B1F0	None	None	-	4.3	3611857	Giant Forest	Unprocessed	Plants - Vascular - Phrymaceae - Erythranthe inconspicua
Plants - Vascular	Erythranthe laciniata	cut-leaved monkeyflower	PDSCR1B1L0	None	None	-	4.3	3611857	Giant Forest	Unprocessed	Plants - Vascular - Phrymaceae - Erythranthe laciniata
Plants - Vascular	Erythranthe laciniata	cut-leaved monkeyflower	PDSCR1B1L0	None	None	-	4.3	3611856	Lodgepole	Unprocessed	Plants - Vascular - Phrymaceae - Erythranthe laciniata
Plants - Vascular	Erythranthe norrisii	Kaweah monkeyflower	PDSCR1B2Y0	None	None	-	1B.3	3611848	Kaweah	Mapped	Plants - Vascular - Phrymaceae - Erythranthe norrisii
Plants - Vascular	Erythranthe norrisii	Kaweah monkeyflower	PDSCR1B2Y0	None	None	-	1B.3	3611847	Case Mountain	Mapped	Plants - Vascular - Phrymaceae - Erythranthe norrisii
Plants - Vascular	Erythranthe norrisii	Kaweah monkeyflower	PDSCR1B2Y0	None	None	-	1B.3	3611837	Dennison Peak	Mapped	Plants - Vascular - Phrymaceae - Erythranthe norrisii
Plants - Vascular	Erythranthe norrisii	Kaweah monkeyflower	PDSCR1B2Y0	None	None	-	1B.3	3611857	Giant Forest	Mapped	Plants - Vascular - Phrymaceae - Erythranthe norrisii
Plants - Vascular	Erythranthe sierrae	Sierra Nevada monkeyflower	PDPHR01060	None	None	-	4.2	3611846	Silver City	Unprocessed	Plants - Vascular - Phrymaceae - Erythranthe sierrae
Plants - Vascular	Erythranthe sierrae	Sierra Nevada monkeyflower	PDPHR01060	None	None	-	4.2	3611847	Case Mountain	Unprocessed	Plants - Vascular - Phrymaceae - Erythranthe sierrae
Plants - Vascular	Agrostis humilis	mountain bent grass	PMPOA040P0	None	None	-	2B.3	3611846	Silver City	Unprocessed	Plants - Vascular - Poaceae - Agrostis humilis
Plants - Vascular	Agrostis humilis	mountain bent grass	PMPOA040P0	None	None	-	2B.3	3611836	Moses Mtn.	Unprocessed	Plants - Vascular - Poaceae - Agrostis humilis
Plants - Vascular	Cinna bolanderi	Bolander's woodreed	PMPOA1H040	None	None	-	1B.2	3611846	Silver City	Mapped	Plants - Vascular - Poaceae - Cinna bolanderi
Plants - Vascular	Cinna bolanderi	Bolander's woodreed	PMPOA1H040	None	None	-	1B.2	3611856	Lodgepole	Mapped	Plants - Vascular - Poaceae - Cinna bolanderi
Plants - Vascular	Cinna bolanderi	Bolander's woodreed	PMPOA1H040	None	None	-	1B.2	3611857	Giant Forest	Mapped	Plants - Vascular - Poaceae - Cinna bolanderi
Plants - Vascular	Glyceria grandis	American manna grass	PMPOA2Y080	None	None	-	2B.3	3611858	Shadequarter Mtn.	Mapped	Plants - Vascular - Poaceae - Glyceria grandis
Plants - Vascular	Leptosiphon oblanceolatus	Sierra Nevada leptosiphon	PDPLM090W0	None	None	-	4.3	3611846	Silver City	Unprocessed	Plants - Vascular - Polemoniaceae - Leptosiphon oblanceolatus
Plants - Vascular	Leptosiphon oblanceolatus	Sierra Nevada leptosiphon	PDPLM090W0	None	None	-	4.3	3611836	Moses Mtn.	Unprocessed	Plants - Vascular - Polemoniaceae - Leptosiphon oblanceolatus
Plants - Vascular	Leptosiphon serrulatus	Madera leptosiphon	PDPLM09130	None	None	-	1B.2	3611848	Kaweah	Mapped	Plants - Vascular - Polemoniaceae - Leptosiphon serrulatus
Plants - Vascular	Leptosiphon serrulatus	Madera leptosiphon	PDPLM09130	None	None	-	1B.2	3611858	Shadequarter Mtn.	Mapped	Plants - Vascular - Polemoniaceae - Leptosiphon serrulatus
Plants - Vascular	Eriogonum nudum var. murinum	mouse buckwheat	PDPGN08495	None	None	-	1B.2	3611858	Shadequarter Mtn.	Mapped and Unprocessed	Plants - Vascular - Polygonaceae - Eriogonum nudum var. murinum
Plants - Vascular	Eriogonum nudum var. murinum	mouse buckwheat	PDPGN08495	None	None	-	1B.2	3611857	Giant Forest	Mapped	Plants - Vascular - Polygonaceae - Eriogonum nudum var. murinum
Plants - Vascular	Eriogonum nudum var. murinum	mouse buckwheat	PDPGN08495	None	None	-	1B.2	3611848	Kaweah	Mapped	Plants - Vascular - Polygonaceae - Eriogonum nudum var. murinum

Plants - Vascular	Eriogonum nudum var. murinum	mouse buckwheat	PDPGN08495	None	None	-	1B.2	3611847	Case Mountain	Mapped	Plants - Vascular - Polygonaceae - Eriogonum nudum var. murinum
Plants - Vascular	Eriogonum nudum var. murinum	mouse buckwheat	PDPGN08495	None	None	-	1B.2	3611837	Dennison Peak	Mapped	Plants - Vascular - Polygonaceae - Eriogonum nudum var. murinum
Plants - Vascular	Delphinium purpusii	rose-flowered larkspur	PDRAN0B1G0	None	None	-	1B.3	3611837	Dennison Peak	Mapped	Plants - Vascular - Ranunculaceae - Delphinium purpusii
Plants - Vascular	Delphinium purpusii	rose-flowered larkspur	PDRAN0B1G0	None	None	-	1B.3	3611836	Moses Mtn.	Mapped	Plants - Vascular - Ranunculaceae - Delphinium purpusii
Plants - Vascular	Ivesia campestris	field ivesia	PDROS0X050	None	None	-	1B.2	3611836	Moses Mtn.	Mapped and Unprocessed	Plants - Vascular - Rosaceae - Ivesia campestris
Plants - Vascular	Ivesia campestris	field ivesia	PDROS0X050	None	None	-	1B.2	3611846	Silver City	Mapped and Unprocessed	Plants - Vascular - Rosaceae - Ivesia campestris
Plants - Vascular	Brodiaea insignis	Kaweah brodiaea	PMLIL0C060	None	Endangered	-	1B.2	3611838	Chickencoop Canyon	Mapped	Plants - Vascular - Themidaceae - Brodiaea insignis
Plants - Vascular	Brodiaea insignis	Kaweah brodiaea	PMLIL0C060	None	Endangered	-	1B.2	3611837	Dennison Peak	Mapped and Unprocessed	Plants - Vascular - Themidaceae - Brodiaea insignis
Plants - Vascular	Brodiaea insignis	Kaweah brodiaea	PMLIL0C060	None	Endangered	-	1B.2	3611847	Case Mountain	Mapped	Plants - Vascular - Themidaceae - Brodiaea insignis
Plants - Vascular	Brodiaea insignis	Kaweah brodiaea	PMLIL0C060	None	Endangered	-	1B.2	3611848	Kaweah	Mapped	Plants - Vascular - Themidaceae - Brodiaea insignis
Plants - Vascular	Viola pinetorum ssp. grisea	grey-leaved violet	PDVIO04431	None	None	-	1B.3	3611846	Silver City	Mapped	Plants - Vascular - Violaceae - Viola pinetorum ssp. grisea

Appendix B

Species Observed in Biological Study Area

Mineral King Road Bridge- List of Species Observed in BSA			
Plants			
Family	**Scientific Name**	**Common Name**	**Native/Non-Native/Invasive**
Amaranthaceae			
	Amaranthus sp.	pigweed	
Anacardiaceae			
	Rhus aromatica	fragrant sumac	native
	Toxicodendron diversilobum	poison oak	native
Apiaceae			
	Anthriscus caucalis	bur-chervil	non-native
	Torilis sp.	hedge parsley	
Asteraceae			
	Centaurea melitensis	tocalote	invasive
	Centaurea solstitialis	yellow star thistle	invasive
	Cirsium occidentale	western thistle	native
	Gnaphalium sp.	cudweed	
	Lasthenia sp.	goldfields	
	Madia elegans	common madia	native
	Matricaria discoidea	pineapple weed	native
	Micropus californicus	Q-tips	native
	Stephanomeria sp.	wirelettuce	native
	Uropappus lindleyi	silver puffs	native
Boraginaceae			
	Amsinckia menziesii	fiddleneck	native
	Cryptantha sp.	popcorn flower	native
	Eriodictyon californicum	yerba Santa	native
	Plagiobothrys sp.	popcorn flower	native
Brassicaceae			
	Capsella bursa-pastoris	shepherd's purse	non-native
	Descurainia pinnata	western tansy mustard	native
	Erysimum capitatum	wallflower	native
	Hirschfeldia incana	wild mustard	invasive
	Lepidium nitidium	shining pepper grass	native
	Thysanocarpus curvipes	common fringe pod	native
Calycanthaceae			
	Calycanthus occidentalis	spicebush	native
Caprifoliaceae			
	Lonicera interrupta	chaparral honeysuckle	native
	Lonicera sp.	honeysuckle	
	Sambucus nigra	black elderberry	native
Caryophyllaceae			
	Silene gallica	common catchfly	non-native
	Stellaria media	chickweed	non-native
Convolvulaceae			
	Calystegia sp.		
	Convolvulus sp.	bindweed	
Crassulaceae			
	Dudleya cymosa	rock lettuce	native
Cucurbitaceae			
	Marah horrida	Sierra manroot	native
Ericaceae			
	Arctostaphylos sp.	manzanita	native
	Arctostaphylos viscida ssp. *viscida*	smooth white leaf manzanita	native
Fabaceae			
	Acmispon americanus	Spanish lotus	native
	Cercis occidentalis	western redbud	native
	Lupinus nanus	sky lupine	native
	Lupinus sp.	lupine	native
	Melilotus indicus	annual yellow sweetclover	non-native
Fagaceae			
	Quercus berberidifolia	inland scrub oak	native
	Quercus chrysolepis	canyon oak	
	Quercus douglasii	blue oak	native
	Quercus wislizeni	interior live oak	native
Geraniaceae			
	Erodium botrys	long-beaked storksbill	non-native
	Erodium brachycarpum	White stemmed filaree	non-native
	Erodium cicutarium	red stemmed filaree	invasive
	Geranium dissectum	cranesbill	invasive
	Geranium molle	crane's-bill geranium	non-native
Grossulariaceae			
	Ribes roezlii	sierra gooseberry	native
Hydrophyllaceae			
	Phacelia cicutaria var. *cicutaria*	caterpillar phacelia	native

	Phacelia sp.	phacelia	
	Pholistoma auritum	fiesta flower	native
Lamiaceae			
	Marrubium vulgare	white horehound	invasive
	Umbellularia californica	California bay	native
Liliaceae			
	Chlorogalum pomeridianum	soap plant	native
	Dichelostemma capitatum	blue dicks	native
	Dichelostemma volubile	twining snake lily	native
	Triteleia ixioides	golden brodiaea	native
	Triteleia laxa	Ithuriel's spear	native
	Calochortus amoenus	purple fairy lantern	native
Myrsinaceae			
	Lysimachia arvensis	scarlett pimpernel	non-native
Onagraceae			
	Epilobium canum	California fuschia	native
	Epilobium ciliatum	slender willow herb	native
Papaveraceae			
	Eschscholzia californica	California poppy	native
Phrymaceae			
	Diplacus aurantiacus	sticky monkey flower	native
	Erythranthe guttata	seep monkeyflower	native
Plantaginaceae			
	Keckiella sp.		
	Penstemon sp.	beardtongue	native
	Plantago lanceolata	English plantain	invasive
Poaceae			
	Avena barbata	slim oat	non-native
	Bromus diandrus	ripgut brome	invasive
	Bromus hordeaceus	soft chess	invasive
	Bromus madritensis	foxtail chess	non-native
	Bromus sp.		
	Bromus tectorum	downy chess	invasive
	Calamagrostis canadensis	Canada Reedgrass	native
	Cynodon dactylon	Bermuda grass	invasive
	Festuca myuros	rattail six weeks grass	invasive
	Hordeum murinum	foxtail barley	invasive
	Melica californica	California melic	native
	Poa annua	annual blue grass	non-native
	Poa bulbosa	bulbous blue grass	non-native
Polemoniaceae			
	Gilia tricolor	bird's eyes gilia	native
	Gilia tricolor ssp. *diffusa*	bird's eyes	native
	Leptosiphon bicolor	true babystars	native
	Leptosiphon montanus	mustang clover	native
Polygonaceae			
	Rumex sp.		
Portulacaceae			
	Calandrinia menziesii	red maids	native
	Claytonia perfoliata	miner's lettuce	native
Pteridaceae			
	Aspidotis californica	California lace fern	native
	Pellaea andromedifolia	coffee fern	native
	Pentagramma triangularis	goldenback fern	native
Ranunculaceae			
	Clematis lasiantha	pipestem	native
Rhamnaceae			
	Ceanothus cuneatus	buck brush	native
	Ceanothus leucodermis	chaparral Whitethorn	native
	Ceanothus sp.	California lilac	native
Rosaceae			
	Adenostoma fasciculatum	chamise	native
	Cercocarpus betuloides	mountain mahogany	native
	Fragaria californica	wild strawberry	native
	Fragaria vesca	California strawberry	native
	Rubus armeniacus	Himalayan blackberry	invasive
	Rubus ursinus	California blackberry	native
Rubiaceae			
	Galium aparine	common bedstraw	native
	Galium sp.		native
Sapindaceae			
	Aesculus californica	California buckeye	native
Scrophulariaceae			
	Scrophularia californica	California bee plant	native
	Collinsia heterophylla var. *heterophylla*	purple Chinese house	native

Selaginellaceae			
	Selaginella sp.	spike moss	
Solanaceae			
	Datura sp.	jimson weed	native
Solanaceae			
	Solanum sp.		
Sterculiaceae			
	Fremontodendron californicum	California Fremontia	native
Verbenaceae			
	Verbena lasiostachys	western vervain	native
Vitaceae			
	Vitis californica	California wild grape	native
	Wildlife		
Family	**Scientific Name**	**Common Name**	**Native/Non-Native**
Accipitridae			
	Buteo jamaicensis	red-tailed hawk	native
Acrididae			
		locust	
Anguidae			
	Elgaria multicarinata	alligator lizard	native
Cardinalidae			
	Pheucticus melanocephalus	black-headed grosbeak	native
Cathartidae			
	Cathartes aura	turkey vulture	native
Cinclidae			
	Cinclus mexicanus	American dipper	native
Columbidae			
	Zenaida macroura	mourning dove	native
Corvidae			
	Aphelocoma californica	California scrub jay	native
	Corvus brachyrhynchos	American crow	native
Emberizidae			
	Melozone crissalis	California towhee	native
Meloidae			
		blister beetle	
Mutillidae			
		velvet ant	
Myrmeleontidae			
	Suborder *Myrmeleontiformia*	antlion	
Papilionidae			
	Papilio eurymedon	pale swallowtail	native
	Papilio rutulus	tiger swallowtail	native
Paridae			
	Baeolophus inornatus	oak titmouse	native
Picidae			
	Dryobates nuttallii	Nuttall's woodpecker	native
	Melanerpes formicivorus	acorn woodpecker	native
Salmonidae			
	Oncorhynchus mykiss	rainbow trout	native
Sciuridae			
	Otospermophilus beecheyi	California ground squirrel	native
Suborder Anisoptera			
		zebra-striped dragonfly	
Troglodytidae			
	Catherpes mexicanus	canyon wren	native
Tyrannidae			
	Myiarchus cinerascens	ash-throated flycatcher	native
	Sayornis sp.	phoebe	native

Appendix C

Photographs of the Biological Study Area



Figure 1. Mineral King Road Bridge from Mineral King Road, Eastbound Approach



Figure 2. Mineral King Road Bridge from Northeast Slope



Figure 3. Mineral King Road Bridge



Figure 4. Mineral King Road Bridge and Kaweah River Channel

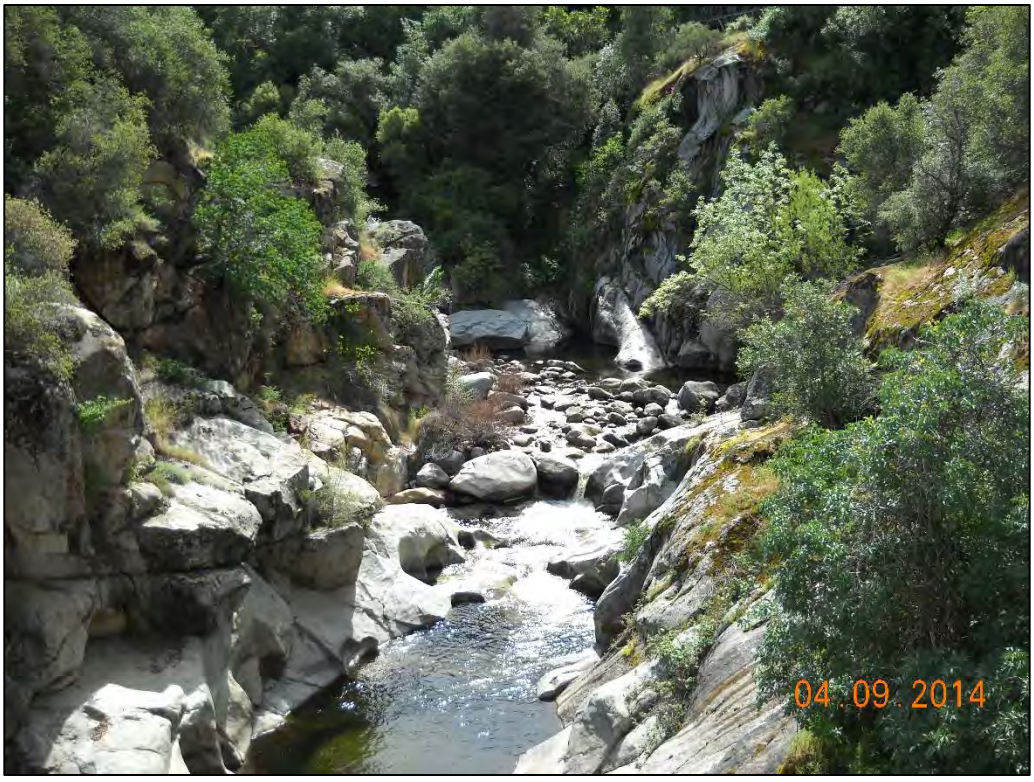


Figure 7. Kaweah River Channel Upstream of Bridge

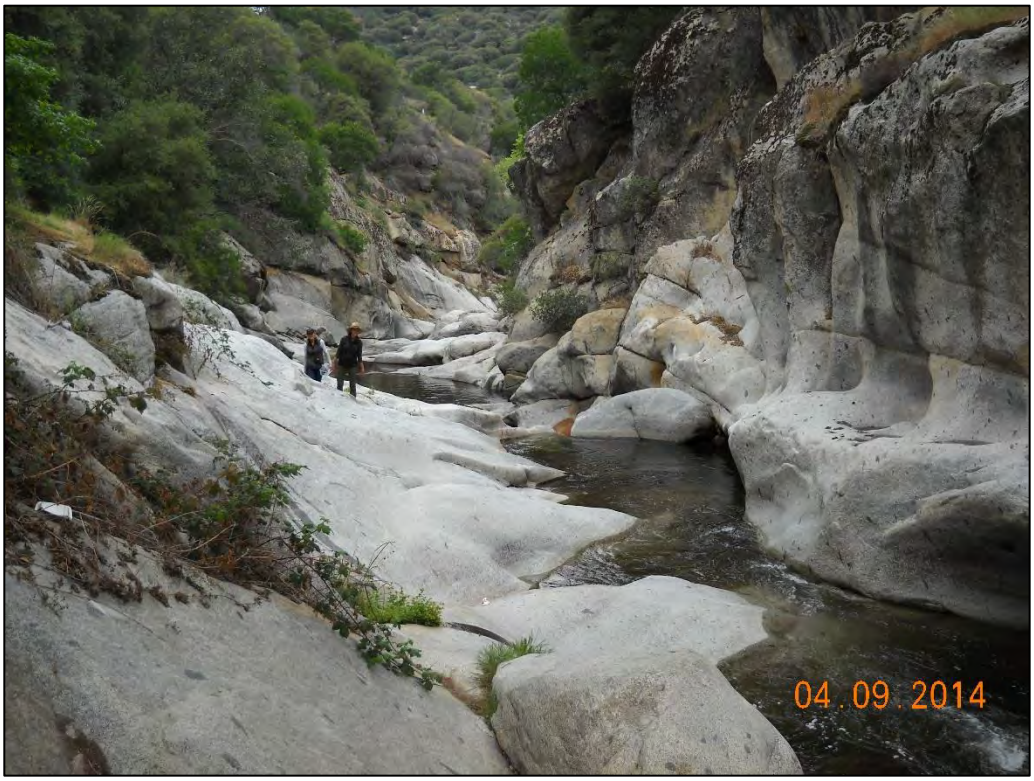


Figure 8. Kaweah River Channel Downstream of Bridge



Figure 9. Mineral King Roadside and Slope



Figure 10. Staging Area 1



Figure 11. Staging Area 2



Figure 12. Staging Area 3



Figure 14. Staining from Bat Roosting On Underside of Bridge



Figure 15. Bats Roosting in Bridge Joint on Southern End of Bridge

ATTACHMENT "D"

CULTURAL AND TRIBAL CULTURAL RESOURCES:

Supplemental Historic Survey Report (2020)

Historic Property Survey Report (2017)
(Includes the Archaeological Survey Report)

Sacred Lands File Search (2021)

RMA Tribal Consultation Tracking (2021)

RMA Tribal Consultation Letters (2020)

Supplemental Historic Property Survey Report

State of California Transportation Agency Department of Transportation

SUPPLEMENTAL HISTORIC PROPERTY SURVEY REPORT

1. UNDERTAKING DESCRIPTION AND LOCATION

District	*County*	*Federal Project. Number. (Prefix, Agency Code, Project No.)*	*Location*	*Previous HPSR Submittal Date*
6	Tulare	HBP 5946 (106)	Oak Grove Bridge (No. 46C0196)	October 12, 2017

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 U.S.C. 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans.

The studies for this undertaking were carried out in a manner consistent with Caltrans' regulatory responsibilities under Section 106 of the National Historic Preservation Act (36 CFR Part 800) and pursuant to the January 2014 *First Amended Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act* (Section 106 PA), as well as under Public Resources Code 5024 and pursuant to the January 2015 *Memorandum of Understanding Between the California Department of Transportation and the California State Historic Preservation Office Regarding Compliance with Public Resources Code Section 5024 and Governor's Executive Order W-26-92, addended 2019* (5024 MOU) as applicable.

Changes to Project Description Since Previous Submittal

In a letter dated March 22, 2018, the State Historic Preservation Officer (SHPO) acknowledged receipt of a Historic Property Survey Report, Archaeology Survey Report, and Finding of Effect for the proposed rehabilitation of the Oak Grove Bridge, a property previously determined eligible for the National Register of Historic Places in 1987 under Criterion C at the local level of significance. The SHPO expressed no objection to Caltrans' determination that a finding of no adverse effect was appropriate for the undertaking, which proposed to replace the existing bridge deck and portions of the substructure in kind, replace the existing barrier rail with a compatible new barrier, repair carbonated concrete on the arch span and piers, and apply a silane waterproofing treatment to the abutments and approach spans.

In December 2019, a detailed corrosion assessment was performed for the Oak Grove Bridge, including: ground penetration radar to identify cover-depth to reinforcing steel, electrical continuity testing of the bar reinforcing steel, corrosion potential surveys, and concrete material sampling for compositional and Petrographic analysis. The assessment determined the primary cause of deterioration present in the structure was severe Alkali Silica Reactivity (ASR), which was observed extending the full 8 to 9-inch length of the extracted concrete core samples.

While there are treatments available for ASR, the detailed corrosion assessment performed in December 2019 concluded it is unlikely that any such treatment would extend the remaining service life of the Oak Grove Bridge beyond 20 years. As a result, the County of Tulare Resource Management Agency, in cooperation with Caltrans, now instead proposes to retain the existing Oak Grove Bridge, permanently close it to vehicular traffic, and construct a new steel plate girder bridge on a new alignment located approximately 50 feet upstream of the existing bridge.

This Supplemental HPSR was prepared to document the proposed project changes and to re-assess effects to the Oak Grove Bridge. A full project description, location, and vicinity maps are included in Attachment B (Supplemental Finding of No Adverse Effect).

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2. CHANGES TO AREA OF POTENTIAL EFFECTS

There are no changes to the APE as a result of the proposed project changes. All direct and indirect potential effects are limited to the previously established APE (see Attachment B for APE Maps).

3. UPDATED CONSULTING PARTIES / PUBLIC PARTICIPATION

☒ Public Information Meetings

A Public Information Meeting to advise the public of the results of the corrosion assessment and resulting proposed project changes will be hosted by the County of Tulare Resource Management Agency and Caltrans District 6. The meeting is scheduled for November 19, 2020 and will be conducted as a virtual meeting to accommodate COVID-19 social distancing requirements (see Attachment C for meeting notice).

4. SUMMARY OF ADDITIONAL IDENTIFICATION EFFORTS

☒ Results:

Identification efforts for known or potential cultural resources in the APE were conducted as part of the previous HPSR and ASR prepared in 2017. The APE will not change as a result of the proposed project changes; therefore, additional identification efforts are not necessary.

5. ADDITIONAL PROPERTIES IDENTIFIED

☒ **No additional cultural resources are present** within the APE. Previous identification efforts included in the previous HPSR submittals remain adequate.

6. REVISED FINDING FOR THE UNDERTAKING

☒ Caltrans, pursuant to Section 106 PA Stipulation X.B.2, has determined a **Finding of No Adverse Effect (without Standard Conditions)** is appropriate for this undertaking, and requests SHPO's concurrence in this determination.

7. ADDITIONAL CEQA CONSIDERATIONS

☒ Not applicable; **Caltrans is not the lead agency under CEQA**.

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8. LIST OF ATTACHED DOCUMENTATION

☒ Previous HPSR Submittals, as appropriate

See the following in Attachment A:

- HPSR form prepared by Andrea Galvin, GPA Consulting, September 21, 2017; reviewed for approval by John Whitehouse, Caltrans District 6 PQS, October 12, 2017; approved by Shane Gunn, Caltrans District 6 EBC, October 12, 2017. (Previous HPSR form attachments omitted for brevity)

☒ Other (Specify below)

See the following in Attachment B:

- Supplemental Finding of No Adverse Effect prepared by Jenna Kachour, GPA Consulting, September 2020; reviewed for approval by John Whitehouse, Caltrans District 6 PQS, DATE; approved by Shane Gunn, Caltrans District 6 EBC, DATE.
  - Appendix A: Maps
    - Regional Location Map
    - Project Area and Staging Areas Map
    - APE Map
  - Appendix B: Correspondence
    - Julianne Polanco, State Historic Preservation Officer to Emily Castano, Acting Section 106 Coordinator, Caltrans RE: Finding of No Adverse Effect for the Proposed Oak Grove Bridge on Mineral King Road, Tulare County, CA, March 22, 2018 (letter reference FHWA_2017_1215_001)
  - Appendix C: Project Plans
    - Revised Alternative 2B General Plan
    - Revised Alternative 2B Schematic Renderings

See the following in Attachment C:

- Notice of Public Information Meeting on November 19, 2020

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9. SUPPLEMENTAL HPSR PREPARATION AND CALTRANS APPROVAL

Prepared by: _____
Jenna Kachour, Senior Architectural Historian Date
GPA Consulting, 617 S. Olive Street, Suite 910, Los Angeles, CA 90014

Reviewed for
Approval by: _____
John Whitehouse, Principal Investigator – Prehistoric and Historical Archaeology Date
District 6 Caltrans PQS

Approved by: _____
Shane Gunn, Environmental Branch Chief Date
District 6 EBC

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Attachment A: Prior HPSR

HPSR form prepared by Andrea Galvin, GPA Consulting, September 21, 2017; reviewed for approval by John Whitehouse, Caltrans District 6 PQS, October 12, 2017; approved by Shane Gunn, Caltrans District 6 EBC, October 12, 2017. (Previous HPSR form attachments omitted for brevity)

HISTORIC PROPERTY SURVEY REPORT

1. UNDERTAKING DESCRIPTION AND LOCATION

District	*County*	*Federal Project. Number. (Prefix, Agency Code, Project No.)*	*Location*
6	Tulare	HBP 5946 (106)	Oak Grove Bridge (No. 46C0196)

Project Description:

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans), proposes to replace or rehabilitate the existing Oak Grove Bridge (46C-0196) on Mineral King Road over the east fork of the Kaweah River. The bridge is located 6.68 miles east of State Route 198, near Three Rivers in Tulare County, California. The project location and vicinity maps are located in Attachment A of this Historic Property Survey Report. The project has three alternatives:

Alternative 1: Rehabilitation/Retrofit

Alternative 1 would include removal and replacement of the bridge deck, spandrel columns, spandrel crossbeams, arch fins, transverse deck beams, and longitudinal exterior beam over the main arch span. It would repair the carbonated concrete at the pier spandrel columns and arch, and replace the existing concrete barrier. Additionally, there would be an application of saline waterproofing treatment to all remaining exposed concrete surfaces.

A temporary scaffolding system, supported within the creek, would be required to access the existing bridge components (i.e., columns, arch, etc.) and make the necessary repairs. A temporary bridge would be required downstream of the existing bridge to maintain traffic during construction, with the centerline of the temporary bridge located approximately 50 feet north of the existing bridge's northern edge of the deck. The temporary bridge would be supported on cast-in-place abutments that would be removed following rehabilitation of the existing bridge.

Alternative 2B: Replacement with Existing Bridge Preservation

Alternative 2B would include retaining the existing historic bridge in place and constructing a replacement bridge with a new cast-in-place tensioned concrete box girder on a new alignment, immediately upstream of the existing bridge, to preserve views of the historic bridge from the approach roadway.

To maintain traffic during construction, the replacement bridge would be located east (upstream) of the existing bridge, with traffic being maintained on the existing bridge until construction has been completed. The existing bridge will become a pedestrian crossing once construction of the new bridge is completed.

Realignment of the approach roadways would be necessary because the alignment of the bridge would shift to the east, requiring cutting into the hillside. Depending on the depth to bedrock, blasting or hydro drilling of the existing rock may be required and retaining walls would be constructed to accommodate both roadway approaches and bridge abutments. In addition, new fill and retaining walls would be required to support the proposed alignment at the southwest corner of the bridge structure.

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Minor rehabilitation of the existing bridge would be completed to maximize its remaining lifespan. This may include replacing the joint seals, applying methacrylate to the bridge deck, and/or injecting epoxy into the larger cracks in the arch ribs and pier spandrel columns.

Alternative 3: Hybrid Rehabilitation/Replacement

Alternative 3 is a combination of Alternatives 1 and 2. This alternative maintains the original arches of the existing bridge while reconstructing the existing bridge deck with a new girder type bridge. The existing historic arches and spandrels, as well as the overall aesthetic appearance of the existing bridge would be maintained. The existing deck, spandrel beams, and abutments would be removed and replaced with a box girder bridge with new abutments that would match the existing aesthetics of the bridge.

Due to the removal of the existing bridge deck, a temporary bridge, as described in Alternative 1, would be required to maintain traffic during construction. After erection of the temporary bridge, construction of the new structure would begin with the demolition of the existing deck, spandrel beams to the tops of the spandrel columns, and abutments. Construction of new abutments would be behind the existing abutments. There would be installation of temporary bracing (i.e., falsework) for the existing arch ribs and spandrel columns—the arches would help support the falsework for construction of the box girder; the falsework would be removed after the box girder is complete.

The Project also includes three potential construction staging areas, identified as the West, South, and East Staging Areas. The West Staging Area is approximately 1.3 miles west of the existing bridge on the north side of Mineral King Road. The South Staging Area is approximately 400 feet northeast of the existing bridge on the south side of Mineral King Road. Finally, the East Staging Area is approximately 800 feet northeast of the existing bridge on the east side of Mineral King Road. Temporary construction easements would be required, and right-of-way acquisitions may be required to accommodate construction of the Project. There would be no utility relocation required as part of the Project. Temporary catchment basins to collect storm water and shrouding (i.e., covering or wrapping) of the bridge arch will be required to prevent debris from falling into the existing river channel during construction.

2. AREA OF POTENTIAL EFFECTS

In accordance with Section 106 Programmatic Agreement Stipulation VIII.A, the Area of Potential Effects (APE) for the project was established in consultation with John Whitehouse, Principal Investigator – Prehistoric and Historical Archaeology, and Charles Garabedian, Project Manager/Local Assistance Engineer, on August 3, 2017. The APE maps are located in Attachment A of this Historic Property Survey Report.

The APE was established as four discontinuous areas (see APE Map page 1), one area surrounding the existing bridge, identified as the Bridge Area (see APE Map page 2), and three potential staging areas, identified as the West, South, and East Staging Areas (see APE Map page 3). The Bridge Area of the APE surrounds existing Bridge 46C-0196, extending approximately 475 feet downstream and 200 feet upstream of the

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existing bridge, and includes the northern and southern approach roadways on Mineral King Road. The West Staging Area of the APE is approximately 1.3 miles west of the existing bridge on the north side of Mineral King Road, the South Staging Area is approximately 400 feet northeast of the bridge on the south side of the road, and the East Staging Area is approximately 800 feet northeast of the bridge on the east side of road.

The APE was determined by including all areas of direct and indirect effects caused by the proposed construction work, including the possible retrofit of the existing bridge, the erection of a temporary bridge, and establishment of staging areas. It encompasses 6.33 acres inclusive of four discontinuous areas surrounding and near the existing bridge. There is also the potential to affect resources below the surface through geophysical boring, excavation, hydro drilling, blasting, and pile driving during construction activities. The approximate maximum depth of these ground-disturbing activities is estimated to be 25 feet below grade. Potential indirect effects within the APE include the introduction of visual, atmospheric, and audible elements such as increased levels of noise and vibration during construction, a temporary bridge (Alternatives 1 and 3), scaffolding, construction equipment and activity, and a proposed new permanent bridge (Alternative 2B).

3. CONSULTING PARTIES / PUBLIC PARTICIPATION

X Local Government

- As the CEQA lead agency, the County initiated the process to solicit written comments from interested parties, including elected officials, public agencies, key stakeholders, and residents/business owners for the purposed of CEQA compliance in January 2016. This was done by providing an informational bulletin (Bulletin #2) to those attending the Three Rivers Community Plan Meeting (Community Plan Meeting) on January 11, 2016 (see Attachment D: Public Scoping of this HPSR for copy of Bulletin #2).
- An Environmental Scoping Notice was published in in the Kaweah Commonwealth Newspaper on January 22, 2016. The notice included the purpose of the project, a general project description, a map of the project location, details regarding an upcoming public scoping meeting that was held on February 23, 2016, notice of a 30-day comment period, and contact information to submit written comments to the County.
- A brief presentation was given at the Community Plan Meeting on February 8, 2016 to inform the public of the project and notify them of another public scoping meeting that was scheduled for February 23, 2016. An informational bulletin (Bulletin #3) was also provided to those attending the Community Plan Meeting on February 8, 2016 (see Attachment D: Public Scoping of this HPSR for copy of Bulletin #3).
- See “Public Information Meetings,” below, for summary of the public scoping meeting held on February 23, 2016.

X Native American Tribes, Groups and Individuals

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- On March 9, 2016, the Native American Heritage Commission (NAHC) provided Applied Earth Works, Inc. (Æ) the names and contact information for five Native American representatives who may have an interest in the project (refer to Appendix C: Native American Consultation in Attachment C: ASR of this HPSR):
    - Kern Valley Indian Council, Julie Turner, Secretary
    - Kern Valley Indian Council, Robert Robinson, Co-Chairperson
    - Tubatulabals of Kern Valley, Robert L. Gomez, Jr., Tribal Chairperson
    - Tule River Indian Tribe, Neil Peyron, Chairperson
    - Wuksache Indian Tribe/Eshom Valley Band
- On March 18, 2016, Æ sent a letter to each of these representatives describing the project, including a map of its location, and requesting information about the study area. On June 22, 2016, Æ attempted follow-up contact with the representatives by telephone.
- Æ received one response to its request for information. Kern Valley Indian Council Secretary Julie Turner responded that the Project is outside the Kern Valley Indian Council's area of interest. Æ has not received any further responses to date.
- Following the County of Tulare's filing of a Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the Project and pursuant to the provisions of Assembly Bill (AB) 52, as lead agency under CEQA the County extended an invitation to consult to 28 Native American representatives from 21 different tribes identified on the NAHC consultation list of tribes with traditional lands or cultural places within the boundaries of the Tulare County. Letters were sent December 8, 2016 via U.S. certified mail (refer to Appendix C: Native American Consultation in Attachment C: ASR of this HPSR).
- Following receipt of letters, the County met with Native American representatives Hector Franco, Shana Powers, Greg Cuara, Robert Jeff, and Roger Martinez of the Santa Rosa Rancheria Tachi Yokut Tribe on December 16, 2016 and with Ken Woodrow of the Wuksachi Indian Tribe/Eshom Valley Band on January 19, 2017. On June 20, 2017, representatives from the County, Applied Earthworks, and GPA Consulting met with Felix Christman of the Tule River Tribe at the project site. Following the meeting, the project team provided Christman with photographs of the river channel, and have not received any additional information from him at this time. The County's AB 52 consultation is in progress and has not been concluded to date.

X Native American Heritage Commission

- On March 6, 2016, Applied Earth Works, Inc. (Æ) sent an e-mail to the Native American Heritage Commission (NAHC) requesting a search of their Sacred Lands File and the contact information for local Native American representatives that may have information about the area or an interest in the Project.
- The NAHC responded on March 9, 2016, stating that it did not identify any sacred sites within or adjacent to the APE (refer to Appendix C: Native

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American Consultation in Attachment C: ASR of this HPSR). The commission cautions that its Sacred Lands Inventory is not exhaustive and the absence of recorded sites does not preclude the discovery of cultural resources during project activities. The NAHC also provided the names and contact information for five Native American representatives who may have an interest in the project (refer to "Native American Tribes. Groups, and Individuals" summary above).

X Local Historical Society / Historic Preservation Group

- On February 25, 2016, Woody Smeck, Superintendent, Sequoia and Kings Canyon National Parks, submitted comments to the County via letter in response to the public outreach meeting held on February 23, 2016 (see Attachment E: Historic Consultation of this HPSR for a copy of the letter). Among Smeck's comments pertaining to historic resources were: 1.) Alternative 1 – Rehab/Retrofit to preserve the Historic Oak Grove Bridge by rehabilitating/retrofitting in situ was preferred, and 2.) that the County complete a National Register of Historic Places Registration Form for the bridge as part of the NEPA/CEQA and Section 106 compliance process.
- On March 21, 2016, Stuart Hendricks, President, Mineral King Preservation Society submitted comments to the County via letter (see Attachment E: Historic Consultation of this HPSR for a copy of the letter). Hendricks noted that the Society had received dozens of inquiries regarding the rehabilitation of the Historic Oak Grove Bridge, and requested that the County "select Alternative 1 – Rehab/Retrofit as presented on record to the Public [at the public outreach meeting], without verbally stated caveats as to possible cost restrictions or newly emerging concerns regarding feasibility." The Society also requested that the County submit a NRHP Registration Form for the bridge, and work in conference with the Sequoia and Kings Canyon National Parks on implementation of the project.
- On March 16, 2017, GPA Consulting mailed a historic consultation letter to the organizations listed below (see Attachment E: Historic Consultation of this HPSR for a copy of the letter). The purpose of the letter was to solicit comments and information from potentially interested parties regarding known historic resources in the vicinity of the project. The letter acknowledged that the Oak Grove Bridge is a known historic resource and would be evaluated for potential impacts.
    - Mineral King Preservation Society
    - Sequoia and Kings Canyon National Parks
    - Sequoia Foothills Chamber of Commerce
    - Sequoia Parks Conservancy, Ash Mountain Office
    - Sequoia Parks Conservancy, Three Rivers Office
    - Southern California Edison
    - Three Rivers Branch Library
    - Three Rivers Historical Society and Museum
    - Tulare County Historical Society
    - Tulare County Library, Annie R. Mitchell History Room

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- On March 28, 2017, GPA Consulting sent the same letter via email to those organizations listed above for which an email address was available. No additional comments were submitted by these organizations in response the historic consultation letter sent via mail and email in March 2017. (See Attachment E: Historic Consultation of this HPSR for a correspondence log.)

X Public Information Meetings

- A public scoping meeting was held on February 23, 2016 in the Three Rivers Memorial Building at 43490 Sierra Drive, Three Rivers, California. The meeting was held from 6:00 p.m. to approximately 8:00 p.m., during which time information regarding the proposed project and the environmental process was distributed to the attendees. Representatives from the County, Cornerstone Engineering, and GPA Consulting presented information to the public during the Power Point presentation. Specific members of the project team included Jason Vivian (Tulare County), Shawn Cullers (Cornerstone Engineering), and Erinn Silva (GPA Consulting).
- A project briefing and Power Point presentation were given from approximately 6:15 p.m. to 6:45 p.m. Those attending the meeting were able to view large-scale plans of various project design elements and ask questions of the project team during the open house and comment submittal period between 6:45 p.m. and 7:30 p.m. The project team provided information related to the project background, purpose and need, project design elements, environmental process, project alternatives, proposed environmental schedule, public scoping details, and contact information for submittal of written comments. Those attending the meeting were able to submit written comments and ask the project team for additional clarification. (See Attachment D: Public Scoping of this HPSR for copies of the public scoping meeting materials, including the sign-in sheet, PowerPoint presentation, and comment cards.)
- The primary purpose of the public scoping meeting was to provide information to interested parties, and to receive feedback to ensure all factors are considered as part of the development of project design and in the environmental studies. The County received 48 written comments during the public scoping comment period, between February 23, 2016 and March 23, 2016. A summary of the comment topics that were received is included in Table 1, List of Public Scoping Period Comments.

Table 1: List of Public Scoping Period Comments

Comment Category	Number of Comments
Bridge History	30
Views/Visual Impact	16
Safety	15
Anti-Demolition	16
Restoration and Preservation	23
Maintain Original Bridge	5
Local Businesses	4

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Tourism	9
Bridge Alternatives	4
Cabin Owners	3
Historic Bridge Name	1
SHPO	1
NHPA & NRHP	2
NEPA & CEQA Documentation	1
Memorandum of Agreement	1
Biological	2
Section 4(f)	1
Natural Environmental Study	1
Water Quality Report	1
Caltrans Local Assistance	1
Cultural Resources	1
Structural Stability	1
Archaeology	1
Mitigation	1
Traffic	1
Pedestrians	3
Engineering Studies	1
Duplicate Bridge	1
Other Comments	7

X Other

- The following individuals contacted the County via email, letter, or public comment card (distributed at the public scoping meeting held on February 23, 2016) with comments or questions relating to historic resources and/or provided their contact information on the sign-in sheet at the public scoping meeting. Common themes expressed by many of these individuals include the importance of the bridge as historic resource that is valued by the community and visitors to the area, and a desire to keep the historic bridge in place. (See Attachment E: Historic Consultation of this HPSR for copies of the comments received and a correspondence log).

Table 2: List of Individuals Involved in Historic Consultation[1]

Individual(s)	Point(s) of Contact	Date(s)
William A. Martin	Email to County Supervisor Phil Cox	11/12/2015
Brian Reynolds	Email to Jason Vivian, County RMA	1/18/2016
Shawn Dienhart	Email to Jason Vivian, County RMA	1/19/2016
Michael Asay	Email to Jason Vivian, County RMA	1/20/2016
Paul Dayton	Email to Jason Vivian, County RMA	1/20/2016

[1] For Sequoia and Kings Canyon National Parks, Mineral King Preservation Society, and other organizations identified as potentially interested parties, please see “Local Historical Society / Historic Preservation Group,” above.

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Ron Kennedy	Email to Jason Vivian, County RMA	1/20/2016
Patricia Whitendale	Email to Jason Vivian, County RMA	1/20/2016
Sally J. Dungan	Email to Jason Vivian, County RMA	1/20/2016
Jana Botkin	Emails to Jason Vivian, County RMA; Emails to Andrea Galvin, GPA Consulting; Public Scoping Meeting Sign-In Sheet	1/20/2016, 2/8/2016, 2/9/2016, 2/23/2016, 3/13/2016, 3/20/2016
Nadine Hack	Emails to Jason Vivian, County RMA	1/20/2016, 3/3/2016, 3/28/2017
Kathy Hath	Email to Jason Vivian, County RMA	1/21/2016
Merl Ledford III, Esq.	Email to Jason Vivian, County RMA	1/21/2016
Dirk Buchenau	Email to Jason Vivian, County RMA	1/21/2016
Sharon Devol	Emails to Jason Vivian, County RMA	1/21/2016, 4/3/2017
Jill Tovey	Email to Jason Vivian, County RMA	1/22/2016
Laile Di Silvestro	Emails to Jason Vivian, County RMA; Public Scoping Meeting Sign-In Sheet	1/22/2016, 2/8/2016, 2/23/2016
Susan B. Merrill	Email to Jason Vivian, County RMA	1/24/2016
Terry L. Ommen	Email to Jason Vivian, County RMA	1/24/2016
Jean Koch	Email to Jason Vivian, County RMA	1/25/2016
Jane Coughran	Email to Jason Vivian, County RMA	1/25/2016
Martin Strudwick	Email to Jason Vivian, County RMA	1/27/2016
Beverly Foltz	Email to Jason Vivian, County RMA	1/31/2016
Todd Harris	Email to Jason Vivian, County RMA	2/1/2016
Chris Brewer	Email to Eric Coyne, County Economic Development; Public Scoping Meeting Sign-In Sheet; Email to Andrea Galvin, GPA Consulting	2/4/2016, 2/23/2016
Paul and Nadean Bissiri	Email to Jason Vivian, County RMA, Email to Jenna Kachour, GPA Consulting	2/10/2016, 3/30/2017
Betty Luceigh	Email to Jason Vivian, County RMA	2/10/2016
Ken Hulick	Email to Jason Vivian, County RMA	2/19/2016
Mary Wadsworth	Email to Jason Vivian, County RMA	2/20/2016
Britta Lee and Marcel V Shain	Email to Jason Vivian, County RMA	2/22/2016
Peggy Blanchard	Email to Jason Vivian, County RMA	2/23/2016
Danielle Temple	Public Scoping Meeting Sign-In Sheet	2/23/2016
Pat Humphrey	Public Scoping Meeting Sign-In Sheet	2/23/2016
Karen Bodner	Public Scoping Meeting Sign-In Sheet	2/23/2016
Greg and Laurie Schwaller	Public Scoping Meeting Sign-In Sheet	2/23/2016
John Mitchell	Public Scoping Meeting Sign-In Sheet	2/23/2016
Jim Barton	Public Scoping Meeting Sign-In Sheet, Email to Jason Vivian, County RMA	2/23/2016, 4/1/2017
John Elliott	Public Scoping Meeting Sign-In Sheet, Email to Jenna Kachour, GPA Consulting	2/23/2016, 3/28/2017
Daniel Rourke	Public Scoping Meeting Sign-In Sheet	2/23/2016
Jamey Haley	Public Scoping Meeting Sign-In Sheet	2/23/2016
Georgellen Parker	Public Scoping Meeting Comment Card	2/28/2016
Stephen Criglov	Public Scoping Meeting Comment Card	2/28/2016
Stuart R. Hendricks	Email to Jason Vivian, County RMA	3/23/2016
John Spock	Email to Jason Vivian, County RMA	4/1/2017
Mary Pat Pinkham	Email to Jason Vivian, County RMA	4/1/2017
Sally Sedwina	Email to Jason Vivian, County RMA	4/1/2017
Mark Bissiri	Email to Jason Vivian, County RMA	4/4/2017

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- On March 16, 2017, GPA Consulting mailed a historic consultation letter to the individuals listed above (see Attachment E: Historic Consultation of this HPSR for a copy of the letter) for which a mailing address was available. The purpose of the letter was to solicit comments and information from potentially interested parties regarding known historic resources in the vicinity of the project. The letter acknowledged that the Oak Grove Bridge is a known historic resource and would be evaluated for potential impacts.
- On March 28, 2017, GPA Consulting sent the same letter via email to those individuals listed above for which an email address was available. To date, the ten responses listed below were received in response the historic consultation letter sent via mail and email in March 2017. (See Attachment E: Historic Consultation of this HPSR for copies of the comments received and a correspondence log.)

Table 3: List of Responses to Historic Consultation Letter

Individual(s)	Response	Date
John Elliott	Via email to Jenna Kachour, GPA Consulting, John Elliott suggested a public notice in the Commonwealth with project update. This request was forwarded to Jason Vivian, County RMA.	3/28/2017
Nadine Hack	Via email to Jenna Kachour, GPA Consulting and Jason Vivian, County RMA, Nadine Hack expressed support for rehabilitating the bridge without compromising the historic look and fabric.	3/28/2017
Paul and Nadean Bissiri	Via email to Jenna Kachour, GPA Consulting, Paul and Nadean Bissiri indicated they would like to see the bridge restored and asked if it was not possible to maintain its present appearance and make it earthquake safe. This response was forwarded to Jason Vivian, County RMA.	3/30/2017
Jim Barton	Via email to Jason Vivian, County RMA, Jim Barton expressed preference for strengthening the existing bridge, or if a new bridge must be built, that it would be similar in appearance and the old bridge would be demolished to prevent an attractive nuisance.	4/1/2017
John Spock	Via email to Jason Vivian, County RMA, John Spock expressed preference for rehabilitating the existing structure, or if this is impractical, allowing the existing structure to remain in place if a new structure is constructed in the vicinity.	4/1/2017
Mary Pat Pinkham	Via email to Jason Vivian, County RMA, Mary Pat Pinkham expressed preference for rehabilitating the bridge rather than replacing it.	4/1/2017
Sally Sedwina	Via email to Jason Vivian, County RMA, Sally Sedwina asked the County to "not restore this bridge in any way except for safety reasons."	4/1/2017
Sharon Devol	Via email to Jason Vivian, County RMA, Sharon Devol expressed support for the preservation of the existing bridge and that demolition should not be an option.	4/3/2017
Mark Bissiri	Via email to Jason Vivian, County RMA, Mark Bissiri expressed support to "reinforce unsafe portions without significantly impacting the historic design." If this is not possible, the next best alternative would be to build a new bridge west of the current bridge and the current bridge left as a historic display open to pedestrians or horses.	4/4/2017
Laile Di Silvestro	Via email to Jason Vivian, County RMA, on 4/13/17, Laile Di Silvestro indicated she would submit a "document that identifies the cultural resources associated with the Oak Grove Bridge Rehabilitation Project's areas of potential adverse effect." A summary document was sent on 4/19/17, and a full document was sent on 5/12/17. Potential cultural resources in the APE identified by Laile Di Silvestro (in addition to the Oak Grove Bridge) include: possible subsurface prehistoric and historic artifacts and features in the Bridge Area, East Staging Area, and South Staging Area of the APE, and remnant footings of a 1912 wooden bridge (no longer extant) that was located west of the Oak Grove Bridge, within the Bridge Area of the APE.	4/13/2017, 4/17/2017, 4/19/2017, 5/12/2017

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4. SUMMARY OF IDENTIFICATION EFFORTS

_ National Register of Historic Places
_ California Register of Historical Resources
X California Inventory of Historic Resources
_ California Historical Landmarks
_ California Points of Historical Interest
X California Historical Resources Information System (CHRIS)
X Caltrans Historic Highway Bridge Inventory
_ Caltrans Cultural Resources Database (CCRD)

X Other Sources consulted

- Caltrans Cultural Studies Office, 3/14/2015
- Office of Historic Preservation (OHP) Historic Properties Directory, 4/17/2015
- Archaeology Determinations of Eligibility, 4/17/2017
- Southern California Edison (SCE), 5/18/2015
- Historic topographic and General Land Office (GLO) maps, various dates
- Applied EarthWorks, Inc. in-house library, various dates

X Results:

- On April 17, 2015, the staff of the Southern San Joaquin Valley Information Center (SSJVIC) at California State University, Bakersfield, performed a records search of the California Historical Resources Information System (CHRIS), which encompassed the APE and a 0.5-mile surrounding radius surrounding. For a copy of the records search results (RS# 15-157), refer to Attachment C: ASR of this HPSR (see ASR Appendix B: Records Search Results). SSJVIC staff examined maps depicting recorded resources and searched their database of reports and cultural resource records as well as the Historic Properties Directory (OHP), Archaeological Determinations of Eligibility, and the California Inventory of Historic Resources (1976).
- The records search identified one previously recorded resource within the Project APE. P-54-004761 was recorded as two dry-stacked rock retaining walls, one on either side of Mineral King Road. Four other previously recorded resources are within 0.5 mile of the APE.
- The records search identified one previous cultural resources study within the APE (TU-01527). This survey followed the route of the Southern California Edison flume that parallels Mineral King Road in the Bridge Area portion of the APE (Kovak and Jackson 2012). Two previous investigations have been documented within 0.5-mile of the APE.
- Caltrans Cultural Studies Office provided inventory forms and photographs of the Oak Grove Bridge (Caltrans Bridge # 46C0196) from the Caltrans Historic Bridge Inventory. The 1986 Caltrans bridge survey determined the Oak Grove Bridge was significant under Criterion C in the areas of transportation and engineering and eligible for listing in the National Register. The 2004 Caltrans bridge survey update confirmed this determination.

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- Southern California Edison provided an archaeological survey (Thomas T. Taylor, SCE, 1989), historic evaluation (Susan Lehman, et al., 1990), and SHPO concurrence letter (Kathryn Gualtieri, 1990) regarding the Kaweah Hydroelectric System. The system includes three powerhouses with associated buildings and structures, referred to as Kaweah Nos. 1, 2, and 3. The SCE flume that parallels Mineral King Road in the Bridge Area portion of the APE is part of the Kaweah No. 1 complex. Kaweah No. 1 was determined ineligible for the National Register in 1990 because it lacked sufficient integrity to convey its historic significance. SHPO concurred with this determination in 1990.

5. PROPERTIES IDENTIFIED

X The following cultural resources within the APE previously determined not eligible for inclusion in the National Register of Historic Places and that determination is still valid.

- APE Map Reference No. 2: Kaweah No. 1 of the Kaweah Hydroelectric System. Kaweah No. 1 was determined ineligible for the National Register in 1990 because it lacked sufficient integrity to convey its historic significance. SHPO concurred with this determination in 1990 (see Attachment F: SHPO Correspondence)

X The following properties within the APE previously were listed or determined eligible for inclusion in the National Register of Historic Places and that determination is still valid.:

- APE Map Reference No. 1: Oak Grove Bridge (Caltrans Bridge # 46C0196). Built in 1923, the bridge was determined eligible for the National Register by consensus of FHWA and SHPO. It is significant under Criterion C, in the areas of transportation and engineering. See Attachment B: Caltrans Historic Bridge Inventory, for inventory forms, and Attachment F: SHPO Correspondence for concurrence letter.

X The following resources are not significant resources under CEQA:

- Kaweah No. 1 of the Kaweah Hydroelectric System (APE Map Reference No. 2) was determined ineligible for the National Register in 1990 because it lacked sufficient integrity to convey its historic significance. SHPO concurred with this determination in 1990 (see Attachment F: SHPO Correspondence). For the same reason, Kaweah No. 1 is ineligible for the California Register and is not historical resource for the purposes of CEQA.

X The following are historical resources for the purposes of CEQA because they meet the California Register or Historical Resources criteria and/or locally designated under a local government ordinance or were identified as significant in a survey that meets the Office of Historic Preservation standards.

- Oak Grove Bridge (Caltrans Bridge # 46C0196) (APE Map Reference No. 1) was determined eligible for the National Register by consensus of FHWA and SHPO. Therefore, it is a historical resource for the purposes of CEQA.

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X Caltrans archaeologist John Whitehouse has determined that the only other properties present within the APE meet the criteria for Section 106 Programmatic Agreement Attachment 4 (Properties Exempt from Evaluation). Mr. Whitehouse is certified as a Principal Investigator in Prehistoric and Historical Archaeology, and as a Principal Architectural Historian.

6. HPSR to District File

X Caltrans, in accordance with Section 106 Programmatic Agreement Stipulation VIII.C.5, has determined there are properties within the APE that were previously determined not eligible for inclusion in the National Register of Historic Places, in consultation with the SHPO or formally determined not eligible for inclusion in the National Register of Historic Places by the Keeper of the National Register of Historic Places and those determinations remains valid; see Section 5. Copy of SHPO/Keeper correspondence is attached.

X Caltrans, in accordance with Section 106 Programmatic Agreement Stipulation VIII.C.5, has determined there are properties within the APE that were previously determined eligible for inclusion in the National Register of Historic Places, in consultation with the SHPO or formally determined eligible for inclusion in the National Register of Historic Places by the Keeper of the National Register and those determinations remain valid; see Section 5. Copy of SHPO/Keeper correspondence is attached.

X Caltrans, pursuant to Section 106 Programmatic Agreement Stipulation IX.B, has determined that there are previously NRHP-listed and/or determined eligible historic properties (See section 5 above) within the APE that will be affected by the undertaking. In accordance with Section 106 Programmatic Agreement Stipulation X, Caltrans will continue consultation with CSO and/or SHPO on the assessment of effects.

7. HPSR to SHPO

X Caltrans, pursuant to Section 106 Programmatic Agreement Stipulation IX.B, has determined that there are historic properties within the APE that will be affected by the undertaking. In accordance with Section 106 Programmatic Agreement Stipulation X, Caltrans will continue consultation with CSO and/or SHPO on the assessment of effects.

8. HPSR to CSO

X Not applicable.

9. Findings for State-Owned Properties

Findings to District File

X Not applicable; project does not involve Caltrans right-of-way or there are no Caltrans-owned cultural resources within the APE.

Findings to SHPO

X Not applicable.

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Findings to CSO

X Not applicable.

10. CEQA Considerations

X Not applicable; Caltrans is not the lead agency under CEQA.

11. List of Attached Documentation

X Project Vicinity, Location, and APE Maps are located in Attachment A: Maps.
X California Historic Bridge Inventory sheet (Attachment B)
X Archaeological Survey Report (ASR) (Attachment C)
- Prepared by Kate Asselin, M.A., RPA, and Randy Baloian, M.A., Applied Earthworks, Inc., August 2017. Reviewed by John Whitehouse, Principal Investigator – Prehistoric and Historical Archaeology, Environmental Analysis, Planning and Local Program, California Department of Transportation, District 6.

X Other
- Public Scoping (Attachment D)
- Historic Consultation (Attachment E)
- SHPO Correspondence (Attachment F)

12. HPSR Preparation and Caltrans Approval

Prepared by:	Andrea Galvin	9/21/17
Consultant / discipline:	Andrea Galvin, Principal Architectural Historian	Date
Affiliation	GPA Consulting, 231 California Street, El Segundo, CA 90245	
Reviewed for approval by:	John Whitehouse	10-12-2017
District 6 Caltrans PQS discipline/level:	John Whitehouse, Principal Investigator — Prehistoric and Historical Archaeology	Date
Approved by:		
District 6 EBC:	Shane Gunn, Environmental Branch Chief	10/12/2017 Date

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Attachment B: Supplemental FNAE

Supplemental Finding of No Adverse Effect prepared by Jenna Kachour, GPA Consulting, September 2020; reviewed for approval by John Whitehouse, Caltrans District 6 PQS, DATE; approved by Shane Gunn, Caltrans District 6 EBC, DATE.

SUPPLEMENTAL FINDING OF NO ADVERSE EFFECT

FOR THE

OAK GROVE BRIDGE (NO. 46C0196) ON MINERAL KING ROAD OVER THE EAST FORK OF THE KAWEAH RIVER NEAR THREE RIVERS, TULARE COUNTY, CALIFORNIA

FEDERAL AID PROJECT NO. HBP 5946 (106)

Prepared by: _____

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Approved by: _____

Shane Gunn, Branch Chief
Environmental Analysis, Planning and Local Programs
Caltrans District 6
855 M Street, Suite 200, Fresno, CA 93721

September 2020

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 U.S.C. 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans.

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1. INTRODUCTION

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans), proposes to construct a new bridge upstream of the existing Oak Grove Bridge (46C0196) on Mineral King Road over the east fork of the Kaweah River. The existing bridge is located 6.68 miles east of State Route 198, near Three Rivers in Tulare County, California. The proposed project would be partially funded under the federal Highway Bridge Program (HBP) thereby making it an *undertaking* as defined by the National Historic Preservation Act (NHPA). Caltrans, as assigned by the Federal Highway Administration (FHWA), is the lead federal agency for the undertaking and the County RMA is the local lead agency.

One historic property, the Oak Grove Bridge (46C0196), is located within the Area of Potential Effects (APE) for this project. The bridge was determined eligible for the National Register of Historic Places (NRHP) by the Caltrans California Bridge Survey in 1986 and the Caltrans Historic Bridge Inventory Update in 2004. The SHPO concurred with the determination of eligibility in 1987. The bridge is listed in the California Register of Historical Resources.

The studies for this undertaking were carried out in a manner consistent with Caltrans' regulatory responsibilities under Section 106 of the National Historic Preservation Act (36 CFR Part 800) and pursuant to the January 2014 *First Amended Programmatic Agreement among the Federal Highway Administration (FHWA), the Advisory Council on Historic Preservation (ACHP), the California State Historic Preservation Officer (SHPO), and the California Department of Transportation (Caltrans) Regarding Compliance with Section 106 of the National Historic Preservation Act* (Section 106 PA). Section 106 compliance activities to date include the preparation of an Archaeological Survey Report (ASR) and Historic Property Survey Report (HPSR), which were approved in October 2017, and a Finding of Effect (FOE), which was approved in December 2017. In a letter dated March 22, 2018, the State Historic Preservation Officer (SHPO) acknowledged receipt of the ASR, HPSR, and FOE and expressed no objection to Caltrans' determination that a finding of no adverse effect was appropriate for the undertaking, which at that time proposed to rehabilitate the Oak Grove Bridge (see Appendix B: Correspondence).

Subsequently, a detailed conditions assessment of the Oak Grove Bridge was conducted in December 2019. The assessment identified severe Alkali Silica Reactivity (ASR) as the primary source of deterioration in the existing structure, and concluded that available ASR treatments were unlikely to extend the remaining service life of the Oak Grove Bridge beyond 20 years. As a result, the County RMA, in cooperation with Caltrans, now proposes to instead construct a new steel plate girder bridge on a new alignment located approximately 50 feet upstream of the existing Oak Grove Bridge. The existing bridge would remain in place and be closed to vehicular traffic once the new bridge is operational. A Supplemental HPSR was approved in DATE 2020 to document the proposed project changes and re-assess effects to the Oak Grove Bridge.

Caltrans has applied the Criteria of Adverse Effect as outlined in 36 CFR 800.5 to the historic property within the APE and determined that the revised undertaking (referred to as Revised Alternative 2B) would not cause an adverse effect on the historic bridge. Caltrans has considered

all views concerning such effects which have been provided by consulting parties and the public, as per 36 CFR 800.5(a).

Caltrans, in applying the Criteria of Adverse Effect, has determined that a Finding of No Adverse Effect is appropriate for the undertaking as a whole and is seeking SHPO concurrence with this finding, pursuant to 36 CFR 800.5(c) and Section 106 PA Stipulation X.B.2.

2. DESCRIPTION OF THE REVISED UNDERTAKING

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans), proposes to construct a new bridge upstream of the existing Oak Grove Bridge (46C0196) on Mineral King Road over the east fork of the Kaweah River. The existing bridge is located 6.68 miles east of State Route 198, near Three Rivers in Tulare County, California (see Appendix A, Regional Location Map).

Background[1]

As detailed in the Project Scoping Study dated December 1, 2015, Cornerstone (the County's engineering consultant) identified numerous deficiencies with the existing Oak Grove Bridge after having completed a load rating analysis, seismic evaluation, field investigations and exploratory work, limited materials testing, and research of adjacent structures. This scoping study considered a total of nine (9) project alternatives:

- Alternative 1: Retrofit/Rehabilitation of the Existing Bridge
- Alternative 2A: Replacement with New Reinforced Concrete Arch Bridge on New Alignment Immediately Upstream of Existing Bridge (Remove Existing Bridge)
- Alternative 2B: Replacement with New Cast-in-Place Post Tensioned Concrete Box Girder Bridge on New Alignment Immediately Upstream of Existing Bridge (Preserve Existing Bridge)
- Alternative 3: Hybrid Retrofit/Rehabilitation & Replacement of Existing Bridge
- Alternative 4A: Replacement with New Reinforced Concrete Arch Bridge on New Alignment Downstream of Existing Bridge (Remove Existing Bridge) – Considered but Rejected
- Alternative 4B: Replacement with New Cast-in-Place Post Tensioned Concrete Box Girder Bridge on New Alignment Downstream of Existing Bridge (Preserve Existing Bridge) – Considered but Rejected
- Alternative 5: Replacement with New Cast-in-Place Post Tensioned Box Girder Bridge Located Along New East Alignment Immediately Downstream of Existing Bureau of Land Management Case Mountain Road Bridge – Considered but Rejected
- Alternative 6: Replacement with New Cast-in-Place Post Tensioned Concrete Box Girder Bridge Located Along New West Alignment – Considered but Rejected
- Alternative 7: Do Nothing – Considered but Rejected

The scoping study identified Alternative 2B, replacement with new cast-in-place post tensioned box girder bridge on a new alignment immediately upstream of the existing bridge while preserving the existing bridge, as the most promising alternative.

During completion of the environmental technical studies for compliance with the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA), GPA Consulting (the County's environmental consultant) and Caltrans (the NEPA lead agency) determined that Alternative 1, retrofit/rehabilitation of the existing bridge, would result in a No

[1] This background information was provided by Cornerstone Engineering on September 14, 2020.

Adverse Effect finding under Section 106 of the National Historic Preservation Act. Caltrans obtained concurrence from the State Historic Preservation Officer (SHPO) on this finding, and Alternative 1, the retrofit and rehabilitation alternative, was identified as the preferred alternative because it was feasible and prudent while being the only alternative that would not result in an adverse effect to the historic structure. Following this determination, the remaining technical studies, NEPA Categorical Exemption, and CEQA Initial Study/Mitigated Negative Declaration included analysis of Alternative 1 only.

While the Project Scoping Study had identified the upstream replacement bridge option (Alternative 2B) as the most promising alternative, the study also recommended that in the event the retrofit and rehabilitation option (Alternative 1) was selected, a more thorough corrosion assessment should be completed. The assessment was recommended in order to better understand the extent of the concrete deterioration, identify the root cause of the deterioration observed in the surface of the concrete, quantify the extent of the distressed areas, and develop the most appropriate repair and rehabilitation solutions necessary to successfully extend the service life of the structure.

In December 2019, Vector Corrosion Services (VCS), working as a subconsultant to Cornerstone, completed an additional corrosion assessment of the existing bridge. As part of the assessment VCS completed a field investigation consisting of the following:

- ground penetration radar to identify cover-depth to reinforcing steel in each element of the structure as there is a direct correlation between cover-depth and concrete durability;
- electrical continuity of the bar reinforcing steel in each of the structural elements to determine whether future corrosion mitigation using cathodic protection was an available option;
- corrosion potential surveys to identify locations with a high probability of active corrosion;
- and concrete material sampling in order to gain an understanding of the concrete composition, chloride ion concentration present, carbonation depth, and samples for in-depth Petrographic analysis.

VCS published their findings and recommendations in a Corrosion Assessment report dated February 5, 2020. VCS determined that the primary cause of deterioration present in the existing bridge is a result of severe Alkali Silica Reactivity (ASR), which was observed in both concrete core samples taken from the bridge's main structural supporting arch ribs.

ASR is a reaction which occurs when water is present in concrete that contains highly alkaline cement paste and non-innocuous aggregates with reactive silica materials. The reaction causes swelling and expansive pressure in the concrete that leads to cracking and deterioration of the concrete. The corrosion assessment noted significant cracking and damage to the concrete resulting from ASR in the extracted concrete cores. VCS also observed that the ASR extended the full depth of the cores, which indicates ASR is present throughout the entire section of the supporting arch ribs and is not just isolated to the outer perimeter of the structural section; making repair of the deteriorated concrete impossible.

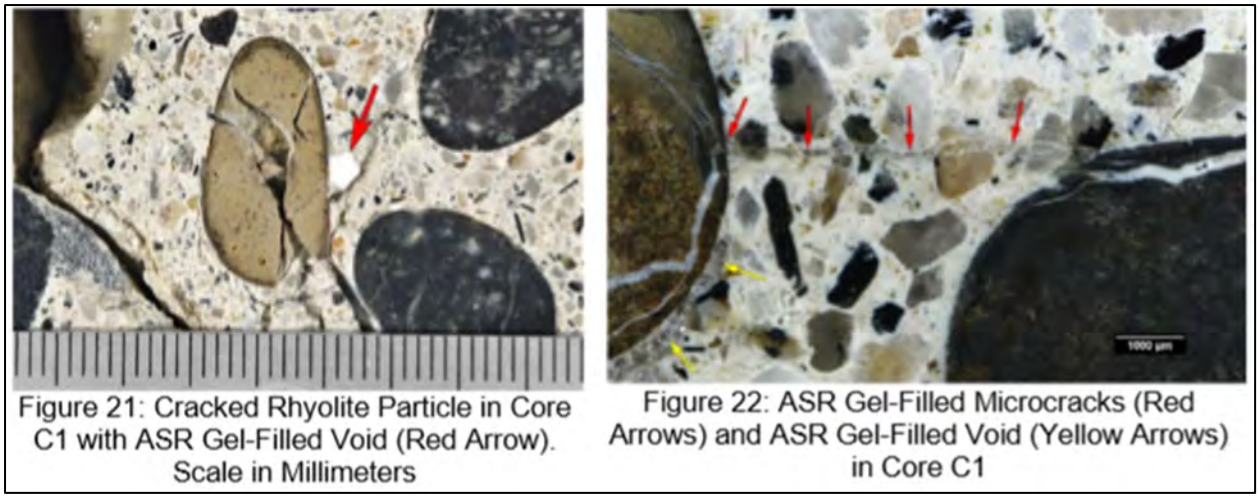


Figure 1: Petrographic analysis depicting Alkali Silica Reactivity in concrete core sample taken from Oak Grove Bridge. Source: Vector Corrosion Services, December 2019.

In the Corrosion Assessment report, VCS concluded that the existing bridge is "nearing its service life as evidenced by the severe ASR and microcracking throughout the length of the extracted cores." While VCS discusses treatments in the Corrosion Assessment report to reduce the progression of ASR and reduce further expansion, VCS also indicates that these treatments are unlikely to stop the ASR completely and that the treatments would "likely result in only a minimal extension of the structures service life (less than 20 years)." The Corrosion Assessment report concludes that "complete replacement should be considered."

Based on VCS's conclusions in the Corrosion Assessment report, the retrofit and rehabilitation of the existing bridge (Alternative 1) was eliminated from consideration as it is no longer considered feasible and prudent. The severity and depth of the ASR in the existing bridge cannot be repaired to provide an appreciable increase in service life. In contrast to the retrofit and rehabilitation alternative (Alternative 1), a new replacement bridge would have a design life of 75 years and be less costly to construct. The County has since elected to move forward with the design of a new steel plate girder bridge on a new alignment located approximately 50 ft. upstream of the existing alignment (Revised Alternative 2B). The complete extents of the existing bridge will be preserved and closed to vehicular traffic as part of this alternative.

Revised Undertaking[2]

Overview of Revised Alternative 2B

The revised undertaking (also referred to as Revised Alternative 2B) would construct a new steel plate girder bridge on a new alignment located upstream of the existing bridge. The proposed new structure would be located far enough upstream to not require any of the historic elements of the existing bridge to be removed. Traffic would be maintained on the existing bridge during construction of the new structure. The new alignment would require cutting into the existing hillside at both bridge approaches as well as the construction of rock anchor retaining walls.

[2] This description of the revised undertaking was provided by Cornerstone Engineering on September 14, 2020.

Specialized rock removal would be required in order to construct the proposed bridge abutments and rock anchor retaining walls.

Two methods of specialized rock removal are anticipated. The first would utilize expansive rock breaking non-explosive demolition agents, such as expanding grout, to facilitate the excavation of the proposed roadway. This method eliminates fly rock, limits the amount of noise produced by this operation, and is a vibration-free excavation method ideal for environmentally sensitive areas or areas adjacent to existing structures. Due to the higher cost and increased construction duration associated with expansive rock breaking non-explosive demolition agents, it is anticipated the contractor may also utilize controlled fracturing of rock using minimal quantities of explosive chemical compounds placed in judiciously spaced predetermined drilled holes. Fly rock, dust, and noise transmission associated with this method are reduced through the use of large, rubber mats placed over the area prior to fracturing.

The existing bridge, as well as the existing viewshed of the historic structure while approaching the crossing along Mineral King Road, would be preserved as part of this revised alternative. It is anticipated that the existing structure may still be used as a pedestrian crossing. Furthermore, the funds not spent on removing the existing bridge may be used to perform minor rehabilitation work on the existing structure in order to maximize its remaining life. Such work may include replacing the joint seals, applying methacrylate to the existing bridge deck, and epoxy injecting larger cracks in the arch ribs and pier spandrel columns.

Proposed Replacement Bridge

The proposed replacement bridge superstructure consists of a new 100-foot-long clear span steel plate girder bridge. The depth of the steel plate girder superstructure would be 5 feet 6 inches, which would provide a depth-to-span ratio of 0.055. This depth-to-span ratio is consistent with the guidelines contained in the American Association of State Highway and Transportation Officials (AASHTO) *Load and Resistance Factor Design (LRFD) Bridge Design Specifications, 6th Edition* Table 2.5.2.6.3-1 and as shown on page 10-26 of Caltrans *Bridge Design Aids*.

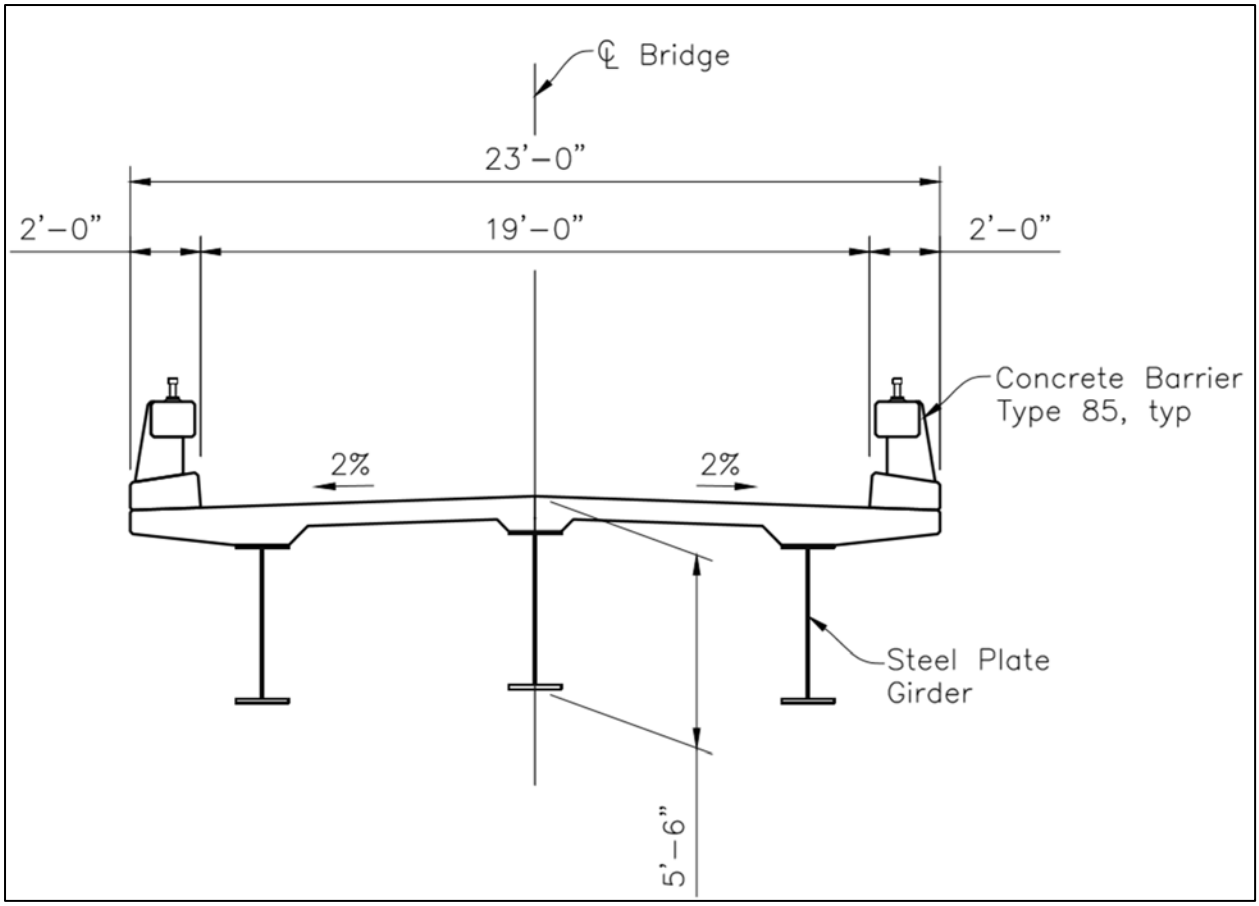


Figure 2: Typical section of proposed replacement bridge superstructure. Source: Cornerstone Engineering, August 2020.

The new bridge abutments are anticipated to consist of seat type abutments. Depending upon the depth to bedrock, the abutments would be supported on either cast-in-drilled-hole (CIDH) concrete piles with concrete rock sockets or spread footings cast directly on bedrock. In the case that spread footings are selected and dead load of the structure prove insufficient to resist uplift due to overturning, post tensioned rock anchors would be used to provide additional resistance. Specialized rock removal is anticipated at the abutments to provide a level surface to construct the abutment foundations. In addition, new cantilever retaining walls would be required at the abutments to support the proposed roadway approaches.

Construction Considerations

The undertaking includes three potential construction staging areas, identified as the West, South, and East Staging Areas (see Appendix A, Project Area and Staging Areas Map). The West Staging Area is approximately 1.3 miles west of the existing bridge on the north side of Mineral King Road. The South Staging Area is approximately 400 feet northeast of the existing bridge on the south side of Mineral King Road. Finally, the East Staging Area is approximately 800 feet northeast of the existing bridge on the east side of Mineral King Road. Temporary construction easements would be required, and right-of-way acquisitions may be required to accommodate

construction of the project. There would be no utility relocation required as part of the project. Temporary catchment basins to collect storm water and shrouding (i.e., covering or wrapping) of the bridge arch would be required to prevent debris from falling into the existing river channel during construction.

2.1. Area of Potential Effects

There are no changes to the Area of Potential Effects (APE) as a result of the proposed project changes. All direct and indirect potential effects are limited to the previously established APE. The APE was established in consultation with John Whitehouse, Principal Investigator – Prehistoric Archaeology and Historical Archaeology, and Charles Garabedian Project Manager/Local Assistance Engineer on August 3, 2017. The APE includes four discontinuous areas (see Appendix A, APE Map page 1): one area surrounding the existing bridge, identified as the Bridge Area (see Appendix A, APE Map page 2), and three potential staging areas, identified as the West, South, and East Staging Areas (see Appendix A, APE Map page 3). The Bridge Area of the APE surrounds the existing Oak Grove Bridge, extending approximately 475 feet downstream and 200 feet upstream of the existing bridge, and includes the northern and southern approach roadways on Mineral King Road. The West Staging Area of the APE is approximately 1.3 miles west of the existing bridge on the north side of Mineral King Road, the South Staging Area is approximately 400 feet northeast of the bridge on the south side of the road, and the East Staging Area is approximately 800 feet northeast of the bridge on the east side of road.

The APE was determined by including all areas of direct and indirect effects that would be caused by the proposed construction work, including the possible retrofit of the existing bridge, the erection of a temporary bridge, and establishment of staging areas. It encompasses approximately 6.33 acres inclusive of four discontinuous areas surrounding and near the existing bridge. There is also the potential to affect resources below the surface through geophysical boring, excavation, hydro drilling, blasting, and pile driving during construction activities. The approximate maximum depth of these ground-disturbing activities is estimated to be 25 feet below grade. Potential indirect effects within the APE include the introduction of visual, atmospheric, and audible elements such as increased levels of noise and vibration during construction, scaffolding, construction equipment and activity, and a proposed new permanent bridge.

3. PUBLIC PARTICIPATION

The County conducted a variety of public outreach efforts during project planning to comply with Section 106 of the NHPA, the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The previous Historic Property Survey Report (October 2017) and Finding of Effect (December 2017) detailed the specific outreach efforts for each of the regulations stated above and included copies of all correspondence received as part of the Section 106 consultation and correspondence associated with the CEQA/NEPA process that referenced cultural resources. See Attachment A of the Supplemental HPSR (date) for a copy of the October 2017 HPSR.

The County RMA and Caltrans District 6 have planned a Public Information Meeting to advise the public of the results of the detailed corrosion assessment and the resulting proposed project changes. The meeting is scheduled for November 19, 2020 and will be conducted as a virtual meeting to accommodate COVID-19 social distancing requirements. Contact information collected from individuals who previously participated in the Section 106 consultation and/or CEQA/NEPA process for the undertaking will be utilized to provide notice of the planned Public Information Meeting. A meeting notice will also appear in the local newspaper and the County's website.

4. DESCRIPTION OF HISTORIC PROPERTIES

Steps taken to identify historic properties are detailed in the previous Historic Property Survey Report (October 2017) and Finding of Effect (December 2017). Identification efforts included a records search of the California Historical Resources Information System (CHRIS), information requests to the Caltrans Cultural Studies Office (CCSO) and Southern California Edison (SCE), outreach to interested parties and organizations, and the preparation of an Archaeological Survey Report (ASR). The APE did not change as a result of the proposed project changes; therefore, additional identification efforts were not necessary and the previous identification efforts remain adequate. The Oak Grove Bridge (Bridge No. 46C0196) is the only historic property located within the APE.

4.1. Oak Grove Bridge

The Oak Grove Bridge (#46C0196) over the east fork of the Kaweah River, is located approximately 6.68 miles east of State Route 198 on Mineral King Road, near Three Rivers in Tulare County (see Appendix A, Maps). It was constructed in 1923 and serves as an approach bridge to the Sequoia National Park. The 1986 Caltrans California Bridge Survey identified the bridge as significant under Criterion C at the local level of significance in the areas of transportation and engineering. SHPO concurred with this determination of eligibility in 1987. The Caltrans Historic Bridge Inventory Update in 2004 confirmed that the bridge retained sufficient historic integrity and continues to meet the criteria for listing in the National Register. The bridge has had no significant alterations since the survey update. The bridge is listed in the California Register of Historical Resources and is also a historical resource for purposes of CEQA, because it meets CEQA Guidelines 15064.5(a)(1).



Figure 3: Oak Grove Bridge, view looking southeast from Mineral King Road. Source: Caltrans Historic Bridge Inventory, 2002.

When state highways were first constructed in pristine wilderness areas during the 1920s, California bridge engineers struggled to find an appropriate design for major bridges on scenic routes.[3] The Oak Grove Bridge was constructed by Tulare County and local contractor Nate Lovelace. It exhibits a modern design aesthetic that contrasts the "rustic" style that was typically utilized for structures within the nearby National Park.[4] Its construction in 1923 presaged the scenic bridge design developed by the Division of Highways in the mid to late 1920s.[5] As such, the Oak Grove Bridge is historically significant as an early example of scenic highway bridge design.

The Oak Grove Bridge is a reinforced concrete, open spandrel, fixed, round arch bridge with one, two-ribbed arch span measuring 67 feet long (see Figure 3 and Figure 5). Its period of significance is 1923, the year it was constructed. The total bridge length is 108 feet, which includes two concrete T-Beam approach spans. The two-lane bridge is 23 feet wide with a flush roadway (see Figure 4). The reinforced concrete railings have an arched window design and a smooth texture finish. Two pairs of decorative posts mark the bridge approaches. The letter "T" (presumably for Tulare

[3] Rating Sheet for Bridge # 46C0196, Caltrans Inventory of Concrete Bridges, Survey Date April 30, 2003.

[4] Carolyn J. Kiernat, *Generals Highway Recording Project* (Washington, D.C.: U.S. Department of the Interior, National Park Service, Historic American Engineering Record, 1993), HAER No. CA-140, Sheet 9 of 10.

[5] Rating Sheet for Bridge # 46C0196.

County) is rendered in bas-relief within arched recesses at the base of each of the four posts (see Figure 6).



Figure 4: Bridge deck and concrete railings with decorative posts, view looking northeast near south approach. Concrete railing extends beyond bridge, curving at each approach where turnouts allow for scenic viewing. Source: Caltrans Historic Bridge Inventory, 2002.

A metal plaque with the text "1923 Kaweah River Oak Grove," and the names of the County Supervisors, County Engineer (Lawrence Moye), and Contractor (Nate Lovelace), is shown affixed to one of the posts in photographs from the 1986 Caltrans bridge survey, but has since been removed. Also, the posts are currently topped by concrete bollards that were not present during the 1986 Caltrans bridge survey or in photographs taken for the Historic American Engineering Record (HAER) in 1993. The boundaries of the historic property include the bridge and approaches, which are linked by the concrete railings.



Figure 5: Detail of bridge superstructure, including arch span and open spandrels. View looking east from south embankment. Source: Caltrans Historic Bridge Inventory, 2002.



Figure 6: Detail of concrete bridge railing and decorative posts. View looking north near south approach. Source: Caltrans Historic Bridge Inventory, 2002.

The character-defining features of the Oak Grove Bridge include the following (ranked by significance):

- Most Significant (strongly conveys sense of time and place)
    - Simplified neoclassical-inspired style
    - Location on a scenic highway
    - Setting within a wilderness area
- Significant (conveys sense of time and place)
    - Concrete two-ribbed arch span
    - Open spandrels with columns and crossbeams
    - Concrete railings with arched window design and decorative posts
    - Concrete T-Beam approach spans
    - Turnouts at bridge approaches for parking and scenic viewing
- Less significant (still conveys sense of time and place, but to a lesser degree)
    - Concrete abutments
    - Bridge deck

5. APPLICATION OF THE CRITERIA OF ADVERSE EFFECT

5.1. Definition of Effect and Criteria of Adverse Effect

The definition of effect is contained within 36 CFR Part 800: "*Effect* means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register."[6] An *adverse effect* occurs "when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association."[7] As listed in 36 CFR 800.5(a)(2), examples of adverse effects may include, but are not limited to, the following:

i. Physical destruction of or damage to all or part of the property;

ii. Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;

iii. Removal of property from its historic location;

iv. Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

v. Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;

vi. Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

vii. Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.[8]

5.2. Analysis of Adverse Effects

The Revised Alternative 2B would construct a new steel plate girder bridge on a new alignment upstream of historic Oak Grove bridge (see Figure 7 and Appendix C, "General Plan - Alternative No. 2B"). The proposed replacement structure would be located far enough upstream to not require any of the historic elements of the existing bridge to be removed. Traffic would be maintained on the existing bridge during construction of the replacement structure, and would be closed once the new bridge is operational.

[6] 36 CFR 800.16(i)

[7] 36 CFR 800.5(a)(1).

[8] 36 CFR 800.5(a)(2)(i through vii).

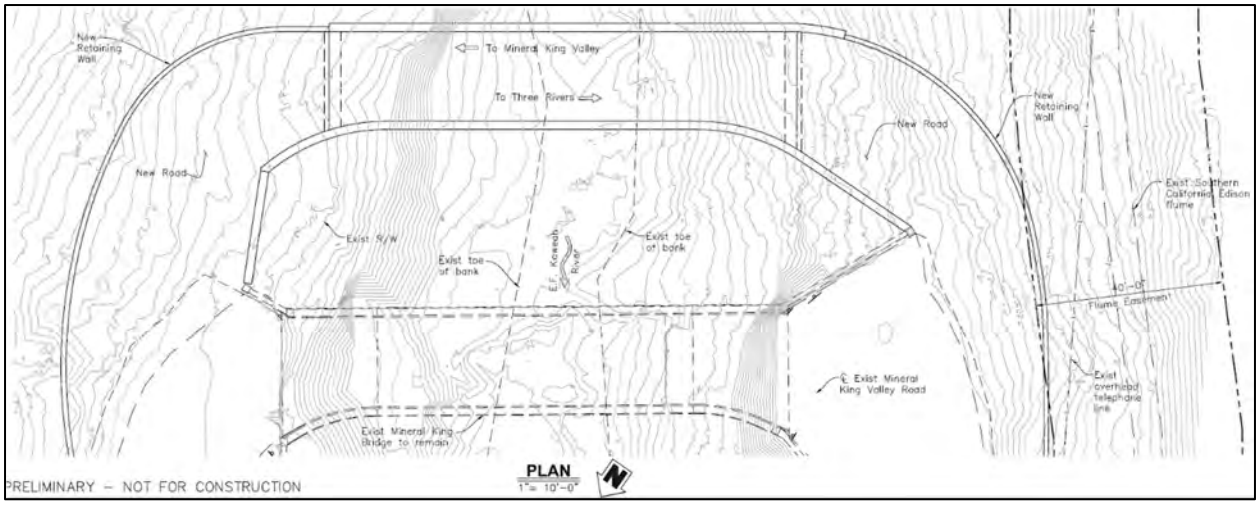


Figure 7: Site plan for proposed Revised Alternative 2B. Source: Cornerstone Engineering, August 2020.



Figure 8: Schematic rendering of proposed Revised Alternative 2B, aerial view looking southeast. The historic bridge is in the foreground, the replacement bridge is behind. Source: Cornerstone Engineering, August 2020.

The new alignment will require cutting into the existing hillside at both bridge approaches (see Figure 9). This will require controlled blasting of the existing rock and construction of retaining walls to accommodate both roadway approaches and bridge abutments. In addition, new fill and retaining walls will also be required to support the proposed alignment at both abutments. Accelerometers would be placed on the historic Oak Grove Bridge during excavation activities to monitor vibrations. If the accelerometers indicate vibration is approaching a specified threshold, the excavation activities would be modified to ensure the threshold is not exceeded.

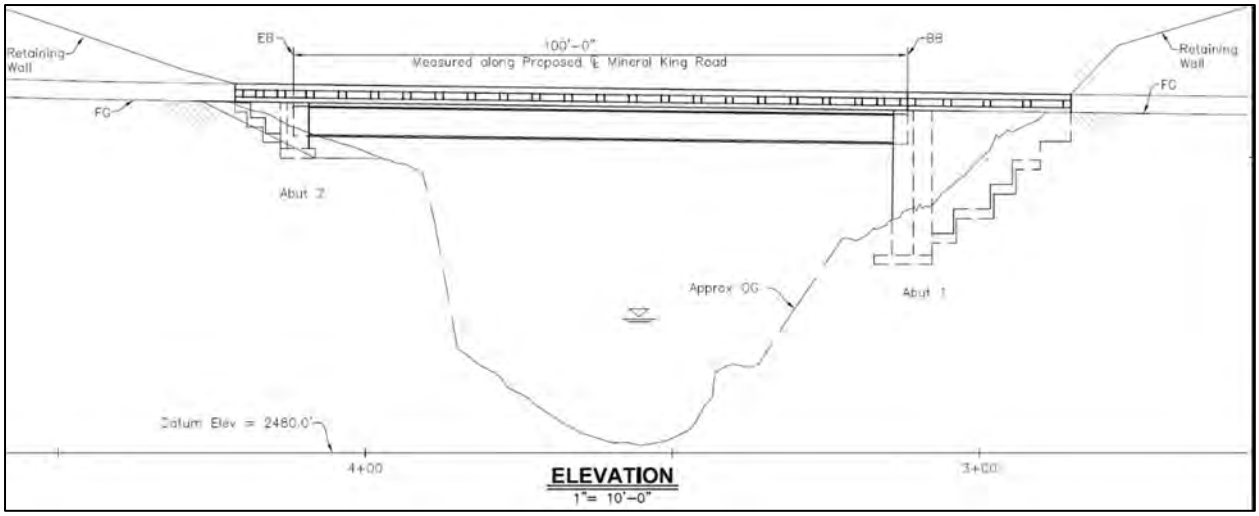


Figure 9: Elevation view of proposed Revised Alternative 2B. Source: Cornerstone Engineering, August 2020.



Figure 10: Schematic rendering of west approach from Mineral King Road, view looking east. The historic bridge is in the foreground, the replacement bridge is behind. Source: Cornerstone Engineering, August 2020.

The historic Oak Grove Bridge, as well as the existing viewshed of the historic structure while approaching the crossing along Mineral King Road, would be preserved as part of the Revised Alternative 2B (see Figure 10). The existing structure would be maintained by the County, and may still be used as a pedestrian crossing. Funds not spent on removing the existing bridge may be used to perform minor rehabilitation work on the existing structure in order to maximize its remaining life. Such work may include replacing the joint seals, applying methacrylate to the existing bridge deck, and epoxy injecting larger cracks in the arch ribs and pier spandrel columns.

The Revised Alternative 2B does not involve physical destruction of or damage to all or part of the historic property [36 CFR 800.5(a)(2)(i)], removal of the property from its historic location [36

CFR 800.5(a)(2)(iii)], or neglect of the property which causes its deterioration [36 CFR 800.5(a)(2)(vi)]. As indicated above, the existing bridge would remain intact. It would be monitored during the construction period to prevent inadvertent damage, and would be maintained by the County after construction of the new structure is complete. The historic bridge is County-owned and will remain as such; the transfer, lease, or sale of the historic property out of Federal ownership or control [36 CFR 800.5(a)(2)(vii)] is not an applicable example of adverse effect for this undertaking.

The Revised Alternative 2B does not involve alteration of a property that is not consistent with the Secretary's Standards for the Treatment of Historic Properties and applicable guidelines [36 CFR 800.5(a)(2)(ii)]. The proposed minor rehabilitation measures, including replacing the joint seals, applying methacrylate to the bridge deck, and/or injecting epoxy into the larger cracks in the arch ribs and pier spandrel columns, would be consistent with the Standards for Rehabilitation. Sealing joints in concrete with appropriate flexible sealants is recommended by the Rehabilitation Guidelines.[9] Applying a coating of methacrylate to the bridge deck will repair the surface cracking on the existing bridge deck and slow future deterioration. It will not result in a major visual or physical change in the appearance of the deck. The surface layer of the bridge deck has been repaved over time and is not historic material. Repairing masonry using recognized preservation methods is recommended by the Rehabilitation Guidelines.[10] Epoxy injection repair is a proven, effective procedure; however, this type of repair is visually apparent in most cases. For this reason, epoxy repairs are not recommended for highly visible areas of historic structures. While the arch ribs and pier spandrel columns are visible at a distance from Mineral King Road or if peering over the edge of the bridge railing, individuals will generally not view these bridge elements up close. As such, the epoxy repairs will be minimally perceptible to bridge users, if at all, and will not detract from the overall aesthetic of the historic structure. Therefore, the proposed rehabilitation measures to the historic bridge itself are consistent with the Secretary's Standards.

The proposed new bridge would be in close proximity to the historic bridge. The applicable Rehabilitation Standards for related new construction are Standards 9 and 10:

> *(9) New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.*
>
> *(10) New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.*[11]

The wing walls of the existing and proposed structures would immediately abut each other (see Figure 11). Fiberboard expansion joint filler is proposed at the separation between the two structures. The historic concrete material of the bridge, and its wing wall and barrier features,

[9] Grimmer, 85.

[10] Grimmer, 83.

[11] 36 CFR part 68.3(b)(9) and (10)

would not be destroyed by the abutting construction. These features are proposed to remain intact during and after the construction period, and the fiberboard is intended to protect the historic concrete from potential damage as a result of any thermal expansion that might occur in the abutting new structure. This construction is proposed in such a manner that if the proposed new bridge were to be removed in the future, the essential form and integrity of the historic bridge would be unimpaired.

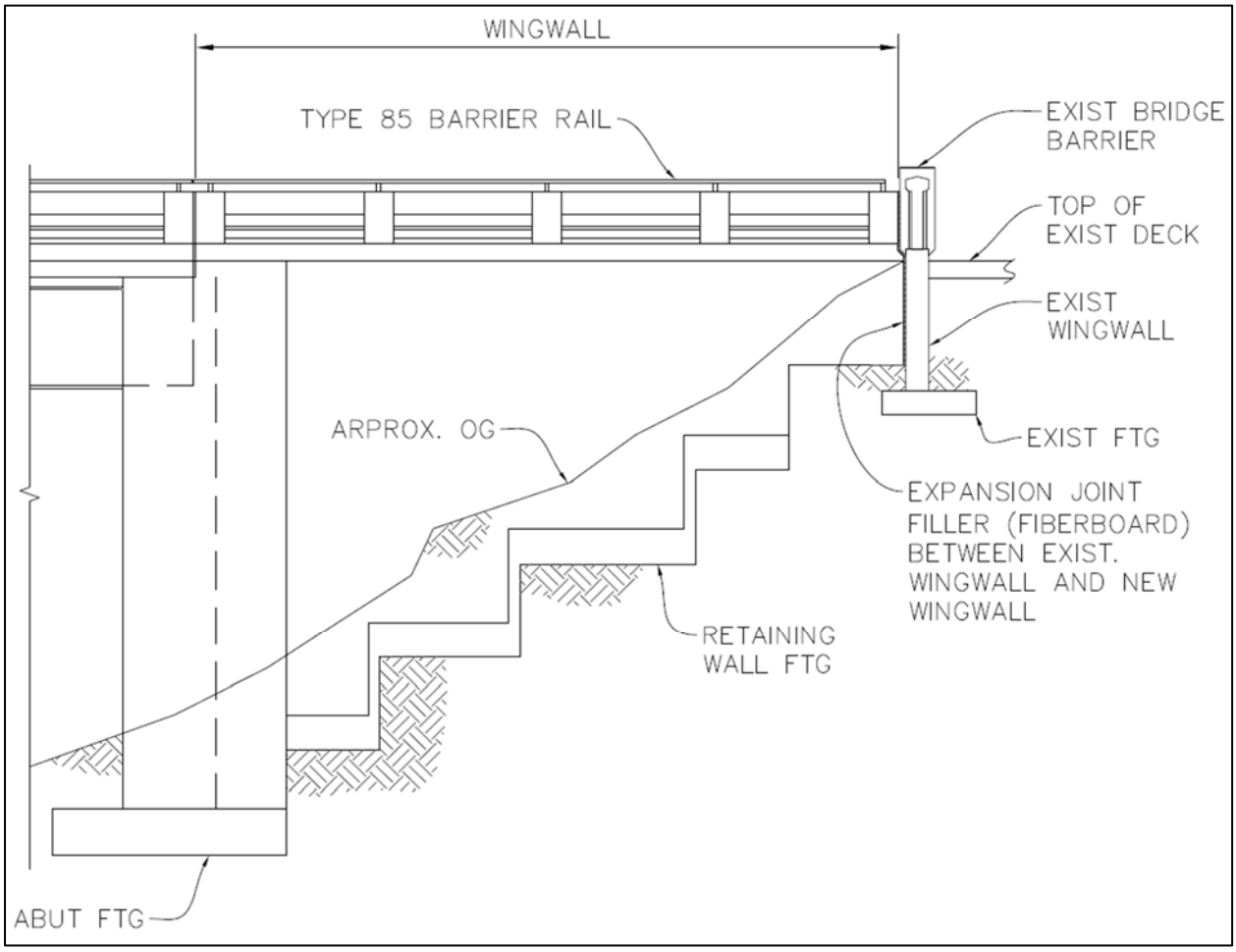


Figure 11: Detail of existing and proposed barrier joint at the west approach. Source: Cornerstone Engineering, August 2020.



Figure 12: Schematic rendering of the existing and proposed wing walls at the east (left image) and west (right image) approaches. Source: Cornerstone Engineering, August 2020.

The physical arrangement of the Oak Grove Bridge over the east fork of the Kaweah River, which is the spatial arrangement that characterizes the historic property, would not be changed. The historic bridge will maintain its current position over the river, with no intervening construction proposed between the historic bridge and the river channel below. The proposed new bridge would be constructed of concrete and Corten steel. The proposed materials, concrete and metal, are the same general class of materials used in the historic bridge, but are slightly differentiated in terms of color, texture, and composition. The proposed features of the new bridge include a low profile I-girder and Type 85 concrete barrier rails (see Figure 13). The proposed features are simplified and utilitarian in design, and are compact and minimal in terms of size, mass, and proportion. As a result, the proposed new bridge would not visually compete with the grand arched design, decorative bridge railing features, and larger physical presence of the historic bridge. Overall, the materials and design of the new structure would not introduce a jarring new aesthetic to the environment of the historic bridge, but also would not mimic the historic bridge. It will be evident to bridge users which is the old and which is the new structure. As a result of careful design choices made for the related new construction, the proposed new bridge is consistent with the Secretary's Standards



Figure 13: Schematic rendering of the proposed Corten steel I-girder and concrete Type 85 bridge barrier, as viewed from the Oak Grove Bridge deck looking south. Source: Cornerstone Engineering, August 2020.

The Revised Alternative 2B does involve some changes to the character of the property's use and to physical features within the property's setting that contribute to its historic significance [36 CFR 800.5(a)(2)(iv)], which has the *potential* to result in an adverse effect if the alterations would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. As described in Section 4.1 above, the Oak Grove Bridge is historically significant as an early example of scenic highway bridge design (NRHP Criterion C). The character of the property's use that contributes to its historic significance is its function as a bridge along a scenic highway. Due to deficiencies which present a safety risk to vehicular traffic, the historic Oak Grove Bridge is proposed to be closed to vehicles, but may remain in safe operation for active transportation users such as pedestrians and cyclists (see Figure 14). This represents a minimal change to the character of its historic use, but does not diminish any of its aspects of integrity. The bridge remains an example of scenic highway bridge design, even if the types of users must be limited in the interest of public safety.



Figure 14: Schematic rendering of pedestrians on Oak Grove Bridge and vehicle on proposed new bridge, view facing southwest. Source: Cornerstone Engineering, August 2020.

The physical features of the setting that contribute to the historic significance of the Oak Grove Bridge include its location on a scenic highway, setting within a wilderness area, and turnouts at bridge approaches for parking and scenic viewing. The first two features are identified as among the "Most Significant (strongly conveys sense of time and place)" character defining features in Section 4.1 above, and the latter is identified as "Significant (conveys sense of time and place)." The physical location of the historic bridge would not change. The existing roadway would extend beyond the current bridge approaches to provide access to the replacement bridge, and the original approaches to the historic bridge would remain in place and physically connected to the scenic highway. The historic bridge approaches, as well as the historic bridge itself, can continue to serve as areas for scenic viewing. Natural boulders would be placed at the ends of the bridge deck in lieu of bollards to prevent vehicular access to the historic bridge, but it will still be visually apparent that the Oak Grove Bridge had served as part of the highway (see Figure 15).



Figure 15: Schematic rendering of east approach with proposed natural boulders placed as safety bollards. View facing southeast. Source: Cornerstone Engineering, August 2020.

The bridge would also still be set within a wilderness area. A portion of the hillsides immediately adjacent to the proposed new bridge approaches would be modified by retaining walls, which involves some excavation and filling. The retaining walls are proposed to be treated with a sculpted, colored concrete finish that simulates an earthen hillside (see Figure 16). This context-sensitive design solution is proposed to minimize the appearance of the walls and promote visual continuity across the landscape. The setting will still be largely undeveloped, with vegetated hillsides surrounding the historic bridge and the natural river channel below (see Figure 10). In sum, the proposed changes to the physical features of the setting will not diminish the integrity of the historic bridge, and it will still convey its historic significance.



Figure 16: Illustrative example of sculpted, colored concrete treatment on retaining wall. Source: Cornerstone Engineering, date unknown.

In addition to the above-described changes to existing physical features of the setting, the Revised Alternative 2B also involves the introduction of new elements to the setting. However, the undertaking does not involve any "visual, atmospheric or audible elements *that diminish the integrity of the property's significant historic features* [36 CFR 800.5(a)(2)(iv)] (emphasis added). Proposed new visual elements include the temporary construction site, and the permanent new bridge, retaining walls, and associated roadway improvements. New atmospheric and audible elements are expected to occur for a limited time, as a result of temporary construction vibration and noise. The temporary visual, atmospheric, and audible elements associated with construction will cease at the end of the construction period and will not permanently alter the setting or the historic bridge itself. Accelerometers would be used during construction to ensure vibrations remain below a threshold that would have the potential to cause damage to the historic bridge.

The permanent visual elements associated with the new bridge, retaining walls, and roadway extension will not physically alter any of the historic features of the Oak Grove Bridge structure. As described in the discussion of 36 CFR 800.5(a)(2)(ii) above, the proposed bridge would be consistent with the Rehabilitation Standards and associated guidelines for related new construction. The proposed bridge design and placement are intended to minimize the visual appearance of the new structure and maximize the distance between the historic and proposed bridge decks. A low-profile I-girder structure, with an approximate depth of 5 feet 6 inches, is proposed upstream of the historic bridge, allowing the historic bridge to visually obscure the new bridge from sight when travelling along Mineral King Road (see Figure 10). Views of the historic bridge from the roadway are preserved as a result. Pedestrians on the historic bridge deck will have a more prominent view of the new bridge than drivers on the roadway, but the two bridge decks will be physically separated by approximately 40 feet of distance (see Figure 14). The simple aesthetic of the new bridge is also visually distinct from the historic bridge, but not in a manner that visually distracts from an appreciation of the historic bridge materials, features, and design (see . Similarly, the visual appearance of the proposed retaining walls would be softened by a sculpted, colored concrete finish intended to blend with the natural surroundings and keep the historic bridge as the primary focal point. In addition, the required roadway extension to the new bridge would be similar to existing improvements. An understanding of the significance of the Oak Grove Bridge as an early example of scenic highway bridge design would not be impeded by the visual presence of the new bridge, retaining walls, or roadway segments.



Figure 17: Schematic rendering of proposed new bridge (right of image, center), retaining walls (left of image, background), and roadway extension (right of image, foreground). View facing east from the proposed west approach. Source: Cornerstone Engineering, August 2020.

In summary, the Revised Alternative 2B would not result in direct or indirect adverse effects to the historic Oak Grove Bridge. The setting of the historic bridge would be altered by the new proposed bridge and related improvements, but not in a manner that would diminish the integrity of the historic property or its ability to convey its historic significance. The historic Oak Grove Bridge structure would remain fully intact, with minor rehabilitative work that is consistent with the Rehabilitation Standards and associated guidelines.

6. CONCLUSIONS

The County RMA, in cooperation with Caltrans, proposes to construct a new bridge upstream from the existing Oak Grove Bridge (Bridge No. 46C0196) over the east fork of the Kaweah River. The project is being partially funded with federal funds under the Highway Bridge Program (HBP), which qualifies the project as a federal undertaking. Caltrans, as assigned by FHWA, is the lead federal agency for the undertaking and the local lead agency is the County RMA. Caltrans prepared this Supplemental Finding of No Adverse Effect (FNAE), which applies the Criteria of Adverse Effect (36 CFR 800.5) to the Oak Grove Bridge under the Revised Alternative 2B. The Oak Grove Bridge is the only historic property within the project APE. This property was previously identified as eligible for listing in the National Register of Historic Places.

Caltrans has applied the Criteria of Adverse Effect as outlined in 36 CFR 800.5 to the historic property within the Area of Potential Effects (APE) and has determined that the revised undertaking (referred to as Revised Alternative 2B) would not cause an adverse effect on the historic bridge. Caltrans has considered any views concerning such effects which have been provided by consulting parties and the public, as per 36 CFR 800.5(a).

Caltrans, in applying the Criteria of Adverse Effect, has determined that a Finding of No Adverse Effect is appropriate for the undertaking as a whole and is seeking SHPO concurrence with this finding, pursuant to 36 CFR 800.5(c) and Section 106 PA Stipulation X.B.2.

REFERENCES

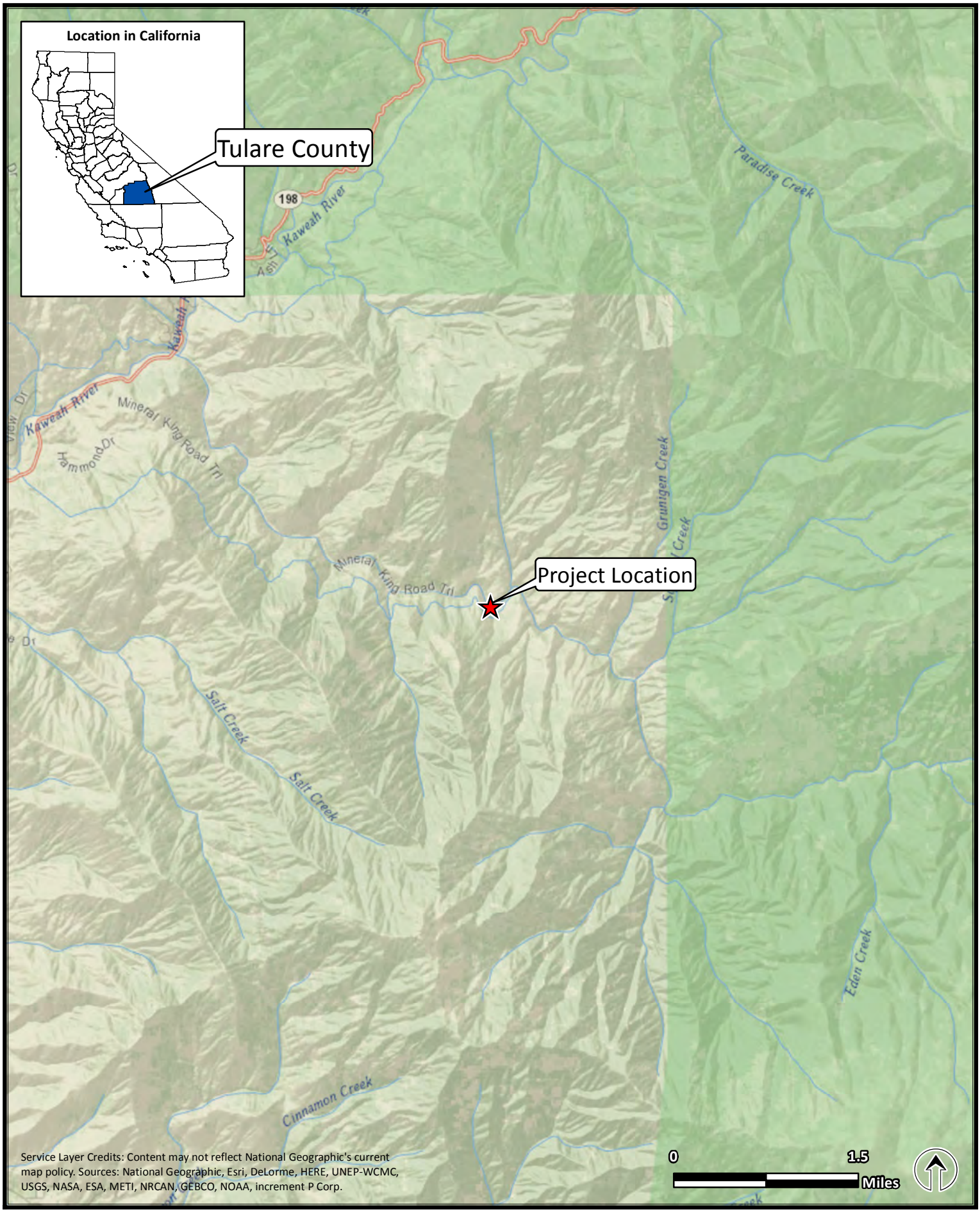
Caltrans Inventory of Concrete Bridges, Rating Sheet for Bridge # 46C0196, Survey Date April 30, 2003.

Gaudette, Paul and Deborah Slaton. *Preservation Brief 15: Preservation of Historic Concrete*. Washington D.C., U.S. Department of the Interior, National Park Service, Heritage Preservation Services, 2007.

Grimmer, Anne E. *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic* Buildings. Washington, D.C.: U.S. Department of the Interior, National Park Service, Technical Preservation Services, 2017.

Kiernat, Carolyn J. *Generals Highway Recording Project* (HAER No. CA-140). Washington, D.C.: U.S. Department of the Interior, National Park Service, Historic American Engineering Record, 1993.

Appendix A: Maps

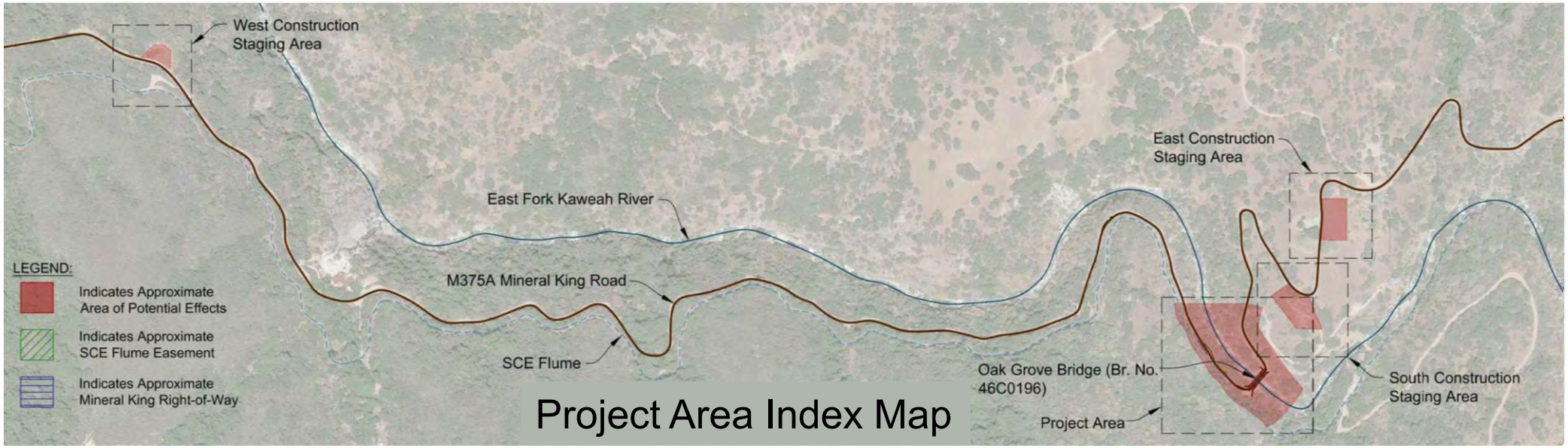


REGIONAL LOCATION MAP
Oak Grove Bridge Revised Alternative 2B



PROJECT AREA AND STAGING AREAS
Oak Grove Bridge Revised Alternative 2B

FIGURE 3: AREA OF POTENTIAL EFFECTS MAP



PROJECT AREA
1" = 500'-0"

LEGEND:
- AREA OF POTENTIAL EFFECTS
- APPROXIMATE SCE FLUME EASEMENT
- APPROXIMATE MINERAL KING RIGHT-OF-WAY

SIGNATURES:

DISTRICT LOCAL ASSISTANCE ENGINEER/ PROJECT MANAGER — DATE 8/3/17

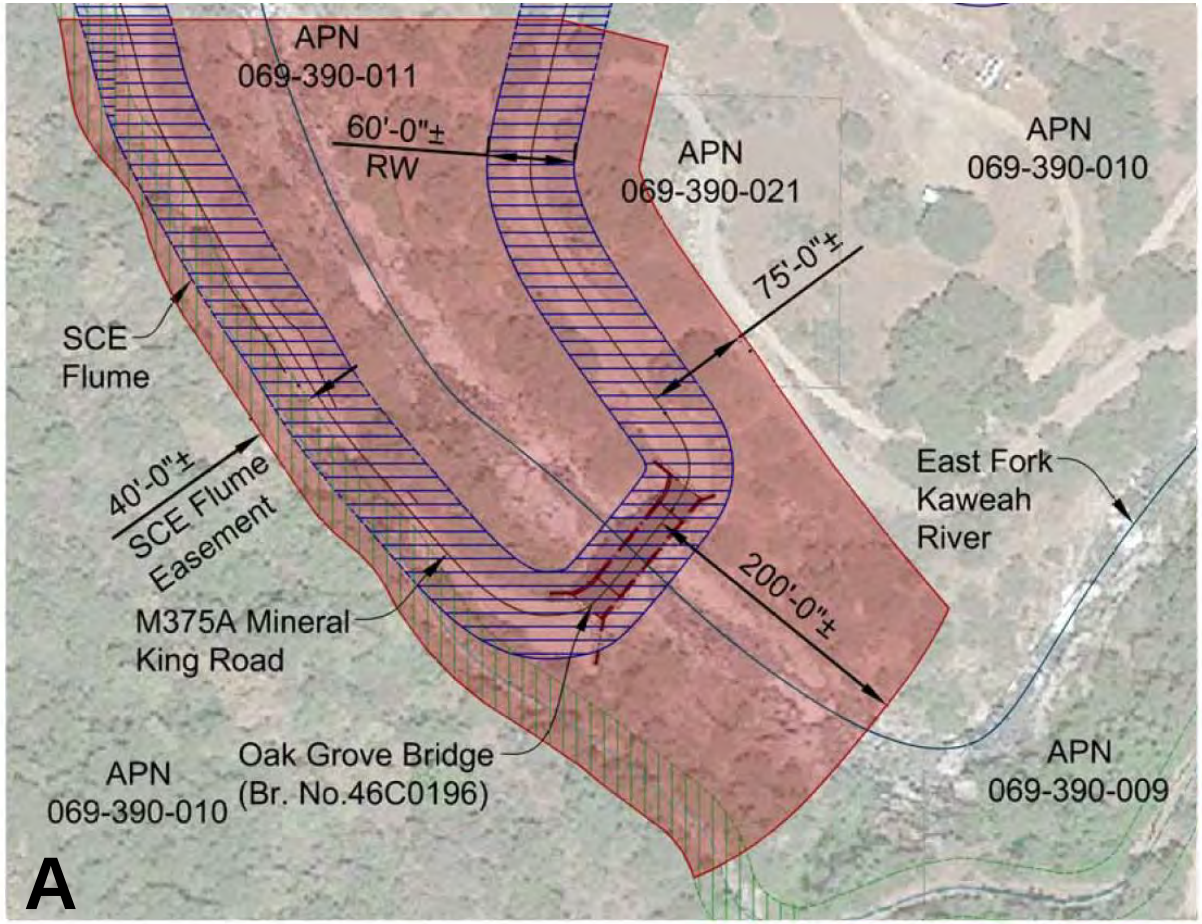
DISTRICT PROFESSIONALLY QUALIFIED STAFF — DATE 8-3-2017

FIGURE 3 Page 1 of 3
Area of Potential Effects Map
Oak Grove Bridge Rehabilitation Project
Tulare County Resource Management Agency
HBP 5946 (106) (May 1, 2016)

FIGURE 3: AREA OF POTENTIAL EFFECTS MAP

Previously Identified Properties:

1. Oak Grove Bridge (Caltrans Bridge No. 46C0196), NRHP Eligible
2. Flume of Kaweah No. 1, Kaweah Hydroelectric System, NRHP Ineligible



PROJECT AREA
1"=100'-0"

N

LEGEND:

- AREA OF POTENTIAL EFFECTS
- APPROXIMATE SCE FLUME EASEMENT
- APPROXIMATE MINERAL KING RIGHT-OF-WAY

Index Key Map

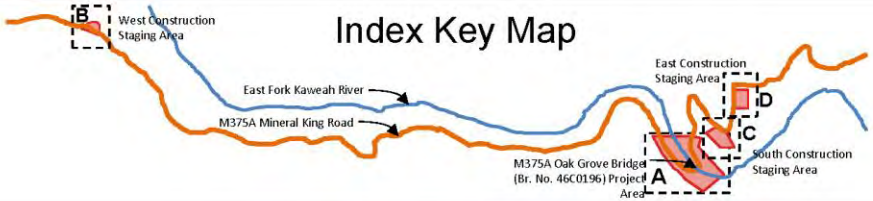


FIGURE 3 Page 2 of 3

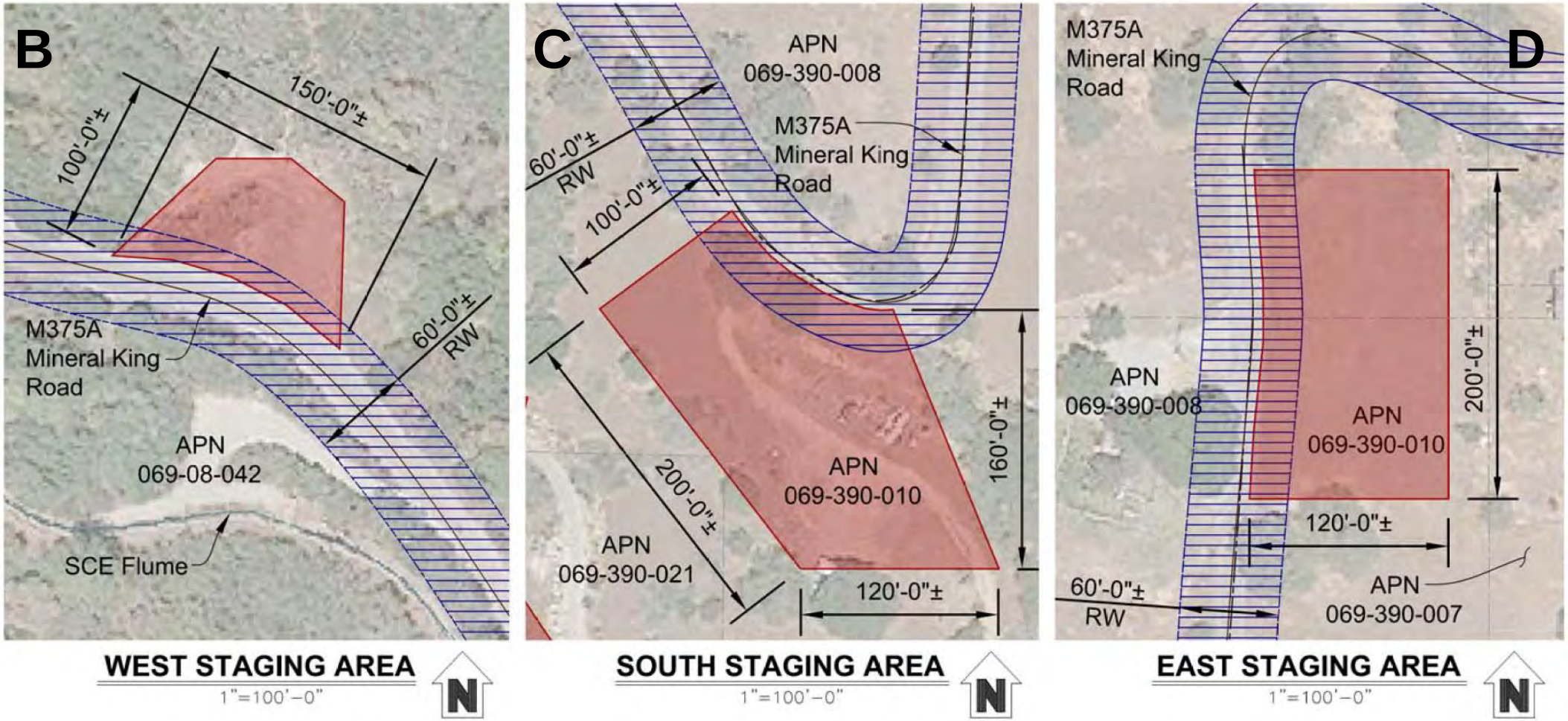
Area of Potential Effects Map

Oak Grove Bridge Rehabilitation Project

Tulare County Resource Management Agency

HBP 5946 (106) (May 1, 2016)

FIGURE 3: AREA OF POTENTIAL EFFECTS MAP



WEST STAGING AREA
1"=100'-0"

SOUTH STAGING AREA
1"=100'-0"

EAST STAGING AREA
1"=100'-0"

LEGEND:

- AREA OF POTENTIAL EFFECTS
- APPROXIMATE SCE FLUME EASEMENT
- APPROXIMATE MINERAL KING RIGHT-OF-WAY

Index Key Map

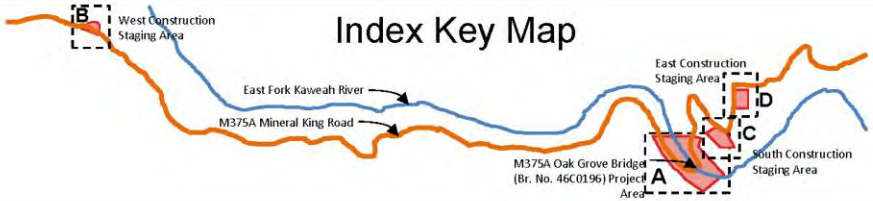


FIGURE 3 Page 3 of 3
Area of Potential Effects Map
Oak Grove Bridge Rehabilitation Project
Tulare County Resource Management Agency
HBP 5946 (106) (May 1, 2016)

Appendix B: Correspondence

State of California • Natural Resources Agency Edmund G. Brown Jr., *Governor*

DEPARTMENT OF PARKS AND RECREATION Lisa Ann L. Mangat, *Director*
OFFICE OF HISTORIC PRESERVATION
Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

March 22, 2018

VIA EMAIL

In reply refer to: FHWA_2017_1215_001

Ms. Emily Castano, Acting Section 106 Coordinator
Cultural Studies Office
Caltrans Division of Environmental Analysis
1120 N Street, PO Box 942873, MS-27
Sacramento, CA 94273-0001

Subject: Finding of No Adverse Effect for the Proposed Oak Grove Bridge on Mineral King Road, Tulare County, CA

Dear Ms. Castano:

You are consulting with me about the subject undertaking in accordance with the January 1, 2014 *First Amended Programmatic Agreement Among the Federal Highway Administration (FHWA), the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (PA). As part of your documentation, Caltrans submitted a Historic Property Survey Report, Archaeological Survey Report and a Finding of Effect for the proposed project.

The County of Tulare Resource Management Agency, in cooperation with Caltrans, proposes to seismically retrofit and rehabilitate the Oak Grove Bridge, a property previously determined eligible for the National Register of Historic Places in 1987 under Criterion C at the local level of significance. The project proposes to replace the existing bridge deck and portions of the substructure in kind, replace the existing barrier rail with a compatible new barrier, repair carbonated concrete on the arch span and piers, and apply a silane waterproofing treatment to the abutments and approach spans.

Pursuant to Stipulation X.A of the PA and 36 CFR 800.5(a)(1), Caltrans has applied the Criteria of Adverse Effect and determined that a finding of no adverse effect is appropriate for the undertaking per Stipulation X.B.2. of the PA. The undertaking would not physically harm the historic property, or a portion of the historic property, and the alterations to the structure necessary for the seismic retrofit would be consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties

(Standards). While the project has the potential to affect some of structure's historic materials, it would not diminish the bridge's integrity of design, workmanship, feeling, association, location or setting. The project will not remove the property from its original site and will not include construction of new features within the setting of the structure that detract from one's comprehension of its historic significance. The resulting bridge would maintain the historic design, in a manner consistent with the Standards.

Based on my review of the submitted documentation, I have no objection to this finding.

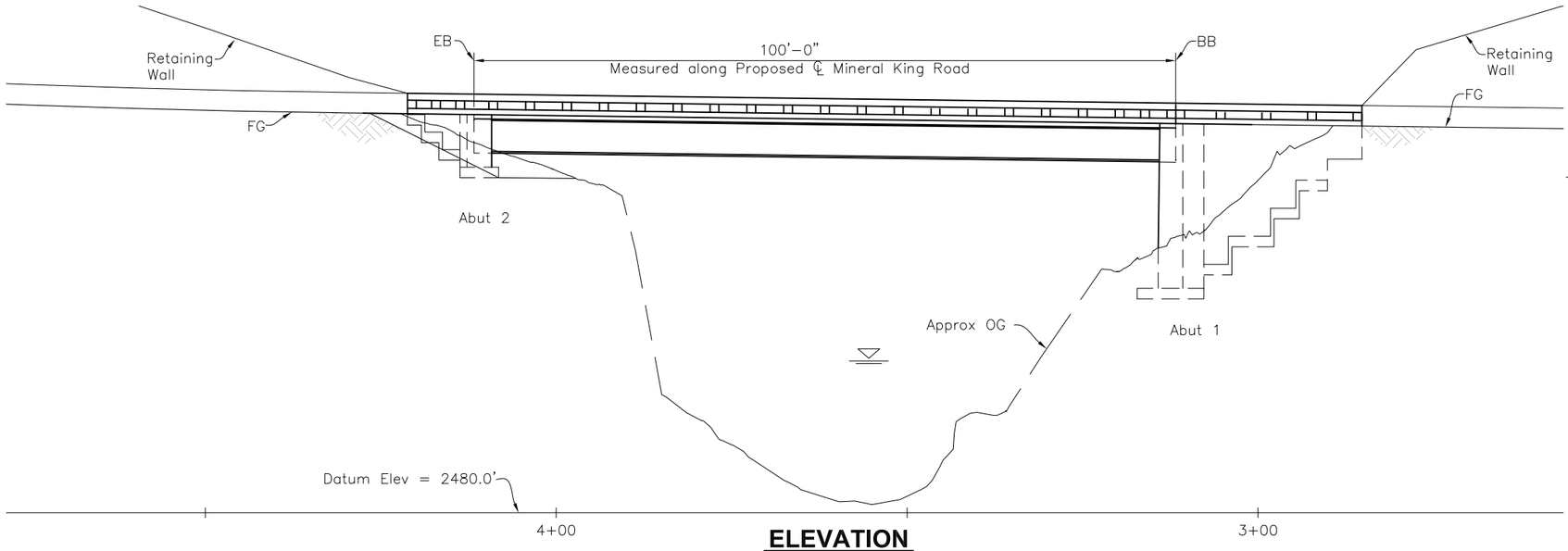
Thank you for considering historic properties during project planning. If you have any questions, please contact Natalie Lindquist of my staff at (916) 445-7014 with e-mail at natalie.lindquist@parks.ca.gov or Alicia Perez at (916) 445-7020 with e-mail at alicia.perez@parks.ca.gov .

Sincerely,

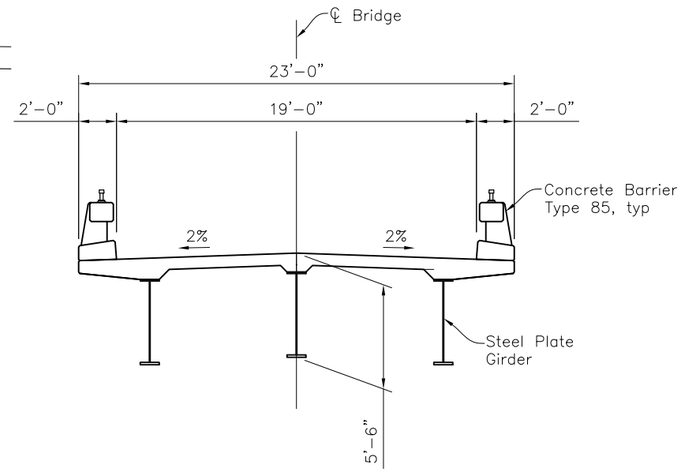


Julianne Polanco
State Historic Preservation Officer

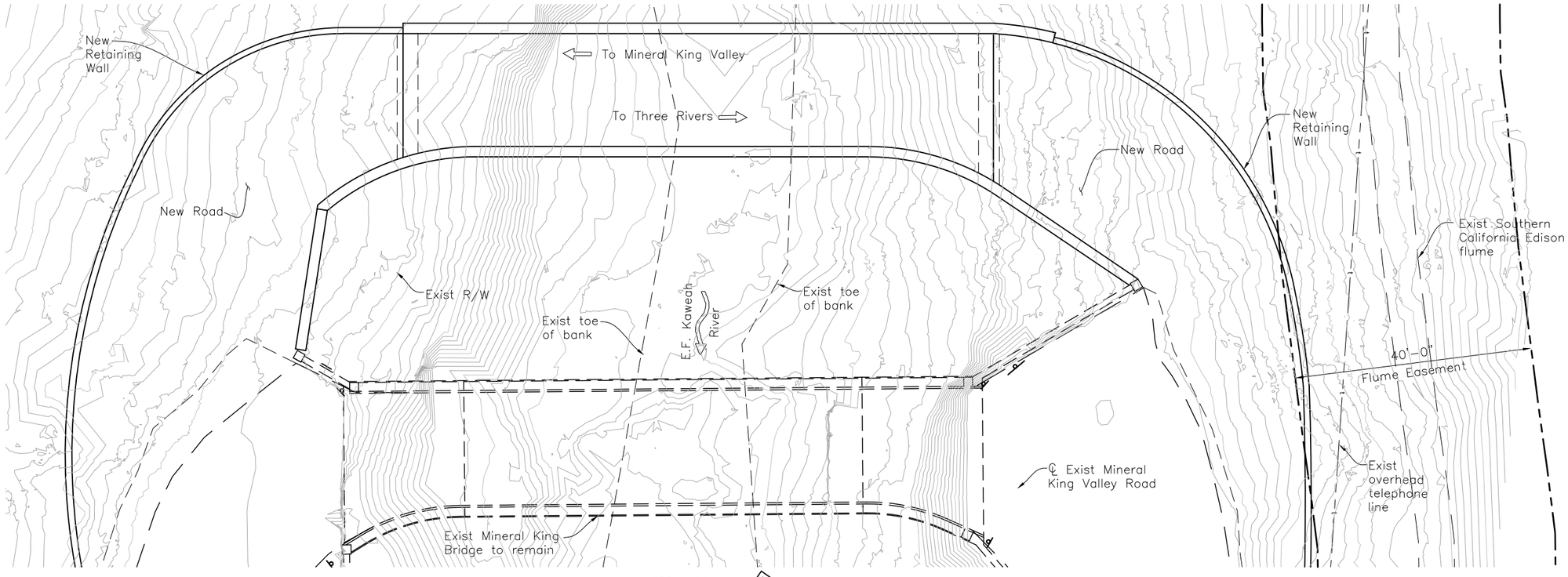
Appendix C: Project Plans



ELEVATION
1"= 10'–0"



TYPICAL SECTION
1/4"=1'–0"



PLAN
1"= 10'–0"

General Notes:

1. These plans shall incorporate the 2018 State Standard Specifications and the 2018 State Standard Plans.
2. The contractor shall verify all controlling field dimensions before ordering or fabricating any material.
3. A representative of the Geotechnical Engineer of Record shall be on site at all times during earthwork activities and foundation construction.

Legend:

- Indicates new construction
- Indicates existing bridge (Br. No. 46C–0196)
- Indicates direction of traffic
- B0-3 / 3-1 — Indicates Caltrans standard plan sheet no. / Indicates detail no.

REGISTERED PROFESSIONAL ENGINEER SHAWN M. CULLERS No. S5561 STRUCTURAL STATE OF CALIFORNIA

PRELIMINARY – NOT FOR CONSTRUCTION

REVISIONS			
NO.	DESCRIPTION	DATE	BY

CORNERSTONE structural engineering group
986 W Alluvial Ave - Suite 201
Fresno, California 93711
559.320.3200
fax 559.320.3201

COUNTY OF TULARE CALIFORNIA

TULARE COUNTY RESOURCE MANAGEMENT AGENCY
5961 SOUTH MOONEY BLVD., VISALIA, CALIFORNIA 93277

SCALE	As Noted
DESIGNED	SMC
DRAWN	NRZ
CHECKED	MAW
FILE NAME	2014046
DATE	

GENERAL PLAN – ALTERNATIVE No. 2B

M375A MINERAL KING BRIDGE OVER THE EAST FORK OF THE KAWEAH RIVER

SHEET No. S1 / 1 OF 1

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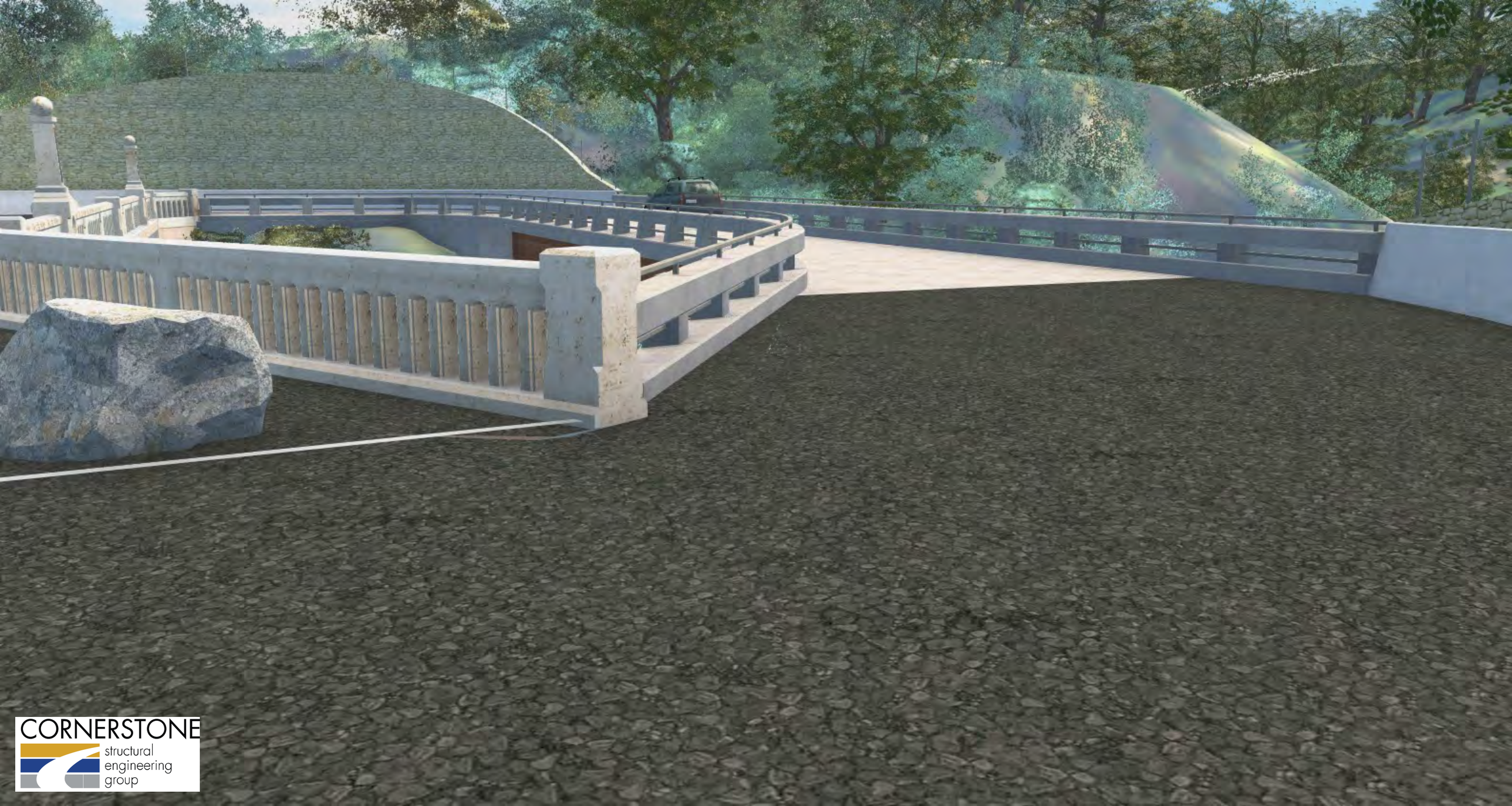


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Attachment C: Public Meeting Notice

Notice of Public Information Meeting on November 19, 2020

Historic Property Survey Report

HISTORIC PROPERTY SURVEY REPORT

1. UNDERTAKING DESCRIPTION AND LOCATION

District	*County*	*Federal Project. Number. (Prefix, Agency Code, Project No.)*	*Location*
6	Tulare	HBP 5946 (106)	Oak Grove Bridge (No. 46C0196)

Project Description:

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans), proposes to replace or rehabilitate the existing Oak Grove Bridge (46C-0196) on Mineral King Road over the east fork of the Kaweah River. The bridge is located 6.68 miles east of State Route 198, near Three Rivers in Tulare County, California. The project location and vicinity maps are located in Attachment A of this Historic Property Survey Report. The project has three alternatives:

Alternative 1: Rehabilitation/Retrofit

Alternative 1 would include removal and replacement of the bridge deck, spandrel columns, spandrel crossbeams, arch fins, transverse deck beams, and longitudinal exterior beam over the main arch span. It would repair the carbonated concrete at the pier spandrel columns and arch, and replace the existing concrete barrier. Additionally, there would be an application of saline waterproofing treatment to all remaining exposed concrete surfaces.

A temporary scaffolding system, supported within the creek, would be required to access the existing bridge components (i.e., columns, arch, etc.) and make the necessary repairs. A temporary bridge would be required downstream of the existing bridge to maintain traffic during construction, with the centerline of the temporary bridge located approximately 50 feet north of the existing bridge's northern edge of the deck. The temporary bridge would be supported on cast-in-place abutments that would be removed following rehabilitation of the existing bridge.

Alternative 2B: Replacement with Existing Bridge Preservation

Alternative 2B would include retaining the existing historic bridge in place and constructing a replacement bridge with a new cast-in-place tensioned concrete box girder on a new alignment, immediately upstream of the existing bridge, to preserve views of the historic bridge from the approach roadway.

To maintain traffic during construction, the replacement bridge would be located east (upstream) of the existing bridge, with traffic being maintained on the existing bridge until construction has been completed. The existing bridge will become a pedestrian crossing once construction of the new bridge is completed.

Realignment of the approach roadways would be necessary because the alignment of the bridge would shift to the east, requiring cutting into the hillside. Depending on the depth to bedrock, blasting or hydro drilling of the existing rock may be required and retaining walls would be constructed to accommodate both roadway approaches and bridge abutments. In addition, new fill and retaining walls would be required to support the proposed alignment at the southwest corner of the bridge structure.

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Minor rehabilitation of the existing bridge would be completed to maximize its remaining lifespan. This may include replacing the joint seals, applying methacrylate to the bridge deck, and/or injecting epoxy into the larger cracks in the arch ribs and pier spandrel columns.

Alternative 3: Hybrid Rehabilitation/Replacement

Alternative 3 is a combination of Alternatives 1 and 2. This alternative maintains the original arches of the existing bridge while reconstructing the existing bridge deck with a new girder type bridge. The existing historic arches and spandrels, as well as the overall aesthetic appearance of the existing bridge would be maintained. The existing deck, spandrel beams, and abutments would be removed and replaced with a box girder bridge with new abutments that would match the existing aesthetics of the bridge.

Due to the removal of the existing bridge deck, a temporary bridge, as described in Alternative 1, would be required to maintain traffic during construction. After erection of the temporary bridge, construction of the new structure would begin with the demolition of the existing deck, spandrel beams to the tops of the spandrel columns, and abutments. Construction of new abutments would be behind the existing abutments. There would be installation of temporary bracing (i.e., falsework) for the existing arch ribs and spandrel columns—the arches would help support the falsework for construction of the box girder; the falsework would be removed after the box girder is complete.

The Project also includes three potential construction staging areas, identified as the West, South, and East Staging Areas. The West Staging Area is approximately 1.3 miles west of the existing bridge on the north side of Mineral King Road. The South Staging Area is approximately 400 feet northeast of the existing bridge on the south side of Mineral King Road. Finally, the East Staging Area is approximately 800 feet northeast of the existing bridge on the east side of Mineral King Road. Temporary construction easements would be required, and right-of-way acquisitions may be required to accommodate construction of the Project. There would be no utility relocation required as part of the Project. Temporary catchment basins to collect storm water and shrouding (i.e., covering or wrapping) of the bridge arch will be required to prevent debris from falling into the existing river channel during construction.

2. AREA OF POTENTIAL EFFECTS

In accordance with Section 106 Programmatic Agreement Stipulation VIII.A, the Area of Potential Effects (APE) for the project was established in consultation with John Whitehouse, Principal Investigator – Prehistoric and Historical Archaeology, and Charles Garabedian, Project Manager/Local Assistance Engineer, on August 3, 2017. The APE maps are located in Attachment A of this Historic Property Survey Report.

The APE was established as four discontinuous areas (see APE Map page 1), one area surrounding the existing bridge, identified as the Bridge Area (see APE Map page 2), and three potential staging areas, identified as the West, South, and East Staging Areas (see APE Map page 3). The Bridge Area of the APE surrounds existing Bridge 46C-0196, extending approximately 475 feet downstream and 200 feet upstream of the

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existing bridge, and includes the northern and southern approach roadways on Mineral King Road. The West Staging Area of the APE is approximately 1.3 miles west of the existing bridge on the north side of Mineral King Road, the South Staging Area is approximately 400 feet northeast of the bridge on the south side of the road, and the East Staging Area is approximately 800 feet northeast of the bridge on the east side of road.

The APE was determined by including all areas of direct and indirect effects caused by the proposed construction work, including the possible retrofit of the existing bridge, the erection of a temporary bridge, and establishment of staging areas. It encompasses 6.33 acres inclusive of four discontinuous areas surrounding and near the existing bridge. There is also the potential to affect resources below the surface through geophysical boring, excavation, hydro drilling, blasting, and pile driving during construction activities. The approximate maximum depth of these ground-disturbing activities is estimated to be 25 feet below grade. Potential indirect effects within the APE include the introduction of visual, atmospheric, and audible elements such as increased levels of noise and vibration during construction, a temporary bridge (Alternatives 1 and 3), scaffolding, construction equipment and activity, and a proposed new permanent bridge (Alternative 2B).

3. CONSULTING PARTIES / PUBLIC PARTICIPATION

X Local Government

- As the CEQA lead agency, the County initiated the process to solicit written comments from interested parties, including elected officials, public agencies, key stakeholders, and residents/business owners for the purposed of CEQA compliance in January 2016. This was done by providing an informational bulletin (Bulletin #2) to those attending the Three Rivers Community Plan Meeting (Community Plan Meeting) on January 11, 2016 (see Attachment D: Public Scoping of this HPSR for copy of Bulletin #2).
- An Environmental Scoping Notice was published in in the Kaweah Commonwealth Newspaper on January 22, 2016. The notice included the purpose of the project, a general project description, a map of the project location, details regarding an upcoming public scoping meeting that was held on February 23, 2016, notice of a 30-day comment period, and contact information to submit written comments to the County.
- A brief presentation was given at the Community Plan Meeting on February 8, 2016 to inform the public of the project and notify them of another public scoping meeting that was scheduled for February 23, 2016. An informational bulletin (Bulletin #3) was also provided to those attending the Community Plan Meeting on February 8, 2016 (see Attachment D: Public Scoping of this HPSR for copy of Bulletin #3).
- See “Public Information Meetings,” below, for summary of the public scoping meeting held on February 23, 2016.

X Native American Tribes, Groups and Individuals

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- On March 9, 2016, the Native American Heritage Commission (NAHC) provided Applied Earth Works, Inc. (Æ) the names and contact information for five Native American representatives who may have an interest in the project (refer to Appendix C: Native American Consultation in Attachment C: ASR of this HPSR):
    - Kern Valley Indian Council, Julie Turner, Secretary
    - Kern Valley Indian Council, Robert Robinson, Co-Chairperson
    - Tubatulabals of Kern Valley, Robert L. Gomez, Jr., Tribal Chairperson
    - Tule River Indian Tribe, Neil Peyron, Chairperson
    - Wuksache Indian Tribe/Eshom Valley Band
- On March 18, 2016, Æ sent a letter to each of these representatives describing the project, including a map of its location, and requesting information about the study area. On June 22, 2016, Æ attempted follow-up contact with the representatives by telephone.
- Æ received one response to its request for information. Kern Valley Indian Council Secretary Julie Turner responded that the Project is outside the Kern Valley Indian Council's area of interest. Æ has not received any further responses to date.
- Following the County of Tulare's filing of a Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the Project and pursuant to the provisions of Assembly Bill (AB) 52, as lead agency under CEQA the County extended an invitation to consult to 28 Native American representatives from 21 different tribes identified on the NAHC consultation list of tribes with traditional lands or cultural places within the boundaries of the Tulare County. Letters were sent December 8, 2016 via U.S. certified mail (refer to Appendix C: Native American Consultation in Attachment C: ASR of this HPSR).
- Following receipt of letters, the County met with Native American representatives Hector Franco, Shana Powers, Greg Cuara, Robert Jeff, and Roger Martinez of the Santa Rosa Rancheria Tachi Yokut Tribe on December 16, 2016 and with Ken Woodrow of the Wuksachi Indian Tribe/Eshom Valley Band on January 19, 2017. On June 20, 2017, representatives from the County, Applied Earthworks, and GPA Consulting met with Felix Christman of the Tule River Tribe at the project site. Following the meeting, the project team provided Christman with photographs of the river channel, and have not received any additional information from him at this time. The County's AB 52 consultation is in progress and has not been concluded to date.

X Native American Heritage Commission

- On March 6, 2016, Applied Earth Works, Inc. (Æ) sent an e-mail to the Native American Heritage Commission (NAHC) requesting a search of their Sacred Lands File and the contact information for local Native American representatives that may have information about the area or an interest in the Project.
- The NAHC responded on March 9, 2016, stating that it did not identify any sacred sites within or adjacent to the APE (refer to Appendix C: Native

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American Consultation in Attachment C: ASR of this HPSR). The commission cautions that its Sacred Lands Inventory is not exhaustive and the absence of recorded sites does not preclude the discovery of cultural resources during project activities. The NAHC also provided the names and contact information for five Native American representatives who may have an interest in the project (refer to "Native American Tribes. Groups, and Individuals" summary above).

X Local Historical Society / Historic Preservation Group

- On February 25, 2016, Woody Smeck, Superintendent, Sequoia and Kings Canyon National Parks, submitted comments to the County via letter in response to the public outreach meeting held on February 23, 2016 (see Attachment E: Historic Consultation of this HPSR for a copy of the letter). Among Smeck's comments pertaining to historic resources were: 1.) Alternative 1 – Rehab/Retrofit to preserve the Historic Oak Grove Bridge by rehabilitating/retrofitting in situ was preferred, and 2.) that the County complete a National Register of Historic Places Registration Form for the bridge as part of the NEPA/CEQA and Section 106 compliance process.
- On March 21, 2016, Stuart Hendricks, President, Mineral King Preservation Society submitted comments to the County via letter (see Attachment E: Historic Consultation of this HPSR for a copy of the letter). Hendricks noted that the Society had received dozens of inquiries regarding the rehabilitation of the Historic Oak Grove Bridge, and requested that the County "select Alternative 1 – Rehab/Retrofit as presented on record to the Public [at the public outreach meeting], without verbally stated caveats as to possible cost restrictions or newly emerging concerns regarding feasibility." The Society also requested that the County submit a NRHP Registration Form for the bridge, and work in conference with the Sequoia and Kings Canyon National Parks on implementation of the project.
- On March 16, 2017, GPA Consulting mailed a historic consultation letter to the organizations listed below (see Attachment E: Historic Consultation of this HPSR for a copy of the letter). The purpose of the letter was to solicit comments and information from potentially interested parties regarding known historic resources in the vicinity of the project. The letter acknowledged that the Oak Grove Bridge is a known historic resource and would be evaluated for potential impacts.
    - Mineral King Preservation Society
    - Sequoia and Kings Canyon National Parks
    - Sequoia Foothills Chamber of Commerce
    - Sequoia Parks Conservancy, Ash Mountain Office
    - Sequoia Parks Conservancy, Three Rivers Office
    - Southern California Edison
    - Three Rivers Branch Library
    - Three Rivers Historical Society and Museum
    - Tulare County Historical Society
    - Tulare County Library, Annie R. Mitchell History Room

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- On March 28, 2017, GPA Consulting sent the same letter via email to those organizations listed above for which an email address was available. No additional comments were submitted by these organizations in response the historic consultation letter sent via mail and email in March 2017. (See Attachment E: Historic Consultation of this HPSR for a correspondence log.)

X Public Information Meetings

- A public scoping meeting was held on February 23, 2016 in the Three Rivers Memorial Building at 43490 Sierra Drive, Three Rivers, California. The meeting was held from 6:00 p.m. to approximately 8:00 p.m., during which time information regarding the proposed project and the environmental process was distributed to the attendees. Representatives from the County, Cornerstone Engineering, and GPA Consulting presented information to the public during the Power Point presentation. Specific members of the project team included Jason Vivian (Tulare County), Shawn Cullers (Cornerstone Engineering), and Erinn Silva (GPA Consulting).
- A project briefing and Power Point presentation were given from approximately 6:15 p.m. to 6:45 p.m. Those attending the meeting were able to view large-scale plans of various project design elements and ask questions of the project team during the open house and comment submittal period between 6:45 p.m. and 7:30 p.m. The project team provided information related to the project background, purpose and need, project design elements, environmental process, project alternatives, proposed environmental schedule, public scoping details, and contact information for submittal of written comments. Those attending the meeting were able to submit written comments and ask the project team for additional clarification. (See Attachment D: Public Scoping of this HPSR for copies of the public scoping meeting materials, including the sign-in sheet, PowerPoint presentation, and comment cards.)
- The primary purpose of the public scoping meeting was to provide information to interested parties, and to receive feedback to ensure all factors are considered as part of the development of project design and in the environmental studies. The County received 48 written comments during the public scoping comment period, between February 23, 2016 and March 23, 2016. A summary of the comment topics that were received is included in Table 1, List of Public Scoping Period Comments.

Table 1: List of Public Scoping Period Comments

Comment Category	Number of Comments
Bridge History	30
Views/Visual Impact	16
Safety	15
Anti-Demolition	16
Restoration and Preservation	23
Maintain Original Bridge	5
Local Businesses	4

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Tourism	9
Bridge Alternatives	4
Cabin Owners	3
Historic Bridge Name	1
SHPO	1
NHPA & NRHP	2
NEPA & CEQA Documentation	1
Memorandum of Agreement	1
Biological	2
Section 4(f)	1
Natural Environmental Study	1
Water Quality Report	1
Caltrans Local Assistance	1
Cultural Resources	1
Structural Stability	1
Archaeology	1
Mitigation	1
Traffic	1
Pedestrians	3
Engineering Studies	1
Duplicate Bridge	1
Other Comments	7

X Other

- The following individuals contacted the County via email, letter, or public comment card (distributed at the public scoping meeting held on February 23, 2016) with comments or questions relating to historic resources and/or provided their contact information on the sign-in sheet at the public scoping meeting. Common themes expressed by many of these individuals include the importance of the bridge as historic resource that is valued by the community and visitors to the area, and a desire to keep the historic bridge in place. (See Attachment E: Historic Consultation of this HPSR for copies of the comments received and a correspondence log).

Table 2: List of Individuals Involved in Historic Consultation[1]

Individual(s)	Point(s) of Contact	Date(s)
William A. Martin	Email to County Supervisor Phil Cox	11/12/2015
Brian Reynolds	Email to Jason Vivian, County RMA	1/18/2016
Shawn Dienhart	Email to Jason Vivian, County RMA	1/19/2016
Michael Asay	Email to Jason Vivian, County RMA	1/20/2016
Paul Dayton	Email to Jason Vivian, County RMA	1/20/2016

[1] For Sequoia and Kings Canyon National Parks, Mineral King Preservation Society, and other organizations identified as potentially interested parties, please see “Local Historical Society / Historic Preservation Group,” above.

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Ron Kennedy	Email to Jason Vivian, County RMA	1/20/2016
Patricia Whitendale	Email to Jason Vivian, County RMA	1/20/2016
Sally J. Dungan	Email to Jason Vivian, County RMA	1/20/2016
Jana Botkin	Emails to Jason Vivian, County RMA; Emails to Andrea Galvin, GPA Consulting; Public Scoping Meeting Sign-In Sheet	1/20/2016, 2/8/2016, 2/9/2016, 2/23/2016, 3/13/2016, 3/20/2016
Nadine Hack	Emails to Jason Vivian, County RMA	1/20/2016, 3/3/2016, 3/28/2017
Kathy Hath	Email to Jason Vivian, County RMA	1/21/2016
Merl Ledford III, Esq.	Email to Jason Vivian, County RMA	1/21/2016
Dirk Buchenau	Email to Jason Vivian, County RMA	1/21/2016
Sharon Devol	Emails to Jason Vivian, County RMA	1/21/2016, 4/3/2017
Jill Tovey	Email to Jason Vivian, County RMA	1/22/2016
Laile Di Silvestro	Emails to Jason Vivian, County RMA; Public Scoping Meeting Sign-In Sheet	1/22/2016, 2/8/2016, 2/23/2016
Susan B. Merrill	Email to Jason Vivian, County RMA	1/24/2016
Terry L. Ommen	Email to Jason Vivian, County RMA	1/24/2016
Jean Koch	Email to Jason Vivian, County RMA	1/25/2016
Jane Coughran	Email to Jason Vivian, County RMA	1/25/2016
Martin Strudwick	Email to Jason Vivian, County RMA	1/27/2016
Beverly Foltz	Email to Jason Vivian, County RMA	1/31/2016
Todd Harris	Email to Jason Vivian, County RMA	2/1/2016
Chris Brewer	Email to Eric Coyne, County Economic Development; Public Scoping Meeting Sign-In Sheet; Email to Andrea Galvin, GPA Consulting	2/4/2016, 2/23/2016
Paul and Nadean Bissiri	Email to Jason Vivian, County RMA, Email to Jenna Kachour, GPA Consulting	2/10/2016, 3/30/2017
Betty Luceigh	Email to Jason Vivian, County RMA	2/10/2016
Ken Hulick	Email to Jason Vivian, County RMA	2/19/2016
Mary Wadsworth	Email to Jason Vivian, County RMA	2/20/2016
Britta Lee and Marcel V Shain	Email to Jason Vivian, County RMA	2/22/2016
Peggy Blanchard	Email to Jason Vivian, County RMA	2/23/2016
Danielle Temple	Public Scoping Meeting Sign-In Sheet	2/23/2016
Pat Humphrey	Public Scoping Meeting Sign-In Sheet	2/23/2016
Karen Bodner	Public Scoping Meeting Sign-In Sheet	2/23/2016
Greg and Laurie Schwaller	Public Scoping Meeting Sign-In Sheet	2/23/2016
John Mitchell	Public Scoping Meeting Sign-In Sheet	2/23/2016
Jim Barton	Public Scoping Meeting Sign-In Sheet, Email to Jason Vivian, County RMA	2/23/2016, 4/1/2017
John Elliott	Public Scoping Meeting Sign-In Sheet, Email to Jenna Kachour, GPA Consulting	2/23/2016, 3/28/2017
Daniel Rourke	Public Scoping Meeting Sign-In Sheet	2/23/2016
Jamey Haley	Public Scoping Meeting Sign-In Sheet	2/23/2016
Georgellen Parker	Public Scoping Meeting Comment Card	2/28/2016
Stephen Criglov	Public Scoping Meeting Comment Card	2/28/2016
Stuart R. Hendricks	Email to Jason Vivian, County RMA	3/23/2016
John Spock	Email to Jason Vivian, County RMA	4/1/2017
Mary Pat Pinkham	Email to Jason Vivian, County RMA	4/1/2017
Sally Sedwina	Email to Jason Vivian, County RMA	4/1/2017
Mark Bissiri	Email to Jason Vivian, County RMA	4/4/2017

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- On March 16, 2017, GPA Consulting mailed a historic consultation letter to the individuals listed above (see Attachment E: Historic Consultation of this HPSR for a copy of the letter) for which a mailing address was available. The purpose of the letter was to solicit comments and information from potentially interested parties regarding known historic resources in the vicinity of the project. The letter acknowledged that the Oak Grove Bridge is a known historic resource and would be evaluated for potential impacts.
- On March 28, 2017, GPA Consulting sent the same letter via email to those individuals listed above for which an email address was available. To date, the ten responses listed below were received in response the historic consultation letter sent via mail and email in March 2017. (See Attachment E: Historic Consultation of this HPSR for copies of the comments received and a correspondence log.)

Table 3: List of Responses to Historic Consultation Letter

Individual(s)	Response	Date
John Elliott	Via email to Jenna Kachour, GPA Consulting, John Elliott suggested a public notice in the Commonwealth with project update. This request was forwarded to Jason Vivian, County RMA.	3/28/2017
Nadine Hack	Via email to Jenna Kachour, GPA Consulting and Jason Vivian, County RMA, Nadine Hack expressed support for rehabilitating the bridge without compromising the historic look and fabric.	3/28/2017
Paul and Nadean Bissiri	Via email to Jenna Kachour, GPA Consulting, Paul and Nadean Bissiri indicated they would like to see the bridge restored and asked if it was not possible to maintain its present appearance and make it earthquake safe. This response was forwarded to Jason Vivian, County RMA.	3/30/2017
Jim Barton	Via email to Jason Vivian, County RMA, Jim Barton expressed preference for strengthening the existing bridge, or if a new bridge must be built, that it would be similar in appearance and the old bridge would be demolished to prevent an attractive nuisance.	4/1/2017
John Spock	Via email to Jason Vivian, County RMA, John Spock expressed preference for rehabilitating the existing structure, or if this is impractical, allowing the existing structure to remain in place if a new structure is constructed in the vicinity.	4/1/2017
Mary Pat Pinkham	Via email to Jason Vivian, County RMA, Mary Pat Pinkham expressed preference for rehabilitating the bridge rather than replacing it.	4/1/2017
Sally Sedwina	Via email to Jason Vivian, County RMA, Sally Sedwina asked the County to "not restore this bridge in any way except for safety reasons."	4/1/2017
Sharon Devol	Via email to Jason Vivian, County RMA, Sharon Devol expressed support for the preservation of the existing bridge and that demolition should not be an option.	4/3/2017
Mark Bissiri	Via email to Jason Vivian, County RMA, Mark Bissiri expressed support to "reinforce unsafe portions without significantly impacting the historic design." If this is not possible, the next best alternative would be to build a new bridge west of the current bridge and the current bridge left as a historic display open to pedestrians or horses.	4/4/2017
Laile Di Silvestro	Via email to Jason Vivian, County RMA, on 4/13/17, Laile Di Silvestro indicated she would submit a "document that identifies the cultural resources associated with the Oak Grove Bridge Rehabilitation Project's areas of potential adverse effect." A summary document was sent on 4/19/17, and a full document was sent on 5/12/17. Potential cultural resources in the APE identified by Laile Di Silvestro (in addition to the Oak Grove Bridge) include: possible subsurface prehistoric and historic artifacts and features in the Bridge Area, East Staging Area, and South Staging Area of the APE, and remnant footings of a 1912 wooden bridge (no longer extant) that was located west of the Oak Grove Bridge, within the Bridge Area of the APE.	4/13/2017, 4/17/2017, 4/19/2017, 5/12/2017

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4. SUMMARY OF IDENTIFICATION EFFORTS

_ National Register of Historic Places
_ California Register of Historical Resources
X California Inventory of Historic Resources
_ California Historical Landmarks
_ California Points of Historical Interest
X California Historical Resources Information System (CHRIS)
X Caltrans Historic Highway Bridge Inventory
_ Caltrans Cultural Resources Database (CCRD)

X Other Sources consulted

- Caltrans Cultural Studies Office, 3/14/2015
- Office of Historic Preservation (OHP) Historic Properties Directory, 4/17/2015
- Archaeology Determinations of Eligibility, 4/17/2017
- Southern California Edison (SCE), 5/18/2015
- Historic topographic and General Land Office (GLO) maps, various dates
- Applied EarthWorks, Inc. in-house library, various dates

X Results:

- On April 17, 2015, the staff of the Southern San Joaquin Valley Information Center (SSJVIC) at California State University, Bakersfield, performed a records search of the California Historical Resources Information System (CHRIS), which encompassed the APE and a 0.5-mile surrounding radius surrounding. For a copy of the records search results (RS# 15-157), refer to Attachment C: ASR of this HPSR (see ASR Appendix B: Records Search Results). SSJVIC staff examined maps depicting recorded resources and searched their database of reports and cultural resource records as well as the Historic Properties Directory (OHP), Archaeological Determinations of Eligibility, and the California Inventory of Historic Resources (1976).
- The records search identified one previously recorded resource within the Project APE. P-54-004761 was recorded as two dry-stacked rock retaining walls, one on either side of Mineral King Road. Four other previously recorded resources are within 0.5 mile of the APE.
- The records search identified one previous cultural resources study within the APE (TU-01527). This survey followed the route of the Southern California Edison flume that parallels Mineral King Road in the Bridge Area portion of the APE (Kovak and Jackson 2012). Two previous investigations have been documented within 0.5-mile of the APE.
- Caltrans Cultural Studies Office provided inventory forms and photographs of the Oak Grove Bridge (Caltrans Bridge # 46C0196) from the Caltrans Historic Bridge Inventory. The 1986 Caltrans bridge survey determined the Oak Grove Bridge was significant under Criterion C in the areas of transportation and engineering and eligible for listing in the National Register. The 2004 Caltrans bridge survey update confirmed this determination.

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- Southern California Edison provided an archaeological survey (Thomas T. Taylor, SCE, 1989), historic evaluation (Susan Lehman, et al., 1990), and SHPO concurrence letter (Kathryn Gualtieri, 1990) regarding the Kaweah Hydroelectric System. The system includes three powerhouses with associated buildings and structures, referred to as Kaweah Nos. 1, 2, and 3. The SCE flume that parallels Mineral King Road in the Bridge Area portion of the APE is part of the Kaweah No. 1 complex. Kaweah No. 1 was determined ineligible for the National Register in 1990 because it lacked sufficient integrity to convey its historic significance. SHPO concurred with this determination in 1990.

5. PROPERTIES IDENTIFIED

X The following cultural resources within the APE previously determined not eligible for inclusion in the National Register of Historic Places and that determination is still valid.

- APE Map Reference No. 2: Kaweah No. 1 of the Kaweah Hydroelectric System. Kaweah No. 1 was determined ineligible for the National Register in 1990 because it lacked sufficient integrity to convey its historic significance. SHPO concurred with this determination in 1990 (see Attachment F: SHPO Correspondence)

X The following properties within the APE previously were listed or determined eligible for inclusion in the National Register of Historic Places and that determination is still valid.:

- APE Map Reference No. 1: Oak Grove Bridge (Caltrans Bridge # 46C0196). Built in 1923, the bridge was determined eligible for the National Register by consensus of FHWA and SHPO. It is significant under Criterion C, in the areas of transportation and engineering. See Attachment B: Caltrans Historic Bridge Inventory, for inventory forms, and Attachment F: SHPO Correspondence for concurrence letter.

X The following resources are not significant resources under CEQA:

- Kaweah No. 1 of the Kaweah Hydroelectric System (APE Map Reference No. 2) was determined ineligible for the National Register in 1990 because it lacked sufficient integrity to convey its historic significance. SHPO concurred with this determination in 1990 (see Attachment F: SHPO Correspondence). For the same reason, Kaweah No. 1 is ineligible for the California Register and is not historical resource for the purposes of CEQA.

X The following are historical resources for the purposes of CEQA because they meet the California Register or Historical Resources criteria and/or locally designated under a local government ordinance or were identified as significant in a survey that meets the Office of Historic Preservation standards.

- Oak Grove Bridge (Caltrans Bridge # 46C0196) (APE Map Reference No. 1) was determined eligible for the National Register by consensus of FHWA and SHPO. Therefore, it is a historical resource for the purposes of CEQA.

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X Caltrans archaeologist John Whitehouse has determined that the only other properties present within the APE meet the criteria for Section 106 Programmatic Agreement Attachment 4 (Properties Exempt from Evaluation). Mr. Whitehouse is certified as a Principal Investigator in Prehistoric and Historical Archaeology, and as a Principal Architectural Historian.

6. HPSR to District File

X Caltrans, in accordance with Section 106 Programmatic Agreement Stipulation VIII.C.5, has determined there are properties within the APE that were previously determined not eligible for inclusion in the National Register of Historic Places, in consultation with the SHPO or formally determined not eligible for inclusion in the National Register of Historic Places by the Keeper of the National Register of Historic Places and those determinations remains valid; see Section 5. Copy of SHPO/Keeper correspondence is attached.

X Caltrans, in accordance with Section 106 Programmatic Agreement Stipulation VIII.C.5, has determined there are properties within the APE that were previously determined eligible for inclusion in the National Register of Historic Places, in consultation with the SHPO or formally determined eligible for inclusion in the National Register of Historic Places by the Keeper of the National Register and those determinations remain valid; see Section 5. Copy of SHPO/Keeper correspondence is attached.

X Caltrans, pursuant to Section 106 Programmatic Agreement Stipulation IX.B, has determined that there are previously NRHP-listed and/or determined eligible historic properties (See section 5 above) within the APE that will be affected by the undertaking. In accordance with Section 106 Programmatic Agreement Stipulation X, Caltrans will continue consultation with CSO and/or SHPO on the assessment of effects.

7. HPSR to SHPO

X Caltrans, pursuant to Section 106 Programmatic Agreement Stipulation IX.B, has determined that there are historic properties within the APE that will be affected by the undertaking. In accordance with Section 106 Programmatic Agreement Stipulation X, Caltrans will continue consultation with CSO and/or SHPO on the assessment of effects.

8. HPSR to CSO

X Not applicable.

9. Findings for State-Owned Properties

Findings to District File

X Not applicable; project does not involve Caltrans right-of-way or there are no Caltrans-owned cultural resources within the APE.

Findings to SHPO

X Not applicable.

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Findings to CSO

X Not applicable.

10. CEQA Considerations

X Not applicable; Caltrans is not the lead agency under CEQA.

11. List of Attached Documentation

X Project Vicinity, Location, and APE Maps are located in Attachment A: Maps.
X California Historic Bridge Inventory sheet (Attachment B)
X Archaeological Survey Report (ASR) (Attachment C)
- Prepared by Kate Asselin, M.A., RPA, and Randy Baloian, M.A., Applied Earthworks, Inc., August 2017. Reviewed by John Whitehouse, Principal Investigator – Prehistoric and Historical Archaeology, Environmental Analysis, Planning and Local Program, California Department of Transportation, District 6.

X Other
- Public Scoping (Attachment D)
- Historic Consultation (Attachment E)
- SHPO Correspondence (Attachment F)

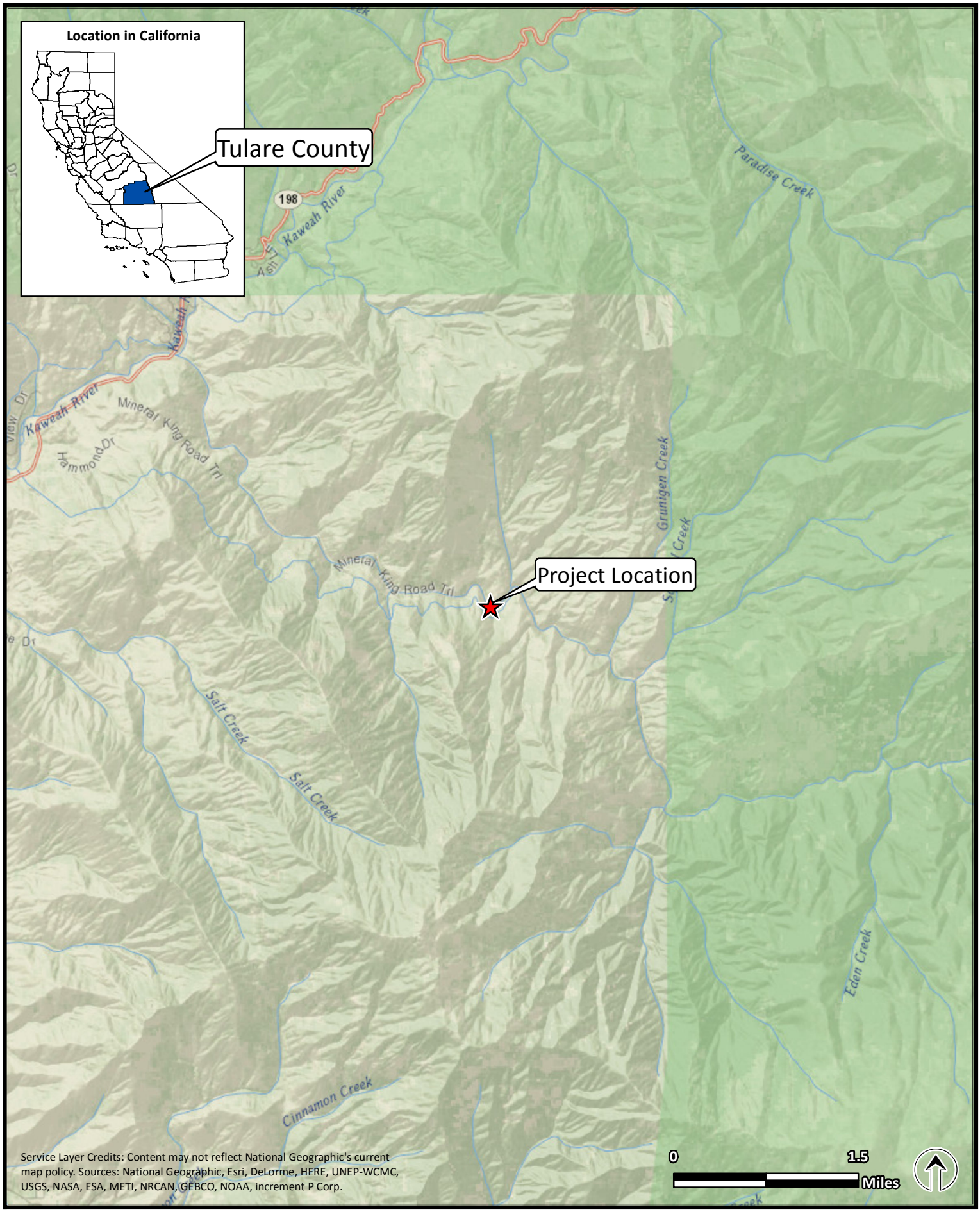
12. HPSR Preparation and Caltrans Approval

Prepared by:	Andrea Galvin	9/21/17
Consultant / discipline: Affiliation	Andrea Galvin, Principal Architectural Historian GPA Consulting, 231 California Street, El Segundo, CA 90245	Date
Reviewed for approval by:		
District 6 Caltrans PQS discipline/level:	John Whitehouse, Principal Investigator — Prehistoric and Historical Archaeology	Date
Approved by:		
District 6 EBC:	Shane Gunn, Environmental Branch Chief	Date

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Attachment A: Maps

- Regional Location Map
- Project Area Map
- Area of Potential Effects (APE) Map

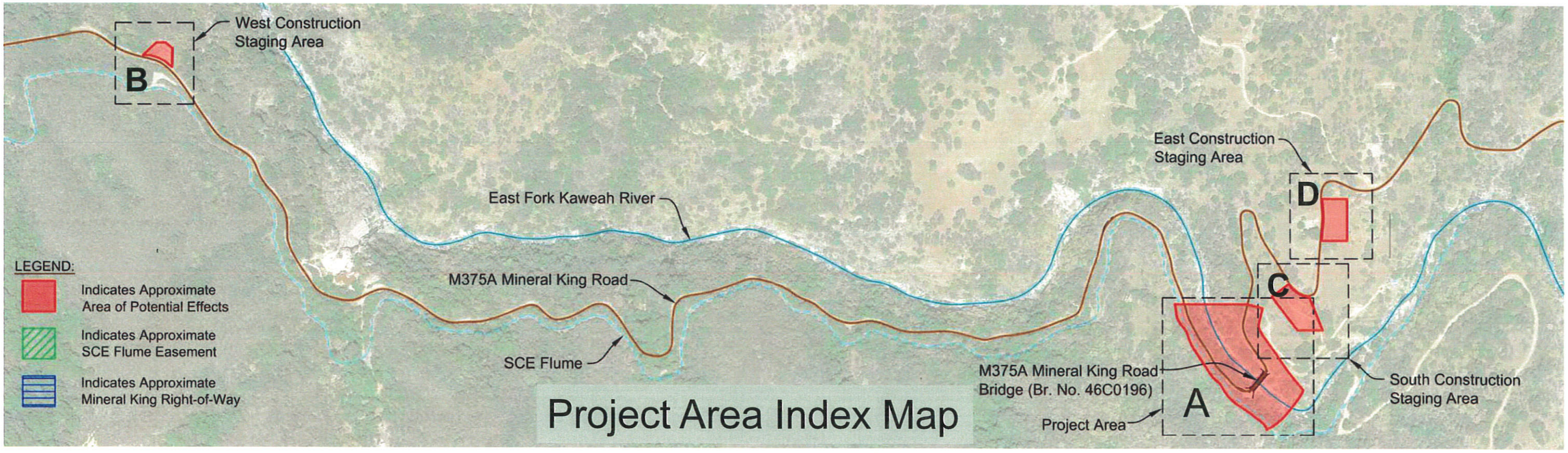


REGIONAL LOCATION MAP
Mineral King Road Bridge Project



PROJECT AREA AND STAGING AREAS
Mineral King Road Bridge Project

FIGURE 3: AREA OF POTENTIAL EFFECTS MAP



PROJECT AREA
1" = 500'-0"

N

LEGEND:

- AREA OF POTENTIAL EFFECTS
- APPROXIMATE SCE FLUME EASEMENT
- APPROXIMATE MINERAL KING RIGHT-OF-WAY

SIGNATURES:

8/3/17
DISTRICT LOCAL ASSISTANCE ENGINEER/ PROJECT MANAGER — DATE

8-3-2017
DISTRICT PROFESSIONALLY QUALIFIED STAFF — DATE

FIGURE 3 Page 1 of 3

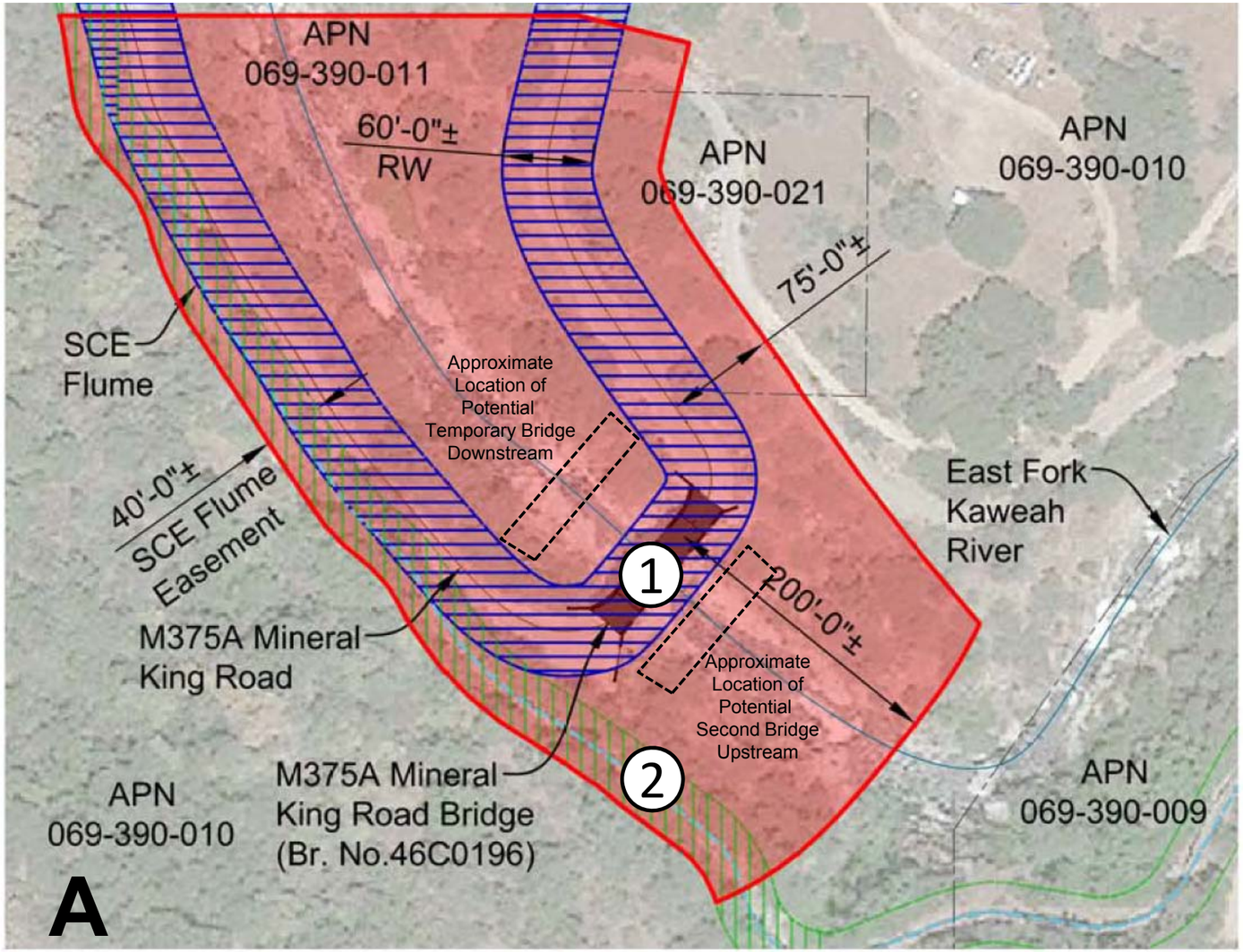
Area of Potential Effects Map

Mineral King Bridge Rehabilitation Project
Tulare County Resource Management Agency
HBP 5946 (106) (May 1, 2016)

FIGURE 3: AREA OF POTENTIAL EFFECTS MAP

Previously Identified Properties:

1. Mineral King Bridge (Caltrans Bridge No. 46C0196), NRHP Eligible
2. Flume of Kaweah No. 1, Kaweah Hydroelectric System, NRHP Ineligible



PROJECT AREA
1"=100'-0"

LEGEND:

- AREA OF POTENTIAL EFFECTS
- APPROXIMATE SCE FLUME EASEMENT
- APPROXIMATE MINERAL KING RIGHT-OF-WAY

Index Key Map

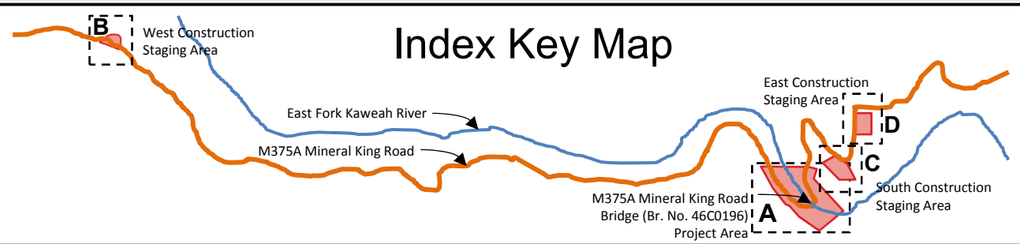


FIGURE 3 Page 2 of 3

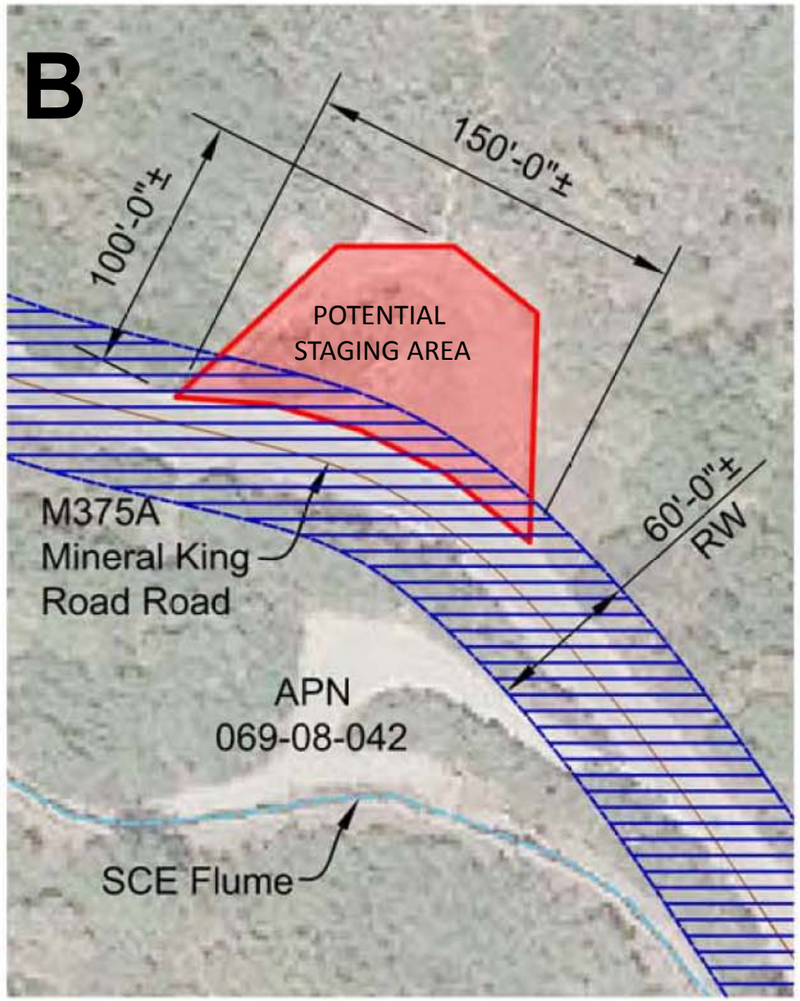
Area of Potential Effects Map

Mineral King Bridge Rehabilitation Project

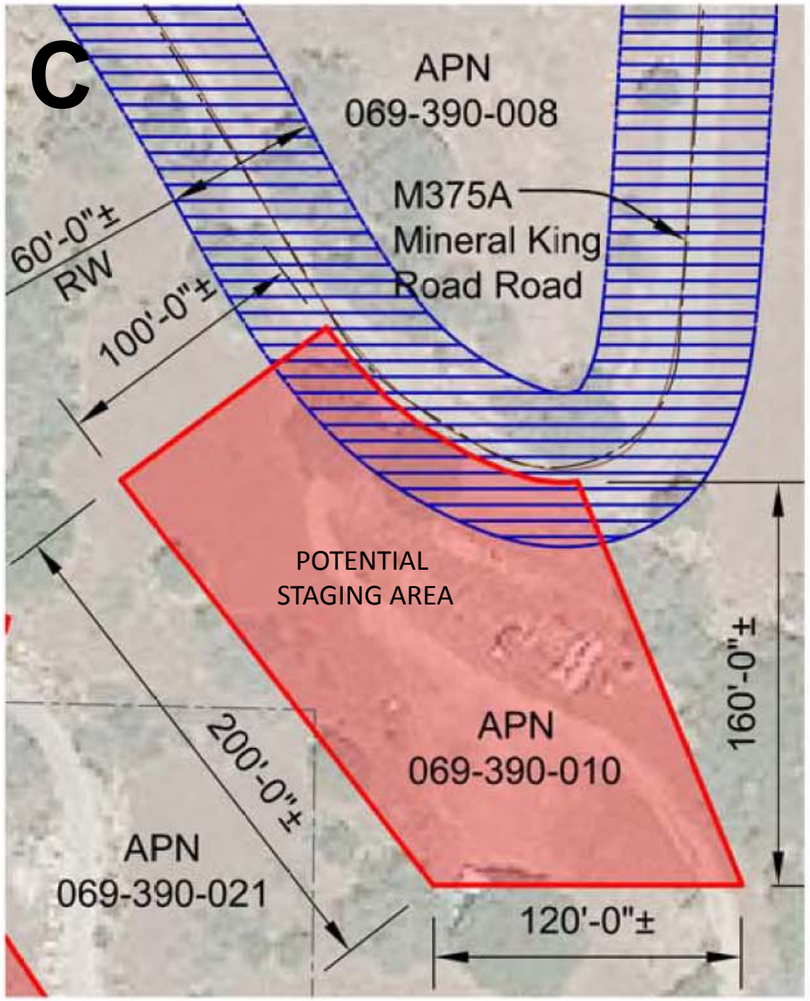
Tulare County Resource Management Agency

HBP 5946 (106) (May 1, 2016)

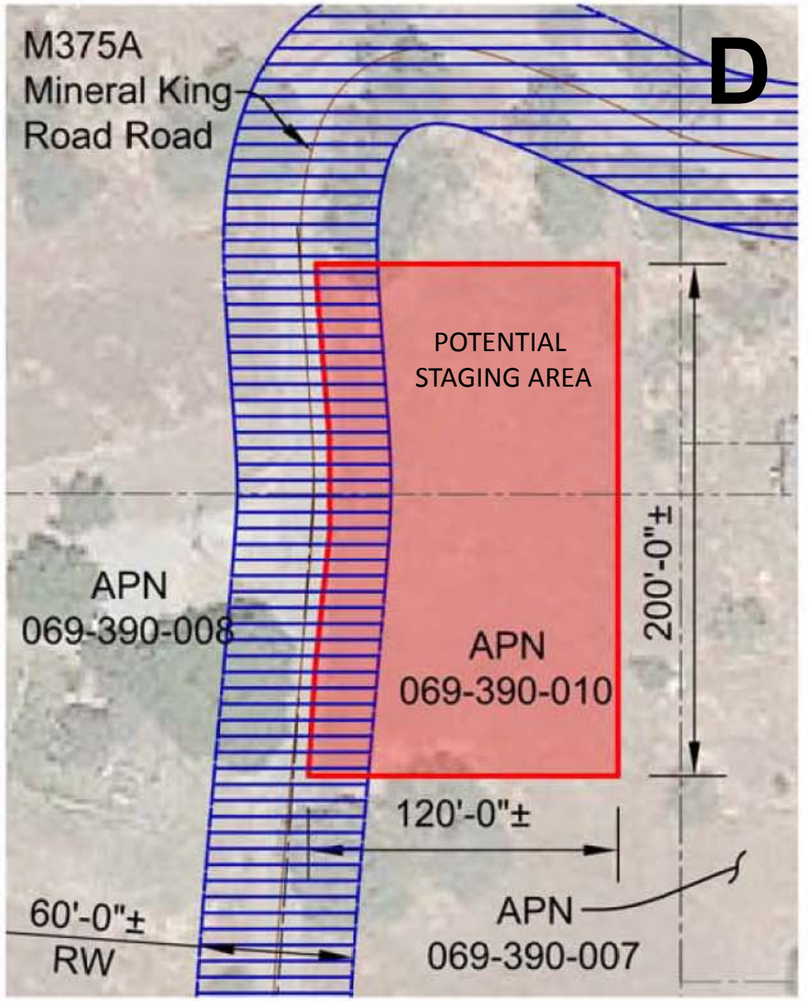
FIGURE 3: AREA OF POTENTIAL EFFECTS MAP



WEST STAGING AREA
1"=100'-0"



SOUTH STAGING AREA
1"=100'-0"



EAST STAGING AREA
1"=100'-0"

LEGEND:

- AREA OF POTENTIAL EFFECTS
- APPROXIMATE SCE FLUME EASEMENT
- APPROXIMATE MINERAL KING RIGHT-OF-WAY

Index Key Map

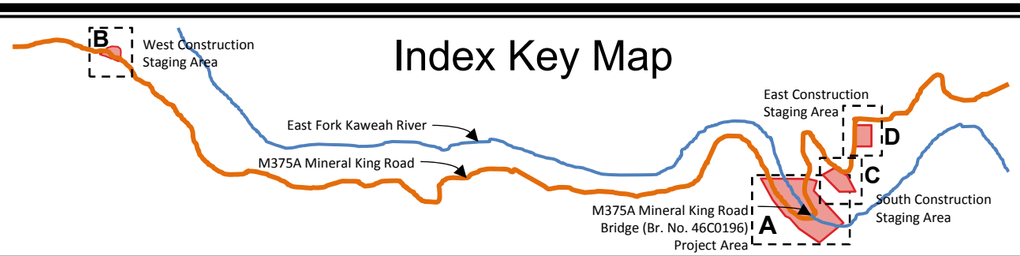


FIGURE 3 Page 3 of 3

Area of Potential Effects Map

Mineral King Bridge Rehabilitation Project
Tulare County Resource Management Agency
HBP 5946 (106) (May 1, 2016)

Attachment B: California Historic Bridge Inventory

- Sheet excerpt
- 1986 Survey Form
- 2004 Survey Form

Structure Maintenance & Investigations



Historical Significance - Local Agency Bridges

July 2015

District 06

Tulare County

Bridge Number	Bridge Name	Location	Historical Significance	Year Built	Year Wid/Ext
46C0163	SPEAR CREEK	3 MI N OF JACK RANCH RD	5. Bridge not eligible for NRHP	1947	
46C0168	PORTER SLOUGH	AT MORTON AVE	5. Bridge not eligible for NRHP	1955	
46C0169	NORTH FORK TULE RIVER	0.1 MI BALCH PARK RD	5. Bridge not eligible for NRHP	1978	
46C0170	PORTER SLOUGH	CITY OF PORTERVILLE	5. Bridge not eligible for NRHP	1953	
46C0171	PORTER SLOUGH	CITY OF PORTERVILLE	5. Bridge not eligible for NRHP	1941	
46C0172	PORTER SLOUGH	0.5 MI N SR 190	5. Bridge not eligible for NRHP	1954	
46C0173	PORTER SLOUGH	0.4 MI N SR 190	5. Bridge not eligible for NRHP	1937	
46C0174	PACKWOOD CREEK	0.12 MI N OF AVE 280	5. Bridge not eligible for NRHP	1980	
46C0175	PACKWOOD CREEK	1.1 MI W OF RD 140	5. Bridge not eligible for NRHP	1970	
46C0176	ALTA CANAL (ALTA EAST BRANCH CANAL)	0.3 MI S OF AVE 432	5. Bridge not eligible for NRHP	1968	
46C0177	SAND CREEK	0.35 MI. N SR 201	5. Bridge not eligible for NRHP	1939	1973
46C0178	COTTONWOOD CREEK	0.4 MI N OF AVE 368	5. Bridge not eligible for NRHP	1948	
46C0179	ALTA CANAL (ALTA EAST BRANCH CANAL)	@ AVE 408	5. Bridge not eligible for NRHP	1939	1960
46C0180	FRIANT-KERN CANAL	0.2 MI NORTH OF AVE 264	4. Historical Significance not determined	1949	
46C0181	HICKMAN CREEK	3.5 MI N OF S.R. 190	5. Bridge not eligible for NRHP	1949	
46C0182	FRIANT-KERN CANAL	0.5 MI SOUTH OF SR 198	2. Bridge is eligible for NRHP	1949	
46C0183	BEAR CREEK	6.7 MI E OF BALCH PARKRD	5. Bridge not eligible for NRHP	1956	
46C0186	OUTSIDE CREEK	0.15 MI S OF AVE 224	5. Bridge not eligible for NRHP	1950	
46C0187	SAND CREEK	.25 MI E OF SR 63	5. Bridge not eligible for NRHP	1938	
46C0188	SAND CREEK	.15 MI S OF FRE CO LINE	5. Bridge not eligible for NRHP	1947	
46C0189	MURRAY CREEK	.25 MI N OF SR245	5. Bridge not eligible for NRHP	1938	
46C0190	SAND CREEK	0.19 MI S OF A456	5. Bridge not eligible for NRHP	1950	
46C0191	MIDDLE FORK TULE RIVER	0.1 MI SE SR 190	5. Bridge not eligible for NRHP	1967	
46C0192	DRY CREEK	0.5 MI FROM RD SD 243	5. Bridge not eligible for NRHP	1940	
46C0193	PACKWOOD CANAL	.67 MI NE OF R180	5. Bridge not eligible for NRHP	1956	
46C0194	KETCHUM DITCH	.18 MI W OF R196	5. Bridge not eligible for NRHP	1958	
46C0195	SOUTH FORK KAWEAH RIVER	11.1 MI SE OF ROAD M347	5. Bridge not eligible for NRHP	1952	
46C0196	EAST FORK KAWEAH RIVER	6.68 MI E OF SR 198	2. Bridge is eligible for NRHP	1923	
46C0197	SOUTH FORK KAWEAH RIVER	1.34 MI SE OF RD M347	5. Bridge not eligible for NRHP	1956	
46C0198	SOUTH FORK KAWEAH RIVER	1.42 MI SE OF M347	5. Bridge not eligible for NRHP	1934	1965
46C0199	SOUTH FORK KAWEAH RIVER	4.1 MI SE CO RD M347	5. Bridge not eligible for NRHP	1959	
46C0200	DEER CREEK	2.23 MI SE OF M120	5. Bridge not eligible for NRHP	1956	1959
46C0201	DEER CREEK	5.11 MI SE/O M120	5. Bridge not eligible for NRHP	1967	
46C0202	DEER CREEK	5.86 MI SE OF M120	5. Bridge not eligible for NRHP	1939	
46C0203	DEER CREEK	13.9 MI SE OF M120	5. Bridge not eligible for NRHP	1930	
46C0204	TYLER CREEK	0.3 MI N OF M56	5. Bridge not eligible for NRHP	1952	
46C0205	DEER CREEK	16.4 MI E M109	5. Bridge not eligible for NRHP	1937	
46C0206	SALMON CREEK	11.94 MI SE OF M50	5. Bridge not eligible for NRHP	1967	
46C0207	BRUSH CREEK	4.81 MI SE OF MSO	5. Bridge not eligible for NRHP	1940	1974
46C0208	COTTONWOOD CREEK	0.2 MI W SR 245	5. Bridge not eligible for NRHP	1961	
46C0210	CAMERON CREEK	0.1 MI E OF RD 168	5. Bridge not eligible for NRHP	1951	1981
46C0211	TULARE IRRIGATION DISTRICT CANAL	0.2 MI E OF RD 156	5. Bridge not eligible for NRHP	1948	1981
46C0215	HOMELAND CANAL	1.0 MI N OF AVENUE 56	5. Bridge not eligible for NRHP	1942	

CHECKLIST
For Documenting Historical Significance of Non-Truss Bridges
REINFORCED CONCRETE ARCHES

Locational

Bridge No. 46C-196 County Tul City/Vic. Three Rivers
Road M375 Feature intersected E. Fork, Kaweah River
Lat/Long 36°27.0' 118°47.4' UTM

History

Date 1923 Designer ~~Ed Switzer~~, Co. Surveyor T.W. Switzer (Lawrence Moye got his name on plans)
Contractor Nate Lanier

Structural

Total Length 107.5' Width 23' Lanes 2 # spans(total) 3
arched spans 1 Main span length 67'
Other arch spans, length —
Arch type Open-spandrel, 2 rib, arched spandrel panels
Approach span type(s) Concrete T-Beam

Architectural

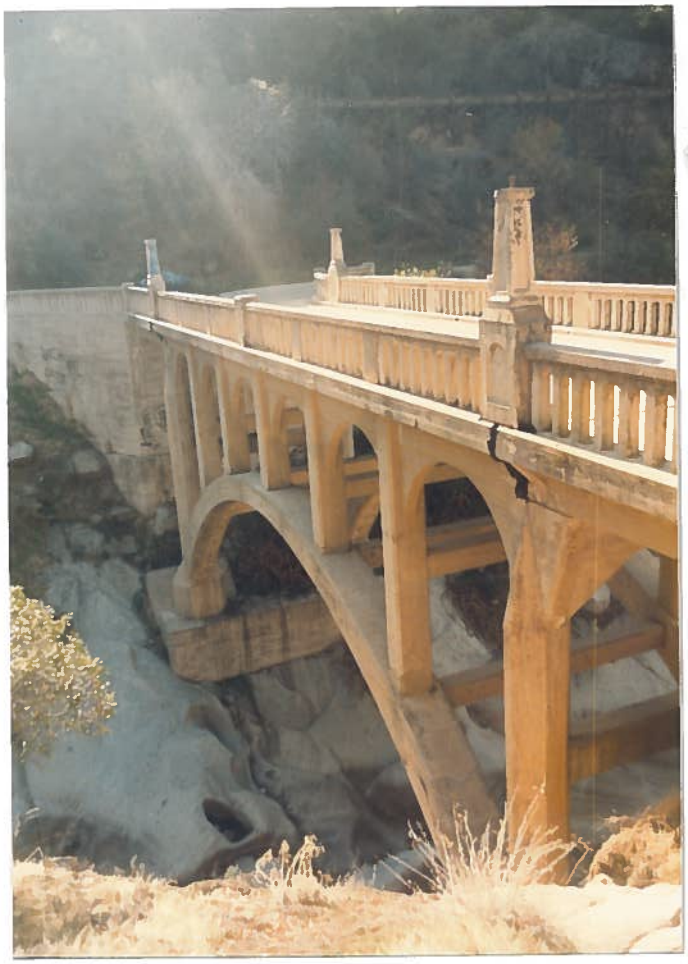
Architectural detail Pylons and lanterns, window railings

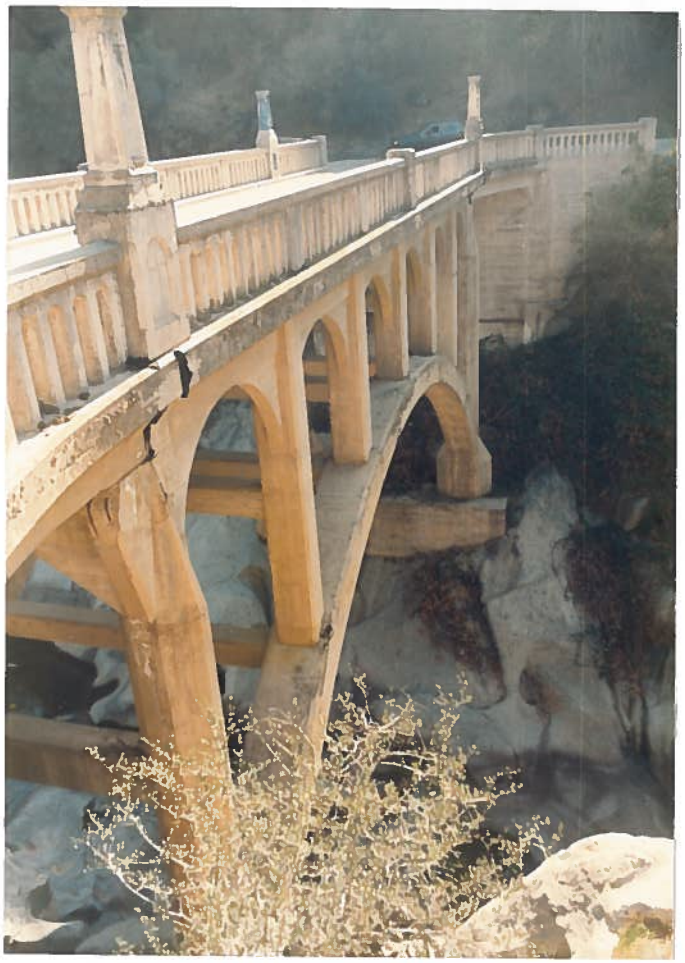
Alterations None

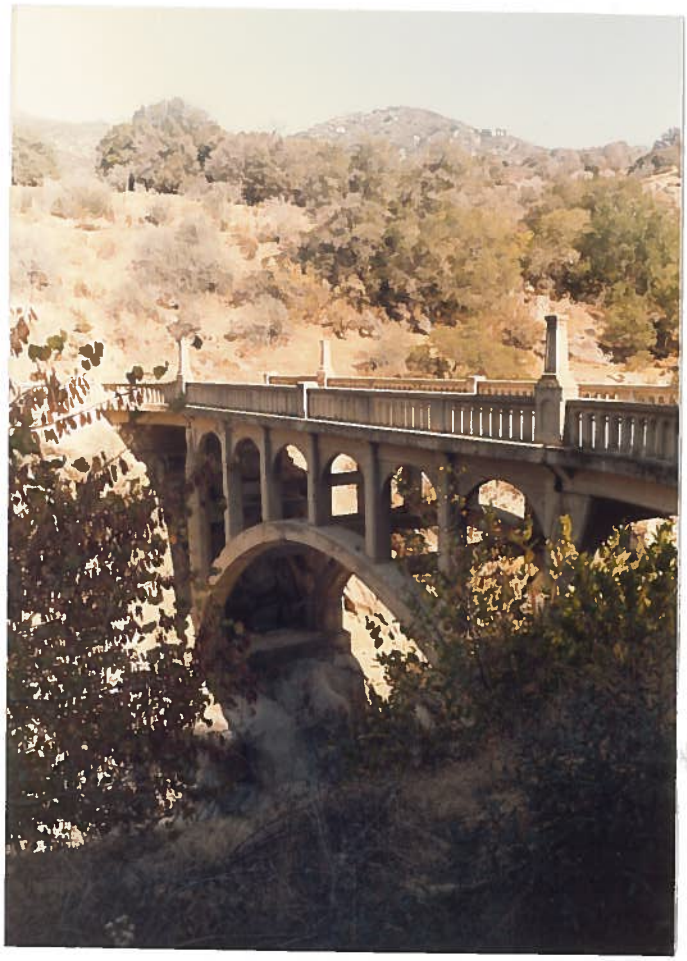
Discuss any known association with historical events, patterns, people, or distinctive technology

Sources: (1) Bridge Maintenance Books; (2) Caltrans Bridge Documents, plans, 7/11/23; (3) Bridge Plank.









961-394

Inventory of Concrete Arch Bridges

Bridge #: 46C0196 **District** 6

Road: M375A Mineral King Rd. **Route:** **PM:**

Feature Intersected: EAST FORK KAWEAH RIVER

City: **County:** Tulare

Other Location Info: 6.68 Miles East of State Route 198

Year Built: 1923

Year Altered:

Owner: County

Designer: T.W. Switzer, Tulare County Surveyor

Contractor: Nate Lovelace

Evaluation Summary (NRHP Eligibility)

Previous: 2 Eligible

Update: 2 Eligible

Description: A reinforced concrete, open spandrel, fixed, round arch bridge with one, two ribbed arch span measuring 67 feet long. Total bridge length is 108 feet and includes two concrete T-Beam approach spans. The two lane bridge is 23 feet wide with a flush roadway. The reinforced concrete railings are of an arched window design and have a smooth texture finish. Decorative column railings are considered to be lanterns.

Surveyor: CDM / JMC **Survey Date:** 4/30/2003

Points	1986		2003	
Date of Construction	11	1921 - 1925 period	11	1921-1925 period
Designer Significance	0	Not significant or not known	0	Not significant or not known
Length:				
Max. Span Length	0	<75	0	<75
Total Length	0	<250	0	<250
Technical Merit	15	Very Good	15	Very Good
Special Features:				
Lanterns	1	Minor	1	Minor
Railings	2	Major	2	Major
Pylons	0	None	0	None
Spandrel Treatment	2	Major	2	Major
Distinctive Texture	0	None	0	None
Pedestrian Amenities	0	None	0	None
Aesthetics				
Site	5	Excellent	5	Excellent
Structural	5	Excellent	5	Excellent
Integrity:				
Location/Setting	0	Excellent	0	Excellent
Design/Material	0	Excellent	0	Excellent
Feeling/Association	0	Excellent	0	Excellent
Transport. / Hist.Assoc.	3	Local	N/A	
Totals	44		41	

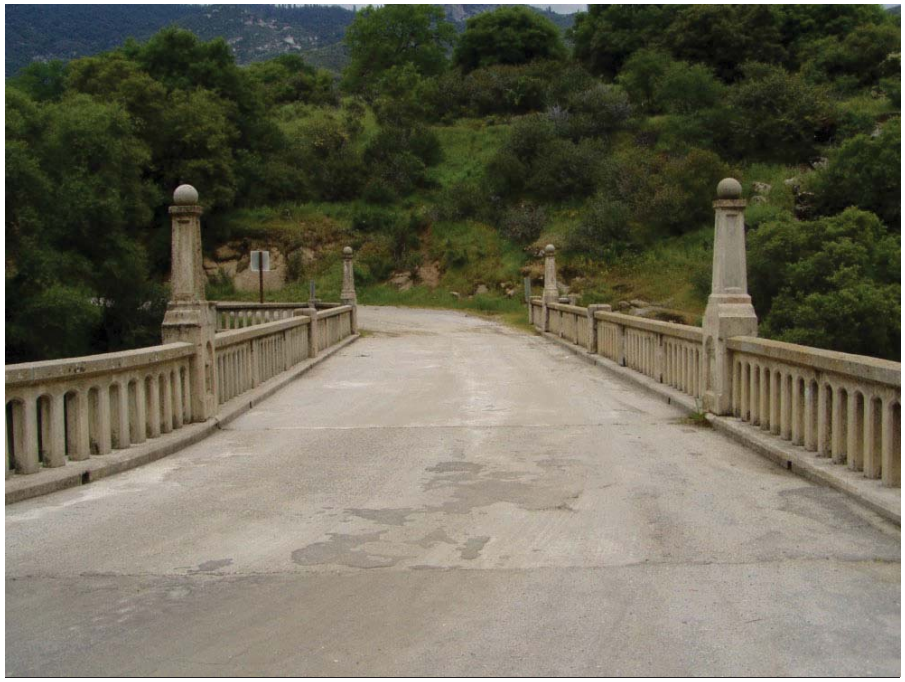
Criterion A Evaluation:
See Historic Evaluation.

Notes:
The plaque has been removed.

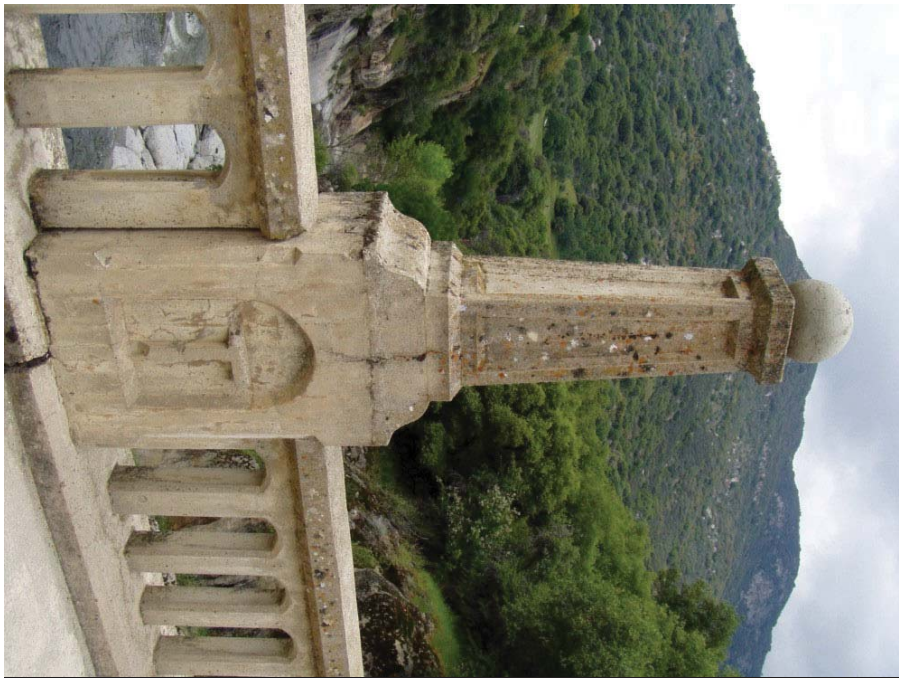
Historic Evaluation

The Kaweah River Bridge in Tulare County, 46C0196, was found eligible for listing in the National Register of Historic Places as part of the Bridge Inventory conducted by Caltrans in the 1980s. The bridge was found to be significant under Criterion C in the areas of transportation and engineering. During the 1920s when state highways were first constructed in pristine wilderness areas, California bridge engineers struggled to find an appropriate design for major bridges on scenic routes. The Kaweah River Bridge, on the road to Sequoia National Park, is very successful in this regard. It was designed by a private consultant in 1922 and presaged the scenic bridge design developed by the Division of Highways in the mid to late 1920s. Reference: 1980s Rating Sheet For 46C0196.

Bridge 46C0196



Facing east



Facing northeast



Facing southeast

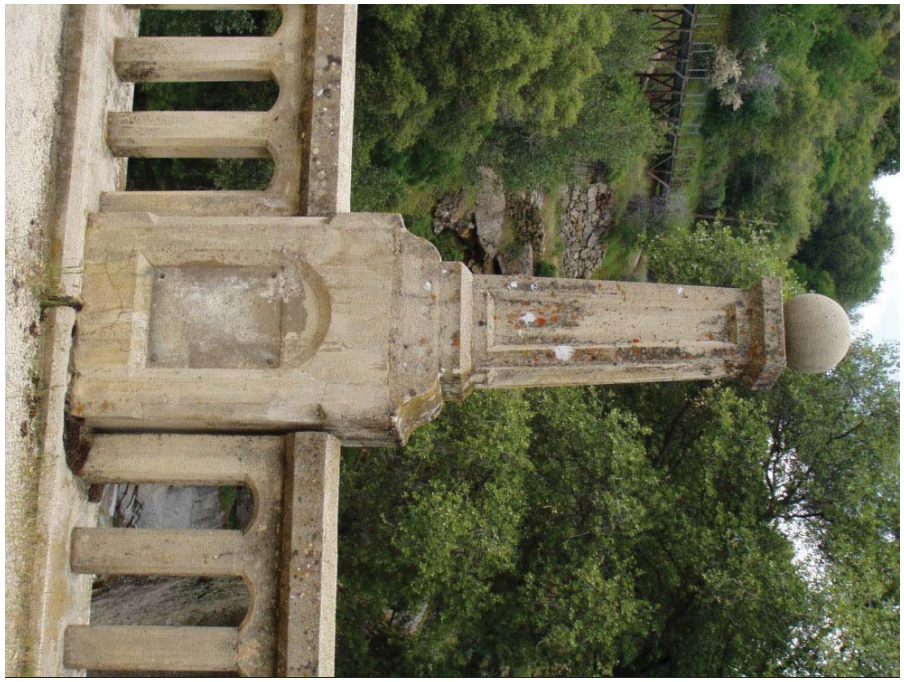


Facing southeast

Bridge 46C0196

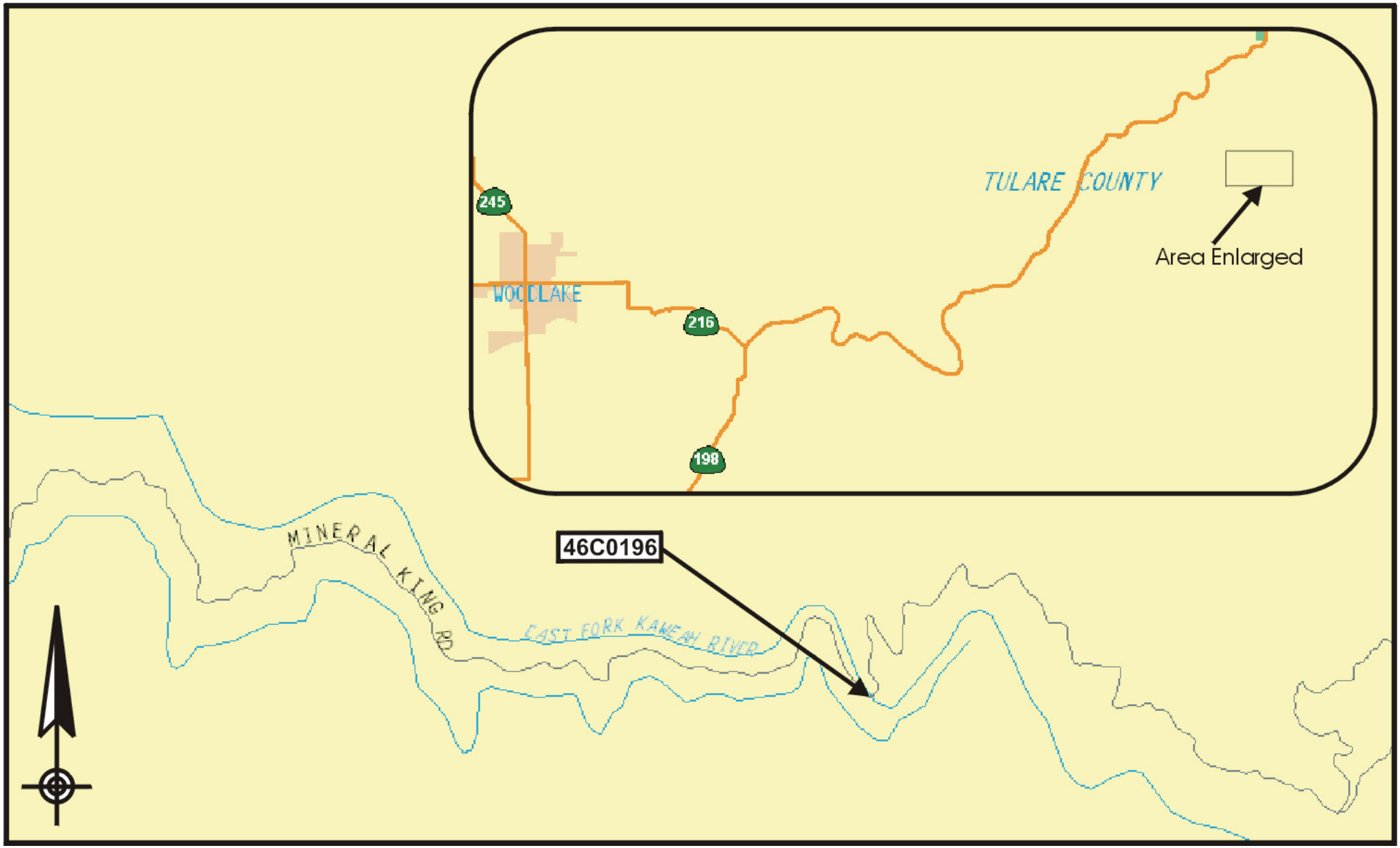


Facing northwest



Facing northwest

Location Map



Attachment C: Archaeological Survey Report

ARCHAEOLOGICAL SURVEY REPORT

Oak Grove Bridge (No. 46C-0196) on Mineral King Road over the East Fork of the Kaweah River near Three Rivers, Tulare County, California

HBP 5946 (106)

Prepared By: _____

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Environmental Analysis, Planning and Local Programs
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855 M Street, Suite 200, Fresno, CA 93721

Approved By: _____

Shane Gunn, Branch Chief
Environmental Analysis, Planning and Local Programs
California Department of Transportation, District 6
855 M Street, Suite 200, Fresno, CA 93721

September 2017

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 U.S.C. 327 and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans.

USGS Case Mountain 7.5-min. quadrangle
6.33 acres (3.40 acres surveyed)

Keywords: P-54-004764, P-54-005300 (newly recorded)

SUMMARY OF FINDINGS

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans), proposes to replace/rehabilitate the existing Oak Grove Bridge (46C-0196) on Mineral King Road over the east fork of the Kaweah River. The bridge is 6.68 miles east of State Route 198 near Three Rivers in Tulare County, California. Using funding from the Federal Transportation Improvement Program administered through Caltrans, on behalf of the County, Applied EarthWorks, Inc. (*Æ*) performed the archaeological inventory necessary for compliance with Section 106 of the National Historic Preservation Act.

The current investigation included: (1) a records search at the Southern San Joaquin Valley Information Center of the California Historical Resources Information System; (2) Native American consultation; and (3) an archaeological pedestrian survey of a 6.33-acre Area of Potential Effects (APE), which is composed of an area surrounding the existing bridge and three discontinuous staging areas.

The records search revealed that there has been one previous cultural resources study within the APE and two investigations within a 0.5-mile radius of the APE. The records search identified one historic-era archaeological site (P-54-004764) within the APE and four additional cultural resources within a 0.5-mile radius of the APE. During the pedestrian survey on June 7, 2016, *Æ* identified and recorded one additional feature associated with P-54-004764. Also within the portion of the APE surrounding the existing bridge, *Æ* found the remains of a previously unrecorded historic-era bridge abutment that predates the existing bridge (P-54-005300). No prehistoric archaeological resources were identified within the APE. Two historic built environment resources occur within the APE. Bridge 46C-0196, constructed in 1923, and the Southern California Edison (SCE) hydroelectric flume. The bridge is historically significant and eligible for the National Register of Historic Places; the flume is part of SCE's Kaweah Number 1 development, which has been determined not eligible for the National Register of Historic Places.

It is Caltrans' policy to avoid cultural resources whenever possible. If buried cultural materials are encountered during construction, it is Caltrans' policy that work stop in that area until a qualified archaeologist can evaluate the nature and significance of the find. Additional survey will be required if the APE changes to include areas not previously surveyed.

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1 INTRODUCTION

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans), plans to replace or rehabilitate the existing Oak Grove Bridge (No. 46C-0196) on Mineral King Road over the east fork of the Kaweah River (Figure 1). The bridge is located 6.68 miles east of State Route 198 near Three Rivers in Tulare County, California (see Maps 1 and 2 in Appendix A). The Oak Grove Bridge Project (Project) is receiving funding through the Federal Transportation Improvement Program.



Figure 1 Bridge 46C-0196 from southeast corner, facing north.

Because the Project involves federal funding, it is subject to the cultural resources provisions of the National Environmental Policy Act and Section 106 of the National Historic Preservation Act, as implemented through the January 1, 2014, *First Amended Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance With Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (Section 106 PA). Section 106 mandates that government agencies consider the effects of their actions on historic properties—i.e., archaeological resources that are eligible for inclusion in the National Register of Historic Places (NRHP) per 36 CFR 800.16(l).

On behalf of the County, and as a subcontractor to GPA Consulting (GPA), Applied EarthWorks, Inc. (Æ) requested a records search from the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System and reviewed the results; (2) performed an archaeological survey of the Project's Area of Potential Effects (APE; Map 3); and (3) initiated Native American consultation. Æ conducted these investigations in accordance with the guidelines for identification of prehistoric archaeological resources in *Caltrans Standard Environmental Reference, Vol. 2: Cultural*, available online.

On June 7, 2016, Æ Associate Archaeologist Katie Asselin, who holds a master's degree in archaeology (2009) and is a Registered Professional Archaeologist (RPA), conducted the pedestrian survey. She has 8 years of experience performing and documenting archaeological investigations throughout California. Æ Principal Archaeologist Mary Clark Baloian served as project manager and provided technical oversight for the project. She holds a doctoral degree in anthropology (2003) and is an RPA with more than 25 years of experience in California archaeology.

2 PROJECT DESCRIPTION AND LOCATION

Bridge 46C-0196 is in Caltrans District 6 within Tulare County (Map 1). The project lies within Township 17 South, Range 29 East, Sections 14, 15, and 39 as depicted on the U.S. Geological Survey (USGS) Case Mountain, Calif., 7.5-minute quadrangle (Map 2). The bridge carries Mineral King Road over the east fork of the Kaweah River in a rural and rugged area of the Sierra Nevada.

The Project APE consists of four discontinuous areas, one area surrounding the existing bridge, identified as the Bridge Area, and three potential staging areas, identified as the West, South, and East Staging Areas (Maps 2 and 3). The Bridge Area of the APE surrounds existing Bridge 46C-0196, extending approximately 475 feet downstream and 200 feet upstream of the existing bridge, and includes the northern and southern approach roadways on Mineral King Road. The West Staging Area is approximately 1.3 miles west of the existing bridge on the north side of Mineral King Road. The South Staging Area is approximately 400 feet northeast of the existing bridge on the south side of Mineral King Road. Finally, the East Staging Area is approximately 800 feet northeast of the existing bridge on the east side of Mineral King Road. Temporary construction easements will be required, and right-of-way acquisitions may be required to accommodate construction of the Project. There would be no utility relocation required as part of the Project. Temporary catchment basins to collect storm water and shrouding (i.e., covering or wrapping) of the bridge arch will be required to prevent debris from falling into the existing river channel during construction. The Project has three alternatives, described briefly below.

2.1 ALTERNATIVE 1: REHABILITATION/RETROFIT

Alternative 1 would include removal and replacement of the bridge deck, spandrel columns, spandrel crossbeams, arch fins, transverse deck beams, and longitudinal exterior beam over the main arch span. It would repair the carbonated concrete at the pier spandrel columns and arch, and replace the existing concrete barrier. Additionally, there would be an application of saline waterproofing treatment to all remaining exposed concrete surfaces.

A temporary scaffolding system, supported within the creek, would be required to access the existing bridge components (i.e., columns, arch, etc.) and make the necessary repairs. A temporary bridge, supported on cast-in-place abutments that would be removed following rehabilitation of the existing bridge, would be required downstream of the existing bridge to maintain traffic during construction, with the centerline of the temporary bridge located approximately 50 feet north of the existing bridge's northern edge of the deck.

2.2 ALTERNATIVE 2B: REPLACEMENT WITH EXISTING BRIDGE PRESERVATION

Alternative 2B would include the construction of a replacement bridge with a new cast-in-place tensioned concrete box girder on a new alignment, immediately upstream of the existing bridge, to preserve views from the approach roadway.

To maintain traffic during construction, the replacement bridge would be located east (upstream) of the existing bridge, with traffic being maintained on the existing bridge until construction has been completed. The existing bridge will become a pedestrian crossing once construction of the new bridge is completed.

Realignment of the approach roadways will be necessary because the alignment of the bridge would shift to the east, requiring cutting into the hillside. Depending on the depth to bedrock, blasting or hydro drilling of the existing rock would be required and retaining walls would be constructed to accommodate both roadway approaches and bridge abutments. In addition, new fill and retaining walls would be required to support the proposed alignment at the southwest corner of the structure.

Minor rehabilitation of the existing bridge would be completed to maximize its remaining lifespan. This may include replacing the joint seals, applying methacrylate to the bridge deck, and/or injecting epoxy into the larger cracks in the arch ribs and pier spandrel columns.

2.3 ALTERNATIVE 3: HYBRID REHABILITATION/REPLACEMENT

Alternative 3 is a combination of Alternatives 1 and 2. This alternative maintains the original arches of the existing bridge while reconstructing the existing bridge deck with a new girder type bridge. All aesthetic features on the new bridge deck would match the existing bridge.

Because of the removal of the existing bridge deck, a temporary bridge, as described in Alternative 1, would be required to maintain traffic during construction. After erection of the temporary bridge, construction of the new structure would begin with the demolition of the existing deck, spandrel beams to the tops of the spandrel columns, and abutments. Construction of new abutments would be behind the existing abutments. There would be installation of temporary bracing (i.e., falsework) for the existing arch ribs and spandrel columns—the arches would help support the falsework for construction of the box girder; the falsework would be removed after the box girder is complete.

The APE has been determined by reviewing the direct impacts of construction work, including the possible retrofit of the existing bridge, the erection of a temporary bridge, and establishment of staging areas. It will encompassing 6.33 acres over four discontinuous areas surrounding and

near the existing bridge (Map 3). There is also the potential to affect resources below the surface through geophysical boring, excavation, hydro drilling, blasting, and pile driving during construction activities. These effects have been taken into consideration, although, the exact depths of these ground-disturbing activities are currently unknown.

3 SOURCES CONSULTED

3.1 RECORDS SEARCH

On April 17, 2015, the staff of the SSJVIC at California State University, Bakersfield, performed a records search of the California Historical Resources Information System (CHRIS), which encompassed the Project APE and a 0.5-mile surrounding radius surrounding (RS# 15-157; Appendix B). SSJVIC staff examined maps depicting recorded resources and searched their database of reports and cultural resource records as well as the Historic Properties Directory (OHP), Archaeological Determinations of Eligibility, and the California Inventory of Historic Resources (1976).

The records search identified one previously recorded resource within the Project APE. P-54-004761 was recorded as two dry-stacked rock retaining walls, one on either side of Mineral King Road. Two historic-era built environment resources also occur within the APE, the existing Oak Grove Bridge (46C-0196) on Mineral King Road, built in 1923, and the Southern California Edison (SCE) hydroelectric flume. The bridge is historically significant and eligible for the National Register of Historic Places; the flume is part of SCE's Kaweah Number 1 development which has been determined not eligible for the National Register of Historic Places (Lehman et al. 1989). The California Office of Historic Preservation concurred with this finding by letter dated August 27, 1990.

The records search identified one previous cultural resources study within the APE (TU-01527). This survey followed the route of the SCE flowline that parallels Mineral King Road in the Bridge Area APE (Kovak and Jackson 2012). Two previous investigations have been documented within 0.5-mile of the Project (Appendix B).

3.2 ARCHIVAL RESEARCH

The purpose of archival research for archaeological studies is to provide information regarding the potential for historic-era deposits to exist within the APE. The investigation compiled information from several sources, including:

- Various online resources for historical maps and documents; and
- Æ's in-house library, which includes local histories.

Æ consulted several historic topographic and General Land Office (GLO) maps. A "house" is noted on the 1883 GLO survey plat in the Project vicinity, specifically in the northwest quarter of the northeast quarter of Section 15 (Bureau of Land Management [BLM] 1883). Upon comparison of the GLO depicted location to the Project area, it appears that this structure is just west of the East and South Staging Areas and is outside the APE. Additionally, the 1883 GLO plat shows the road on the north side of the Kaweah River, not on its current alignment, and not crossing the east fork of the Kaweah River. The 1920 GLO plat depicts the road in its current

alignment and crossing the Kaweah River at the approximate location of the current bridge (BLM 1920). The 1920 and 1935 GLO plats depict the Mt. W. P. and E. Co. (now SCE) flume in its current location (BLM 1920, 1935). There are no other structures or features depicted within the APE on these or other historic maps.

3.3 NATIVE AMERICAN CONSULTATION

On March 6, 2016, Æ sent an e-mail to the Native American Heritage Commission (NAHC) requesting a search of their Sacred Lands File and the contact information for local Native American representatives that may have information about the area or an interest in the Project. The NAHC responded on March 9, 2016, stating that it did not identify any sacred sites within or adjacent to the APE (Appendix C). The commission cautions that its Sacred Lands Inventory is not exhaustive and the absence of recorded sites does not preclude the discovery of cultural resources during project activities. The NAHC also provided the names and contact information for five Native American representatives who may have an interest in the project. On March 18, 2016, Æ sent a letter to each of these representatives describing the project, including a map of its location, and requesting information about the study area. On June 22, 2016, Æ attempted follow-up contact with the representatives by telephone.

Æ received one response to its request for information. Kern Valley Indian Council Secretary Julie Turner responded that the Project is outside the Kern Valley Indian Council's area of interest. Æ has not received any further responses to date (see consultation log in Appendix C). Æ will forward any further communication received to the Tulare County.

Following the County of Tulare's filing of a Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the Project and pursuant to the provisions of Assembly Bill (AB) 52, as lead agency under CEQA the County extended an invitation to consult to 28 Native American representatives from 21 different tribes identified on the NAHC consultation list of tribes with traditional lands or cultural places within the boundaries of the Tulare County. Letters were sent December 8, 2016 via U.S. certified mail (Appendix C).

Following receipt of letters, the County met with Native American representatives Hector Franco, Shana Powers, Greg Cuara, Robert Jeff, and Roger Martinez of the Santa Rosa Rancheria Tachi Yokut Tribe on December 16, 2016 and with Ken Woodrow of the Wuksachi Indian Tribe/Eshom Valley Band on January 19, 2017. The County's AB 52 consultation is in progress and has not been concluded to date.

4 BACKGROUND

4.1 NATURAL ENVIRONMENT

The Project is in the Sierra Nevada geomorphic province, which extends nearly 400 miles from the Cascade Range southward to the Tehachapi Mountains. The Sierra Nevada range is 40–100 miles wide and varies in elevation from approximately 300 feet above mean sea level along its western edge to more than 14,000 feet above mean sea level at the crest (Norris and Webb 1990:63). The Project lies at approximately 2,600 feet above mean sea level in the foothills 6 miles east of the community of Three Rivers.

Geologically, the Sierra Nevada is a batholith composed of granitic blocks that formed 70–90 million years ago and were uplifted during the past 10–12 million years (Hill 1975; Norris and Webb 1990). Large outcrops of granitic rock occur throughout the foothills and mountains. Native people used such outcrops for milling hard seeds, acorns, pine nuts, berries, and other foods. Granitic and basaltic cobbles, readily available in local streambeds, were shaped to make pestles and handstones for use in the milling process (see Hull et al. 1999; McCarthy et al. 1985).

The annual climatic cycle of the foothills is typified by a warm/dry season of about 6 months followed by a cool/moist season of roughly the same duration. Summer air heated in the Central Valley rises and spreads eastward up the mountain slopes to create breezy afternoon conditions (Schoenherr 1992:72). Precipitation falls mostly as rain between October and April.

To accommodate the great quantity of water produced by storms and snowmelt, the western Sierra is drained by numerous streams that carry more than half of California's runoff (Moratto 1984:13). The major watercourse in the vicinity is the east fork of the Kaweah River, which actually flows through the Project APE. The river, its principal tributaries, and smaller streams supported human use of the area during prehistoric and historic times. Riparian and aquatic habitats along these streams provided freshwater fish, beaver, otter, raccoon, bear, and abundant plant resources of economic value to native people. In the twentieth century, many of the streams in the Sierra were dammed to capture water for agriculture and to generate hydroelectric power (Redinger 1998; Rose 1992).

4.2 ETHNOGRAPHY

The west slope of the Sierra Nevada features a series of north-south trending life zones, ranging from Lower Sonoran in the western foothills to Alpine in the high country of the crestal zone (Merriam 1898; cf. the plant belts of Storer et al. 2004). Each zone provided a distinctive array of floral and faunal resources that were used by native peoples. The biogeography of the Sierra, together with ecological aspects of cultural adaptations to local and regional environments, influenced both the distribution and the seasonal land-use patterns of ethnic groups.

The Project lies within the ethnographic territory of the Foothill Yokuts, who, along with the Northern Valley and Southern Valley Yokuts, are part of the Yokuts socio-linguistic group. At the time of first contact with the Spanish missionaries, the Yokuts people collectively inhabited the San Joaquin Valley as well as the western foothills of the Sierra Nevada from the Calaveras River southward to the Kern River (Spier 1978; Wallace 1978a, 1978b). The Yokuts language belongs to the broader Penutian family, which subsumes a relatively diverse assemblage of languages including Miwok, Costanoan, Maiduan, and Wintuan (Silverstein 1978). Compared to other Penutian languages, however, Yokuts shows considerable internal linguistic homogeneity, especially given the extent of its geographic distribution. Dialects differ minimally and were mutually intelligible, at least among individuals from contiguous groups. This relative lack of linguistic differentiation suggests that ancestors of the Yokuts entered California after the arrival and subsequent radiation of the more linguistically diverse Penutian groups such as the Miwok and Costanoan (Moratto 1984:554).

Spier (1978) divides the Foothill Yokuts into northern, central, and southern categories, but he acknowledges that the groupings are based more on geography than purported ancestry. Moreover, due to the lack of linguistic and historical data about the Foothill Yokuts, research

cannot adequately address such questions as whether the Foothill Yokuts as a whole comprise a distinct linguistic entity or, alternatively, if each geographical group was more closely related to nearby tribes inhabiting the valley floor. Specifically, the study area is in the vicinity of the tribal territory of the Wikchamni, but due to a lack of data, the general ethnohistory of the Foothill Yokuts is discussed herein.

While the history of Foothill Yokuts tribes is far from certain, they do share the same suite of subsistence adaptations and patterns. The internal structure of the tribe could best be described as a loose confederation of villages, each led by its own chief. Spier (1978:481–482) states that village heads functioned more or less autonomously but that they conferred with each other on matters of tribal importance. Although his authority regarding intertribal and intervillage conflict was limited, the chief was the central figure in a society based on reciprocity; he redistributed wealth within the village, coordinated and presided over all ceremonies, and served as the focal point of trade. In a sense, the chief controlled the flow of goods into and within the village and, as a result, could amass a considerable income from his position. For most Yokuts groups, ceremonies and social relations within the tribe were structured around moieties, or inherited, diametric social divisions typically represented by a totemic symbol (e.g., eagle, coyote).

Subsistence practices of the Foothill Yokuts consisted of hunting and gathering. The diversity of resources included acorns, pine nuts, ground squirrels, rabbits, wild oats, manzanita berries, ducks, trout, and mussels. Tule elk roamed the valley in great numbers and were an important prey for the Yokuts (Meighan, Dillon, Armstrong et al. 1988:37). The east fork of the Kaweah River did support trout and other freshwater fish.

Structures made by the Foothill Yokuts were of several forms. One was a conical structure about 3.6–4.6 meters (12–15 feet) in diameter that functioned as living quarters. This type of structure was made of slender poles or sticks lashed together and built with or without walls, depending on the season. Some of the conical wattle buildings were covered with clay daub that became very durable when baked by the sun (see King 1968; Moratto 1972, 1988:162–174, 255–272). The second type of structure was the round sweathouse, usually excavated approximately 0.9 meter (3 feet) below the ground surface and constructed of oak timbers. The third kind of structure was a temporary sun shade, hemispherical in form, made of branches secured to a light frame (Spier 1978:476–477).

Basalt and granitic cobbles were locally available and used for ground stone tools (Spier 1978:473); bedrock mills (mortars and milling slicks) were often produced on outcrops of granitic rock. Soapstone or steatite, found at nearby sources, was commonly formed into cooking vessels, arrow-shaft straighteners, and artistic objects because of its malleable quality and ability to retain heat. The Foothill Yokuts fashioned bows from mountain cedar and sinew. Flaked stone tools were produced of local quartz, chert, and basalt as well as of obsidian acquired from sources in the western Great Basin (e.g., Coso volcanic flow in the Owens Valley) through trade with the neighboring tribes to the east. In addition, goods from the trade centers of the Tulare Lake area—including local materials (e.g., tule reeds) as well as shell beads and other items from the coast—made their way to the foothill region (Davis 1961). Rock art, probably attributable to the Yaudanchi and Koyete, is found within the Tule River Indian Reservation and at Rocky Hill, west of Success Lake (Kroeber 1925:479; Meighan, Dillon, and Armstrong 1988), southwest of the Project.

4.3 PREHISTORY

Several large-scale surveys have been conducted in the Project vicinity, including Jones' (1969) study for SCE's Tule River Project and Weinberger's (1985, 1988, 1992) various investigations near Springville, south of the Project. A survey within the Tule River Indian Reservation discovered 148 archaeological sites; based on datable and diagnostic artifacts, Gehr (1981) concluded that occupation of the area around the reservation probably began about 2000 before present (B.P.). In the late 1980s, a research team from the University of California, Los Angeles undertook a comprehensive investigation at Lake Kaweah (Meighan, Armstrong, Dillon et al. 1988) and of the Success Lake area (Meighan, Armstrong, and Dillon 1988) for the U.S. Army Corps of Engineers. At Success Lake, the survey team revisited two previously recorded sites and discovered 11 new sites, including a late prehistoric village (CA-TUL-971) and a magnesite mine (CA-TUL-970H). Thorough historical and ethnographic studies of the area also were a part of the investigation. More recently, archaeological surveys have been conducted along the SCE Camp Nelson Circuit electric distribution line southeast of the Project (Jackson and O'Neill 2007) and along the northern boundary of the Tule River Indian Reservation (Coleman and Phillips 2010). Although only 25 percent of the requested 2,264 acres could be surveyed for that project, archaeologists relocated several previously recorded bedrock outcrop and midden sites as well as discovered one bedrock basin "tub" site within their project area (Coleman and Phillips 2010).

The focus of excavations in the southern Sierra Nevada has been around the Terminus Reservoir (Lake Kaweah) to the east. Investigations at Slick Rock Village (CA-TUL-10) revealed 14 house pits, 3 large bedrock milling stations, more than 1,000 sherds of Tulare plainware ceramics, pictographs, obsidian points, bone awls, glass and steatite beads, and other artifacts. Fenenga (1952) concluded that the site was a protohistoric Wukchumni (Foothill Yokuts) settlement. The Greasy Creek site (CA-TUL-1) yielded artifacts similar to those at CA-TUL-10; in addition, large projectile points, core choppers, and a cobble mortar were found in the lower component, indicating a longer and possibly older period of occupation than at Slick Rock Village (Moratto 1984:330; Pendergast and Meighan 1959). The Cobble Lodge site (CA-TUL-145) also appears to have a long period of occupation. Although CA-TUL-145 had been disturbed in at least two separate instances (1860s and 1930s), excavations revealed an early component with large projectile points and cobble mortars underlying a later component containing pottery, arrow points, and steatite beads (Berryman and Elsasser 1966; von Werlhof 1961). In the 1860s, a smallpox epidemic decimated the Indian inhabitants at this site.

To the south, Dillon (1992) conducted excavations at the Sunset Point Site (CA-TUL-1052). Investigations yielded a rich artifact assemblage, house pits, bedrock milling stations, and evidence of occupation spanning close to 5,000 years. The site is believed to have functioned as a seasonal base camp for processing sugar pine nuts (Dillon 1992).

In contrast with the shorelines of Tulare Lake, which contain some of the oldest remains in California, the prehistory of the southern Sierra begins much later. Although no specific sequence has been formulated for the southern Sierra foothills, McGuire and Garfinkel (1980:49–53) devised a four-part chronology for the highlands east of the study vicinity (also see Moratto 1984:333). These phases are characterized by a sequence of diagnostic projectile points coupled with the gradual increased exploitation of piñon and are based on their investigations along a segment of the Pacific Crest Trail in eastern Kern and Tulare counties. This sequence has

been applied to recent work at CA-TUL-819 at the Johnsondale Work Center Site (Ramirez et al. 2010) and at CA-TUL-1384 near California Hot Springs (2010 Draft NRHP Nomination Form).

The Lamont Phase (6000–3200 B.P.) is characterized by Pinto points and basalt tools. The material remains associated with this phase represent forays into the upland areas by hunting groups from the lowlands east of the Sierras. There is some evidence of piñon nut gathering.

The succeeding Canebrake Phase (3200–2600 B.P.) is marked by a greater reliance on pine nuts. Milling stones are found along with Sierra Concave Base, Elko, and Humboldt Concave Base points. The material culture of this phase suggests settlement in the Sierra Nevada rather than mere sporadic use of the region.

Intensification of occupation occurs in the Sawtooth Phase (2600–700 B.P.). Artifacts include Rose Spring and Eastgate series points, handstones and milling stones, bedrock mortars and cobble pestles, steatite or serpentine beads, and occasionally *Olivella* spire-lopped beads. Obsidian use increases compared to earlier phases.

Subsistence and settlement remain qualitatively unchanged in the ensuing Chimney Phase (700 B.P. to historical times), except that there is a considerable increase in the intensity of occupation. Typical artifacts include Desert Side-notched and Cottonwood Triangular arrow points, Owens Valley brownware ceramics (similar to Tulare plainware), stone disk beads, glass beads, and *Olivella* rough disk beads.

An important element of McGuire and Garfinkel's interpretation is the distinction between the Numic peoples of the Great Basin and the tribes to the west. Differences in material culture suggest that since 3000 B.P., Numic groups occupied the crest and eastern side of the Sierra Nevada, while Tübatulabal settlements occurred along its western slope.

While data from the valley floor and upper Sierra may be applicable to the general southern Sierra foothill area, little direct evidence for these connections exists. The lack of stratified sites and the general deficiency of well-preserved organic remains have resulted in a regional cultural chronology largely based on diagnostic artifact sequences developed primarily from, as noted above, eastern Kern and Tulare counties. Further, a large-scale cultural resources overview of the southern Sierra Nevada (Theodoratus Cultural Research, Inc. [TCRI] and Archaeological Consulting and Research Services, Inc. [ACRSI]) noted in its review of the archaeology of the Tule River drainages that "materials on these groups are rather meager in terms of either a subsistence model or ethnographically recorded activity areas" (TCRI and ACRSI 1984:92).

However, the Kaweah River drainage generally, and the location currently covered by Lake Kaweah specifically, was well populated in late prehistory. Some ethnohistoric period estimates place the population as high as 2,400 individuals. The area supported a large variety of site types, including villages, cemeteries, bedrock milling stations, hunting blinds and traps, and rock art. The settlement system appears to have centered on villages, occupied most or all of the year, from which small groups (likely families) would radiate out to gather resources at seasonal camps and special-use sites (e.g. hunting locations, acorn gathering spots, etc.) (Meighan, Armstrong, Dillon et al. 1988).

The identity of the prehistoric occupants of the Lake Kaweah area is open to some interpretation. Several site indicate cemetery burials in keeping with late Prehistoric and ethnohistoric Yokuts traditions. However, other sites contain cremations and burials in house floors. This may indicate retention of earlier burial practices within the Lake Kaweah area, or it may indicate that the area was occupied by both Yokuts and Mono peoples. This latter hypothesis is further supported by local rock art, which appears to be more similar to known Mono styles than to that of the Yokuts. Moreover, pottery, an innovation often attributed to the Mono, is relatively abundant at Lake Kaweah sites, while steatite vessels more common in the western Yokuts sites are rare (Meighan, Armstrong, Dillon et al. 1988). While the ethnographic record indicates that Yokuts people populated the region, the aggregate data seem to suggest that either the Yokuts population regularly interacted with and shared many traits of the neighboring Mono population, or that the area prehistorically was used by both groups.

4.4 HISTORIC CONTEXT

In 1853, Tulare County, which at the time included most of present-day Kings County, was established with the budding town of Visalia as the county seat. By the 1870s, many Southern Pacific Railroad towns had emerged, including Hanford (1877), Lemoore (1877), and Tulare (1872) (Preston 1981:125). The coming of the railroad was by no means a boon for all residents. Numerous pioneers had settled on and improved railroad land, mistakenly believing that they would pay the low per-acre price advertised by the railroad for unimproved land. Instead, when homesteaders attempted to gain title to their land, they were given asking prices exceeding $30 per acre for their now-improved properties. The disgruntled settlers filed suits against the railroad but were stone-walled by railroad-backed politicians. Frustration erupted into violence on May 11, 1880, when homesteaders exchanged gunfire with a U.S. marshal and railroad representatives near Hanford. The incident—known as the Mussel Slough Tragedy—provided fodder for antirailroad sentiment in the press and served as the inspiration for the Frank Norris novel, *The Octopus: A California Story* (see Baloian [2009] and Hanson [2006]).

The pace of economic development in Tulare County greatly accelerated with the construction of irrigation systems. Several irrigation companies formed in the early and mid-1870s, and after overcoming initial financial and physical difficulties, the Lower Kings River, People's, and Last Chance ditches, among others, were delivering water to farms by the end of the decade (Menefee and Dodge 1913). Tulare irrigation concerns tapped the ample Kings River, although some canals draw water from the Kaweah River and its branches.

Citrus fruit, now a major crop in Tulare County, was initially thought "too exotic" for the San Joaquin Valley. Lemons, specifically, were thought to be ill-suited to the valley climate, until they were planted by James William Center Pogue in 1868. Initially planting nearer the Kaweah River, the Pogue family moved their orchards to the community of Lime Kiln. In addition to serving as the home base for Pogue's growing citrus operation, Lime Kiln also became the base for a large operation organized by Pogue, J. B. Wallace, and C. W. Crocker. The three also built the Pogue Hotel to serve travelers. In 1894, Pogue subdivided the land in and around Lime Kiln and sold residential lots, renaming the town Lemon Cove (Elliott 2014).

By 1910, the development of new towns and settlements had slowed dramatically, and improvements were initiated to construct better roads. Agricultural concerns continued to prosper, resulting in the intensification of local farming until the 1930s, when individual farmers

emerging from the Great Depression no longer found agriculture to be a lucrative endeavor. Since that time farmland has increasingly been developed for commercial interests.

5 FIELD METHODS

On June 7, 2016, Æ Associate Archaeologist Katie Asselin, performed an intensive pedestrian survey of the 6.33-acre APE using parallel and meandering transects spaced no more than 15–20 meters apart. Upon the discovery of a cultural resource, Æ defined the site limits using a close-interval survey, recorded the site limits with a Trimble Global Position System (GPS) unit, took digital photographs, and documented the resource on the applicable California Department of Parks and Recreation 523 series forms.

The APE is four discontinuous areas that include the area surrounding the existing bridge, and three potential staging areas on Mineral King Road in the vicinity of the bridge, designated as the West, East, and South staging areas (Map 3). Ground visibility was generally poor, with thick grasses up to 3 feet high, brush, and oak trees obscuring visibility to less than 5 percent. Soils are a tan silty loam typical of the Sierra Nevada. There are granite boulders and outcrops throughout the Project APE. The survey conditions for each area varied slightly; these are summarized below.

5.1 BRIDGE AREA

The area surrounding the Oak Grove Bridge is the largest portion of the APE. It encompasses the existing bridge and roadway approaches on Mineral King Road. It is a 4.73-acre area that is approximately 668 feet long (northwest to southeast) by 443 feet wide (southwest to northeast). The Bridge Area APE includes the paved Mineral King Road, the SCE flume on its southwest edge, and granite outcrops amongst steep overgrown terrain surrounding the river canyon of the east fork of the Kaweah River (Figures 2 and 3). Other than a few accessible areas adjacent to the existing bridge and roadway, 2.93 acres of this portion of the APE has slopes greater than 45 degrees, which were too steep to survey. Average visibility was between 5 and 10 percent, mainly hindered by overgrown grasses and the paved road. Æ observed three metal eyelets imbedded in a granite boulder just northeast of the existing bridge (Figure 4). The metal eyelets were noted, but they were not recorded as a historic feature because of the lack of definitive association with the historic bridge or development of the area.

5.2 WEST STAGING AREA

The West Staging Area is approximately 1.3 miles downstream (west) of Bridge 46C-0196 on the north side of Mineral King Road. It is a 0.22-acre area that is approximately 128 feet wide (southwest to northeast) by 144 feet long (northwest to southeast). It has been graded and improved as a road pullout and is generally void of vegetation. Soils are compact and portions are covered in asphalt. Æ observed a dozer push pile covered in brush and weeds near the southwest corner of the staging area (Figure 5). The surrounding slopes are steep and covered with thick grasses and shrubs that obscure visibility. Visibility ranged from less than 5 percent to 100 percent, averaging about 30 percent. Æ noted modern trash scattered across the area.



Figure 2 **Overview of Bridge Area APE from the northern edge looking up the river at Bridge 46C-0196, facing southeast.**



Figure 3 **Overview of Bridge Area APE looking northwest from Bridge 46C-0196 down the Kaweah River; SCE flume is at the top of the photograph.**



Figure 4 **Metal eyelets in granite boulder, facing southwest; Bridge 46C-0196 in background.**



Figure 5 **West staging area with Mineral King Road to the right of the frame, facing east.**

5.3 SOUTH STAGING AREA

The South Staging Area encompasses 0.73-acre and is approximately 400 feet upslope (northeast) of Bridge 46C-0196. It lies primarily on the south side of Mineral King Road at a predominate bend. It is approximately 289 feet long (northwest to southeast) by 194 feet wide (southwest to northeast). The area is accessed by a dirt road from Mineral King Road. It contains a modern camper trailer, cars, and other debris, including car parts, lawn mowers, and piled wood and lumber (Figure 6). The camper trailer is at the southern end of the area and appeared to be occupied at the time of survey. Visibility varied from excellent (70–100 percent) in the dirt roadway and area surrounding the trailer to poor (less than 5 percent) in the areas covered by thick grasses.



Figure 6 South Staging Area survey conditions, looking south from Mineral King Road.

5.4 EAST STAGING AREA

The East Staging Area covers 0.65 acre and is approximately 800 feet upslope (northeast) of Bridge 46C-0196 on the east side of Mineral King Road. It is about 133 feet wide (east to west) by 214 feet long (north to south). Thick grasses and weeds covered the entire area and reduced ground surface visibility to less than 5 percent (Figure 7). Æ noted several objects, including a water spigot, a section of 1-inch metal pipe, and the remains of a wood fence with what appear to be hand-hewn posts (Figure 8). Although these objects suggest that this parcel may have been part of a homestead, there are no temporally diagnostic artifacts or other attributes to allow



Figure 7 **East Staging Area survey conditions, looking southwest from northeast corner.**



Figure 8 **Remains of wood fence at the East Staging Area; Mineral King Road in background, facing south.**

definitive association with a historic-era occupation or development of the area. During a public informational meeting for the Project, the County received a comment that this area contains remains of a former Civilian Conservation Corps (CCC) camp as well as Native American artifacts. However, Æ did not observe any evidence to suggest the homestead objects were associated with a CCC camp, nor did they find any information about a CCC camp at this location in the historical record. Additionally, Æ did not observe any Native American artifacts on this parcel.

6 STUDY FINDINGS AND CONCLUSIONS

Æ's pedestrian survey of the four discontinuous areas that make up the Project APE resulted in the expansion of one previously recorded historic archaeological site, P-54-004764, and documentation of one newly identified resource, P-54-005300 (assigned temporary number AE-2945-01). Both resources occur in the APE surrounding the bridge. Æ did not observe any prehistoric or historic-era artifacts, sites, or features in the South, West, or East Staging Areas.

When first recorded in 2010, P-54-004764 was described as containing two dry-stacked rock walls (Features A and B), one on either side of Mineral King Road (Kovak and Jackson 2010). During the pedestrian survey, Æ observed the previously recorded Features A and B and identified a third previously unrecorded segment of dry-stacked rock wall associated with the site. Æ documented this segment as Feature C (Figure 9). It is just southeast of Feature B on the northeast (downslope) side of Mineral King Road (see Appendix D). It is stacked between one



Figure 9 Overview of P-54-004764 Feature C taken from downslope of Mineral King Road, facing southwest.

and three courses high and is approximately 1 foot wide and 5 feet long. The feature may extend farther north, possibly connecting with Feature B; however, the area is overgrown with grasses and thick brush and its continuation could not be confirmed. It does not appear that Feature C extends farther south. The other rock walls (Features A and B) appear to be in good condition and do not appear to have changed since they were first recorded in 2010 (Figure 10).

P-54-005300 consists of wood debris and stacked rocks that appears to be the ruins of an abutment for an older bridge on Mineral King Road over the East Fork of the Kaweah River (Figure 11) that predates the existing 1923 bridge. Æ could only observe the debris from Mineral King Road using binoculars because the terrain was too rugged and steep to access safely. Æ observed debris only on the southwest bank of the river. No associated debris of a possibly matching abutment was visible on the northeast bank.

The pre-1923 bridge abutment remains (P-54-005300), the three metal eyelets (noted but not recorded), and the rock wall features (P-54-004764) have been determined to be exempt from National Register evaluation under the criteria contained in Attachment 4 of the Caltrans Section 106 Programmatic Agreement. The determination was made by Caltrans Archaeologist John Whitehouse, who is certified as a Principal Investigator in Prehistoric and Historical Archaeology, and as a Principal Architectural Historian.

The two previously recorded historic-era structures in the APE, the existing Mineral King Road Bridge (46C-0196) and the SCE flume, are addressed in the Historic Property Survey Report for this Project.



Figure 10 **Overview of P-54-004764 Feature B (foreground) and Feature A (mid-frame) with Mineral King Road in the center, facing northwest.**



Figure 11 **Bridge abutment remnants (P-54-005300), photographed from across the river on Mineral King Road, facing southwest.**

If previously unidentified cultural materials are unearthed during construction, it is Caltrans' policy that work be halted in the area until a qualified archaeologist can assess the significance of the find. Additional archaeological survey will be needed if project limits are extended beyond the present survey limits.

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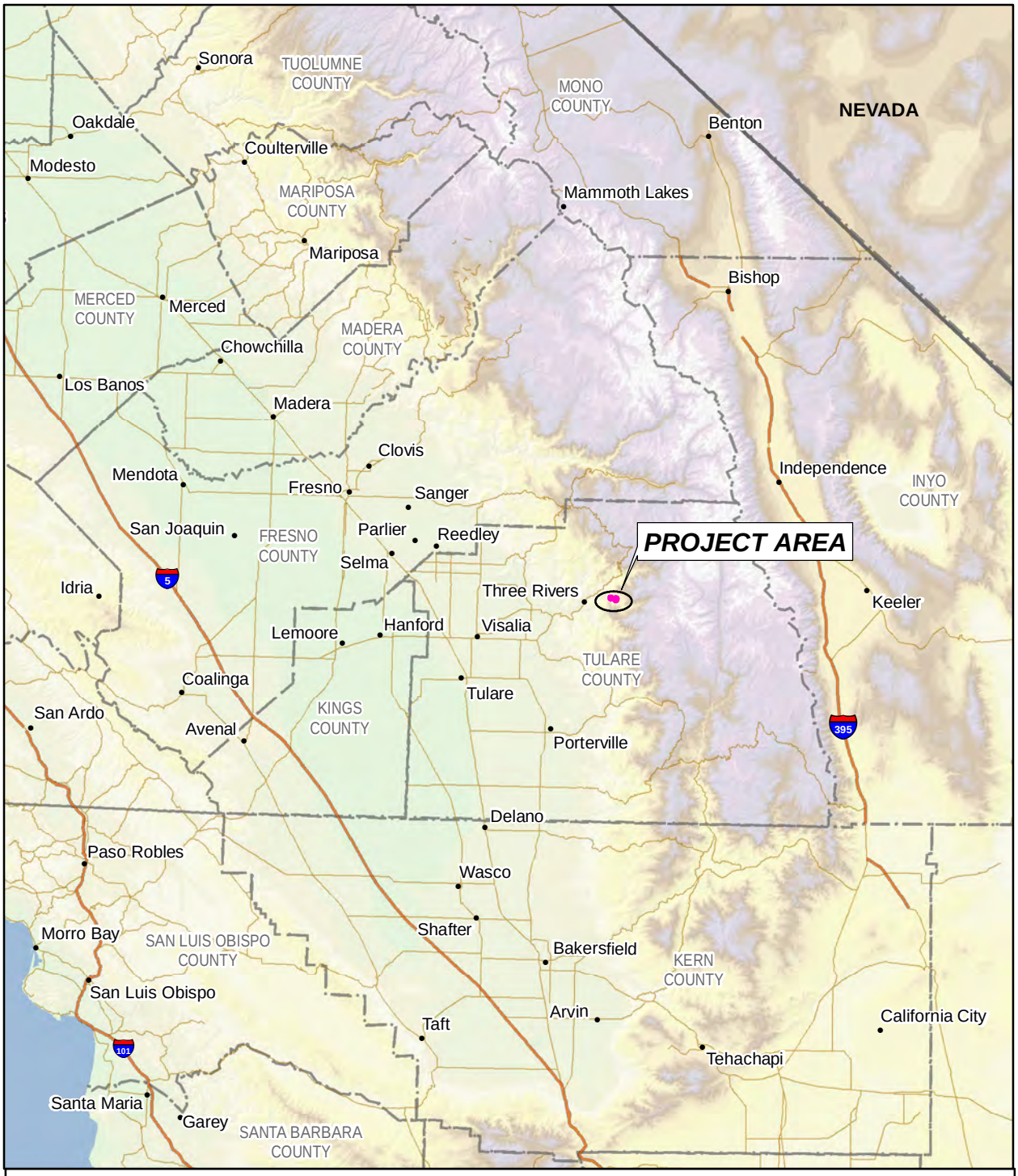
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APPENDIX A

Maps





SCALE 1:2,000,000

25 0 25 50 Miles

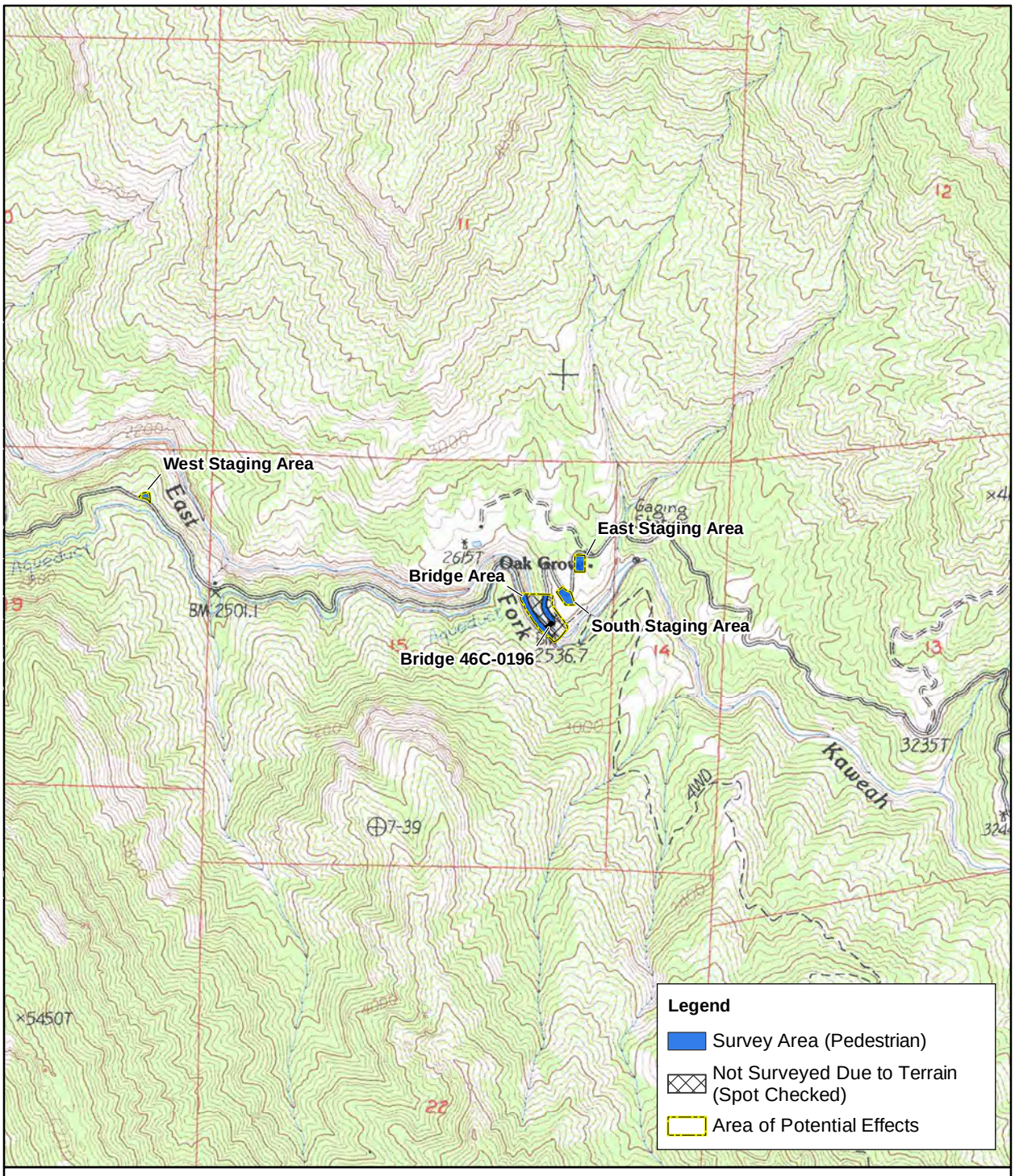
20 0 20 40 Kilometers

STUDY VICINITY

Oak Grove Bridge (No. 46C-0196)
on Mineral King Road
Caltrans District 6
Tulare County

HBP 5946 (106)

Map 1



SCALE 1:24,000

0.5 0 0.5 Miles

1,000 0 1,000 2,000 3,000 Feet

0.5 0 0.5 Kilometers

STUDY LOCATION

Oak Grove Bridge (No. 46C-0196)
on Mineral King Road
Caltrans District 6
Tulare County

HBP 5946 (106)

Township 17S /Range 29E , Section 15
Case Mountain(PE1987-MR1994), CA 7.5' USGS Quadrangle

Map 2



Locator Map



SCALE 1:2,400

0 40 80 120 160 200 400 Feet

0 6 12 18 24 30 60 Meters

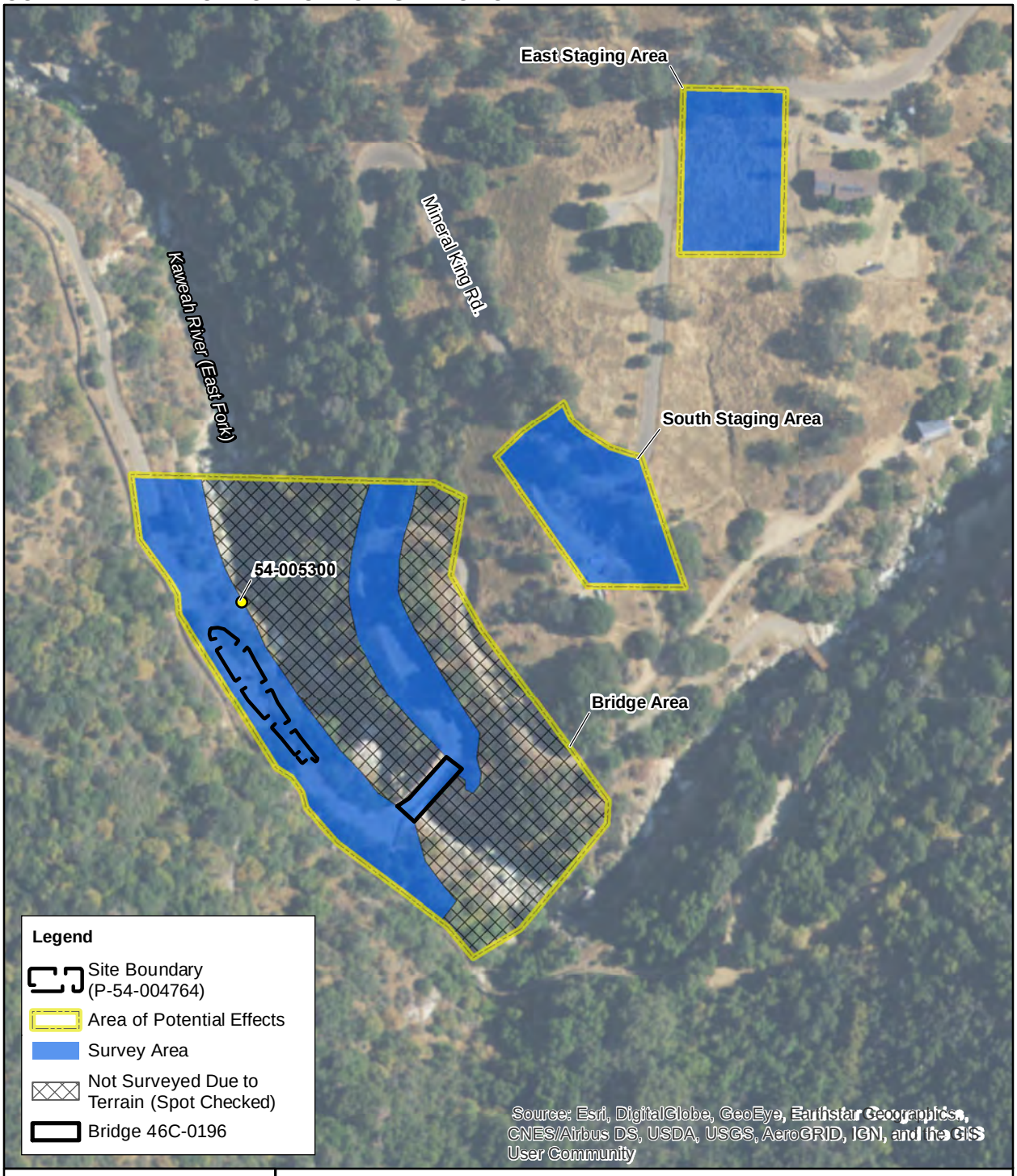
SURVEY COVERAGE

Oak Grove Bridge (No. 46C-0196)
on Mineral King Road
Caltrans District 6
Tulare County

HBP 5946 (106)

Map 3 (SHEET 1)

CONFIDENTIAL - NOT FOR PUBLIC DISTRIBUTION



Locator Map



SCALE 1:2,400

0 40 80 120 160 200 400 Feet

0 6 12 18 24 30 60 Meters

SURVEY COVERAGE

Oak Grove Bridge (No. 46C-0196)
on Mineral King Road
Caltrans District 6
Tulare County

HBP 5946 (106)

Map 3 (SHEET 2)

APPENDIX B

Records Search Results

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

FRESNO KERN KINGS MADERA TULARE

Southern San Joaquin Valley Information Center
California State University, Bakersfield
Mail Stop: 46 MEC
9001 Stockdale Highway
Bakersfield, California 93311-1022
(661) 654-2289 FAX (661) 654-2415
E-mail: ssjvic@csub.edu

4/17/2015

Mary Baloian
Applied EarthWorks, Inc.
1391 W. Shaw Ave., Suite C
Fresno, CA 93711

Re: Mineral King Bridge Replacement Project, Tulare County
Records Search File No.: 15-157

The Southern San Joaquin Valley Information Center received your record search request for the project areas referenced above, located on the Case Mountain USGS 7.5' quad. The following reflects the results of the records search for the project areas and the 0.5 mile radii:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☐ custom GIS maps ☐ shapefiles ☒ hand-drawn maps

Resources within project areas:	P-54-004764
Resources within 0.5 mile radii:	P-54-004761, 004765, 004766, 004797
Reports within project areas:	TU-01527
Reports within 0.5 mile radii:	TU-00351, 01362

Resource Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed	☐ not available
Resource Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed	☐ not available
Resource Digital Database Records:	☒ enclosed	☐ not requested	☐ nothing listed	☐ not available
Report Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed	☐ not available
Report Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed	☐ not available
Report Digital Database Records:	☒ enclosed	☐ not requested	☐ nothing listed	☐ not available
Resource Record Copies:	☒ enclosed	☐ not requested	☐ nothing listed	
Report Copies:	☐ enclosed	☒ not requested	☐ nothing listed	
OHP Historic Properties Directory:	☐ enclosed	☐ not requested	☒ nothing listed	
Archaeological Determinations of Eligibility:	☐ enclosed	☐ not requested	☒ nothing listed	
CA Inventory of Historic Resources (1976):	☐ enclosed	☐ not requested	☒ nothing listed	

Caltrans Bridge Survey: Not available at SSJVIC; please see http://www.dot.ca.gov/hq/structur/strmaint/historic.htm

Ethnographic Information: Not available at SSJVIC

Historical Literature: Not available at SSJVIC

Historical Maps: Not available at SSJVIC; please see http://historicalmaps.arcgis.com/usgs/

Local Inventories: Not available at SSJVIC

GLO and/or Rancho Plat Maps: Not available at SSJVIC

Shipwreck Inventory: Not available at SSJVIC; please see http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp

Soil Survey Maps: Not available at SSJVIC; please see http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

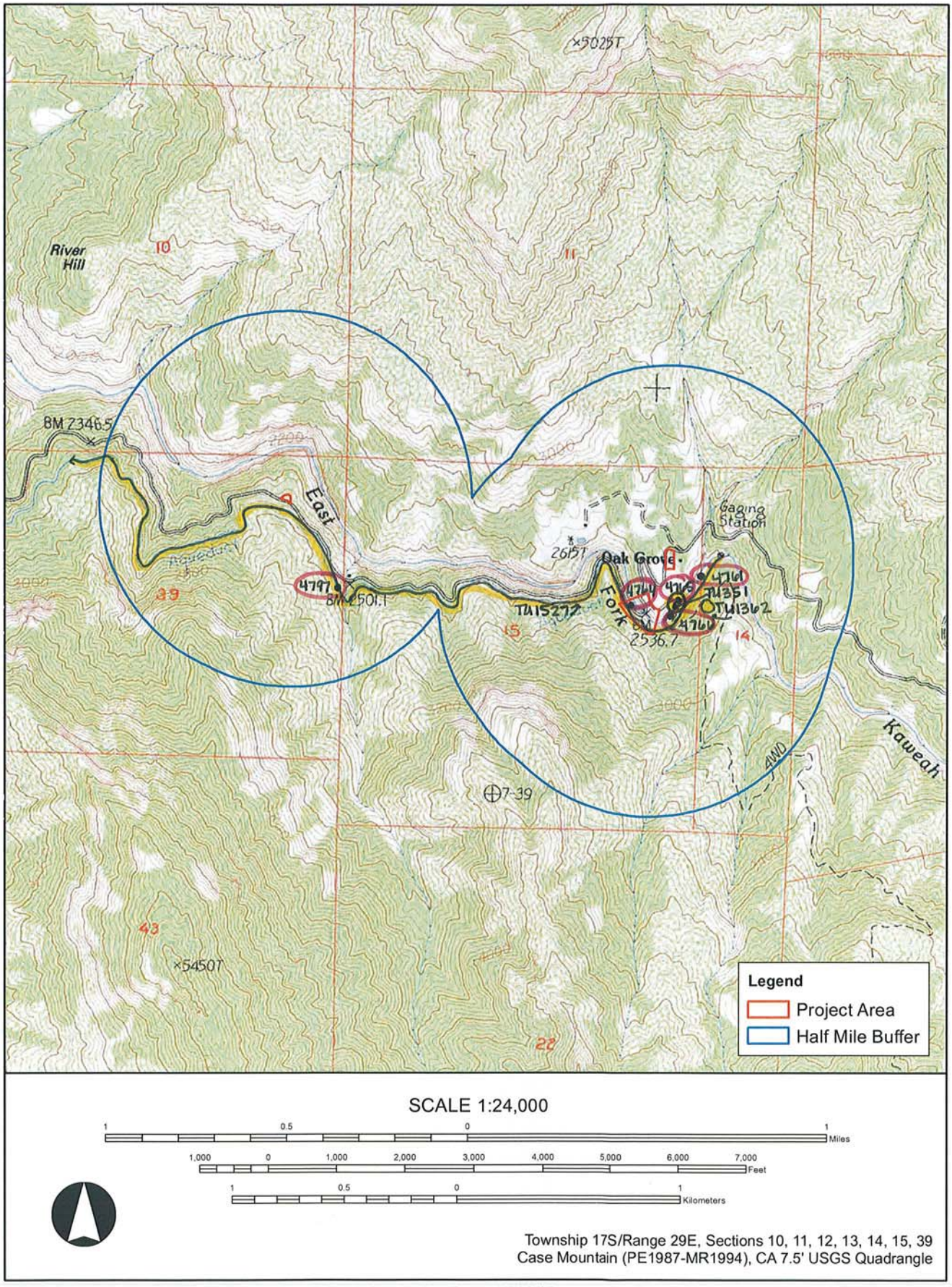
Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Celeste M. Thomson
Coordinator



Records Search location map for the *Mineral King Bridge - AE2945.*

Resource List

SSJVIC Record Search 15-157

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-54-004761	CA-TUL-002961H	Resource Name - K1-A01	Site	Historic	AH02 (Foundations/structure pads)	2010 (Cris Lowgren, Amy Kovak, Patricia Ellison, and Dave Makar, Pacific Legacy, Inc.)	
P-54-004764	CA-TUL-002964H	Resource Name - K1-A05	Site	Historic	AH11 (Walls/fences)	2010 (Cris Lowgren, Amy Kovak, Patricia Ellison, and Dave Makar, Pacific Legacy, Inc.)	
P-54-004765	CA-TUL-002965H	Resource Name - K1-A06	Site	Historic	AH11 (Walls/fences)	2010 (Amy Kovak, Cris Lowgren, Patricia Ellison, and David Makar, Pacific Legacy, Inc.)	
P-54-004766		Resource Name - K1-A-ISO-01	Other	Historic	AH04 (Privies/dumps/trash scatters)	2010 (Cris Lowgren, Amy Kovak, Patricia Elison, Dave Makar, Pacific Legacy, Inc.)	
P-54-004797		Resource Name - K1-8-ISO-01	Other	Historic	AH16 (Other) - Rock cairn	1810 (Cris Lowgren, Amy Kovak, Patricia Ellison, and Dave Makar, Pacific Legacy, Inc.)	

Report List

SSJVIC Record Search 15-157

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
TU-00351		1993	Kayser, David	Cultural Resource Inventory Report - Three Rivers Road Maintenance	BLM	
TU-01362		2008	Parr, Robert	Cultural Resource Assessment for the Southern California Edison Company Kaweah Powerhouse 1 Intake Modification Kaweah Hydroelectric Project Tulare County, California.	Cal Heritage	
TU-01527		2012	Kovak, Amy and Jackson, Thomas	Cultural Resources Inventory for the Kaweah No. 1 Hydroelectric Flowline FERC Project No. 298 Tulare County, California	Pacific Legacy, El Dorado Hills	

Structure Maintenance & Investigations



Historical Significance - Local Agency Bridges

July 2015

District 06

Tulare County

Bridge Number	Bridge Name	Location	Historical Significance	Year Built	Year Wid/Ext
46C0163	SPEAR CREEK	3 MI N OF JACK RANCH RD	5. Bridge not eligible for NRHP	1947	
46C0168	PORTER SLOUGH	AT MORTON AVE	5. Bridge not eligible for NRHP	1955	
46C0169	NORTH FORK TULE RIVER	0.1 MI BALCH PARK RD	5. Bridge not eligible for NRHP	1978	
46C0170	PORTER SLOUGH	CITY OF PORTERVILLE	5. Bridge not eligible for NRHP	1953	
46C0171	PORTER SLOUGH	CITY OF PORTERVILLE	5. Bridge not eligible for NRHP	1941	
46C0172	PORTER SLOUGH	0.5 MI N SR 190	5. Bridge not eligible for NRHP	1954	
46C0173	PORTER SLOUGH	0.4 MI N SR 190	5. Bridge not eligible for NRHP	1937	
46C0174	PACKWOOD CREEK	0.12 MI N OF AVE 280	5. Bridge not eligible for NRHP	1980	
46C0175	PACKWOOD CREEK	1.1 MI W OF RD 140	5. Bridge not eligible for NRHP	1970	
46C0176	ALTA CANAL (ALTA EAST BRANCH CANAL)	0.3 MI S OF AVE 432	5. Bridge not eligible for NRHP	1968	
46C0177	SAND CREEK	0.35 MI. N SR 201	5. Bridge not eligible for NRHP	1939	1973
46C0178	COTTONWOOD CREEK	0.4 MI N OF AVE 368	5. Bridge not eligible for NRHP	1948	
46C0179	ALTA CANAL (ALTA EAST BRANCH CANAL)	@ AVE 408	5. Bridge not eligible for NRHP	1939	1960
46C0180	FRIANT-KERN CANAL	0.2 MI NORTH OF AVE 264	4. Historical Significance not determined	1949	
46C0181	HICKMAN CREEK	3.5 MI N OF S.R. 190	5. Bridge not eligible for NRHP	1949	
46C0182	FRIANT-KERN CANAL	0.5 MI SOUTH OF SR 198	2. Bridge is eligible for NRHP	1949	
46C0183	BEAR CREEK	6.7 MI E OF BALCH PARKRD	5. Bridge not eligible for NRHP	1956	
46C0186	OUTSIDE CREEK	0.15 MI S OF AVE 224	5. Bridge not eligible for NRHP	1950	
46C0187	SAND CREEK	.25 MI E OF SR 63	5. Bridge not eligible for NRHP	1938	
46C0188	SAND CREEK	.15 MI S OF FRE CO LINE	5. Bridge not eligible for NRHP	1947	
46C0189	MURRAY CREEK	.25 MI N OF SR245	5. Bridge not eligible for NRHP	1938	
46C0190	SAND CREEK	0.19 MI S OF A456	5. Bridge not eligible for NRHP	1950	
46C0191	MIDDLE FORK TULE RIVER	0.1 MI SE SR 190	5. Bridge not eligible for NRHP	1967	
46C0192	DRY CREEK	0.5 MI FROM RD SD 243	5. Bridge not eligible for NRHP	1940	
46C0193	PACKWOOD CANAL	.67 MI NE OF R180	5. Bridge not eligible for NRHP	1956	
46C0194	KETCHUM DITCH	.18 MI W OF R196	5. Bridge not eligible for NRHP	1958	
46C0195	SOUTH FORK KAWEAH RIVER	11.1 MI SE OF ROAD M347	5. Bridge not eligible for NRHP	1952	
46C0196	EAST FORK KAWEAH RIVER	6.68 MI E OF SR 198	2. Bridge is eligible for NRHP	1923	
46C0197	SOUTH FORK KAWEAH RIVER	1.34 MI SE OF RD M347	5. Bridge not eligible for NRHP	1956	
46C0198	SOUTH FORK KAWEAH RIVER	1.42 MI SE OF M347	5. Bridge not eligible for NRHP	1934	1965
46C0199	SOUTH FORK KAWEAH RIVER	4.1 MI SE CO RD M347	5. Bridge not eligible for NRHP	1959	
46C0200	DEER CREEK	2.23 MI SE OF M120	5. Bridge not eligible for NRHP	1956	1959
46C0201	DEER CREEK	5.11 MI SE/O M120	5. Bridge not eligible for NRHP	1967	
46C0202	DEER CREEK	5.86 MI SE OF M120	5. Bridge not eligible for NRHP	1939	
46C0203	DEER CREEK	13.9 MI SE OF M120	5. Bridge not eligible for NRHP	1930	
46C0204	TYLER CREEK	0.3 MI N OF M56	5. Bridge not eligible for NRHP	1952	
46C0205	DEER CREEK	16.4 MI E M109	5. Bridge not eligible for NRHP	1937	
46C0206	SALMON CREEK	11.94 MI SE OF M50	5. Bridge not eligible for NRHP	1967	
46C0207	BRUSH CREEK	4.81 MI SE OF MSO	5. Bridge not eligible for NRHP	1940	1974
46C0208	COTTONWOOD CREEK	0.2 MI W SR 245	5. Bridge not eligible for NRHP	1961	
46C0210	CAMERON CREEK	0.1 MI E OF RD 168	5. Bridge not eligible for NRHP	1951	1981
46C0211	TULARE IRRIGATION DISTRICT CANAL	0.2 MI E OF RD 156	5. Bridge not eligible for NRHP	1948	1981
46C0215	HOMELAND CANAL	1.0 MI N OF AVENUE 56	5. Bridge not eligible for NRHP	1942	

APPENDIX C

Native American Consultation

Native American Consultation

Replacement of Bridge 46C-0196 on Mineral King Road

Organization	Name	Position	Letter	E-mail	Phone	Summary of Contact
Native American Heritage Commission				3/6/16		Responed by letter on 3/6/16.
Kern Valley Indian Council	Julie Turner	Secretary	3/18/16	—	6/22/16	Left message. Received response on 6/22/16. The project is outside their area of concern.
Tule River Indian Tribe	Neil Peyron	Chairperson	3/18/16		6/22/16	Called and left message. No response to date.
Wuksache Indian Tribe/Eshom Valley Band	Kenneth Woodrow	Chairperson	3/18/16		6/22/16	Called and left message. No response to date.
Kern Valley Indian Council	Robert Robinson	Co-Chairperson	3/18/16		6/22/16	Project is outside their area of concern; as per conversation with Julie Turner.
Tubatulabals of Kern Valley	Robert L. Gomez, Jr.	Tribal Chairperson	3/18/16		6/22/16	Called and telephone number has been disconnected.

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 FAX

March 9, 2016

Katie Asselin
Applied EarthWorks, Inc

Sent via e-mail: kasselin@appliedearthworks.com
Number of pages: 3

RE: Proposed Mineral King Bridge Replacement Project, Case Mountain USGS Quadrangle, Tulare County, California

Dear Ms. Asselin:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties. Please note that the intent above reference codes is to mitigate impacts to tribal cultural resources, as defined, for California Environmental Quality Act (CEQA) projects.

As of July 1, 2015, Public Resources Code Sections 21080.3.1 and 21080.3.2 require public agencies to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose mitigating impacts to tribal cultural resources:

> Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section. (Public Resources Code Section 21080.3.1(d))

The law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions. The NAHC believes that in fact that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.3.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC believes that agencies should also include with their notification letters information regarding any cultural resources assessment that has been completed on the APE, such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - If the probability is low, moderate, or high that cultural resources are located in the APE.
   - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE; and
   - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measurers.

     All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure in accordance with Government Code Section 6254.10.

3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission. A search of the SFL was completed for the USGS quadrangle information provided with negative results.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton
Associate Governmental Project Analyst

Native American Heritage Commission
Tribal Consultation List
Tulare County
March 9, 2016

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589
Porterville , CA 93258
chairman@tulerivertribe-nsn.gov
(559) 781-4271

Yokuts

Kern Valley Indian Council
Julie Turner, Secretary
P.O. Box 1010
Lake Isabella , CA 93240

(661) 340-0032 Cell

Southern Paiute
Kawaiisu
Tubatulabal
Koso
Yokuts

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct.
Salinas , CA 93906
kwood8934@aol.com
(831) 443-9702

Foothill Yokuts
Mono
Wuksache

Kern Valley Indian Council
Robert Robinson, Co-Chairperson
P.O. Box 401
Weldon , CA 93283
brobinson@iwvisp.com
(760) 378-2915 Home
(916) 803-3408 Cell

Tubatulabal
Kawaiisu
Koso
Yokuts

Tubatulabals of Kern Valley
Robert L. Gomez, Jr., Tribal Chairperson
P.O. Box 226
Lake Isabella , CA 93240
(760) 379-4590

Tubatulabal

This list is current only as of the date of this document.
Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list applicable only for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Mineral King Bridge Replacement Project, Case Mountian USGS Quadrangle, Tulare County, California.

EXAMPLE

Applied EARTHWORKS Inc.
1391 W. Shaw Ave., Suite C
Fresno, CA 93711-3600
O: (559) 229-1856 | F: (559) 229-2019

March 18, 2016

Julie Turner, Secretary
Kern Valley Indian Council
P.O. Box 1010
Lake Isabella, CA 93240

RE: Mineral King Bridge Replacement Project, Tulare County.

Ms. Julie Turner,

Applied EarthWorks, Inc. (Æ), under contract to GPA Consulting, is providing cultural resources services in support of the Mineral King Bridge Replacement Project, east of the community of Lemon Cove in Tulare County, California. The project intends to either refurbish or replace the existing bridge and use adjacent areas for staging. Because the project will receive federal support, it is considered a federal undertaking (per 36 CFR 800.16[y]) subject to the national Historic Preservation Act of 1966, as amended (NHPA). The project is also subject to the California Environmental Quality Act (CEQA).

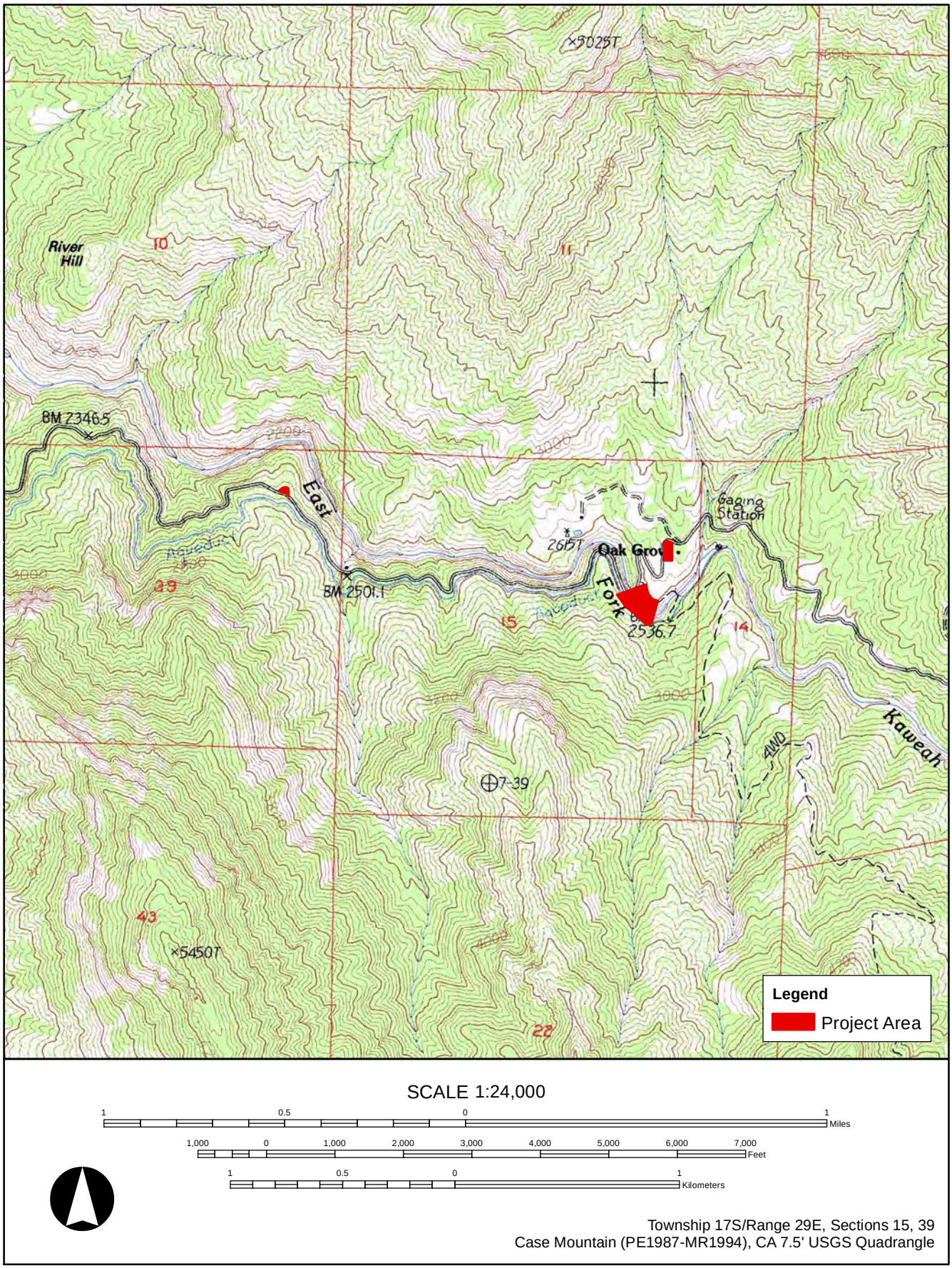
The project Area of Potential Effects (APE) lies within Township 17 South, Range 29 East, Sections 15 and 39 of the Case Mountain, CA 7.5-minute USGS quadrangle (see attached map). A search of the Native American Heritage Commission (NAHC) Sacred Lands File failed to indicate the presence of Native American cultural resources in the immediate project area. Applied EarthWorks, Inc. also requested a records search of the California Historic Resources Information System, Southern San Joaquin Valley Information Center. The records search revealed that two cultural resources investigations have occurred within 0.5 mile of the APE and one within the APE. These studies resulted in the identification of one historic-era cultural resource, a dry laid rock wall along Mineral King Road, in the APE and four other historic-era cultural resources within the 0.5 mile vicinity of the APE. No prehistoric resources have been identified within the APE or within 0.5 mile vicinity of the project.

Applied EarthWorks, Inc. will conduct a pedestrian survey of the project area to identify and record cultural resources within the APE. The NAHC provided your name and address as someone who might have information on sacred sites, tribal cultural resources, or other important sites in the project area. If you have any information that you wish to share, or have questions or would like more information about the project, please do not hesitate to contact me by phone (559) 229-1856, email (kasselin@appliedearthworks.com), or send a letter to my attention. I would appreciate any information you might provide to assist us with our inventory efforts. Be assured that any locations of archaeological sites, cemeteries, or sacred places will be treated confidentially, as required by law, and not disclosed in any document available to the general public.

Sincerely,

Katie Asselin, M.A., RPA
Associate Archaeologist

encl.: Project Location Map



Records Search location map for the *Mineral King Bridge - AE2945*.

AB 52 Consultation

MINERAL KING BRIDGE
TRIBAL CONSULTAION REQUESTS AND NOTIFICATIONS

Native American Tribe	SB 18 Official Notice		AB 52 / NOP Official Notice		EIR Official Notice	
	Mail Date	Receipt Date	Mail Date	Receipt Date	Mail Date	Receipt Date
Big Sandy Rancheria Elizabeth D. Kipp, Chairperson P.O. Box 337 Auberry, CA 93602	n/a	n/a	12/8/16	12/15/16		
Cold Springs Rancheria of Mono Indians Carol Bill, Chairperson P.O. Box 209 Tollhouse, CA 93667	n/a	n/a	12/8/16	12/15/16		
Dumna Wo-Wah Tribal Government Robert Ledger, Chairperson 2216 East Hammond Street Fresno, CA 93703	n/a	n/a	12/8/16	12/10/16		
Dunlap Band of Mono Indians Dunlap Chairperson Box 44 Dunlap, CA 93621	n/a	n/a	12/8/16	12/16/16		
Kern Valley Indian Council Robert Robinson, Co-Chairperson P.O. Box 401 Weldon, CA 93283	n/a	n/a	12/8/16	12/12/16		
Kern Valley Indian Council Julie Turner, Secretary P.O. Box 1010 Lake Isabella, CA 93240	n/a	n/a	12/8/16	12/20/16		
Kings River Choinumni Farm Tribe Stan Alec, Vice-Chair 3515 East Fedora Avenue Fresno, CA, 93726	n/a	n/a	12/8/16	12/13/16		
Kitanemuk & Yowlumne Tejon Indians Delia Dominguez, Chairperson 115 Radio Street Bakersfield, CA, 93305	n/a	n/a	12/8/16	12/10/16		
Mono Lake Indian Community Charlotte Lange, Chairperson P.O. Box 117 Big Pine, CA 93513	n/a	n/a	12/8/16	12/20/16		
North Fork Mono Tribe Ron Goode, Chairperson 13396 Tollhouse Road Clovis, CA 93619	n/a	n/a	12/8/16	12/13/16 per USPS		
North Fork Rancheria of Mono Indians Judy Elaine Bethel-Fink, Chairperson P.O. Box 929 North Fork, CA 93643	n/a	n/a	12/8/16	12/12/16		
Picayune Rancheria of Chukchansi Claudia Gonzales, Chairperson 8080 Palm Ave, Suite 207 Fresno, CA, 93711	n/a	n/a	12/8/16	12/12/16		

MINERAL KING BRIDGE
TRIBAL CONSULTAION REQUESTS AND NOTIFICATIONS

Native American Tribe	SB 18 Official Notice		AB 52 / NOP Official Notice		EIR Official Notice	
	Mail Date	Receipt Date	Mail Date	Receipt Date	Mail Date	Receipt Date
Picayune Rancheria of Chukchansi Mary Matola Tribal Historic Preservation Officer 8080 Palm Ave, Suite 207 Fresno, CA, 93711	n/a	n/a	12/8/16	12/14/16 per USPS		
Santa Rosa Rancheria Tachi Yokut Tribe Rueben Barrios Sr., Chairperson P. O. Box 8 Lemoore, CA 93245	n/a	n/a	12/8/16	12/14/16		
Santa Rosa Rancheria Tachi Yokut Tribe Cultural Department Hector Franco, Director P. O. Box 8 Lemoore, CA 93245	n/a	n/a	12/8/16	12/16/16 per USPS Met 3/3/17 with tribal representatives Hector Franco, Shana Powers, Greg Cuara, Robert Jeff, and Roger Martinez		
Santa Rosa Rancheria Tachi Yokut Tribe Cultural Department Shana Powers, Cultural Specialist P. O. Box 8 Lemoore, CA 93245	n/a	n/a	12/8/16	12/14/16		
Sierra Nevada Native American Coalition Bill Lawrence, Interim Chairperson P.O. Box 125 Dunlap, CA 93621	n/a	n/a	12/8/16	12/17/16		
Southern Sierra Miwuk Nation Lois Martin, Chairperson P.O. Box 186 Mariposa, CA 95338	n/a	n/a	12/8/16	12/15/16		
Table Mountain Rancheria Leanne Walker-Grant, Chairperson P.O. Box 410 Friant, CA, 93626	n/a	n/a	12/8/16	12/12/16		
Table Mountain Rancheria Bob Pennell, Cultural Resource Director P.O. Box 410 Friant, CA, 93626	n/a	n/a	12/8/16	12/12/16		
Traditional Choinumni Tribe David Alvarez, Chairperson 2415 E. Houston Avenue Fresno, CA, 93720	n/a	n/a	12/8/16	---		
Tubatulabals of Kern Valley Robert L. Gomez, Jr., Chairperson P. O. Box 226 Lake Isabella, CA 93240	n/a	n/a	12/8/16	12/12/16		

MINERAL KING BRIDGE
TRIBAL CONSULTAION REQUESTS AND NOTIFICATIONS

Native American Tribe	SB 18 Official Notice		AB 52 / NOP Official Notice		EIR Official Notice	
	Mail Date	Receipt Date	Mail Date	Receipt Date	Mail Date	Receipt Date
Tule River Indian Tribe Neil Peyron, Chairperson P. O. Box 589 Porterville, CA 93258	n/a	n/a	12/8/16	12/13/16		
Tule River Indian Tribe Tribal Archaeological Department Joseph Garfield, Tribal Archaeologist P. O. Box 589 Porterville, CA 93258	n/a	n/a	12/8/16	12/13/16		
Tule River Indian Tribe Environmental Department Kerri Vera, Director P. O. Box 589 Porterville, CA 93258	n/a	n/a	12/8/16	12/13/16		
Woodlake Tribes Jennifer Malone 637 East Lakeview Woodlake, CA 93286	n/a	n/a	12/8/16	12/10/16		
Wuksachi Indian Tribe/Eshom Valley Band Kenneth Woodrow, Chairperson 1179 Rock Haven Ct. Salinas, CA 93906	n/a	n/a	12/8/16	12/12/16 Met with Ken 1/19/17		
Wuksache Tribe John Sartuche 1028 East “K” Street Visalia, CA 93292	n/a	n/a	12/8/16			

Local Government Tribal Consultation List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Type of List Requested

☑ **CEQA Tribal Consultation List (AB 52)** – ***Per Public Resources Code § 21080.3.1, subs. (b), (d), (e) and 21080.3.2***

☐ **General Plan (SB 18)** - ***Per Government Code § 65352.3.***

Local Action Type:

☐ **General Plan** ☐ **General Plan Element** ☐ **General Plan Amendment**

☐ **Specific Plan** ☐ **Specific Plan Amendment** ☐ **Pre-planning Outreach Activity**

Required Information

Project Title: Mineral King Road Bridge (Historic Oak Grove Bridge), Bridge #46C-0196 Rehabilitation/Replacement Project

Local Government/Lead Agency: Tulare County Resource Management Agency

Contact Person: Jessica Willis / Hector Guerra

Street Address: 5961 S. Mooney Blvd.

City: Visalia **Zip:** 93277-9394

Phone: (559) 624-7122 / (559) 624-7121 **Fax:** (559) 730-2653

Email: jwillis@co.tulare.ca.us / hguerra@co.tulare.ca.us

Specific Area Subject to Proposed Action

County: Tulare **City/Community:** Three Rivers

Project Description:

The project includes the replacement and/or rehabilitation of the Mineral King Road Bridge. The purpose of the project is to resolve the structural deficiencies of the bridge while protecting the bridge's historical significance. There will be three potential staging areas: the East Construction Area is located approx. 800 ft northeast of the existing bridge; the West Construction Area is located approx. 1.3 miles west of the existing bridge; and the South Construction Staging Area is located approx. 370 ft northeast of the existing bridge.

Additional Request

☑ **Sacred Lands File Search** - ***Required Information:***

USGS Quadrangle Name(s): Case Mountain

Township: 17 S **Range:** 29 E **Section(s):** 15, MDB&M

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 FAX

December 9, 2016

Jessica Willis / Hector Guerra
Tulare County Resource Management Agency

Sent by E-mail: jwillis@co.tulare.ca.us
hguerra@co.tulare.ca.us

RE: Proposed Mineral King Road Bridge (Historic Oak Grove Bridge), Bridge #46C-0196 Rehabilitation/ Replacement Project, Community of Three Rivers; Case Mountain USGS Quadrangle, Tulare County, California

Dear Ms. Willis and Mr. Guerra:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties. Please note that the intent of the reference codes below is to avoid or mitigate impacts to tribal cultural resources, as defined, for California Environmental Quality Act (CEQA) projects under AB-52.

As of July 1, 2015, Public Resources Code Sections 21080.3.1 and 21080.3.2 **require public agencies** to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose mitigating impacts to tribal cultural resources:

> **Within 14 days** of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section. (Public Resources Code Section 21080.3.1(d))

The law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions. The NAHC believes that in fact that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.3.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC believes that agencies should also include with their notification letters information regarding any cultural resources assessment that has been completed on the APE, such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - If the probability is low, moderate, or high that cultural resources are located in the APE.
   - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE; and

- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measurers.

     All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure in accordance with Government Code Section 6254.10.

3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission. A search of the SFL was completed for the project with negative results.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst

Native American Heritage Commission
Tribal Consultation List
Tulare County
12/9/2016

Big Sandy Rancheria
Elizabeth D. Kipp, Chairperson
P.O. Box 337 — Western Mono
Auberry, CA, 93602
Phone: (559)374-0066
Fax: (559) 374-0055
lkipp@bsrnation.com

Cold Springs Rancheria of Mono Indians
Carol Bill, Chairperson
P.O. Box 209 — Mono
Tollhouse, CA, 93667
Phone: (559) 855-5043
Fax: (559) 855-4445

Dumna Wo-Wah Tribal Government
Robert Ledger, Chairperson
2216 East Hammond Street — Foothill Yokut
Fresno, CA, 93703 — Mono
Phone: (559)519-1742
ledgerrobert@ymail.com

Dunlap Band of Mono Indians
Florence Dick, Tribal Secretary
Box 44 — Mono
Dunlap, CA, 93621
Phone: (559) 338-2545

Kings River Choinumni Farm Tribe
Stan Alec,
3515 East Fedora Avenue — Foothill Yokut
Fresno, CA, 93726
Phone: (559) 647-3227

Kitanemuk & Yowlumne Tejon Indians
Delia Dominguez, Chairperson
115 Radio Street — Kitanemuk
Bakersfield, CA, 93305 — Southern Valley
Phone: (626)339-6785 — Yokut
deedominguez@juno.com

Mono Lake Indian Community
Charlotte Lange, Chairperson
P.O. Box 117 — Mono
Big Pine, CA, 93513 — Paiute
Phone: (760)938-1190
clange2008@hotmail.com

North Fork Mono Tribe
Ron Goode, Chairperson
13396 Tollhouse Road — Mono
Clovis, CA, 93619
Phone: (559)299-3729
rwgoode911@hotmail.com

North Fork Rancheria of Mono Indians
Judy Elaine Bethel-Fink, Chairperson
P.O .Box 929 — Mono
North Fork, CA, 93643
Phone: (559)877-2461
Fax: (559) 877-2467
NFRancheria@netptc.net

Picayune Rancheria of Chukchansi
Claudia Gonzales, Chairperson
8080 Palm Ave, Suite 207 — Foothill Yokut
Fresno, CA, 93711
Phone: (559) 370-4141

Santa Rosa Rancheria Tachi Yokut Tribe
Rueben Barrios, Chairperson
P.O. Box 8 — Southern Valley
Lemoore, CA, 93245 — Yokut
Phone: (559)924-1278
Fax: (559) 924-3583

Table Mountain Rancheria
Leanne Walker-Grant, Chairperson
P.O. Box 410 — Yokut
Friant, CA, 93626
Phone: (559)822-2587
Fax: (559) 822-2693

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 6097.98 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Mineral King Road Bridge (Historic Oak Grove Bridge), Bridge #46C-0196 Rehabilitation/Replacement Project, Tulare County.

Native American Heritage Commission
Tribal Consultation List
Tulare County
12/9/2016

Traditional Choinumni Tribe
David Alvarez, Chairperson
2415 E. Houston Avenue — Foothill Yokut
Fresno, CA, 93720
Phone: (559)323-6231
Fax: (559) 292-5057
davealvarez@sbcglobal.net

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589 — Yokut
Porterville, CA, 93258
Phone: (559) 781-4271
Fax: (559) 781-4610
neil.peyron@tulerivertribe-nsn.gov

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct. — Foothill Yokut
Salinas, CA, 93906 — Mono
Phone: (831)443-9702
kwood8934@aol.com

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 6097.98 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Mineral King Road Bridge (Historic Oak Grove Bridge), Bridge #46C-0196 Rehabilitation/Replacement Project, Tulare County.

EXAMPLE

RESOURCE MANAGEMENT AGENCY

5961 SOUTH MOONEY BLVD
VISALIA, CA 93277
PHONE (559) 624-7000
FAX (559) 730-2653

Michael Washam — Economic Development and Planning
Benjamin Ruiz, Jr. — Public Works
Sherman Dix — Fiscal Services

BENJAMIN RUIZ, JR., DIRECTOR

December 8, 2016

Wuksache Tribe
John Sartuche
1028 East "K" Street
Visalia, CA 93292

RE: Project Notification Pursuant to Assembly Bill (AB) 52 and Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the Mineral King Road Bridge (Historic Oak Grove Bridge), Bridge #46C-0196 Rehabilitation/Replacement Project

Dear Mr. Sartuche,

Pursuant to the provisions of AB 52, as the lead agency under the California Environmental Quality Act (CEQA), the County of Tulare hereby extends an invitation to consult on the California Environmental Quality Act (CEQA) review of the Mineral King Road Bridge (Historic Oak Grove Bridge), Bridge #46C-0196 Rehabilitation/Replacement Project in order to assist with identifying and/or preserving and/or mitigating project impacts to Native American cultural places including:

- Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine; and
- Native American historic, cultural, or sacred site that is listed or may be eligible for listing in the California Register of Historical Resources including historic or prehistoric ruins and any burial ground, archaeological, or historic site.

In accordance with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), the County of Tulare Resource Management Agency (RMA) will be preparing an Environmental Impact Report (EIR) to evaluate the environmental effects associated with the Project.

The County requested a Sacred Lands File (SLF) search through the Native American Heritage Commission on December 6, 2016, for the Project. Results of the SLF search have not yet been received by the County. As such, the SLF search results will be made available upon the release of the Draft EIR for public review. The results may be made available to your Tribal Representatives if a written request for consultation is submitted to the County within thirty (30) days of receipt of this letter. Written correspondence can be mailed to the address provided above.

If we do not receive a response we will presume that your Tribe has declined the opportunity to consult on this project under AB 52.

Thank you for your consideration on this matter and please do not hesitate to contact me by phone or e-mail should you have any questions or need additional information. If you need immediate assistance and I am unavailable, please contact Jessica Willis by phone at (559) 624-7122, or by email at jwillis@co.tulare.ca.us.

Sincerely,

Jessica R Willis

for

Hector Guerra
Chief Environmental Planner
Environmental Planning Division
(559) 624-7121
hguerra@co.tulare.ca.us

Attachments Notice of Preparation

APPENDIX D

Cultural Resource Records

***P3a. Description:** This is a supplement to the original site record and does not replace it. This update describes a previously unrecorded dry-stacked rock wall segment, documented here as Feature C, associated with the dry-stacked rock walls previously recorded as Features A and B. Feature C is just southeast of Feature B on the northeast (downslope) side of Mineral King Road. It is stacked between 1 and 3 courses high and is approximately 1 foot wide and 5 feet long. The feature may extend farther north and connect with Feature B; however, the area is overgrown with grasses and thick brush and an association could not be confirmed. Feature C does not appear to extend farther south.

The other rock wall features (Features A and B) are in good condition and there is no indication that their condition has changed since they were originally recorded in 2010. Updated location and sketch maps depicting the expanded site boundary and additional feature are attached.

P5a. Photograph or Drawing:



P5b. Description of Photo: Overview of rock wall segment, Feature C, downslope from Mineral King Road, facing southwest.

***P8. Recorded By:** K. Asselin
Applied EarthWorks, Inc.
1391 W. Shaw Ave., Suite C
Fresno, CA 93711

***P9. Date Recorded:** 6/7/2016

***P11. Report Citation:** Asselin, Katie and Randy Baloian
2017 *Archaeological Survey Report: Oak Grove Bridge (No. 46C-0196) on Mineral King Road over the East Fork of the Kaweah River near Three Rivers, Tulare County, California.* Applied EarthWorks, Inc., Fresno, California. Prepared for County of Tulare Resource Management Agency, Visalia, California. Submitted to California Department of Transportation, District 6, Fresno.

***Attachments:**
☐ NONE ☒ Location Map ☒ Sketch Map ☐ Continuation Sheet
☐ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record
☐ Photograph Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record
☐ Other (list):

UPDATE

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

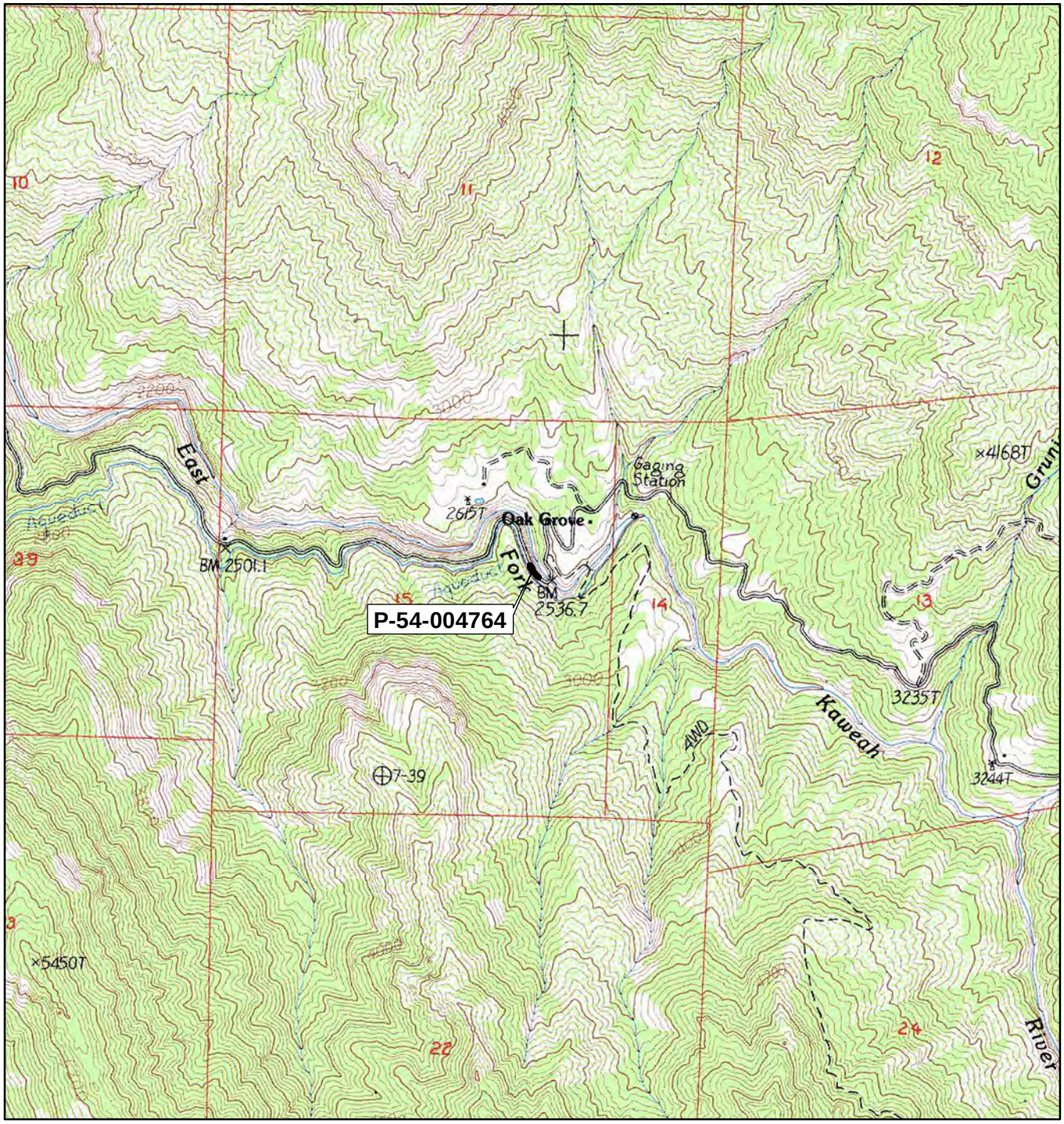
Primary # 54-004764
HRI#
Trinomial CA-TUL-2964H

Resource Name or #:

Scale: 1:24,000

Map Name: Case Mountain, CA, USGS 7.5' quadrangle

Date: PE1987 (MR1994)



SCALE 1:24,000

1 0.5 0 1 Miles

1,000 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 Feet

1 0.5 0 1 Kilometers

TRUE NORTH

UPDATE

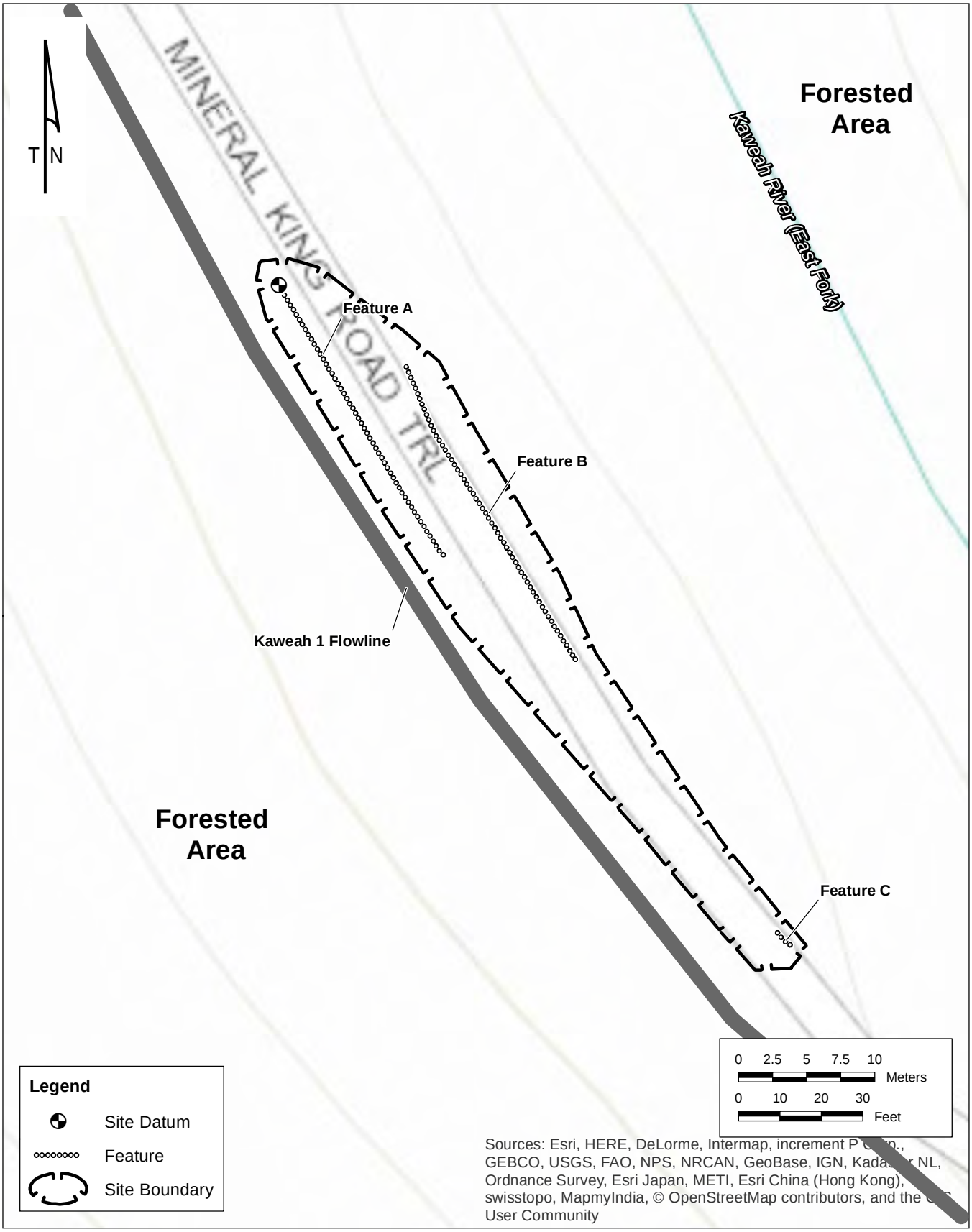
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
SKETCH MAP

Primary # 54-004764
HRI#
Trinomial CA-TUL-2964H

***Resource Name or #:**

***Drawn by:** J.JONES

***Date of map:** 06/28/2016



***Required information**

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # P-54-004764
HRI #
Trinomial CA-TUL-2964H
NRHP Status Code
Other Listings
Review Code Reviewer Date

Page 1 of 6 *Resource Name or #: K1-A05

P1. Other Identifier: None known

***P2. Location:** ☒ **Not for Publication** ☐ **Unrestricted** ***a. County** Tulare

*b. **USGS 7.5' Quad** Case Mountain **Date** 1987 (MR 1994) **T** 17S; **R** 29E; SE ¼ **of** NE ¼ **of Sec** 15; Mt. Diablo **B.M**

c. Address N/A City Zip

d. UTM: Zone 11N, 339236 mE/ 4035330 mN (NAD 83) Site datum

e. Other Locational Data: From the SCE Powerhouse No. 1 at 44511 Highway 198, take State Route (SR) 198 east for 0.2 miles to Mineral King Road. Turn right and follow Mineral King Road for approximately 6.4 miles. Site datum is located at the north end of Feature A (upslope rock retaining wall).

***P3a. Description:** Site consists of two dry stacked rock retaining walls on each side of Mineral King Road. Feature A retaining wall is located on the upslope of the road and Feature B is located on the downslope of the road. Both walls are parallel to the Kaweah 1 flowline which is situated 5 m upslope from Feature A. The site measures 135 ft. (northwest-southeast) by 40 ft. (east-west).

***P3b. Resource Attributes:** AH.11 Walls/fences

***P4. Resources Present:** ☐Building ☐Structure ☐Object ☒Site ☐District ☐Element of District ☐Other (Isolates, etc.)



P5b. Description of Photo: Site overview with rock walls on upslope and downslope of Mineral King Road, view north-northwest (340°).

***P6. Date Constructed/Age and Source:** ☒Historic ☐ Prehistoric ☐ Both

***P7. Owner and Address:** Unknown

***P8. Recorded by:** Cris Lowgren, Amy Kovak, Patricia Elison, and Dave Makar
Pacific Legacy, Inc
4919 Windplay Dr., Suite 4
El Dorado Hills, CA 95762

***P9. Date Recorded:** 2/19/10

***P10. Survey Type:** Reconnaissance Survey

***P11. Report Citation**: Kovak, Amy and Thomas Jackson (2010), *Cultural Resources Inventory Report for the Kaweah 1 Hydroelectric Flowline and Access Roads*. Prepared by Pacific Legacy, Inc, El Dorado Hills, CA. Prepared for Southern California Edison Company, Rosemead, CA.

***Attachments:** ☐NONE ☒ Location Map ☒ Sketch Map ☐ Continuation Sheet ☐ Building, Structure, and Object Record ☒Archaeological Record ☐District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
ARCHAEOLOGICAL SITE RECORD

Primary # P-54-004764
Trinomial CA-TUL-2964-H

*Resource Name or K1-A05

*A1. Dimensions: a. Length 135 ft (NW/SE) × b. Width 40 ft (E/W)

Method of Measurement: ☐ Paced ☐ Taped ☐ Visual estimate ☒ Other: GPS (Trimble GeoExplorer)

Method of Determination (Check any that apply.): ☐ Artifacts ☒ Features ☐ Soil ☐ Vegetation ☐ Topography ☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary ☐ Other (Explain):

Reliability of Determination: ☒ High ☐ Low Explain:

Limitations (Check any that apply): ☒ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined ☐ Disturbances ☐ Vegetation ☐ Other (Explain): Feature B is situated on the side of an extremely steep slope.

A2. Depth: ☐ None ☒ Unknown Method of Determination: No subsurface investigations were conducted.

A3. Human Remains: ☐ Present ☒ Absent ☐ Possible ☐Unknown (Explain):

A4. Features: (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.) The site is comprised of two parallel rock retaining walls (Features A and B) constructed to retain the integrity of Mineral King Road. Both walls are constructed of native granitic boulders and cobbles 10-15 courses high and 1-2 courses wide. Feature A is located on the upslope side of Mineral King Road. The wall measures 63 ft. long, 14 ft .high, and 10 in. wide at the top and at least 24 in. wide at the bottom. Several of the rocks in the wall have drilled holes, presumably made when the granite was originally obtained. Feature B is located on the downslope side of Mineral King Road on a nearly vertical slope above the East Fork of the Kaweah River. The wall measures 74 ft. long, 15 ft. high, by 24 in. wide.

A5. Cultural Constituents: (Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.)
No cultural constituents were observed.

A6. Were Specimens Collected? ☒ No ☐ Yes

A7. Site Condition: ☒ Good ☐ Fair ☐ Poor (Describe disturbances.): Some disturbance by vegetation and erosion is evident, but minimal; no other disturbances were noted.

A8. Nearest Water: The East Fork of the Kaweah River is about 65 ft. east.

A9. Elevation: 2595 ft. above sea level.

A10. Environmental Setting: Site is located on the steep slopes on the southeast bank of the East Fork Kaweah River canyon. The surrounding area is heavily forested with oaks. The area has been altered by the construction of Mineral King Road.

A11. Historical Information: None known.

A12. Age: ☐ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☐ 1880-1914 ☐ 1914-1945 ☐ Post 1945 ☒ Undetermined

A13. Interpretations: (Discuss data potential, function[s], ethnic affiliation, and other interpretations): The retaining walls are likely associated with road construction.

A14. Remarks: Site datum was established at the north end of Feature A, rock retaining wall.

A15. References: (Documents, informants, maps, and other references)

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.):
Original Media/Negatives Kept at: Pacific Legacy, Inc. 4919 Windplay Dr., Ste. 4, El Dorado Hills, CA 95762

Exposure	Date	Description	Direction
1713	12/19	Feature A-rock retaining wall below flume	170°
1714	12/19	Feature A-rock retaining wall below flume	170°
1715	12/19	Feature A- close-up	220°
1716	12/19	Feature A- close-up	220°
1717	12/19	Feature A, rock wall with flume in background	180°
1718	12/19	Feature A, rock wall with flume in background	180°
1719	12/19	Feature A	320°
1720	12/19	Feature A	320°
1721	12/19	Feature B, rock wall	340°
1722	12/19	Feature B, rock wall	340°
1723	12/19	Site overview	340°
1724	12/19	Features A and B with flume in background	340°
1725	12/19	Feature B, rock wall with Kaweah River Bridge and Kaweah River	120°
1726	12/19	Feature B, rock wall with Kaweah River Bridge and Kaweah River	120°
1727	12/19	Feature B, rock wall	140°
1728	12/19	Feature B, rock wall	140°
1729	12/19	Feature A, rock wall with flume	230°

A17. Form Prepared by: C. Lowgren, A. Kovak, P. Elison, and D. Makar **Date:** 2/19/10
Affiliation and Address: Pacific Legacy, Inc. 4919 Windplay Dr., Ste 4, El Dorado Hills, CA 95762

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

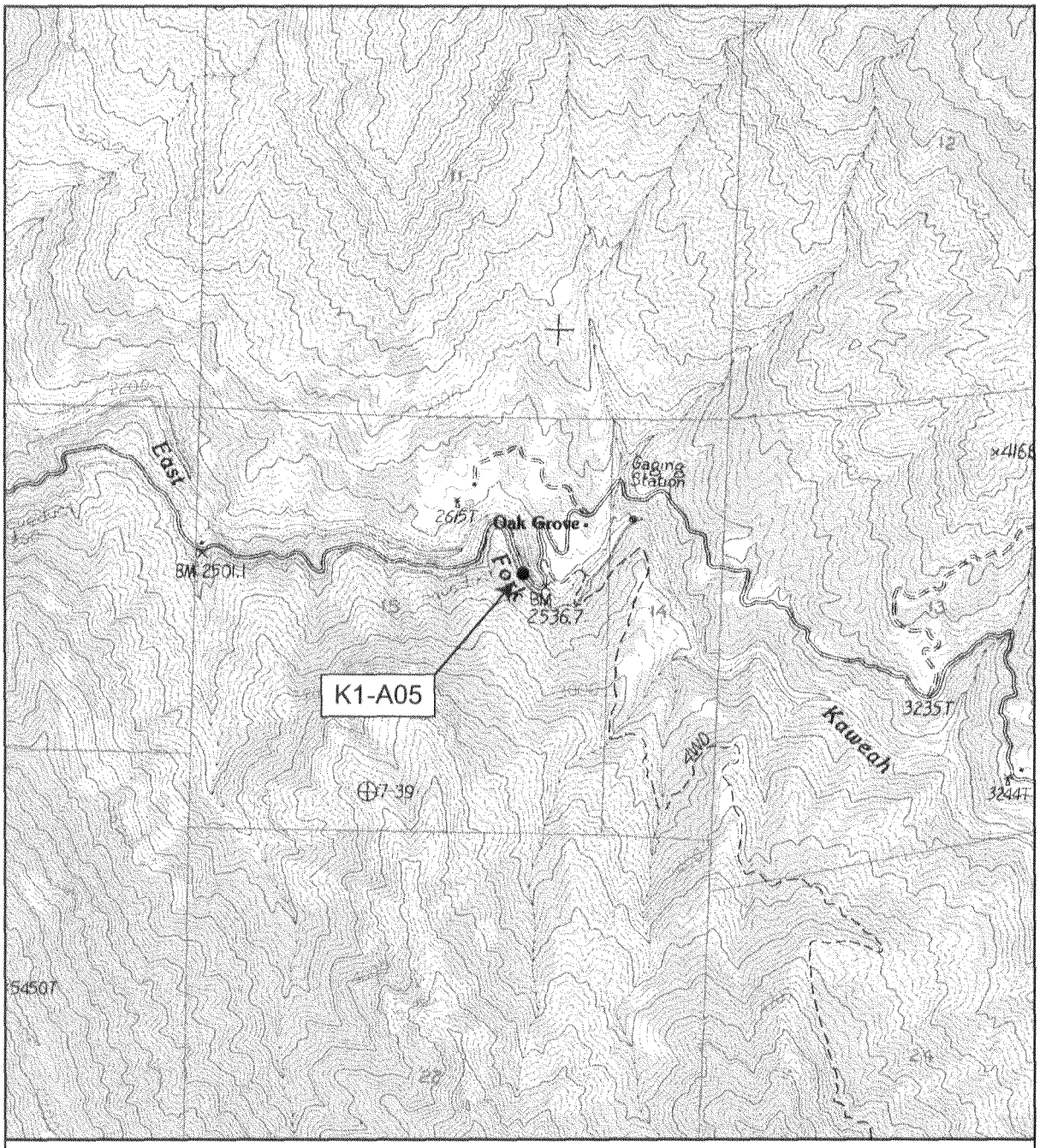
LOCATION MAP

Primary #: P-54-004764
HRI #:
Trinomial: CA-TUL-2964H

Page 4 of 6

*Resource Name or # (Assigned by recorder) K1-A05

*Map Name: USGS 7.5' Case Mountain, CA *Scale: 1:24,000 *Date of Map: 1987 (MR 1994)



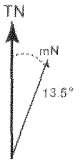
SOURCE: USGS 7.5' Case Mountain, CA 1987 (MR 1994) SCALE: 1:24,000.



QUADRANGLE LOCATION

MILES
0 0.5 1

0 0.5 1
KILOMETERS



*Required Information

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

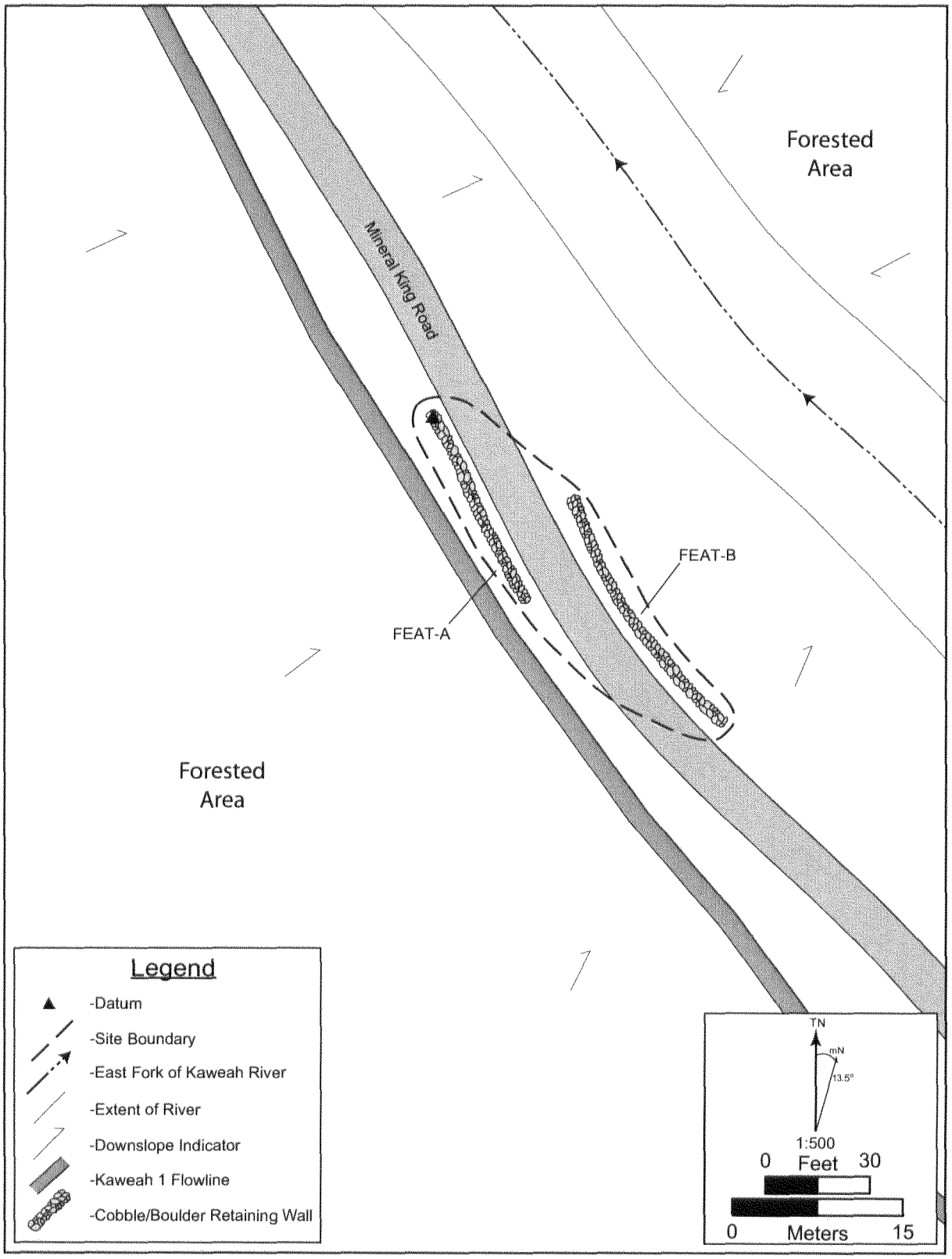
SKETCH MAP

Primary #: P-54-004764
HRI #:
Trinomial: CA-TUL-2964H

*Resource Name or # (Assigned by recorder) K1-A05

*Drawn By: K. Glover

*Date of Map: 4/6/2010



*Required Information



Figure 1. Feature A, rock wall with flume in background, view south (180°).

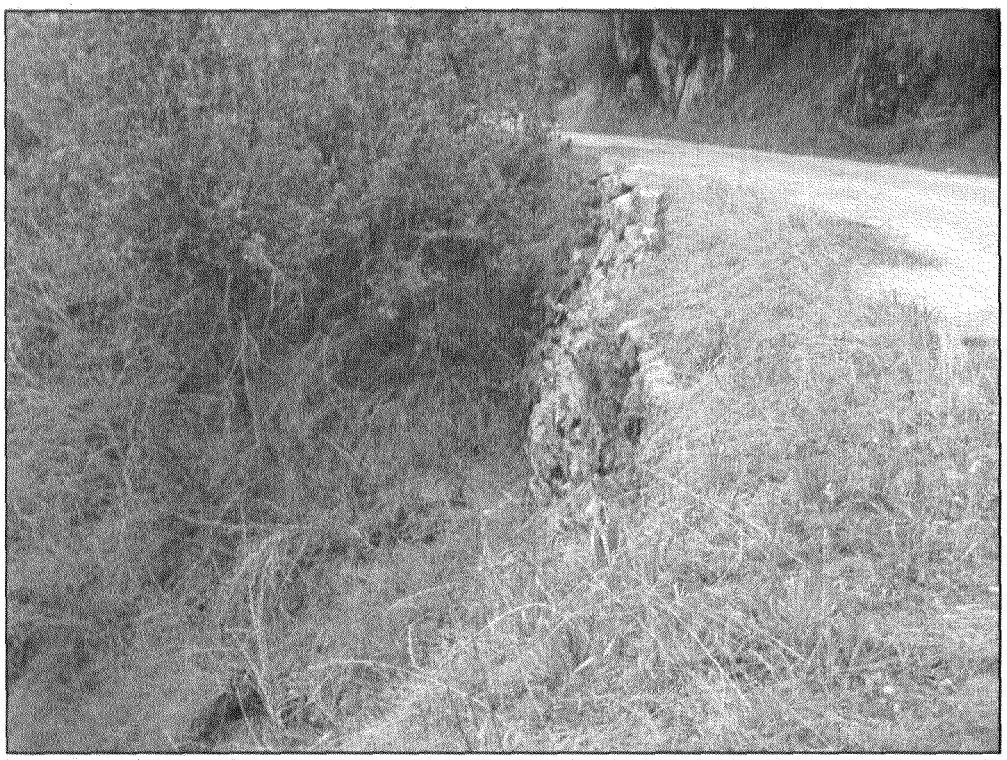


Figure 2. Feature B, rock wall downslope of Mineral King Road, view southeast (140°).

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # 54-005300
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

Page 1 **of** 2 **Resource Name or #** AE-2945-01

P1. Other Identifier: Original Mineral King Road Bridge Abutment

***P2. Location: a. County:** Tulare, CA ☒ **Not for Publication** ☐ **Unrestricted**

b. USGS 7.5′ Quad: Case Mountain, CA **Date:** PE1987-MR1994 T 17S, R 29E; Section 15, Mt. Diablo **B.M.**

c. Address: N/A

d. UTM: NAD83, Zone 10N; 877029 **mE /** 4042093 **mN** (Abutment on southwest bank of East Fork Kaweah)

e. Other Locational Data: Just below Mineral King Road before the road crosses the East Fork of the Kaweah on southwest bank of the river.

***P3a. Description:** This resource is comprised of wood debris and stacked rocks that appear to be the ruins of the abutment of a bridge on Mineral King Road predating the existing 1923 bridge over the East Fork of the Kaweah River. The debris could only be observed from Mineral King Road using binoculars because the terrain was too rugged and steep to safely access. The remains of an abutment could be seen on the southwest side of the river; no debris of a possible matching abutment was observed on the northeast bank.

***P3b. Resource Attributes:** HP39. Other; bridge abutment remains.

***P4. Resources Present:** ☐ Building ☐ Structure ☐ Object ☒ Site ☐ District ☐ Element of District ☐ Other:

***P5a. Photograph or Drawing:**



P5b. Description of Photo: Overview of site area, showing SCE flume, rock walls (P-54-004764), with the old abutment in the center of the frame, taken from across the river, facing southwest.

***P6. Date Constructed/Age and Sources:** ☐ Prehistoric ☒ Historic ☐ Both

***P7. Owner and Address:**
APN 069-390-010

***P8. Recorded By:** K. Asselin
Applied EarthWorks, Inc.
1391 W. Shaw Ave., Suite C
Fresno, CA 93711

***P9. Date Recorded:** 6/7/2016

***P10. Survey Type:** ☒ Intensive ☐ Reconnaissance ☐ Other
Describe:

***P11. Report Citation:** Asselin, Katie, and Randy Baloian
2017 *Archaeological Survey Report: Oak Grove Bridge (No. 46C-0196) on Mineral King Road over the East Fork of the Kaweah River near Three Rivers, Tulare County, California.* Applied EarthWorks, Inc., Fresno, California. Prepared for County of Tulare Resource Management Agency, Visalia, California. Submitted to California Department of Transportation, District 6, Fresno.

***Attachments:**
☐ NONE ☒ Location Map ☐ Sketch Map ☐ Continuation Sheet
☐ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record
☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record
☐ Photograph Record ☐ Other (list):

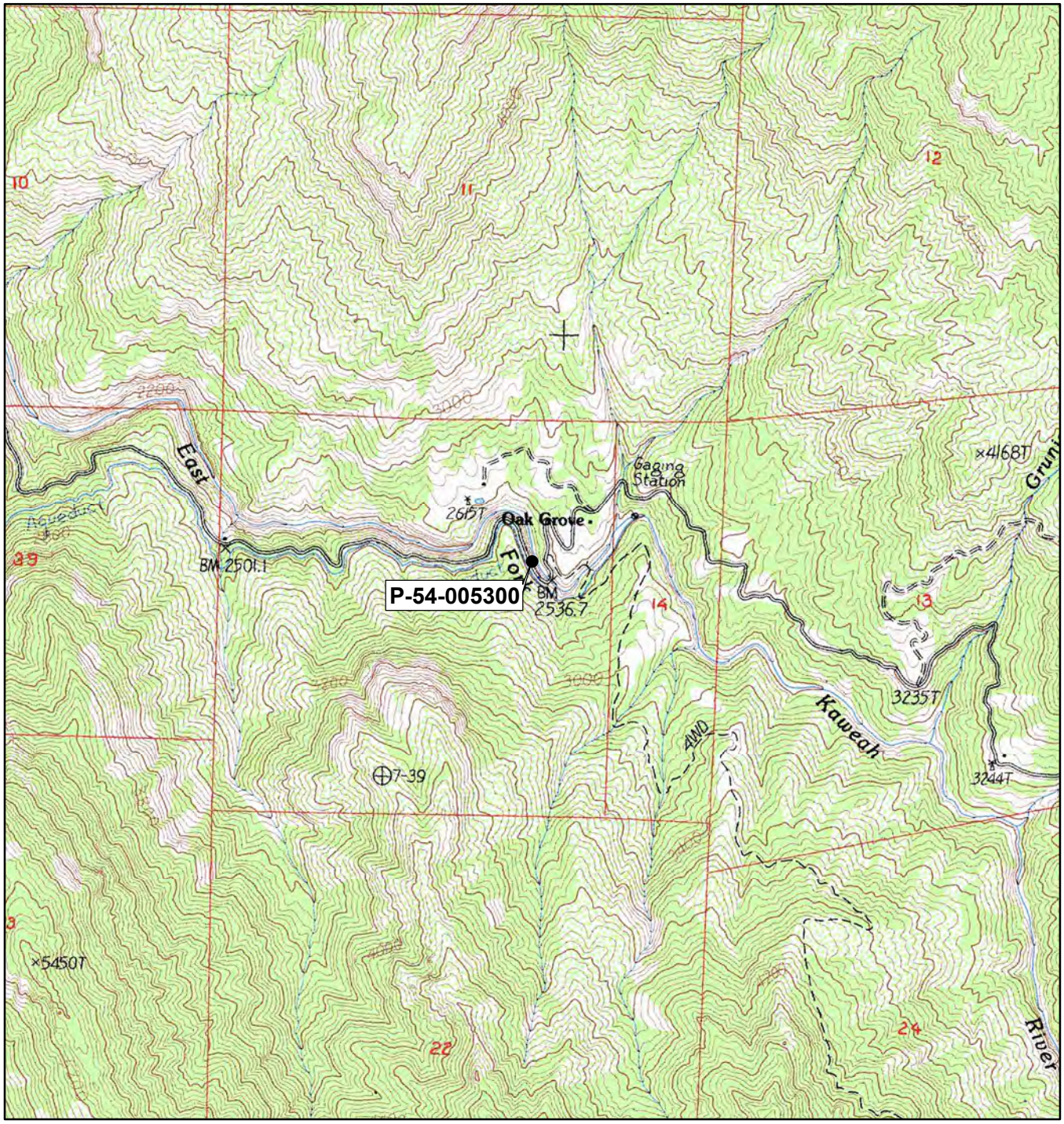
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary # 54-005300
HRI#
Trinomial

Page 2 **of** 2 **Resource Name or #:** AE-2945-01 **Scale:** 1:24,000

Map Name: Case Mountain, CA, USGS 7.5' quadrangle **Date:** PE1987 (MR1994)



SCALE 1:24,000

1 0.5 0 1 Miles

1,000 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 Feet

1 0.5 0 1 Kilometers

TRUE NORTH

Attachment D: Public Scoping Documentation

- Bulletin #2, January 2016
- Bulletin #3, February 2016
- Environmental Scoping Meeting materials, February 23, 2016:
  - PowerPoint slides
  - Sample comment cards
  - Sign-in sheets
  - Photographs

M375A MINERAL KING BRIDGE PROJECT

Project Description: The Mineral King Bridge is an approximately 108-foot-long structure providing access across the East Fork of the Kaweah River. The existing bridge, constructed in 1923, is considered a historic resource. The bridge received a low sufficiency rating and was flagged as structurally deficient due to deterioration of the bridge over time. The purpose of the project is to enhance public safety, improve the sufficiency rating, and remove the structurally deficient flag. In order to meet the purpose of the project, Tulare County, in cooperation with the California Department of Transportation (Caltrans), proposes to replace and/or rehabilitate the existing bridge.



Public Involvement: In an effort to engage the public early in the design process, Tulare County will provide a brief presentation during the Community Plan meeting on February 8, 2016 at approximately 6:00 p.m. The meeting will be held at the Three Rivers Veterans Memorial Building, 43490 Sierra Drive in Three Rivers, California. The presentation will include information regarding the project background, proposed alternatives, project schedule, and future community meetings.

For further information or questions regarding this project please contact Jason Vivian by phone, 559-624-7135 or e-mail jvivian@co.tulare.ca.us

Project Design Team

Tulare County Project Manager: Jason Vivian, Tulare County

Project Manager: Todd Goolkasian, Cornerstone

Project Engineer: Shawn Cullers, Cornerstone

Hydraulics Engineer: Cathy Avila, Avila and Associates

Geotechnical Engineer: David Pearson, Kleinfelder

Environmental Consultant: GPA Consulting

Regulatory Agency Permitting: Aaron Bock, Tulare County

Right-of-Way: Heather Franklin, Tulare County

Caltrans

TCAG Tulare County Association of Governments

U.S. Department of Transportation Federal Highway Administration

M375A HISTORIC OAK GROVE BRIDGE

Project Description: The Historic Oak Grove Bridge is an approximately 108-foot-long structure providing access across the East Fork of the Kaweah River. The existing bridge, constructed in 1923, is considered a historic resource. The bridge received a low sufficiency rating and was flagged as structurally deficient due to deterioration of the bridge over time. The purpose of the project is to enhance public safety, improve the sufficiency rating, and remove the structurally deficient flag. In order to meet the purpose of the project, Tulare County, in cooperation with the California Department of Transportation (Caltrans), proposes to either rehabilitate the existing bridge or construct a replacement bridge structure while retaining and preserving the existing bridge.

Public Involvement: In an effort to engage the public early in the design process, a scoping meeting will be held to discuss the proposed project and environmental process on February 23, 2016 at 6:00 p.m. at the Three Rivers Veterans Memorial Building, 43490 Sierra Drive in Three Rivers, California. The meeting will include a presentation on the project background, proposed alternatives, environmental documentation, project schedule, and future public meetings. In addition, the County will be soliciting comments from all public agencies, private entities, and interested/affected individuals regarding potential social, economic, community, traffic, and environmental issues related to this project.



For further information or questions regarding this project, please contact Jason Vivian by phone (559) 624-7135 or e-mail jvivian@co.tulare.ca.us

Project Design Team

Tulare County Project Manager: Jason Vivian, Tulare County

Project Manager: Todd Goolkasian, Cornerstone

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Regulatory Agency Permitting: Aaron Bock, Tulare County

Right-of-Way: Heather Franklin, Tulare County

Caltrans

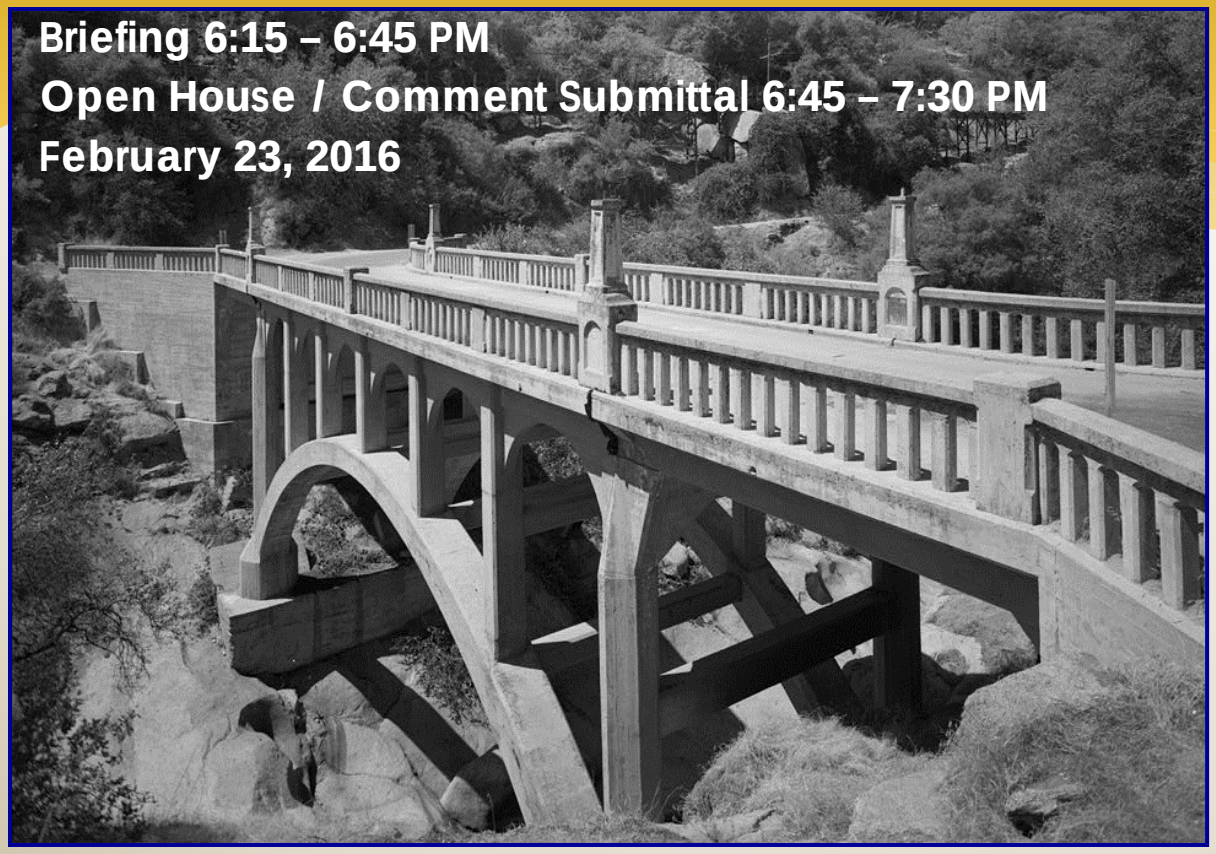
TCAG Tulare County Association of Governments

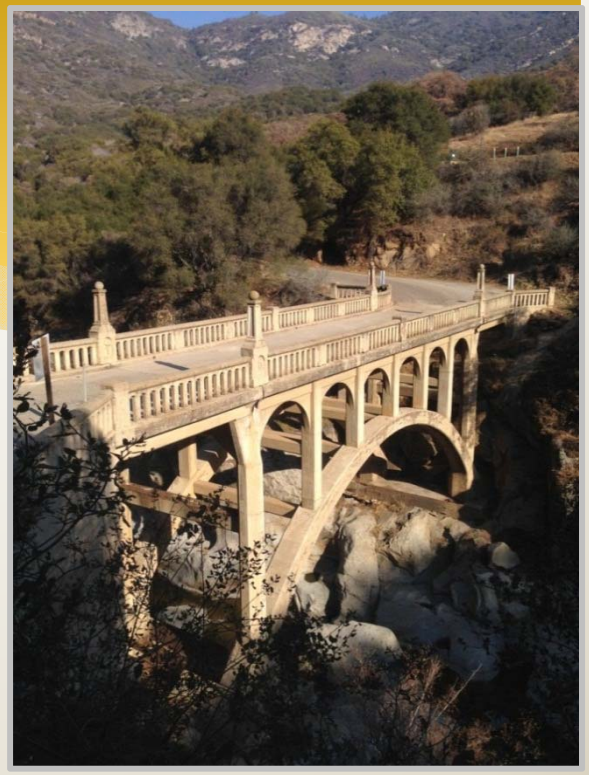
U.S. Department of Transportation Federal Highway Administration

HISTORIC OAK GROVE BRIDGE

ENVIRONMENTAL SCOPING MEETING

Briefing 6:15 – 6:45 PM
Open House / Comment Submittal 6:45 – 7:30 PM
February 23, 2016







COUNTY OF TULARE CALIFORNIA

CORNERSTONE structural engineering group

CONSULTING GPA

AGENDA

- **PROJECT BRIEFING**
  - **Introduction**
  - **Proposed Project Features**
  - **Environmental Review Process**
  - **Public Involvement**
- **OPEN HOUSE**
  - **Four Workshop Stations**
  - **Comment Cards**

ENVIRONMENTAL SCOPING

What is Scoping?

- Define the Proposed Project
- Define proposed Project Alternatives
- Define major issues for environmental analysis
- Identify potential impacts/issues of concern

What is Your Role?

- Early involvement/participation
- Provide comments/relevant information
- Stay involved

PROJECT INTRODUCTION

Why Are We Here?

- Bridge Constructed in 1923
- Sufficiency Rating = 71.7
  - Structurally Deficient
- Programmed for Federal HBP Funding
  - 100% Federally Funded
  - Must Fix **All** Deficiencies





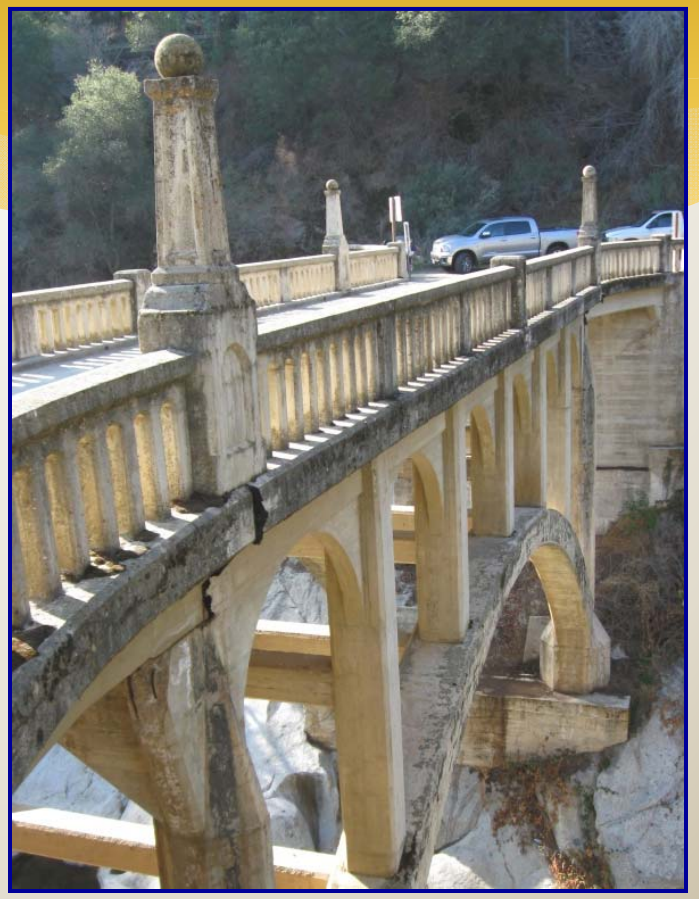


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HISTORICAL SIGNIFICANCE

Oak Grove Bridge - A Gateway to History

- Eligible for National Register of Historic Places
  - Not currently listed
- Representative of Reinforced Concrete Open Spandrel Arch Bridges Constructed in the 1920's and 30's
- Identification of Historic Elements
  - Arches
  - Spandrel Columns and Beams
  - Barrier Rail and Monuments

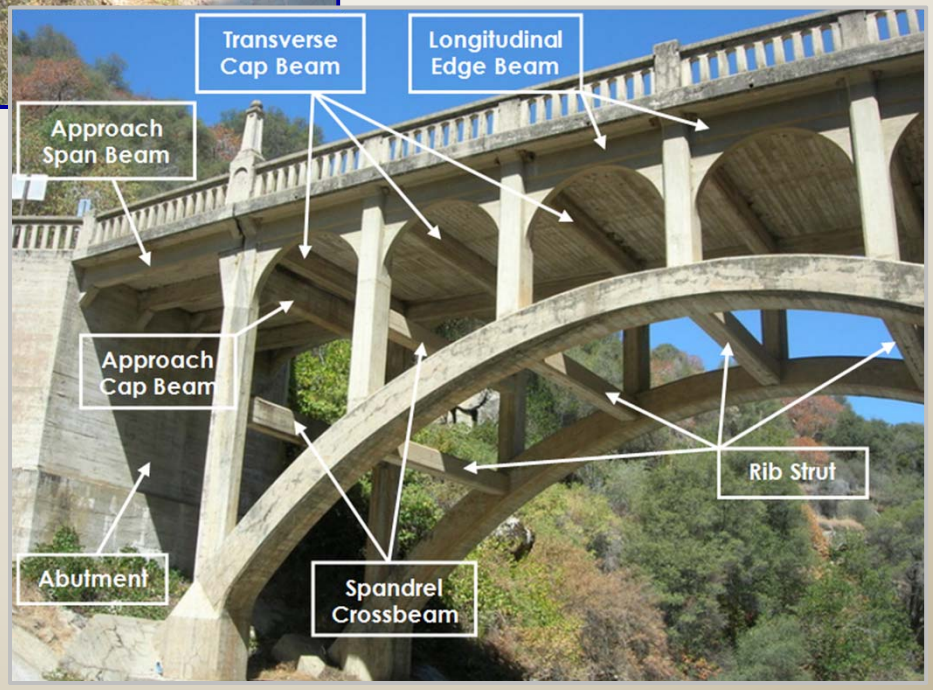




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ARCH BRIDGE NOMENCLATURE





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BRIDGE INVESTIGATION

Detailed Field Investigation

- Completed January 6, 2015
- Caltrans, Cornerstone, & County Staff
- Visual Inspection & Concrete Sounding
  - Caltrans UBIT Truck – Additional Access
- Material Samples
  - 5 Concrete Cores
  - 1 Rebar Sample











COUNTY OF TULARE CALIFORNIA

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BRIDGE INVESTIGATION

Material Testing Program

- Concrete Strength Tests
- Reinforcing Strength Tests
- Concrete Petrographic Tests

Engineering Analysis

- Vertical Load Analysis
- Seismic Analysis





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BRIDGE DEFICIENCIES

Inadequate Load Capacity

- Deficient Deck & Deck Support Beams
- Bridge Requires Load Posting
  - Posting being Coordinated with Caltrans
  - Public Hearing
- Correction will Require Significant Impacts

NATIONAL BRIDGE RATING LOADS		
Bridge Element	**Federal Standard**	**Oak Grove Bridge**
Deck	36 Tons	14 Tons
Support Beams	36 Tons	30 Tons









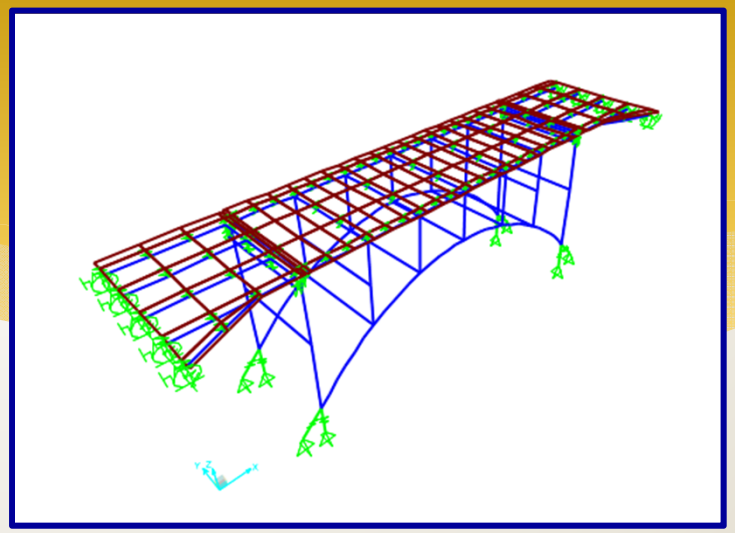
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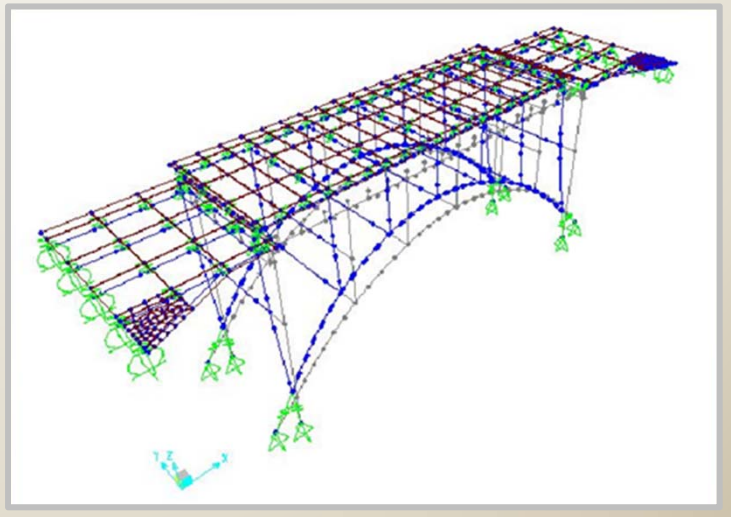
BRIDGE DEFICIENCIES

Seismically Vulnerable

- Deficient Spandrel Columns
- Likely Collapse During Design Earthquake





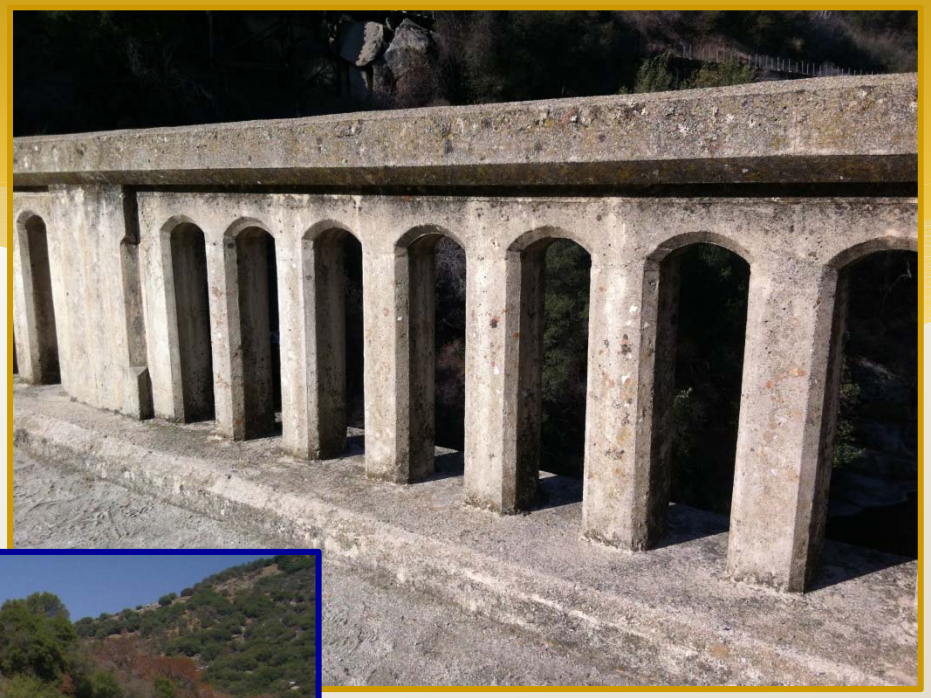


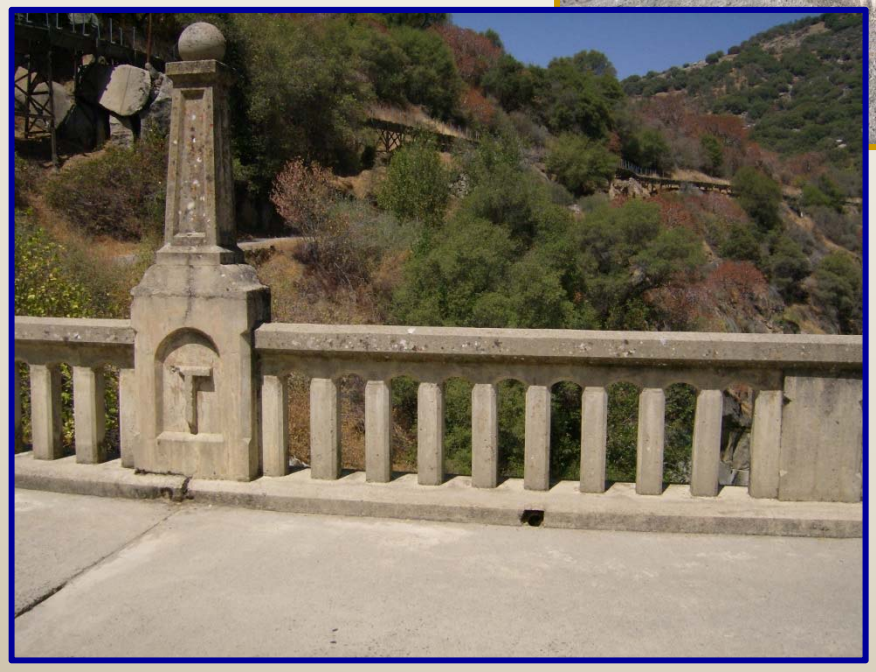
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BRIDGE DEFICIENCIES

Deficient Barriers

- Weak Impact Resistance
- Deteriorated Concrete
- Requires Replacement with FHWA Approved Crash Tested Barrier
- End Post Monoliths Could be Reincorporated



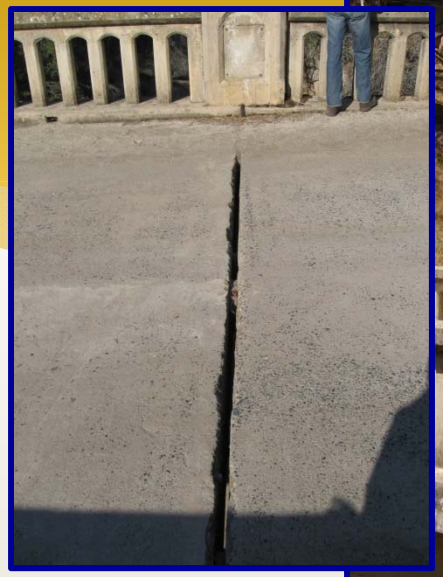


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BRIDGE DEFICIENCIES

Joint and Drain Failure

- Open Joint
- Water Drains onto Bridge











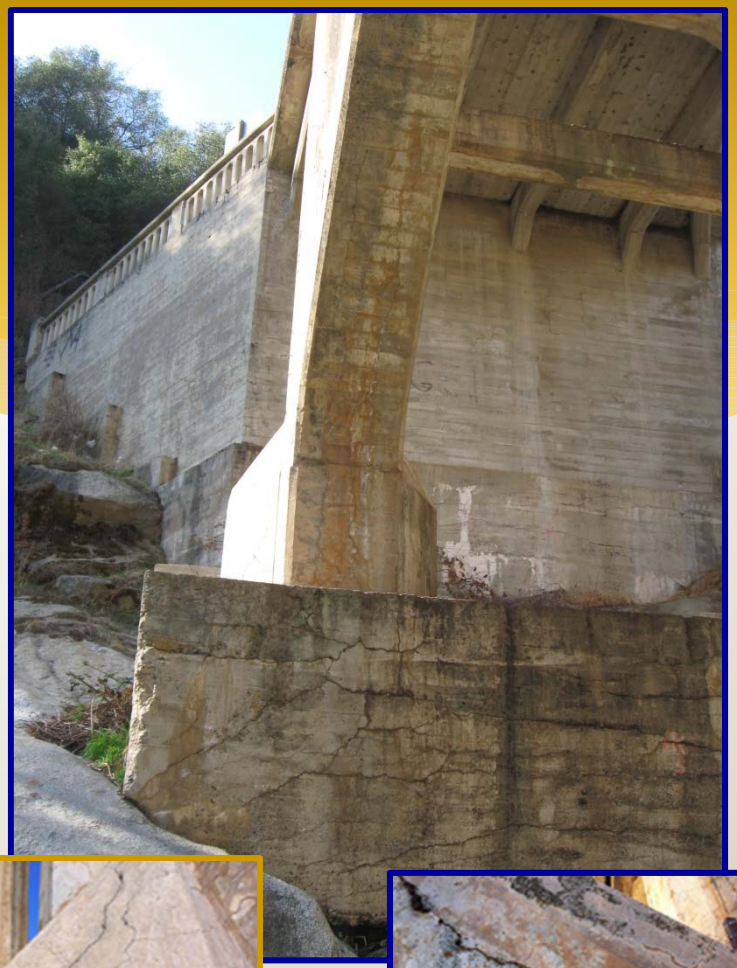
COUNTY OF TULARE CALIFORNIA

CORNERSTONE structural engineering group

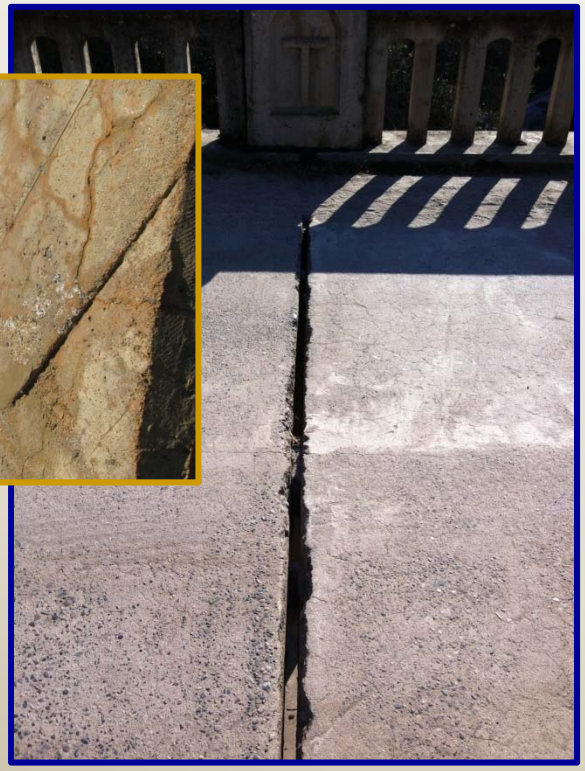
BRIDGE DEFICIENCIES

Concrete Deterioration

- Cracks Throughout Bridge
  - Concentrated Where Water Collects and in Shadowed Areas
  - Large Cracks (>1/4”) in Arches
- Deck Cracks in Main Span
- Delamination Starting











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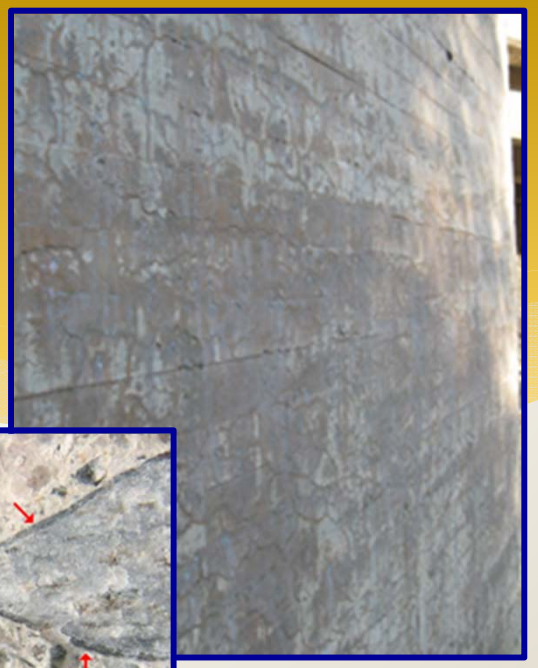
BRIDGE DEFICIENCIES

Concrete Deterioration

- Causes of Deterioration
  - Age
  - Alkali-Silica Reaction (ASR)
  - Carbonation









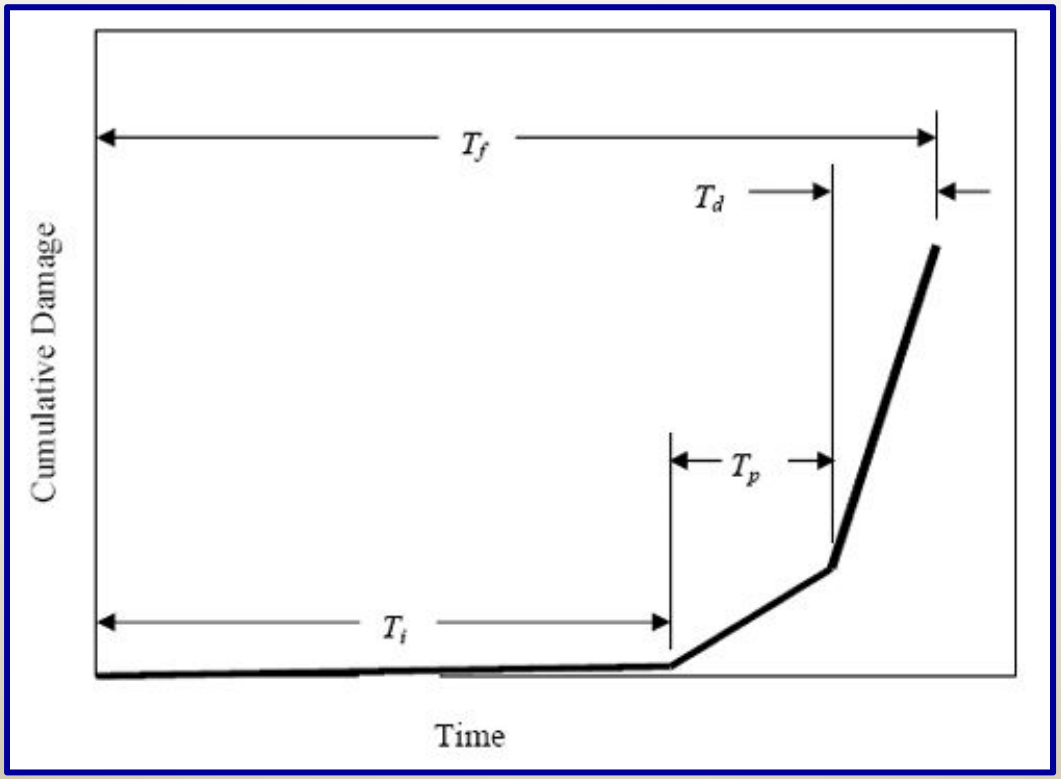


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BRIDGE DEFICIENCIES

Concrete Deterioration

- Reinforcing in Concrete is a Blessing and a Curse
  - Increases Efficiency But…Steel Corrodes (i.e. Rusts)
- Concrete Protects Reinforcing
  - Protection Is Compromised by Cracking, Chlorides, & Carbonation



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SUMMARY OF BRIDGE DEFICIENCIES

- **Inadequate Load Capacity**
- **Seismically Vulnerable**
- **Deficient Barriers**
- **Joint & Drain Failure**
- **Concrete Deterioration – Nearing End of Useful Life**

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ALL CONSIDERED ALTERNATIVES

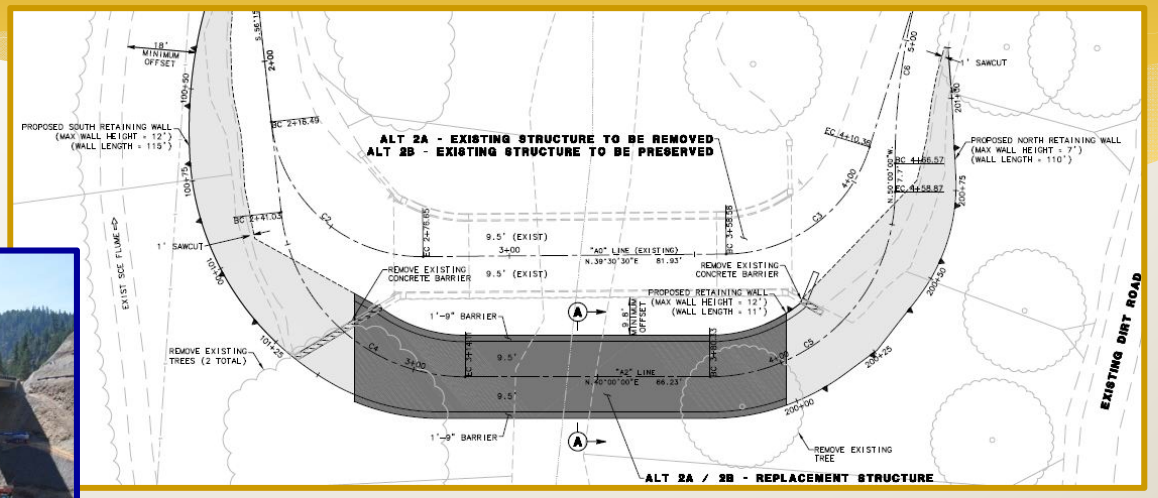
- **Alternative 1: Retrofit/Rehabilitate Existing Bridge**
- **Alternative 2A: Replace with Arch Bridge Upstream (Remove Existing Bridge)**
- **Alternative 2B: Replace with Girder Bridge Upstream (Preserve Existing Bridge)**
- **Alternative 3: Hybrid Rehab/Replacement**
- **Alternative 4A: Replace with Arch Bridge Downstream (Remove Existing Bridge)**
- **Alternative 4B: Replace with Girder Bridge Downstream (Preserve Existing Bridge)**
- **Alternative 5: New East Alignment (Preserve Existing Bridge)**
- **Alternative 6: New West Alignment (Preserve Existing Bridge)**
- **Alternative 7: Do Nothing**

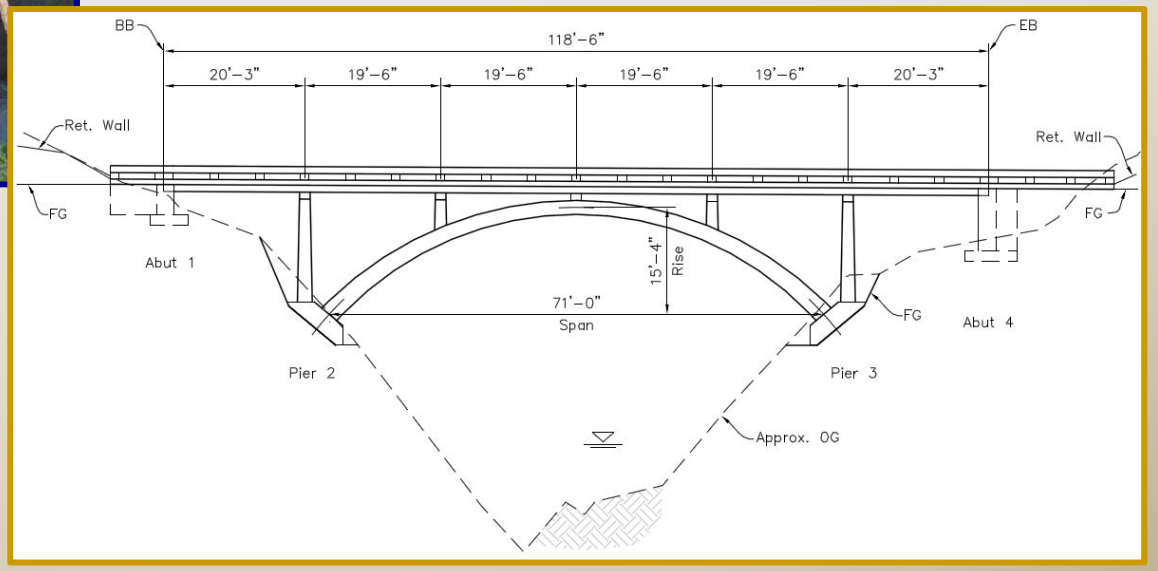
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CONSIDERED BUT REMOVED ALTERNATIVES

Alternative 2A – Replacement Arch Bridge Upstream



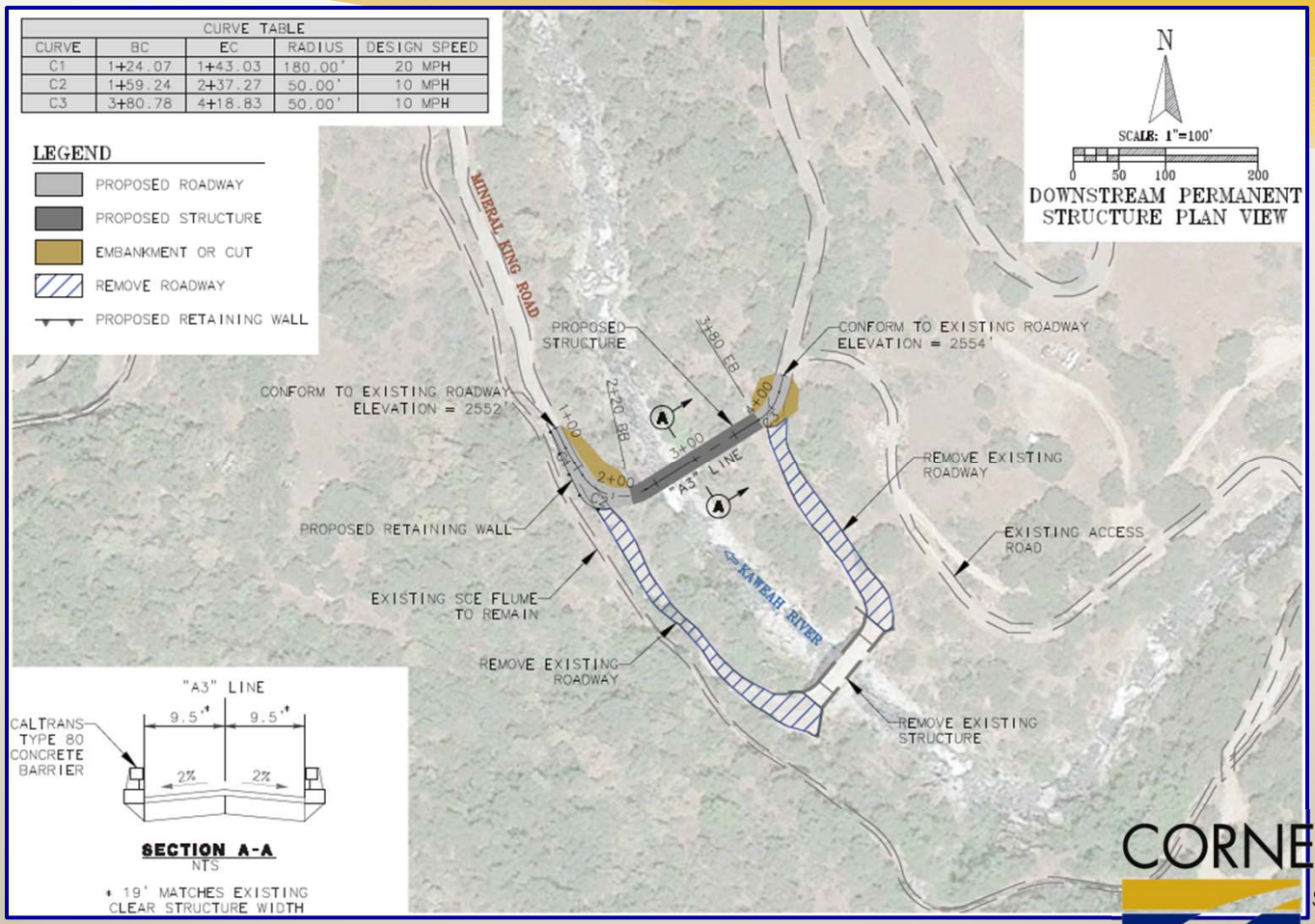




CONSIDERED BUT REMOVED ALTERNATIVES

Alternative 4A – Replacement Arch Bridge Downstream

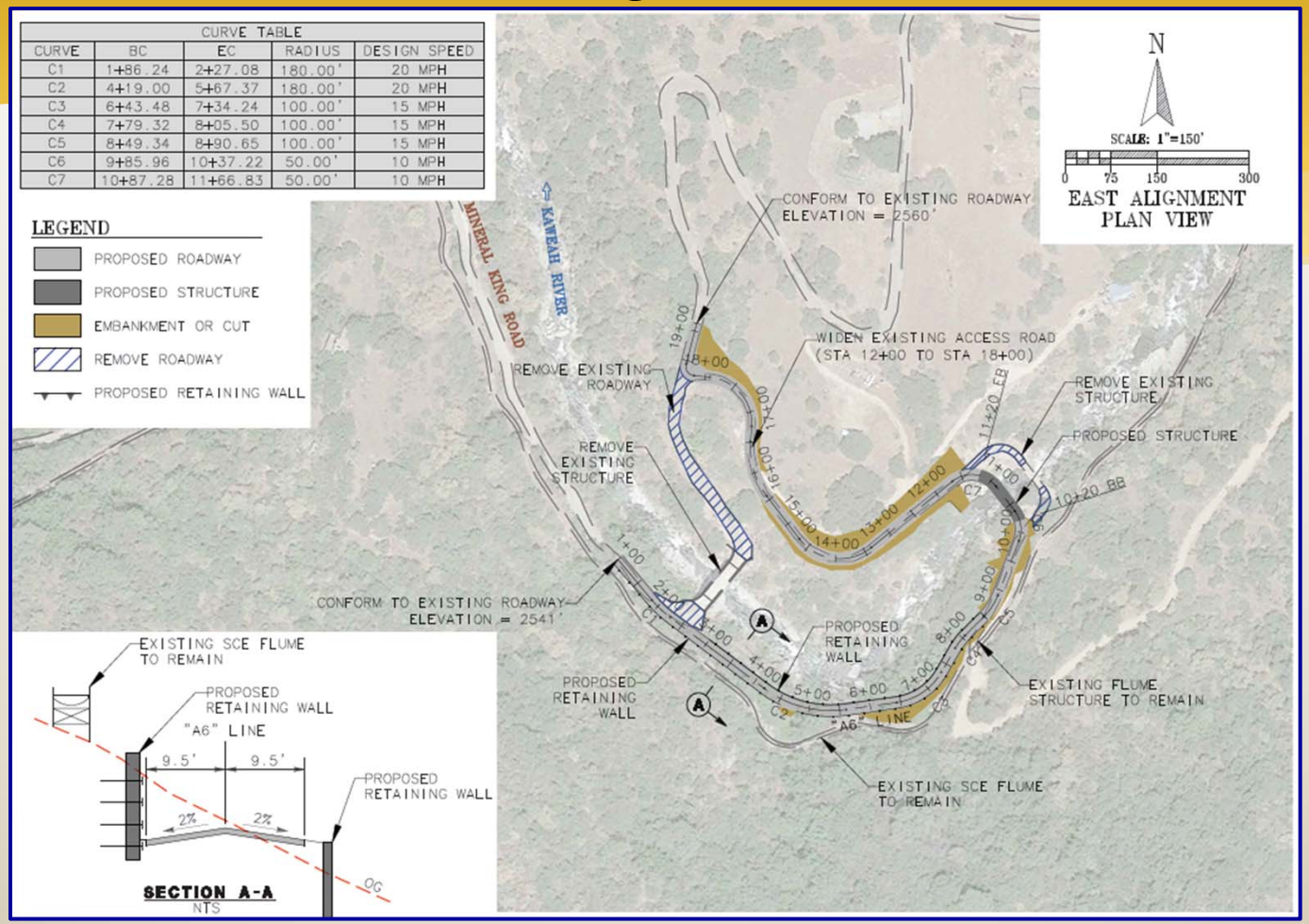
Alternative 4B – Replacement Girder Bridge Downstream



CORNERSTONE structural engineering group

CONSIDERED BUT REMOVED ALTERNATIVES

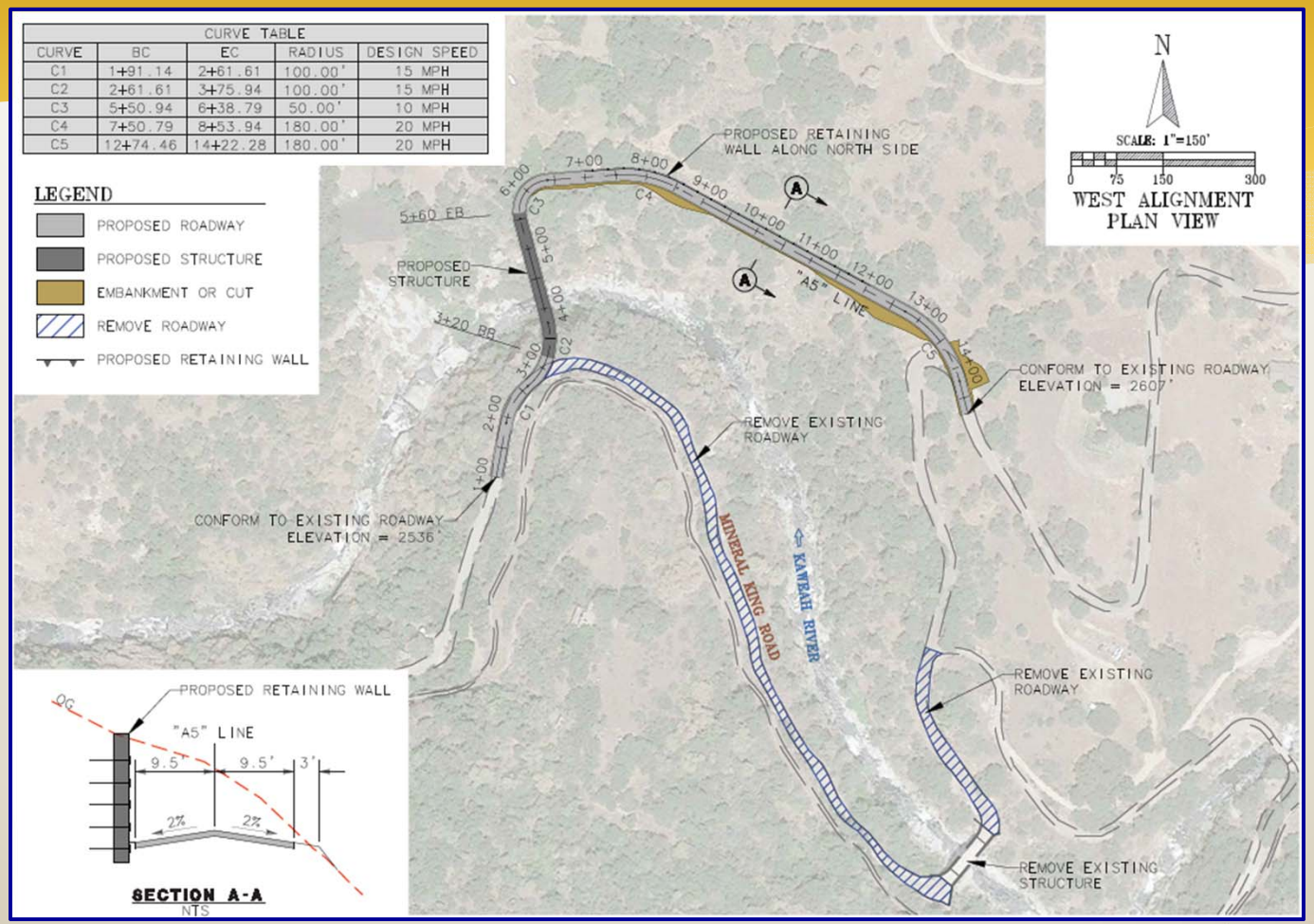
Alternative 5 – New East Alignment



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CONSIDERED BUT REMOVED ALTERNATIVES

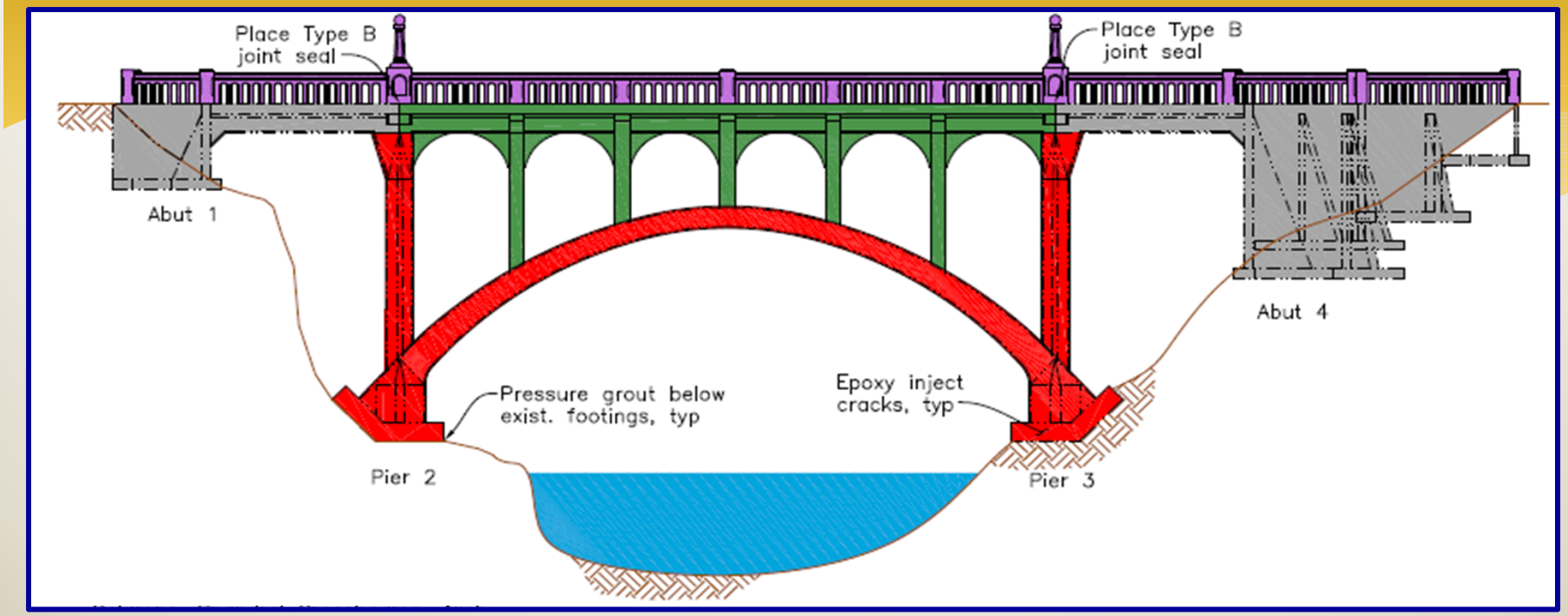
Alternative 6 – New West Alignment



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ALTERNATIVES CURRENLTY UNDER CONSIDERATION

Alternative 1 – Retrofit/Rehabilitate Existing Bridge

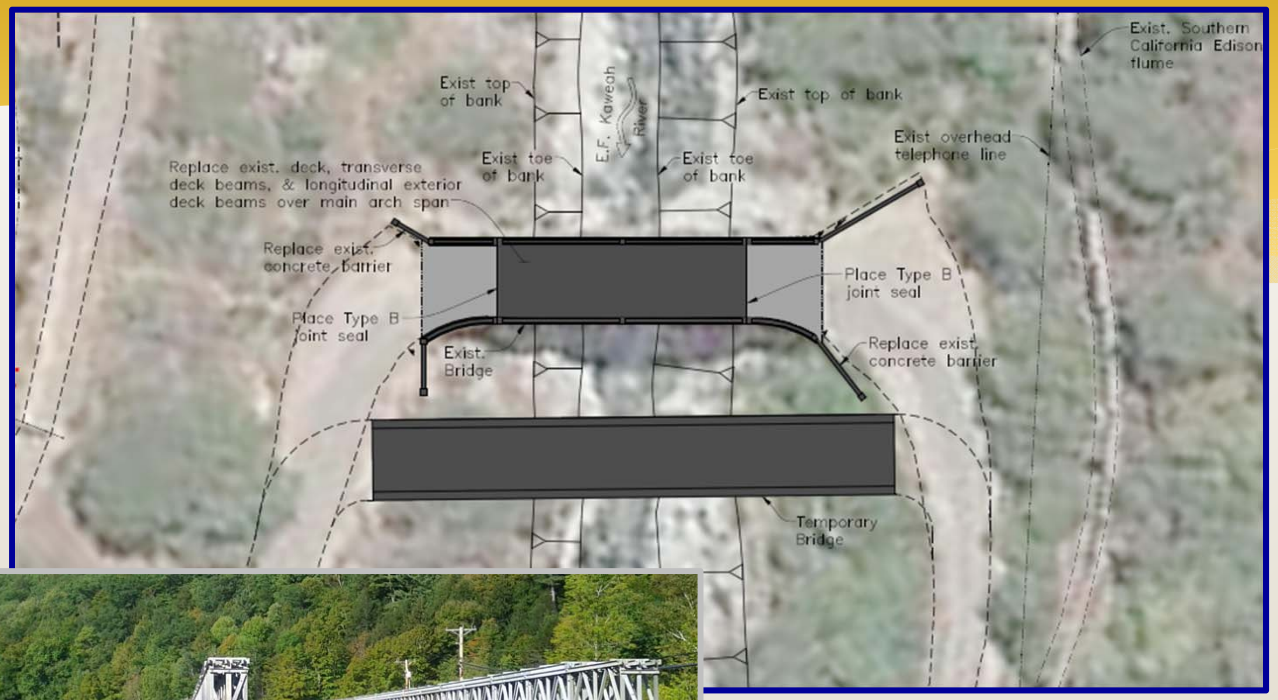


DEFICIENCY	ADDRESSED BY:
Inadequate Load Capacity	Replace Deck
Seismically Vulnerable	Replace Spandrel Columns
Deficient Barriers	Replace Barriers
Joint & Drain Failure	Replace Joints & Drains
Concrete Deterioration	Replace Carbonated Concrete
	Epoxy Inject Cracks
	Silane Treatment

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ALTERNATIVES CURRENLTY UNDER CONSIDERATION

Alternative 1 – Retrofit/Rehabilitate Existing Bridge





Temporary Bridge

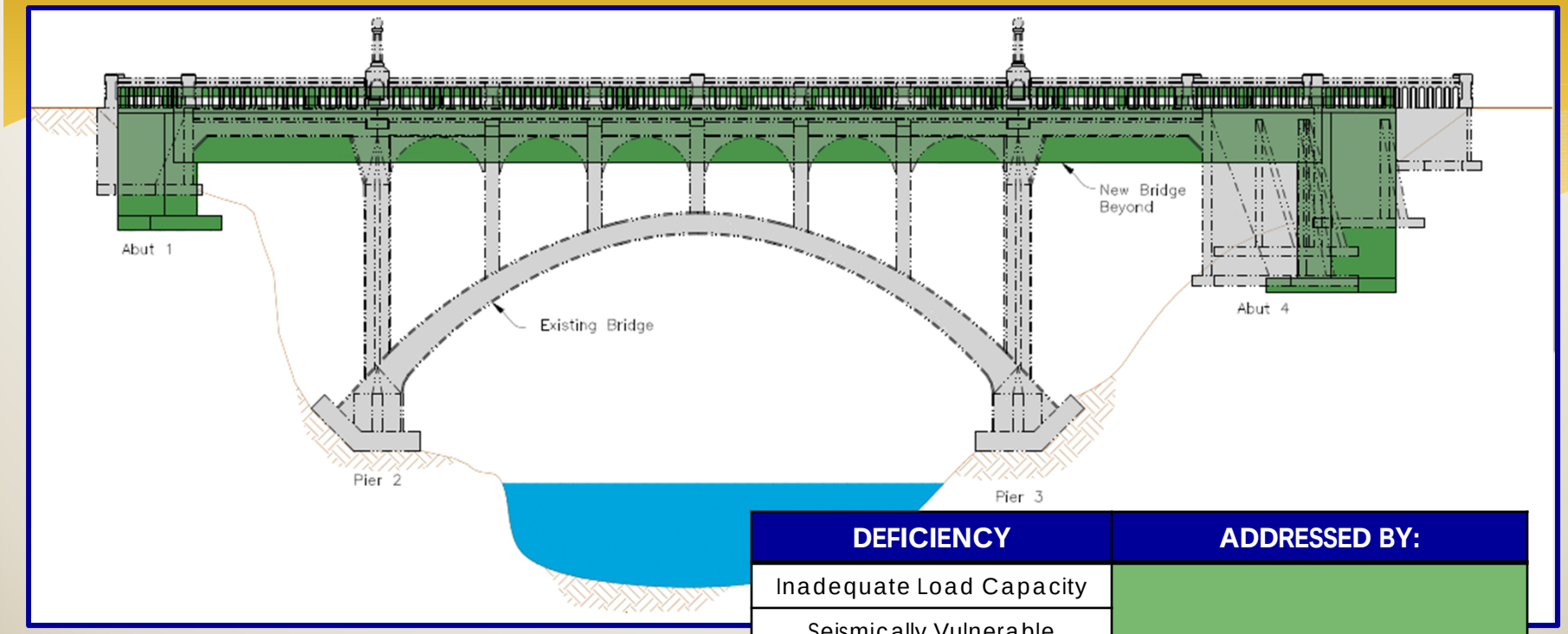


Texas Classic Type T411 Bridge Barrier Rail

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ALTERNATIVES CURRENLTY UNDER CONSIDERATION

Alternative 2B – Replace with Girder Bridge Upstream

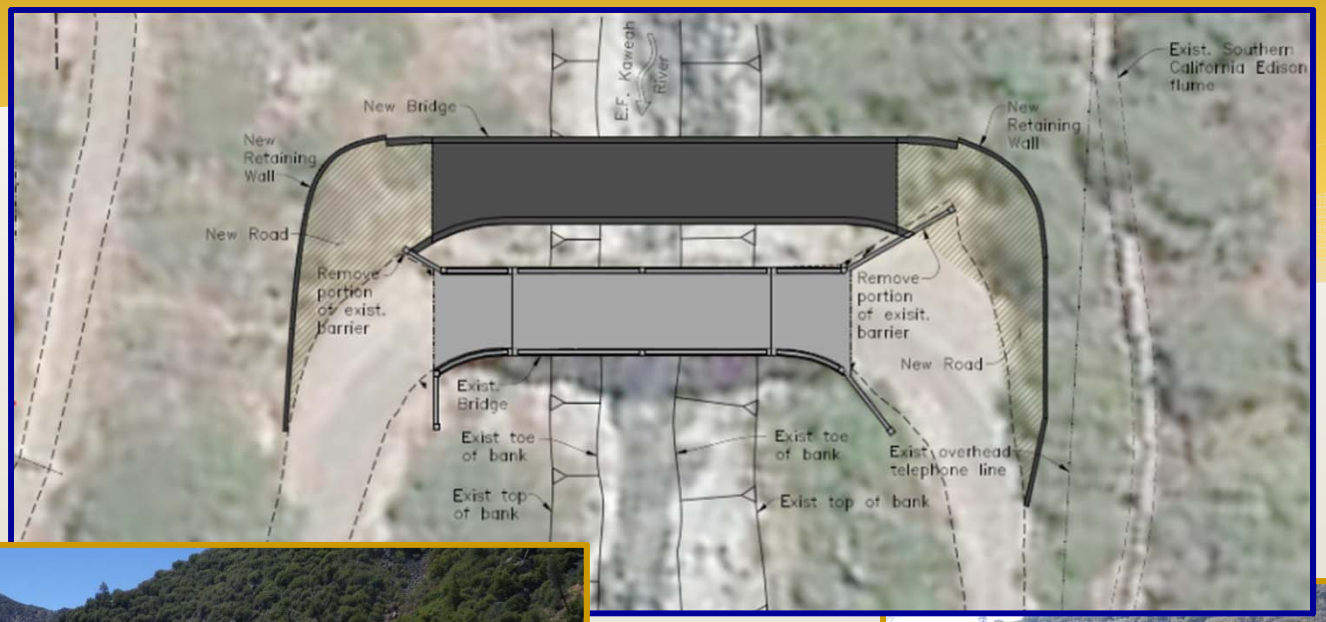


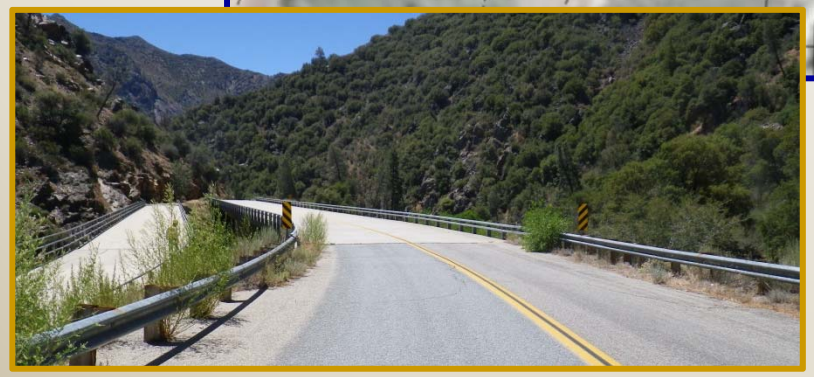
DEFICIENCY	ADDRESSED BY:
Inadequate Load Capacity	New Bridge Upstream
Seismically Vulnerable	
Deficient Barriers	
Joint & Drain Failure	
Concrete Deterioration	
Concrete Deterioration	Epoxy Inject Cracks Silane Treatment Methacrylate Deck

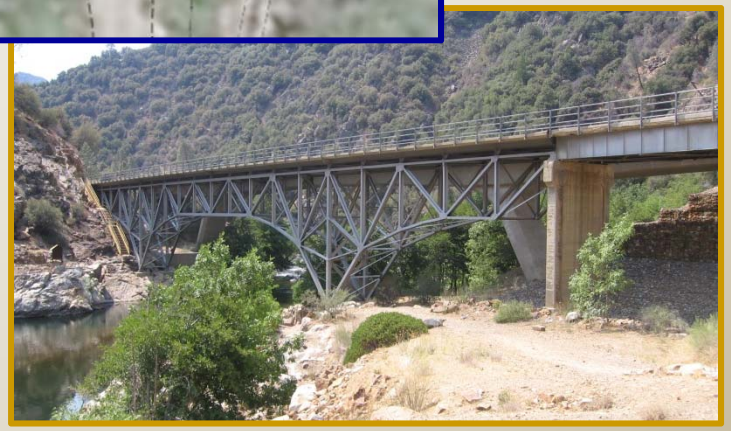
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ALTERNATIVES CURRENLTY UNDER CONSIDERATION

Alternative 2B – Replace with Girder Bridge Upstream



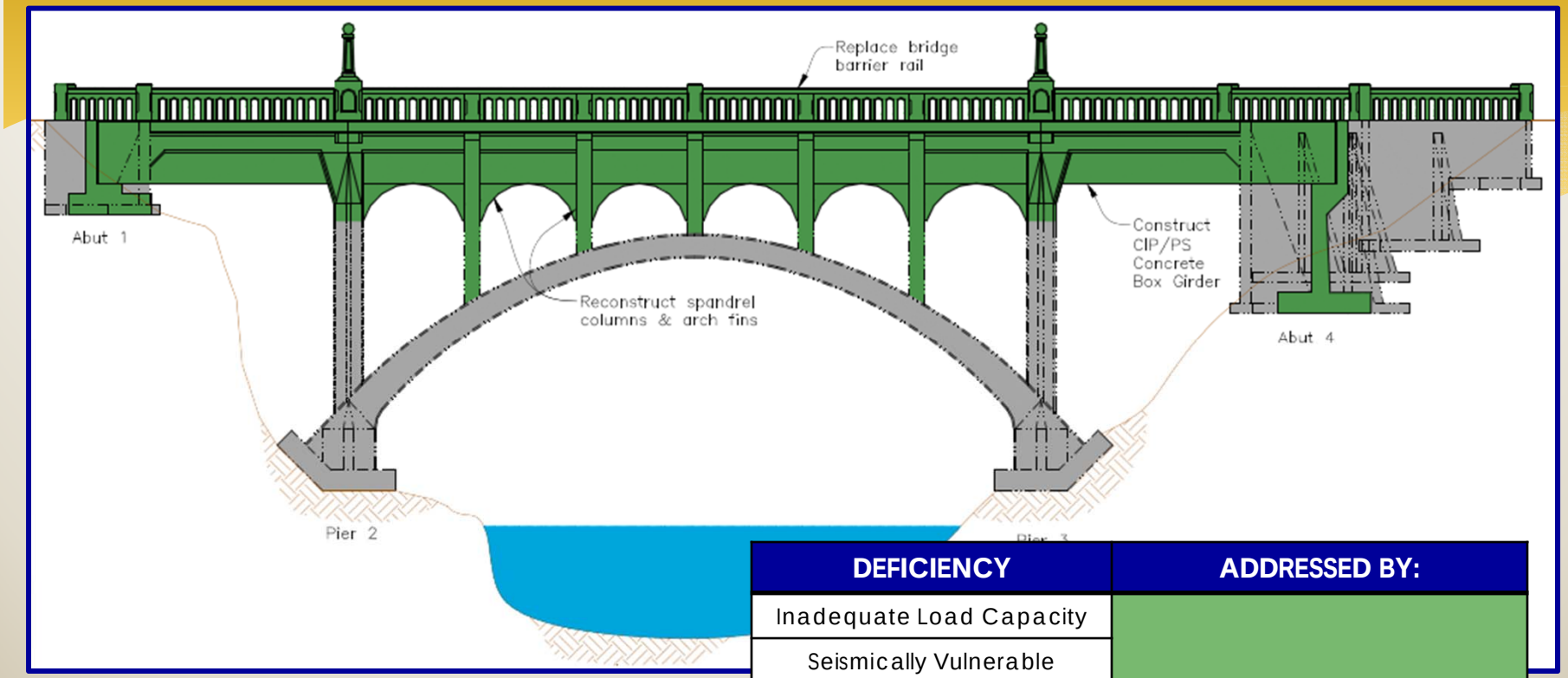




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REMAINING PROJECT ALTERNATIVES

Alternative 3 – Hybrid Rehab/Replacement

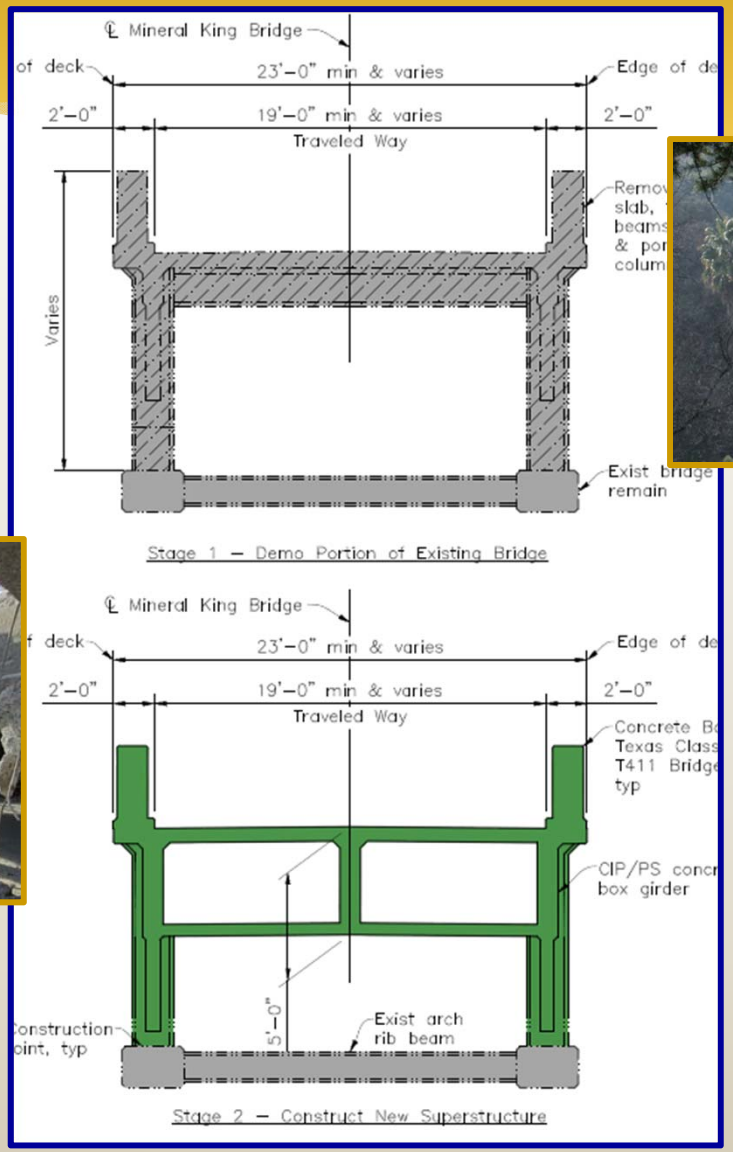


DEFICIENCY	ADDRESSED BY:
Inadequate Load Capacity	New Bridge Built Over Existing Bridge
Seismically Vulnerable	
Deficient Barriers	
Joint & Drain Failure	
Concrete Deterioration	
Concrete Deterioration	Epoxy Inject Cracks Silane Treatment

CORNERSTONE structural engineering group

REMAINING PROJECT ALTERNATIVES

Alternative 3 – Hybrid Rehab/Replacement

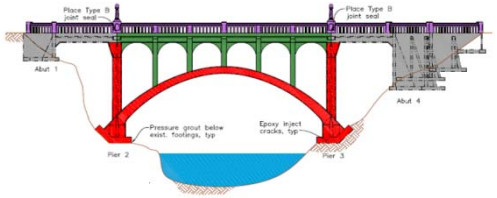
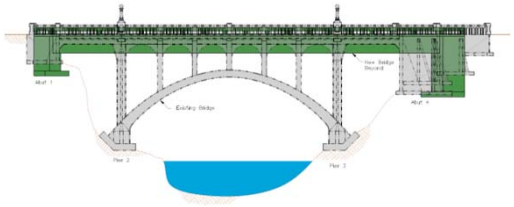
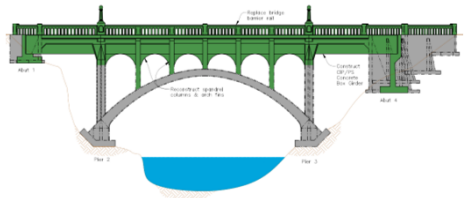






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SUMMARY OF REMAINING ALTERNATIVES

Alternative	Estimated Cost	PROS	CONS
Alternative 1 Retrofit/Rehabilitate Existing Bridge 	$4.5 Million	• Preserves Original Structure • Preserves Existing Aesthetics • Maintains Existing Alignment	• High Initial Cost • High Engineering Risk • High Risk of Unknowns During Construction • High Risk of Increasing Construction Costs • High Future Maintenance Costs • Short Design Life • Requires Temporary Bridge • Requires Significant Retrofit/Rehab Work • Requires Replacement of Barrier
Alternative 2B Replace with Girder Bridge Upstream 	$4.0 Million	• Provides New, Low Maintenance Bridge • Preserves Existing Bridge • Preserves View Shed of Existing Bridge • Lower Cost • Low Risk of Unknowns During Construction • Low Risk of Increasing Construction Costs	• Requires Maintenance on Two Bridges • Existing Bridge No Longer Eligible for Federal Funding • Requires Right-of-Way • More Environmental Impact • Requires New Retaining Walls
Alternative 3 Hybrid Rehab/Replacement 	$5.0 Million	• Essentially Preserves Existing Aesthetics • Provides New, Low Maintenance Bridge • Only One Bridge • Lower Maintenance Costs • Maintains Existing Alignment • Minimizes Environmental Impact • Minimal Road Work	• Requires Temporary Bridge • High Construction Cost • Replaces Existing Bridge • Medium Risk of Unknowns During Construction • Medium Risk of Increasing Construction Costs

OTHER CONSIDERATIONS

Site Access

- Route Survey Completed by Reeve Trucking
- 28 ft. Long flat-bed Trailers
- 265-ton All-Terrain Crane
- Concrete from CEMEX plant in Farmersville, CA
- Cal Fire Dozer Transport







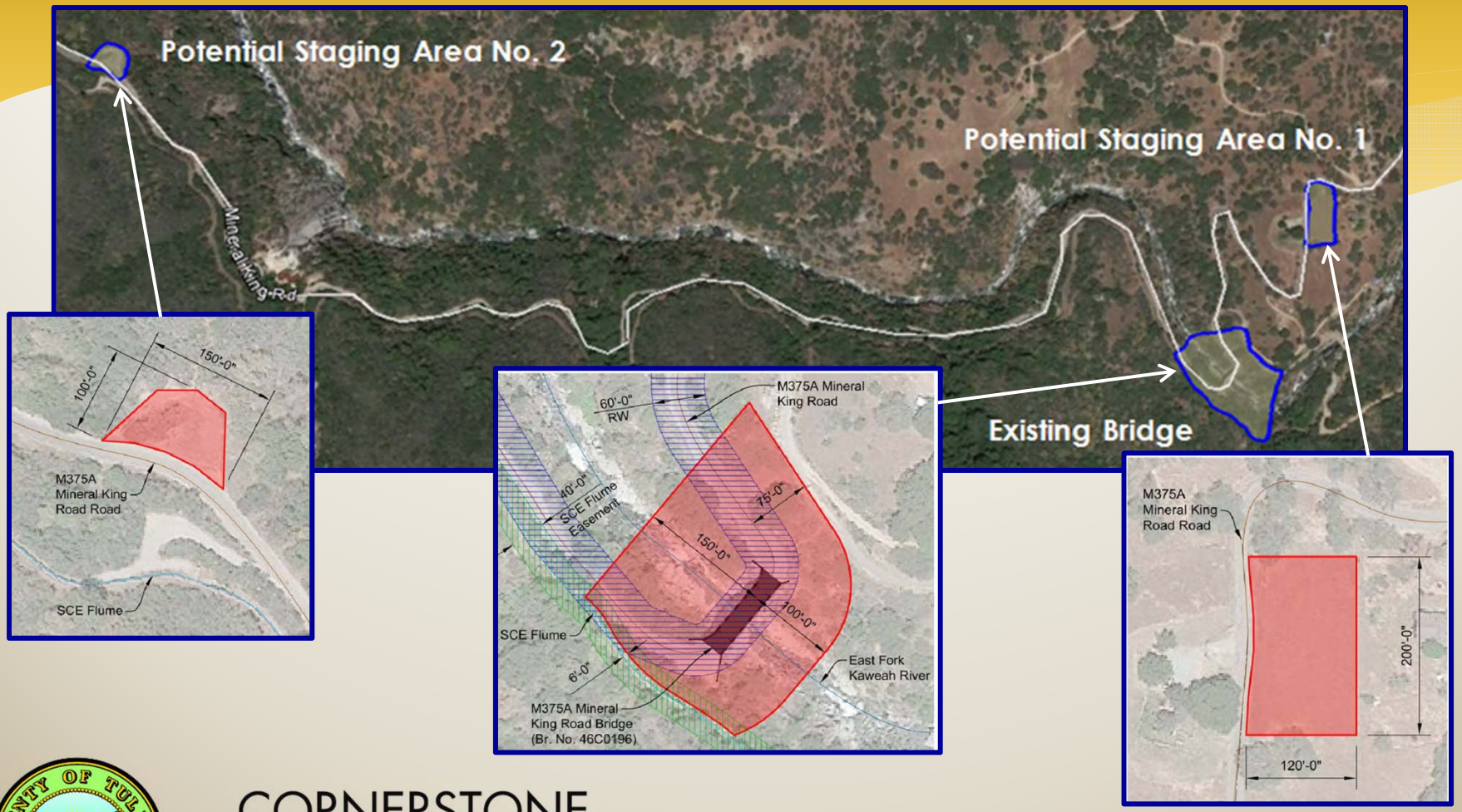


COUNTY OF TULARE CALIFORNIA

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OTHER CONSIDERATIONS

Area of Potential Effects



COUNTY OF TULARE CALIFORNIA

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ENVIRONMENTAL LAWS

California Environmental Quality Act (CEQA)

- Initial Study (IS) and Environmental Impact Report (EIR)
- County is CEQA lead agency

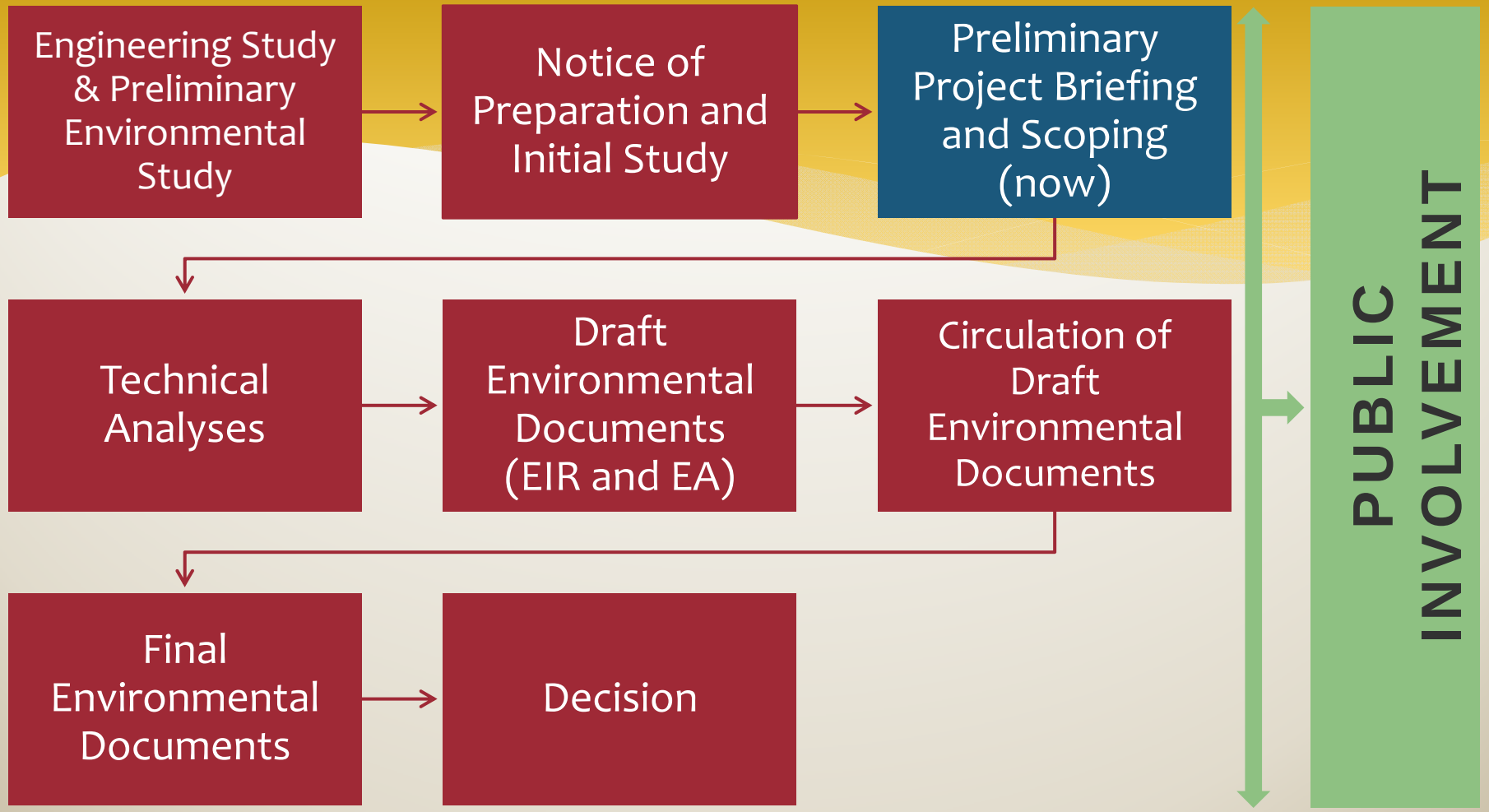
National Environmental Policy Act (NEPA)

- Preliminary Environmental Study (PES) and Environmental Assessment(EA)
- Caltrans is NEPA Lead Agency

Technical Studies

- Biological Resources
- Water Quality
- Visual Resources
- Historic & Archeological Resources
- Hazardous Materials

ENVIRONMENTAL REVIEW PROCESS



CONSULTING GPA

PUBLIC INVOLVEMENT

Public Scoping Meeting → February 23rd, 2016

Circulation of Draft EIR → Anticipated Early 2017

Please submit comments by **March 23rd, 2016**

- Submit a comment card: Welcome Table
- Send via postal mail to:

  Jason Vivian
  Tulare County RMA Public Works – Design
  5961 S. Mooney Boulevard
  Visalia, CA 93277

- Or send via e-mail to: JVivian@co.tulare.ca.us

COMMENT CARD

COUNTY OF TULARE, CALIFORNIA
Historic Oak Grove Bridge Project
Public Scoping Meeting
February 23, 2016

NAME:_____ DATE:_____

ADDRESS:_____ PHONE:_____

CITY, STATE, ZIP:_____

E-MAIL ADDRESS:_____

☐ I would like to have the following statement filed for the record.
☐ I would like to have the following question answered.

COMMENT:

_____

_____

_____

_____

_____

Comments must be received no later than March 23, 2016. Comment cards may be mailed to Jason Vivian; Tulare County RMA Public Works – Design, 5961 S. Mooney Boulevard, Visalia, CA 93277 or emailed to JVivian@co.tulare.ca.us.

COMMENT CARD

COUNTY OF TULARE, CALIFORNIA
Historic Oak Grove Bridge Project
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February 23, 2016

NAME:_____ DATE:_____

ADDRESS:_____ PHONE:_____

CITY, STATE, ZIP:_____

E-MAIL ADDRESS:_____

☐ I would like to have the following statement filed for the record.
☐ I would like to have the following question answered.

COMMENT:

_____

_____

_____

_____

_____

Comments must be received no later than March 23, 2016. Comment cards may be mailed to Jason Vivian; Tulare County RMA Public Works – Design, 5961 S. Mooney Boulevard, Visalia, CA 93277 or emailed to JVivian@co.tulare.ca.us.

Historic Oak Grove Bridge Project
Public Scoping Meeting - February 23rd 2016
SIGN-IN SHEET

NAME	ADDRESS	PHONE NUMBER	E-MAIL
Laile D. Silvestro	40901 Quail Dr. Three Rivers	425.444.2805	laile@mindspring.com
Pat Humphrey	41636 South Fork Dr	559-561-1145	dp8760@SBCGlobal.net
DAVID T. HUMPHREY	~~40750~~ 47050 GENERALS HWY.	559.565.3139	dave_humphrey@nps.gov
Danielle Temple	40910 Elk Dr.	770-712-7639	daniellegtemple@gmail.com
Jana Bolton + Michael	43372 Alta Acres Dr	561-4322	cabinart@cabinart.net

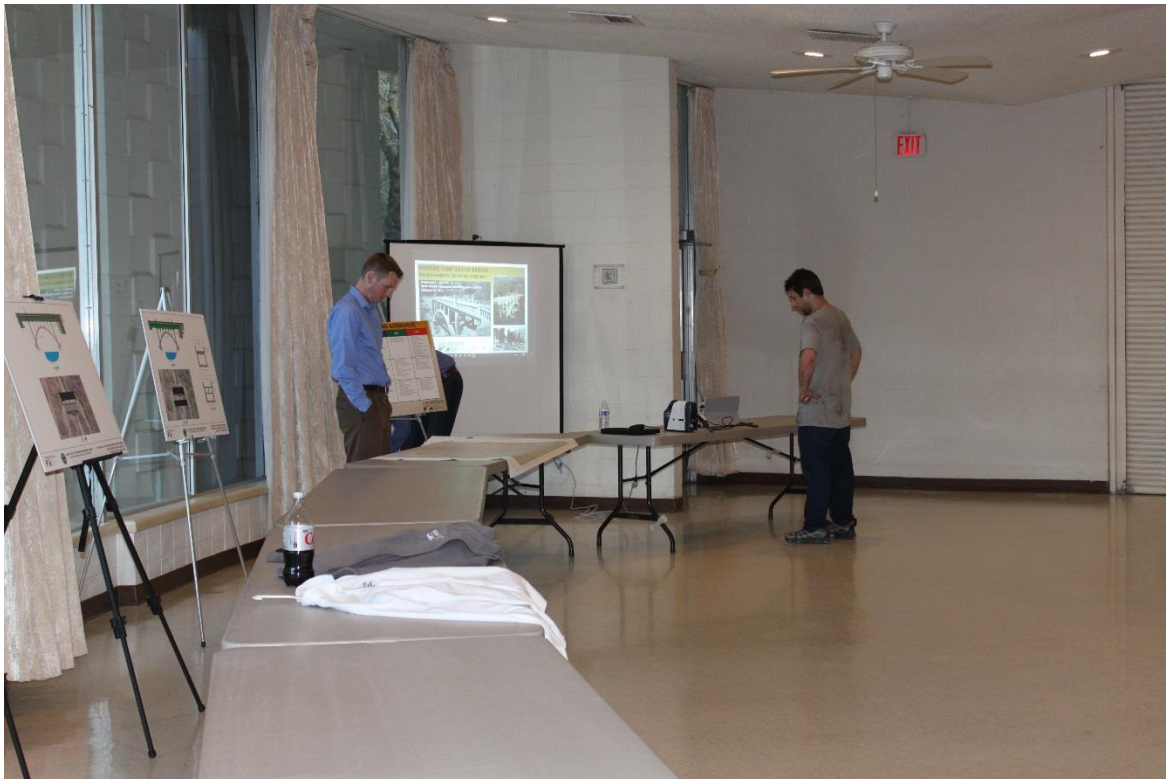
Historic Oak Grove Bridge Project
Public Scoping Meeting - February 23rd 2016
SIGN-IN SHEET

NAME	ADDRESS	PHONE NUMBER	E-MAIL
CHRIS Brewer	199 E. Pine ST Exeter 93221	559 2808547	1718KP@verizon.net
Karen Bodner	PO Box 445 3 Rivers	561-4063	Kebodner@wildblue.net
Greg + Laurie Schwaller	43857 S. Fork 93271	2808181	lschwaller1@wildblue.net
John Kitchens	51675 Lynwood Knight Rd	561-3192	jkm@sbcglobal.net
John Elliott	41855 NO. FORK	7R 561-3627	tkcplanner@yahoo.com
Daniel Rourke	43659 Encina Dr TR.	465-5039	LuckyDR@Yahoo.com
JIM BARTON	41855 NORTH FORK DR	5614205	JB3RIVERS@WEBTV.NET
Jamey Haley	49818 MINERAL KING RD	561-3490	Jameyhaley@yahoo.com

Photographs of Public Outreach Meeting: February 2, 2016



Registration/Open House



Registration/Open House



Registration/Open House



PowerPoint Presentation



PowerPoint Presentation



Public Comment Period

Attachment E Historic Consultation Documentation

- Sample historic consultation letter
- Correspondence log
- Copies of comments received

March 16, 2017

«Contact_Name»
«AddressBlock»

RE: Request for Public Comments and Information Regarding the Mineral King Bridge (also named Historic Oak Grove Bridge) Rehabilitation Project, near the community of Three Rivers, Tulare County

Dear «Contact_Name»,

The Tulare County Resource Management Agency (County), in cooperation with Caltrans and the Federal Highway Administration (FHWA), is proposing to either rehabilitate the existing Mineral King Bridge (Caltrans Bridge No. 46C0196, also named Historic Oak Grove Bridge) over the East Fork of the Kaweah River or construct a replacement bridge structure while retaining the existing bridge. The bridge is located approximately 5.0 miles from State Route 198, east of the community of Three Rivers along Mineral King Road (see attached regional and project location maps). The bridge was constructed in 1923 and is eligible for listing in the National Register of Historic Places.

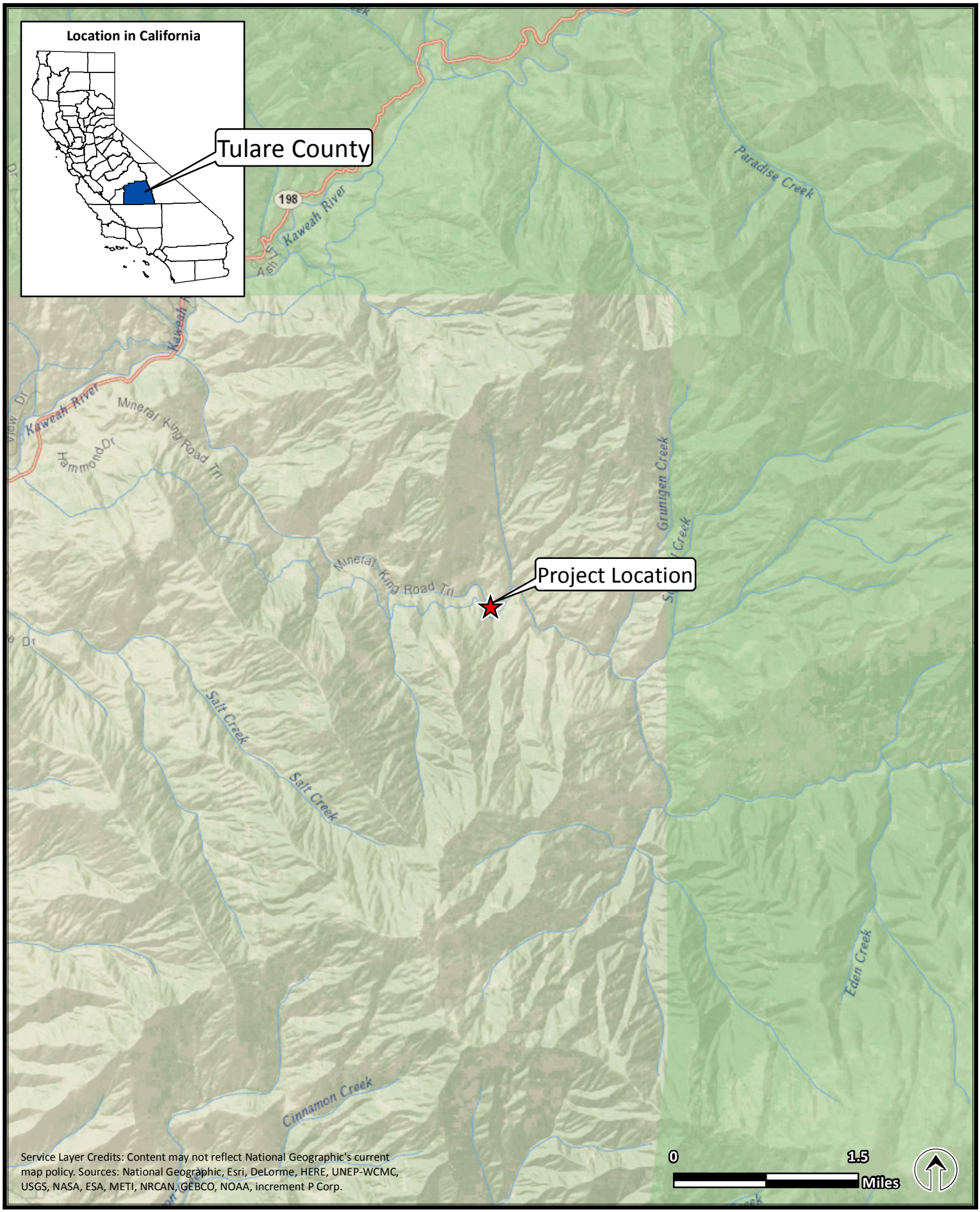
Because the project will utilize federal funding, it must comply with Section 106 of the National Historic Preservation Act (36 CFR §800). As part of the environmental process associated with compliance, GPA Consulting, sub-consultant to the County, is soliciting comments and information from potentially interested parties. In particular, we are seeking information regarding the potential of the proposed project to impact historic resources in the vicinity. Your response allows us to identify concerns relating to the proposed project and to gather valuable information on local historic resources. We are already aware that the Mineral King Bridge (Historic Oak Grove Bridge) is a historic resource and we will be analyzing the proposed project for its potential to impact the bridge. In addition, the location of sensitive archaeological resources will remain confidential but the potential project impacts to these resources will also will be addressed.

[If comments already received from letter recipient or attended scoping meeting, add acknowledgement here.] If you have information regarding additional historic resources that may be potentially impacted by the project, we would greatly appreciate your response by April 14, 2017, so we can include it in our technical report. Please contact Jason Vivian, Engineer IV, Tulare County Resource Management Agency, by phone (559) 624-7135 or e-mail jvivian@co.tulare.ca.us to provide comments in response to this letter.

Sincerely,

Jenna Kachour
Senior Preservation Planner
GPA Consulting

SAMPLE



REGIONAL LOCATION MAP
Mineral King Road Bridge Project



PROJECT AREA AND STAGING AREAS
Mineral King Road Bridge Project

Southern California Edison
2425 S. Blackstone St., Tulare, CA 93305

5/18/2015 Andrea Galvin, GPA Consulting, requested information regarding NRHP eligibility of Kaweah Hydroelectric System flume within the project APE via email to Adam Sriro, Manager, Archaeological Resources, SCE

5/20/2015 Audry Williams, Senior Archaeologist, SCE, provided archaeological survey (Thomas T. Taylor, SCE, 1989), historic evaluation (Susan Lehman, et al., 1990), and SHPO concurrence (Kathryn Gualtieri, 1990) via email to Andrea Galvin GPA Consulting

6/16/2016 Jenna Kachour, GPA Consulting, requested confirmation that flume withinproject APE is part of Kaweah No. 1, and was determined ineligible for NRHP listing in 1990 and SHPO concurred in that same year via email to Audry Williams, SCE

1/11/2017 Audry Williams, SCE confirmed that the flume within the APE is part of Kaweah No. 1 and is not eligible via email to Andrea Galvin, GPA Consulting

3/16/2017 Historic consultation letter mailed to Southern California Edison

William A. Martin
Email: wam01@comcast.net Phone: 559-625-9089

11/12/2015 William A. Martin inquired about project status via email to County Supervisor Phil Cox

3/28/2017 Historic consultation letter emailed to William A. Martin

Brian Reynolds
837 Vista del Arroyo, San Luis Obispo, CA 93405
Email: brianar628@sbcglobal.net

1/18/2016 Brian Reynolds submitted comments via email to Jason Vivian, County RMA

3/16/2017 Historic consultation letter mailed to Brian Reynolds

3/28/2017 Historic consultation letter emailed to Brian Reynolds

Shawn Dienhart
Paso Robles, CA
Email: shawn@theradioroom.org

1/19/2016 Shawn Dienhart submitted comments via email to Jason Vivian, County RMA

3/28/2017 Historic consultation letter emailed to Shawn Dienhart

Michael Asay
Email: asaymi@gmail.com

1/20/2016 Michael Asay submitted comments via email to Jason Vivian, County RMA

3/28/2017 Historic consultation letter emailed to Michael Asay

Paul Dayton
Email: pdayton@ucsd.edu

1/20/2016 Paul Dayton submitted comments via email to Jason Vivian, County RMA

3/28/2017 Historic consultation letter emailed to Paul Dayton

Ron Kennedy

4741 Sleeping Indian Road, Fallbrook, CA 92028
Email: Otrkennedy@aol.com Phone: 760-723-4357
1/20/2016 Ron Kennedy submitted comments via email to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Ron Kennedy
3/28/2017 Historic consultation letter emailed to Ron Kennedy

Patricia Whitendale
Visalia, CA
Email: twhitendale@yahoo.com
1/20/2016 Patricia Whitendale submitted comments via email to Jason Vivian, County RMA
3/28/2017 Historic consultation letter emailed to Patricia Whitendale

Sally J. Dungan
730 N. Highland, Visalia, CA 93291
Email: sjdungan@earthlink.net Phone: 559-303-3113
1/20/2016 Sally J. Dungan submitted comments via email to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Sally J. Dungan
3/28/2017 Historic consultation letter emailed to Sally J. Dungan

Jana Botkin
P.O. Box 311, Three Rivers, CA 93271
Email: cabinart@cabinart.net Phone: 559-561-7606
1/20/2016 Jana Botkin submitted comments via email to Jason Vivian, County RMA
2/8/2016 Jana Botkin requested public photo gallery on preject websit via email to Erinn Silva and Andrea Galvin, GPA Consulting
2/8/2016 Andrea Galvin, GPA Consulting responded via email indicating the project team will discuss request for a public photo gallery
2/9/2016 Jana Botkin requested to know who will be building project website, and if the condition of the bridge had been diagnosed via email to Andrea Galvin, GPA Consulting
2/23/2016 Jana Botkin attended public scoping meeting and provided contact information in sign-in sheet
3/13/2016 Jana Botkin requested link to website showing project alternatives via email to Jason Vivian, County RMA
3/20/2016 Jana Botkin again requested link to website showing project alternatives via email to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Jana Botkin
3/28/2017 Historic consultation letter emailed to Jana Botkin

Nadine Hack
Email: ndghack@comcast.net
1/20/2016 Nadine Hack submitted comments via email to Jason Vivian, County RMA
3/3/2016 Nadine Hack expressed support for project alternative 2B via email to Jason Vivian, County RMA
3/28/2017 Historic consultation letter emailed to Nadine Hack

3/28/2017 Nadine Hack responded to historic consultation letter via email to Jenna Kachour, GPA Consulting and Jason Vivian, County RMA, expressing support for rehabilitating the bridge without compromising the historic look and fabric.

Kathy Hath
28881 Via Buena Vista, San Juan Capistrano, CA 92675
Email: khath@nmusd.us
1/21/2016 Kathy Hath submitted comments via email to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Kathy Hath
3/28/2017 Historic consultation letter emailed to Kathy Hath

Merl Ledford III, Esq.
805 West Oak Ave., Visalia, CA 93291
Email: m.ledford3@ledfordlaw.net Phone: 559-627-2710
1/21/2016 Merl Ledford III, Esq. submitted comments via email to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Merl Ledford III, Esq.
3/28/2017 Historic consultation letter emailed to Merl Ledford III, Esq.

Dirk Buchenau
Woodland Hills, CA 91364
Email: Dirk_Buchenau@qintl.com Phone: 818-884-1901
1/21/2016 Dirk Buchenau submitted comments via email to Jason Vivian, County RMA
3/28/2017 Historic consultation letter emailed to Dirk Buchenau

Sharon Devol
Newhall, CA
Email: MineralKing50@gmail.com
1/21/2016 Sharon Devol submitted comments via email to Jason Vivian, County RMA
3/28/2017 Historic consultation letter emailed to Sharon Devol
4/3/2017 Sharon Devol responded to historic consultation letter via email to Jason Vivian, County RMA, expressing support for the preservation of the existing bridge.

Jill Tovey
Email: sewscraps1@gmail.com
1/22/2016 Jill Tovey submitted comments via email to Jason Vivian, County RMA
3/28/2017 Historic consultation letter emailed to Jill Tovey

Laile Di Silvestro
P.O. Box 1153, Three Rivers, CA 93271
Email: laile@mindspring.com Phone: 425-444-2805
1/22/2016 Laile Di Silvestro indicated the historic name of Mineral King Bridge is Oak Grove Bridge and requested status of SHPO consultation and project deliverables via email to Jason Vivian, County RMA

2/8/2016 Laile Di Silvestro indicated she would attend the Community Plan Meeting on 2/8/2016 and could ask the questions indicated in her email of 1/22/2016 at the meeting via email to Jason Vivian, County RMA
2/23/2016 Laile Di Silvestro attended public scoping meeting and provided contact information in sign-in sheet
3/16/2017 Historic consultation letter mailed to Laile Di Silvestro
3/28/2017 Historic consultation letter emailed to Laile Di Silvestro
4/13/2017 Laile Di Silvestro indicated she would submit a "document that identifies the cultural resources associated with the Oak Grove Bridge Rehabilitation Project's areas of potential adverse effect" by end of day 4/14/17 via mail to Jason Vivian, County RMA
4/17/2017 Jason Vivian inquired via email if the document had been sent and Laile Di Silvestro replied that it was not yet complete, but that a link to download would be sent when it was ready
4/19/2017 Laile Di Silvestro submitted a summary of public comment and information regarding the Oak Grove Bridge Rehabilitation Project
5/12/2017 Laile Di Silvestro submitted a first draft of public comment and information regarding the Oak Grove Bridge Rehabilitation Project

Susan B. Merrill
30007 Road 158, Visalia, CA 93292
Email: Sbaqmerril@aol.com
1/24/2016 Susan B. Merrill submitted comments via email to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Susan B. Merrill
3/28/2017 Historic consultation letter emailed to Susan B. Merrill

Terry L. Ommen
P.O. Box 3864, Visalia, CA 93278
Email: histerry@comcast.net Phone: 559-901-3227
1/24/2016 Terry L. Ommen submitted comments via email to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Terry L. Ommen
3/28/2017 Historic consultation letter emailed to Terry L. Ommen

Jean Koch
2125 Ames St, Los Angeles, CA 90027
Email: drpku@sbcglobal.net
1/25/2016 Jean Koch submitted comments via email to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Jean Koch
3/28/2017 Historic consultation letter emailed to Jean Koch

Jane Coughran
Alexandria, VA
Email: coughranjn@aol.com
1/25/2016 Jane Coughran submitted comments via email to Jason Vivian, County RMA
3/28/2017 Historic consultation letter emailed to Jane Coughran

Martin Strudwick
Email: martinstrud@yahoo.com
1/27/2016 Martin Strudwick submitted comments via email to Jason Vivian, County RMA
3/28/2017 Historic consultation letter emailed to Martin Strudwick

Beverly Foltz
Fox Island, WA
Email: bgfoltz@gmail.com
1/31/2016 Beverly Foltz submitted comments via email to Jason Vivian, County RMA
3/28/2017 Historic consultation letter emailed to Beverly Foltz

Todd Harris
Email: pcas.sbcglobal.net@gmail.com
2/1/2016 Todd Harris submitted comments via email to Jason Vivian, County RMA
3/28/2017 Historic consultation letter emailed to Todd Harris

Chris Brewer
199 East Pine St., Exeter, CA 93221
Email: cdbrewer@gmx.com Phone: 559-280-8547
2/4/2016 Chris Brewer submitted comments via email to Eric Coyne, County Economic Development, Film, & Tourism
2/23/2016 Chris Brewer attended public scoping meeting and provided contact information in sign-in sheet
2/23/2016 Chris Brewer submitted comments via email to Andrea Galvin, GPA Consulting
3/16/2017 Historic consultation letter mailed to Chris Brewer
3/28/2017 Historic consultation letter emailed to Chris Brewer

Paul and Nadean Bissiri
1161 Ragatz Lane, Napa, CA 94558
Email: nadeanbissiri@gmail.com
2/10/2016 Nadean Bissiri submitted comments via email to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Nadean Bissiri
3/28/2017 Historic consultation letter emailed to Nadean Bissiri
3/30/2017 Paul and Nadean Bissiri responded to historic consultation letter via email to Jenna Kachour, GPA consulting, indicating they would like to see the bridge restored and asking if it was not possible to maintain its present appearance and make it earthquake safe. This response was forwarded to Jason Vivian, County RMA.

Betty Luceigh
Three Rivers, CA
Email: luceigh@chem.ucla.edu
2/10/2016 Betty Luceigh submitted comments via email to Jason Vivian, County RMA
3/28/2017 Historic consultation letter emailed to Betty Luceigh

Ken Hulick
18015 Stoney Creek Way, Morgan Hill, CA 95037
Email: kenhulick41@gmail.com Phone: 408-706-4792
2/19/2016 Ken Hulick submitted comments via email to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Ken Hulick
3/28/2017 Historic consultation letter emailed to Ken Hulick

Mary Wadsworth
2336 Gable Ave., Corcoran, CA 93212
Email: martiniwith3olives@hotmail.com
2/20/2016 Mary Wadsworth submitted comments via email to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Mary Wadsworth
3/28/2017 Historic consultation letter emailed to Mary Wadsworth

Britta Lee and Marcel V Shain
P.O. Box 914, Monrovia, CA 91017-0914
Email: howlingcoyote@teepeemusic.com Phone: 310-613-9706
2/22/2016 Britta Lee and Marcel V Shain submitted comments via email to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Britta Lee and Marcel Shain
3/28/2017 Historic consultation letter emailed to Britta Lee and Marcel Shain

Peggy Blanchard
41011 Meadow Drive, Three Rivers, CA 93271
Email: 3rivers.peggy@gmail.com
2/23/2016 Peggy Blanchard submitted comments via email to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Peggy Blanchard
3/28/2017 Historic consultation letter emailed to Peggy Blanchard

Danielle Temple
40916 Elk Dr., Three Rivers, CA 93271
Email: daniellegtemple@gmail.com Phone: 770-712-7639
2/23/2016 Danielle Temple attended public scoping meeting and provided contact information in sign-in sheet
3/16/2017 Historic consultation letter mailed to Danielle Temple
3/28/2017 Historic consultation letter emailed to Danielle Temple

David T. Humphrey, Cultural Resources Program Manager, Sequioa and Kings Canyon National Parks
47050 Generals Hwy., Three Rivers, CA 93271
Email: dave_humphrey@nps.gov Phone: 559-565-3139
2/23/2016 David T. Humphrey attended public scoping meeting and provided contact information in sign-in sheet
3/16/2017 Historic consultation letter mailed to David T. Humphrey
3/28/2017 Historic consultation letter emailed to David T. Humphrey

Pat Humphrey
41636 South Fork Dr., Three Rivers, CA 93271
Email: dpe760@sbcglobal.net Phone: 559-561-1145

2/23/2016 Pat Humphrey attended public scoping meeting and provided contact information in sign-in sheet
3/16/2017 Historic consultation letter mailed to Pat Humphrey
3/28/2017 Historic consultation letter emailed to Pat Humphrey

Karen Bodner
P.O. Box 445, Three Rivers, CA 93271
Email: kebodner@wildblue.net Phone: 559-561-4063

2/23/2016 Karen Bodner attended public scoping meeting and provided contact information in sign-in sheet
3/16/2017 Historic consultation letter mailed to Karen Bodner
3/28/2017 Historic consultation letter emailed to Karen Bodner

Greg and Laurie Schwaller
43857 S. Fork Dr, Three Rivers, CA 93271
Email: gschwaller1@wildblue.net Phone: 559-280-8181

2/23/2016 Greg and Laurie Schwaller attended public scoping meeting and provided contact information in sign-in sheet
3/16/2017 Historic consultation letter mailed to Greg and Laurie Schwaller
3/28/2017 Historic consultation letter emailed to Greg and Laurie Schwaller

John Mitchell
425 N Todd Street, Visalia, CA 93291
Email: jhm@sbcglobal.net Phone: 559-561-3192

2/23/2016 John Mitchell attended public scoping meeting and provided contact information in sign-in sheet
3/16/2017 Historic consultation letter mailed to John Mitchell
3/28/2017 Historic consultation letter emailed to John Mitchell

John Elliott
41855 N. Fork Dr, Three Rivers, CA 93271
Email: tkcplanner@yahoo.com Phone: 559-561-3627

2/23/2016 John Elliott attended public scoping meeting and provided contact information in sign-in sheet
3/16/2017 Historic consultation letter mailed to John Elliott
3/28/2017 Historic consultation letter emailed to John Elliott
3/28/2017 John Elliott responded to historic consultation letter via email to Jenna Kachour, GPA Consulting, suggesting a public notice in the Commonwealth with project update. This request was forwarded to Jason Vivian, County RMA.

Daniel Rourke
43659 Encina Dr., Three Rivers, CA 93271
Email: luckydr@yahoo.com Phone: 559-465-5039

2/23/2016 Daniel Rourke attended public scoping meeting and provided contact information in sign-in sheet
3/16/2017 Historic consultation letter mailed to Daniel Rourke
3/28/2017 Historic consultation letter emailed to Daniel Rourke

Jim Barton
41855 N. Fork Dr, Three Rivers, CA 93271
Email: jb3rivers@webtv.net Phone: 559-561-4205

2/23/2016 Jim Barton attended public scoping meeting and provided contact information in sign-in sheet
3/16/2017 Historic consultation letter mailed to Jim Barton
3/28/2017 Historic consultation letter emailed to Jim Barton
4/1/2017 Jim Barton responded to historic consultation letter via email to Jason Vivian, County RMA, expressing preference for strengthening the existing bridge, or if a new bridge must be built, that it would be similar in appearance and the old bridge would be demolished to prevent an attractive nuisance.

Jamey Haley
49818 Mineral King Rd, Three Rivers, CA 93271
Email: jameyhaley@yahoo.com Phone: 559-561-3490

2/23/2016 Jamey Haley attended public scoping meeting and provided contact information in sign-in sheet
3/16/2017 Historic consultation letter mailed to Jamey Haley
3/28/2017 Historic consultation letter emailed to Jamey Haley

Woody Smeck, Superintendent, Sequoia and Kings Canyon National Parks
47050 Generals Hwy., Three Rivers, CA 93271
Email: woody_smeck@nps.gov Phone: 559-565-3101

2/25/2016 Woody Smeck submitted comments via letter to Jason Vivian, County RMA
4/7/2017 Historic consultation letter emailed to Woody Smeck

Georgellen Parker
P.O. Box 496, Three Rivers, CA 93271
Email: going@theworks.com

2/28/2016 Georgellen Parker submitted a comment card from the public scoping meeting held on 2/23/2016
3/16/2017 Historic consultation letter mailed to Georgellen Parker
3/28/2017 Historic consultation letter emailed to Georgellen Parker

Stephen Criglov
43469 Alta Acres Dr., Three Rivers, CA 93271

Email: waldosc3@gmail.com Phone: 559-561-4439
2/28/2016 Stephen Criglov submitted a comment card from the public scoping meeting held on 2/23/2016
3/28/2017 Historic consultation letter emailed to Stephen Criglov

Mineral King Preservation Society
3026 South Johnson Dr., Visalia, CA 93277
Email: preservation@mineralking.org
3/21/2016 Mineral King Preservation Society submitted comments via letter to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Mineral King Preservation Society
3/28/2017 Historic consultation letter emailed to Mineral King Preservation Society

Stuart R. Hendricks
125 S. Bridge St #150, Visalia, CA 93291
Email: stuart.hendricks@teterae.com Phone: 559-625-5246
3/23/2016 Stuart R. Hendricks submitted comments via email to Jason Vivian, County RMA
3/16/2017 Historic consultation letter mailed to Stuart R. Hendricks
3/28/2017 Historic consultation letter emailed to Stuart R. Hendricks

Tulare County Library, Annie R. Mitchell History Room
200 West Oak Avenue, Visalia, CA 93291-4993
Email: questions@tularecountylibrary.org Phone: 559-713-2727
3/16/2017 Historic consultation letter mailed to Tulare County Library, Annie R. Mitchell History Room
3/28/2017 Historic consultation letter emailed to Tulare County Library, Annie R. Mitchell History Room

Sequoia Foothills Chamber of Commerce
P.O. Box 818, Three Rivers, CA 93271
Email: info@threerivers.com Phone: 559-561-3300
3/16/2017 Historic consultation letter mailed to Sequoia Foothills Chamber of Commerce
3/28/2017 Historic consultation letter emailed to Sequoia Foothills Chamber of Commerce

Sequoia Parks Conservancy, Ash Mountain Office
47050 Generals Highway #10, Three Rivers, CA 93271
Email: info@sequoiaparks.org Phone: 559-565-4803
3/16/2017 Historic consultation letter mailed to Sequoia Parks Conservancy, Ash Mountain Office
3/28/2017 Historic consultation letter emailed to Sequoia Parks Conservancy, Ash Mountain Office

Sequoia Parks Conservancy, Three Rivers Office
P.O. Box 175, Three Rivers, CA 93271
Email: info@sequoiaparks.org Phone: 559-565-4803
3/16/2017 Historic consultation letter mailed to Sequoia Parks Conservancy, Three Rivers Office

3/28/2017 Historic consultation letter emailed to Sequoia Parks Conservancy, Three Rivers Office

Three Rivers Branch Library
P.O. Box 216, Three Rivers, CA 93271-0216
Email: questions@tularecountylibrary.org Phone: 559-713-2700
3/16/2017 Historic consultation letter mailed to Three Rivers Branch Library
3/28/2017 Historic consultation letter emailed to Three Rivers Branch Library

Three Rivers Historical Society and Museum
42268 Sierra Dr., Three Rivers, CA 93271
Email: history@3rmuseum.org Phone: 559-561-2707
3/16/2017 Historic consultation letter mailed to Three Rivers Historical Society and Museum
3/28/2017 Historic consultation letter emailed to Three Rivers Historical Society and Museum

Tulare County Historical Society
P.O. Box 295, Visalia, CA 93279
Email: Contact form on website (www.tularecountyhistoricalsociety.org) Phone: 559-635-4896
3/16/2017 Historic consultation letter mailed to Tulare County Historical Society
3/28/2017 Historic consultation letter emailed to Tulare County Historical Society

Mary Pat Pinkham
Email: mpatpink@gmail.com
4/1/2017 Mary Pat Pinkham submitted comments via email to Jason Vivian, County RMA

Sally Sedwina
Email: sallysedwina@aol.com
4/1/2017 Sally Sedwina submitted comments via email to Jason Vivian, County RMA

John Spock
1127 N. La Brea Ave., Inglewood, CA 90302
Email: johnspock4@gmail.com Phone: 310-922-3167
4/1/2017 John Spock submitted comments via email to Jason Vivian, County RMA

Mark Bissiri
PO Box 2621, Mill Valley, CA 94942
Email: mbissiri@us.ibm.com Phone: 415-734-0804
4/4/2017 Mark Bissiri submitted comments via email to Jason Vivian, County RMA

From: "BETTY A. LUCEIGH" <luceigh@chem.ucla.edu>
To: <jvivian@co.tulare.ca.us>
Date: 2/10/2016 10:10 AM
Subject: M375A Historic Oak Grove Bridge

I'm sending this email to support keeping the Oak Grove Bridge but upgrading as necessary for safety. That is, do the necessary repairs to retrofit but don't tear down the bridge. The bridge is a historic landmark, is a beautiful bridge appropriate to the surroundings, sustains a sense of natural history to the area. Safety is of course essentialt, but surely can be done without building a replacement bridge.

Betty Luceigh
Three Rivers, CA

From: Beverly Foltz <bgfoltz@gmail.com>
To: <jvivian@co.tulare.ca.us>
Date: 1/31/2016 4:34 PM
Subject: Oak Grove Bridge

Dear Mr. Vivian & Tulare County Board of Supervisors,

I am writing to urge your careful consideration of the future of the historic Oak Grove bridge on the Mineral King road. My great grandfather, John Crowley, along with partners, built the original road into Mineral King in the late 19th century, at that time entirely on the north side of the canyon. My mother, Nadine Crowley Graham, tells of the 2 day trip to Mineral King from Visalia by buckboard. Subsequently the growing use of the automobile brought the need to widen the road & build the lower section on the south side of the canyon, along with the 1923 bridge.

I've crossed that bridge nearly every year since childhood, often stopping to look down at the rushing river below. It appears in countless photographs. Although the bridge is not within the boundaries of the 2003 "Mineral King Road Cultural Landscape District" designation on the National Register, certainly its 93 year old history makes it worthy of preservation. The road itself, and its ultimate terminus at Mineral King, is a historic walk back in time to a colorful era in Western history, a cultural landscape too often lost to a citizenry inundated with the latest & speediest technology. Please, preserve this special part of the the Mineral King road by protecting the beautiful Oak Grove bridge.

Sincerely,

Beverly Foltz
Fox Island, WA

From: Brian Reynolds <brianar628@sbcglobal.net>
To: Jason Vivian <Jvivian@co.tulare.ca.us>
Date: 1/18/2016 12:42 PM
Subject: Re: Public Hearing on Oak Grove Historic Bridge

Thank you so much! I will email my comments before Feb. 1. Is there a staff report with options and recommendations so that I can refer to those in my comments? Thanks again, Brian

Sent from my iPhone

> On Jan 18, 2016, at 12:31 PM, Jason Vivian <Jvivian@co.tulare.ca.us> wrote:
>
> Hello Brian,
>
> Go ahead and send any written comments that you have by email and I will make sure they are addressed/discussed. Please send me comments by Feb. 1st so we have adequate time to formulate responses, thank you.
>
> Jason Vivian
> Tulare County RMA
>
>>>> Brian Reynolds <brianar628@sbcglobal.net> 01/18/16 09:56 AM >>>
>
>
>
>
> Hello! I would like to get information on how I might provide written comments for the public meeting scheduled for February 8, 2016, on how to proceed with bridge repairs/renovations/construction crossing the Kaweah River at Oak Grove.
> Thank you, Brian Reynolds
>

From: Brian Reynolds <brianar628@sbcglobal.net>
To: "jvivian@co.tulare.ca.us" <jvivian@co.tulare.ca.us>
Date: 1/18/2016 9:56 AM
Subject: Public Hearing on Oak Grove Historic Bridge

Hello! I would like to get information on how I might provide written comments for the public meeting scheduled for February 8, 2016, on how to proceed with bridge repairs/renovations/construction crossing the Kaweah River at Oak Grove.
Thank you, Brian Reynolds

From: Brian Reynolds <brianar628@sbcglobal.net>
To: Jason Vivian <JVivian@co.tulare.ca.us>
Date: 1/19/2016 12:46 PM
Subject: Re: Public Hearing on Oak Grove Historic Bridge

Jason, Thanks for sending me the flyer on the the Mineral King bridge. I look forward to being kept informed of outcomes from the upcoming public meeting and having a chance to to comment further once more details and alternatives emerge. Below, please find my initial comments: Our family has been visiting Mineral King since the 1890's. We have owned a cabin in Mineral King (WMK #7) since 1923, the year the Mineral King bridge was built to cross the East Fork of the Kaweah River. So, we have crossed over this beautiful, historic bridge many times through the years. I remember being thrilled when, some years ago, the concrete balls atop the bridge pillars were re-installed.

We consider this bridge to be an historic structure and one worth saving if at all possible. So, we would prefer that repairs be made to the bridge that would make it structurally safe and be used for automobile traffic many years into the future. We would hope that the existing bridge would not be demolished. We also hope that a new bridge not be built to replace the old bridge due to the expense and extra work of building a new bridge over the steep river gorge.

Thank you for the opportunity to participate in this important discussion.
Brian A. Reynolds837 Vista del ArroyoSan Luis Obispo CA 93405brianar628@sbcglobal.net

On Tuesday, January 19, 2016 9:38 AM, Jason Vivian <JVivian@co.tulare.ca.us> wrote:

We don't have a report available at this time. Our intent was to discuss the viable alternatives at the meeting next month.

Please see attached flyer for time, location and topics of discussion.

Thanks again,

Jason K. Vivian, PE
Engineer IV
Tulare County
RMA Public Works - Design
5961 S. Mooney Blvd.
Visalia, CA 93277-9394
Office: (559) 624-7135
Fax: (559) 740-4448

>>> Brian Reynolds <brianar628@sbcglobal.net> 1/18/2016 12:42 PM >>>
Thank you so much! I will email my comments before Feb. 1. Is there a staff report with options and recommendations so that I can refer to those in my comments? Thanks again, Brian

Sent from my iPhone

> On Jan 18, 2016, at 12:31 PM, Jason Vivian <Jvivian@co.tulare.ca.us> wrote:
>
> Hello Brian,
>
> Go ahead and send any written comments that you have by email and I will make sure they are addressed/discussed. Please send me comments by Feb. 1st so we have adequate time to formulate responses, thank you.
>
> Jason Vivian
> Tulare County RMA
>
>>>> Brian Reynolds <brianar628@sbcglobal.net> 01/18/16 09:56 AM >>>
>
>
>
>
> Hello! I would like to get information on how I might provide written comments for the public meeting scheduled for February 8, 2016, on how to proceed with bridge repairs/renovations/construction crossing the Kaweah River at Oak Grove.
> Thank you, Brian Reynolds
>

From: Britta Lee Shain <howlingcoyote@teepeemusic.com>
To: <jvivian@co.tulare.ca.us>
Date: 2/22/2016 11:15 AM
Subject: Comment re OAK GROVE BRIDGE preservation

Thank you for forwarding our comment, Jason Vivian ...

To whom it may concern:

I have been driving the Mineral King Road, in summer, for nearly 40 years. Ten years ago, my husband and I became property owners in Silver City. I have never once given a thought to the safety of the Oak Grove Bridge as bridges like it and from its era, exist world wide and functioning. The scenic beauty of this bridge as one enters this section of the park can create a memory of a lifetime for the thousands of visitors and their children who visit the park each year from all over the world.

It is my understanding that the Oak Grove Bridge is a National Register Eligible Bridge, and may also be eligible to achieve National Historical Monument status through other avenues.

As property owners with a near life-long appreciation of the Mineral King landscape, we urge the Planning Commission (and/or the County Board of Supervisors) to vote “NO” on tearing down this important historical landmark and engage in a plan to RESTORE and repair this stunning reminder of Tulare County’s rich culture and character.

The Oak Grove Bridge is a functioning historical landmark and deserves respect and preservation.

Demolitions are forever.

Thank you for your consideration.

Britta Lee and Marcel V Shain
#108 Silver City Forest Homes
Three Rivers, Ca 93271

310 613 9706 cell

From: Dave Bryant
To: Vivian, Jason
Date: 2/8/2016 4:23 PM
Subject: Fwd: Re: Oak Grove Bridge

Jason, FYI. Thanks, DB

>>> Eric Coyne <ecoyne@co.tulare.ca.us> 2/5/2016 8:22 AM >>>

Thanks for the great email! Eric

Sent from my iPhone

> On Feb 4, 2016, at 8:22 PM, Chris Brewer <cdbrewer@gmx.com> wrote:
>
> Hi Eric: I am concerned about the status of the bridge at Oak Grove. There is no point in getting in to the significance of the structure as it is well known as a National Register property. This bridge is one of only a few in the state remaining and its significance to the local community as well as those thousands of visitors to Silver City and Mineral King is well known.
> You and I have known each other for many years and I can tell you that the Oak Grove Bridge is probably the most significant historic bridge in Tulare County. I just retired from Caltrans, District 6, as a Principal Architectural Historian and was the historian called upon in the San Joaquin Valley to handle historic bridges over the last 15 years.
>
> I was responsible for a great deal of mitigation efforts for bridges with Caltrans and would suggest that if a new structure is warranted, it could be place upstream or south of the existing bridge, leaving it for pedestrian and equestrian traffic and for the wonderful viewshed it creates along the historic Mineral King Road and the Kaweah River. I will be at the meeting in Three Rivers on Monday and would like to speak to this issue if possible. I know the community is quite concerned about the status of the bridge, as are many historians statewide. Regardless of whether the engineering study indicates the bridge is or is not up to current standards, this bridge must be saved as the monument it truly is.
>
> Thanks much. I will see you Monday.
>
> Chris Brewer
> 199 East Pine St.
> Exeter, CA 93221
> 559 280-8547
> N6SKC

From: Hernan Beltran Herrera
To: Vivian, Jason
Date: 2/16/2016 12:05 PM
Subject: Fwd: Re: Oak Grove Bridge

FYI

>>> Eric Coyne <ecoyne@co.tulare.ca.us> 2/5/2016 8:22 AM >>>

Thanks for the great email! Eric

Sent from my iPhone

> On Feb 4, 2016, at 8:22 PM, Chris Brewer <cdbrewer@gmx.com> wrote:
>
> Hi Eric: I am concerned about the status of the bridge at Oak Grove. There is no point in getting in to the significance of the structure as it is well known as a National Register property. This bridge is one of only a few in the state remaining and its significance to the local community as well as those thousands of visitors to Silver City and Mineral King is well known.
> You and I have known each other for many years and I can tell you that the Oak Grove Bridge is probably the most significant historic bridge in Tulare County. I just retired from Caltrans, District 6, as a Principal Architectural Historian and was the historian called upon in the San Joaquin Valley to handle historic bridges over the last 15 years.
>
> I was responsible for a great deal of mitigation efforts for bridges with Caltrans and would suggest that if a new structure is warranted, it could be place upstream or south of the existing bridge, leaving it for pedestrian and equestrian traffic and for the wonderful viewshed it creates along the historic Mineral King Road and the Kaweah River. I will be at the meeting in Three Rivers on Monday and would like to speak to this issue if possible. I know the community is quite concerned about the status of the bridge, as are many historians statewide. Regardless of whether the engineering study indicates the bridge is or is not up to current standards, this bridge must be saved as the monument it truly is.
>
> Thanks much. I will see you Monday.
>
> Chris Brewer
> 199 East Pine St.
> Exeter, CA 93221
> 559 280-8547
> N6SKC

Jenna Kachour

From: Chris Brewer <cdbrewer@gmx.com>
Sent: Monday, February 08, 2016 9:19 PM
To: Andrea Galvin
Subject: Fw: Mineral King... er uh Oak Grove Bridge

Hi Andrea. It was great seeing and chatting with you tonight in Three Rivers. I am sorry I hung you up so long but it has been so long since I had a chance to chat with you. I think the project will be just fine but am going to go look for photos and info on the bridge/ I have the original files of the Exeter Sun and Woodlake Gazette here and will go into the papers from 1923 to find the articles on the construction of the bridge. It was a big deal back then especially to local people who had cabins up in Mineral King. If I can find anything I will bring it with me on the 23rd. Meanwhile I have two symposiums for Kern County's 150th anniversary to work on this month and next... Don't you love free work!!

Let me know if you need anything up here. I have a huge archive of local history here.....

Chris Brewer
199 East Pine St.
Exeter, CA 93221
559 280-8547
N6SKC

From: "Dirk Buchenau" <Dirk_Buchenau@qintl.com>
To: <jvivian@co.tulare.ca.us>
Date: 1/21/2016 9:30 AM
Subject: Oak Grove Bridge

01/21/2016
re.: Oak Grove bridge on the Mineral King road

To whom it may concern

Myself and my family strongly support any effort to preserve the bridge. As cabin and lot owners of Silver City lots 86 and 88 we have been driving the Mineral King Road for our whole life, 56 years in my wife's case. A stop at the bridge has always been a part of our travel up the mountain and a conversation piece for every visitor to our cabin - hundreds to thousands over the years. The beautiful historic bridge deserves to be preserved. Please vote accordingly.

Best regards,

Dirk Buchenau
Kelly-Hubbell Buchenau
Kilian Buchenau
Sadie Buchenau

Woodland Hills, CA 91364
818-884-1901

_____
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_____

COMMENT CARD

COUNTY OF TULARE, CALIFORNIA
Historic Oak Grove Bridge Project
Public Scoping Meeting
February 23, 2016

NAME: Georgellen Parker DATE: 2/28/2016

ADDRESS: PO B 496 PHONE:

CITY, STATE, ZIP: Three Rivers, CA 93271

E-MAIL ADDRESS: going@theworks.com

☒ I would like to have the following statement filed for the record.
☐ I would like to have the following question answered.

COMMENT:

Please keep the Oak Grove Bridge as original as possible - but restore it. No other bridge. Option 1

Comments must be received no later than March 23, 2016. Comment cards may be mailed to Jason Vivian; Tulare County RMA Public Works – Design, 5961 S. Mooney Boulevard, Visalia, CA 93277 or emailed to JVivian@co.tulare.ca.us.

From: Jana Botkin <cabinart06@sbcglobal.net>
To: <jvivian@co.tulare.ca.us>
Date: 1/20/2016 9:53 AM
Subject: Oak Grove Bridge

Hi Jason,

Tulare County is a little weak on historic landmarks, but do we have the Oak Grove Bridge on the Mineral King Road. When driving that rough, narrow, winding, rural road, it is a wonderful and elegant surprise. It is one of the most beautiful structures in our entire county.

I am horrified to think that it could be replaced with something new. Please do everything you can to preserve this special bridge and remove the option of tearing it down from your list of possible solutions.

Thank you for your consideration of this request.

Sincerely,

Jana Botkin
cabinart@cabinart.net
http://www.cabinart.net/
http://www.janabotkin.net
http://www.thecabinsofwilsonia.com
559-561-7606
P.O. Box 311
Three Rivers, CA 93271

Jenna Kachour

From: Jana Botkin <cabinart06@sbcglobal.net>
Sent: Monday, February 08, 2016 7:40 PM
To: Andrea Galvin
Subject: Fwd: Oak Grove Bridge meeting

Hi Andrea,

I typo'd when sending the first message so am trying again. It is never smart to type with one finger while doing something else (No, I wasn't driving - I was drinking tea!)

Jana

Begin forwarded message:

From: Jana Botkin <cabinart06@sbcglobal.net>
Date: February 8, 2016 7:36:38 PM PST
To: erinn@gpaconsulting-us.com, andrea@gpaconsulying-us.com
Subject: Oak Grove Bridge meeting

Hi Erinn and Andrea,

It was so nice to meet you both and visit a bit this evening.

THANK YOU for caring about the beauty of the Oak Grove Bridge.

I had an idea this evening for the website: what do you think about including a photo gallery and asking for the public to share their images? We live in an era where pictures get more attention than words, and it would help to drive home the point of what a treasure our bridge is.

Thank you for coming so far for such a short presentation. I hope to see you on February 23.

My best,

Jana Botkin
cabinart@cabinart.net
http://www.cabinart.net/
http://www.janabotkin.net
559-561-7606
P.O. Box 311
Three Rivers, CA 93271

Jenna Kachour

From: Jana Botkin <cabinart06@sbcglobal.net>
Sent: Tuesday, February 09, 2016 8:33 AM
To: Andrea Galvin
Subject: Re: Oak Grove Bridge meeting

Andrea, thanks for responding to my idea about photos on the website. Do you know who will be building the site?

And what horrible news about the Sixth Street Bridge! Has our bridge been diagnosed so we know that it doesn't have the same disease??

Sorry for asking so many questions. It is the way I roll. . .

Jana

On Feb 8, 2016, at 10:54 PM, Andrea Galvin wrote:

> Jana:
>
> It was a pleasure to meet you this evening. We greatly appreciate you taking the time out of your evening to attend the meeting. We hope to see you on the 23rd.
>
> I like your idea about the picture gallery; the City of Los Angeles recently did something similar with their historic Sixth Street Bridge, that is in the process of being demolished (the first City landmark to be demolished). It was suffering from a condition that affected the concrete such that it could not be saved…
>
> Anyway, we will discuss it with the project team.
>
> Regards,
> Andrea Galvin
>
> **ANDREA GALVIN**
> President/ Principal Architectural Historian | andrea@gpaconsulting-us.com | (310) 792-2690
> GPA CONSULTING | www.gpaconsulting-us.com
> **<image001.png>**<image002.png><image003.png><image004.png><image005.png>
>
> ---
>
> **From:** Jana Botkin [mailto:cabinart06@sbcglobal.net]
> **Sent:** Monday, February 8, 2016 7:40 PM
> **To:** Andrea Galvin <andrea@gpaconsulting-us.com>
> **Subject:** Fwd: Oak Grove Bridge meeting
>
> Hi Andrea,

I typo'd when sending the first message so am trying again. It is never smart to type with one finger while doing something else (No, I wasn't driving - I was drinking tea!)

Jana

Begin forwarded message:

From: Jana Botkin <cabinart06@sbcglobal.net>
Date: February 8, 2016 7:36:38 PM PST
To: erinn@gpaconsulting-us.com, andrea@gpaconsulying-us.com
Subject: Oak Grove Bridge meeting

Hi Erinn and Andrea,

It was so nice to meet you both and visit a bit this evening.

THANK YOU for caring about the beauty of the Oak Grove Bridge.

I had an idea this evening for the website: what do you think about including a photo gallery and asking for the public to share their images? We live in an era where pictures get more attention than words, and it would help to drive home the point of what a treasure our bridge is.

Thank you for coming so far for such a short presentation. I hope to see you on February 23.

My best,

Jana Botkin
cabinart@cabinart.net
http://www.cabinart.net/
http://www.janabotkin.net
559-561-7606
P.O. Box 311
Three Rivers, CA 93271

From: Jana Botkin <cabinart06@sbcglobal.net>
To: <jvivian@co.tulare.ca.us>
Date: 3/13/2016 9:05 PM
Subject: Oak Grove Bridge website?

Hi Jason,

Is there a link to the website that shows the alternatives for the restoration of the Oak Grove Bridge?

I'd like to send out an email about it to interested folks, but need to be accurate.

Thanks in advance for your help!

Sincerely,

Jana Botkin
cabinart@cabinart.net
http://www.cabinart.net/
http://www.janabotkin.net
http://www.thecabinsofwilsonia.com
559-561-7606
P.O. Box 311
Three Rivers, CA 93271

From: Jana Botkin <cabinart06@sbcglobal.net>
To: Jason Vivian <JVivian@co.tulare.ca.us>
Date: 3/20/2016 9:19 AM
Subject: Oak Grove Bridge website?

Hi Jason,

Is there a link to the website that shows the alternatives for the restoration of the Oak Grove Bridge?

I'd like to send out an email about it to interested folks, but need to be accurate.

Thanks in advance for your help!

Sincerely,

Jana Botkin
cabinart@cabinart.net
http://www.cabinart.net/559-561-7606
P.O. Box 311
Three Rivers, CA 93271

From: Jane Coughran <coughranjn@aol.com>
To: "Jvivian@co.tulare.ca.us" <Jvivian@co.tulare.ca.us>
Date: 1/25/2016 12:14 PM
Subject: Oak Grove Bridge on MK Road

Please save this beautiful, nearly 100 year old bridge.

Jane Coughran
Alexandria, VA

Sent from my iPhone

From: <drpku@sbcglobal.net>
To: <jvivian@co.tulare.ca.us>
Date: 1/25/2016 3:01 PM
Subject: Oak Grove Bridge

To the Board of Supervisors and Planning Commission:
I have been coming to Mineral King since 1932 when the road will still mostly unpaved. One important stopping place along with way was the Oak Grove Bridge. We always gave the car a rest there and leaned over the railings on both sides to get a view of the river. Nearly every time I travel that road, I see fellow travelers stopping for the same view all these years later. Is there no way the bridge can be retrofitted and preserved? Please do not destroy the Oak Grove Bridge.
Jean Koch
2125 Ames St.
Los Angeles, CA 90027

From: Jill Tovey <sewscraps1@gmail.com>
To: <jvivian@co.tulare.ca.us>
Date: 1/22/2016 10:40 PM
Subject: Bridge on the Mineral King Road

Dear Mr. Vivian,
I am unable to attend the meeting on February 8, 2016, but I would like you to know that the bridge on the Mineral King Road is a piece of history. I have been camping, hiking, and backpacking in Mineral King for sixty-seven years, and every time we cross that bridge, we look down at the beautiful river flowing over those spectacular rocks. My grandchildren are now going to Mineral King and they love crossing the bridge and watching the river. My desire is that Tulare County would keep this beautiful piece of history and preserve it as a walking bridge so that many generations of campers, hikers, and backpackers can enjoy the beauty of the river and the mountains of Mineral King.
Thanks for listening,
Jill Tovey

From:	Jason Vivian
To:	jim barton
Cc:	Jenna Kachour
Subject:	Re: Oak grove bridge
Date:	Monday, April 03, 2017 9:23:06 AM
Attachments:	Jason Vivian.vcf

Hello Jim,

Thank you for your comments. They will be included in our technical report for cultural resources.

Best regards,

Jason K. Vivian, PE
Engineer IV
Tulare County
RMA Public Works - Design
5961 S. Mooney Blvd.
Visalia, CA 93277-9394
Office: (559) 624-7135
Work Cell: (559) 747-8569
Fax: (559) 740-4448
>>> jim barton <jb3rivers@webtv.net> 4/1/2017 10:25 AM >>>

The two similar bridges down on hiway 198 are the same age and seem to still be serviceable carrying much more traffic. It is my hope that the Oak Grove bridge can be strengthened up with steel arches or whatever you engineers have in mind.I have been crossing it my whole life ,92 years, and would like doing that many more ! However, if it can not be strengthened up I think that after it's been used during construction of a new adjacent structure it should be taken out. (My dad used to haul loads across the old wooden bridge and would set the hand throttle , walk alongside, and be ready to run if he heard a crackling !
Thank you, Jim Barton,4th generation with a cabin in MK.
Jb3rivers@webtv.net

Get Outlook for Android

From:	Jason Vivian
To:	jim barton
Cc:	Jenna Kachour
Subject:	Re: Oak grove bridge
Date:	Tuesday, April 04, 2017 8:10:47 AM

Thanks again Jim.

-Jason

>>> jim barton <jb3rivers@webtv.net> 4/3/2017 9:06 PM >>>

Hi Jason
My reason to suggest demolition if no longer usable is that it might be an attraction for some visitors to try dangerous climbing or paint their decorations and ruin the historic appearance. Perhaps a new bridge could have similar appearance at the deck level.
Regards, Jim Barton

Get Outlook for Android

From: Jason Vivian <JVivian@co.tulare.ca.us>
Sent: Monday, April 3, 2017 9:22:57 AM
To: jim barton
Cc: Jenna Kachour
Subject: Re: Oak grove bridge

Hello Jim,

Thank you for your comments. They will be included in our technical report for cultural resources.

Best regards,

Jason K. Vivian, PE
Engineer IV
Tulare County
RMA Public Works - Design
5961 S. Mooney Blvd.
Visalia, CA 93277-9394
Office: (559) 624-7135
Work Cell: (559) 747-8569
Fax: (559) 740-4448
>>> jim barton <jb3rivers@webtv.net> 4/1/2017 10:25 AM >>>

The two similar bridges down on hiway 198 are the same age and seem to still be serviceable carrying much more traffic. It is my hope that the Oak Grove bridge can be strengthened up with steel arches or whatever you engineers have in mind.I have been crossing it my whole life ,92 years, and would like doing that many more ! However, if it can not be strengthened up I think that after it's been used during construction of a new adjacent structure it should be taken out. (My dad used to haul loads across the old wooden bridge

and would set the hand throttle , walk alongside, and be ready to run if he heard a crackling !
Thank you, Jim Barton,4th generation with a cabin in MK.
Jb3rivers@webtv.net

Get Outlook for Android

From:	Jenna Kachour
To:	"John Elliott"
Cc:	"jvivian@co.tulare.ca.us"
Bcc:	Erinn Silva; Andrea Galvin
Subject:	RE: Request for Public Comments and Information Regarding the Mineral King Bridge Rehabilitation Project
Date:	Tuesday, March 28, 2017 2:33:00 PM

Thank you for your response, John. I am copying Jason Vivian on this email so that he can see your suggestion, below.

JENNA KACHOUR
Senior Preservation Planner | jenna@gpaconsulting-us.com | (310) 792-2690
GPA CONSULTING | www.gpaconsulting-us.com

From: John Elliott [mailto:tkcplanner@yahoo.com]
Sent: Tuesday, March 28, 2017 2:28 PM
To: Jenna Kachour <jenna@gpaconsulting-us.com>
Subject: Re: Request for Public Comments and Information Regarding the Mineral King Bridge Rehabilitation Project

Hi Jenna:
What about running a brief public notice in the Commonwealth? More folks would see the update on the project who weren't at the Feb. meeting.
John

Sent from my iPhone

On Mar 28, 2017, at 1:48 PM, Jenna Kachour <jenna@gpaconsulting-us.com> wrote:

> Dear John Elliott,
>
> The Tulare County Resource Management Agency (County), in cooperation with Caltrans and the Federal Highway Administration (FHWA), is proposing to either rehabilitate the existing Mineral King Bridge (Caltrans Bridge No. 46C0196, also named Historic Oak Grove Bridge) over the East Fork of the Kaweah River or construct a replacement bridge structure while retaining the existing bridge. The bridge is located approximately 5.0 miles from State Route 198, east of the community of Three Rivers along Mineral King Road (see attached regional and project location maps). The bridge was constructed in 1923 and is eligible for listing in the National Register of Historic Places.
>
> Because the project will utilize federal funding, it must comply with Section 106 of the National Historic Preservation Act (36 CFR §800). As part of the environmental process associated with compliance, GPA Consulting, sub-consultant to the County, is soliciting comments and information from potentially interested parties. In particular, we are seeking information regarding the potential of the proposed project to impact historic resources in the vicinity. Your response allows us to identify concerns relating to the proposed project and to gather valuable information on local historic resources. We are already aware that the Mineral King Bridge (Historic Oak Grove Bridge) is a historic resource and we will be analyzing the proposed project for its potential to impact the bridge. In addition, the location of any

sensitive archaeological resources will remain confidential but the potential project impacts to these resources will also will be addressed.

Your attendance at the Public Scoping Meeting held on February 23, 2016 was noted in the sign-in sheet. If you have information regarding additional historic resources that may be potentially impacted by the project, we would greatly appreciate your response by April 14, 2017, so we can include it in our technical report. Please contact Jason Vivian, Engineer IV, Tulare County Resource Management Agency, by phone (559) 624-7135 or e-mail jvivian@co.tulare.ca.us to provide comments in response to this letter.

Sincerely,

JENNA KACHOUR
Senior Preservation Planner | jenna@gpaconsulting-us.com | (310) 792-2690
GPA CONSULTING | www.gpaconsulting-us.com

<Map 1_Regional Location Map.pdf>
<Map 2_Project Area and Staging Areas.pdf>

From:	Jason Vivian
To:	John Spock
Cc:	Jenna Kachour
Subject:	Re: Historic Oak Grove Bridge
Date:	Monday, April 03, 2017 9:18:10 AM
Attachments:	Jason Vivian.vcf

Hello Mr. Spock,

Thank you for your comments. They will be included in our technical report for cultural resources.

Best regards,

Jason K. Vivian, PE
Engineer IV
Tulare County
RMA Public Works - Design
5961 S. Mooney Blvd.
Visalia, CA 93277-9394
Office: (559) 624-7135
Work Cell: (559) 747-8569
Fax: (559) 740-4448
>>> John Spock <johnspock4@gmail.com> 4/1/2017 11:58 AM >>>
To whom it may concern,

I'm not aware of the structural shortcomings of the historic Oak Grove Bridge on the Mineral King Road, but I do enjoy seeing it every time I pass over it on my way up to the Mineral King Valley. I want to register my preference for attempting to rehabilitate the existing structure, or, if this is impractical, allowing the existing bridge to remain in place if a new structure is constructed in the vicinity.

Yours truly,

John

JOHN SPOCK
1127 N. La Brea Ave.
Inglewood, California 90302
johnspock4@gmail.com
cell/voicemail 310 922 3167

From: Kathy M Hath <khath@nmusd.us>
To: "jvivian@co.tulare.ca.us" <jvivian@co.tulare.ca.us>
Date: 1/21/2016 8:19 AM
Subject: Oak Grove Bridge

Hello,
I would like to write to you and support the idea of preserving the Oak Grove Bridge. It would be great if it could be used as a walking bridge and another one could be built for cars. The history of the bridge is so valuable I would hate to see that destroyed.
Thank you for accepting my comments.
Kathy Hath
28881 Via Buena Vista
San Juan Capistrano, CA 92675

From: "Ken Hulick" <kenhulick41@gmail.com>
To: <jvivian@co.tulare.ca.us>
Date: 2/19/2016 2:51 PM
Subject: Oak Grove Bridge

I would like to make a few comments related to the Oak Grove Bridge.

. The 1923 Bridge represents a significant historic resource which is a part of the resource study done on the Mineral King Road a few years ago. As this bridge is an integral part of the road that now has both California State and U.S. Government recognition, the provisions of both California preservation law and the Federal Historic Preservation Act apply and should govern any proposals for change.

. Any changes made to the bridge should relate only to the MINIMUM ones necessary to maintain public safety in the use of the bridge.

. Visitors enjoy stopping at the bridge to view both the bridge itself and the East Fork of the Kaweah River below the bridge. It is a significant education/esthetic/historic resource in terms of visitor appreciation.

. The cost of renovation of this bridge should not be weighed against the alternative of constructing a new bridge. A new bridge would violate Federal and State Law, and therefore cost should not be considered when analyzing various alternatives of historic preservation. Historic values outweigh economic values.

. Visitors also have a chance to see from below the flume carrying water taken from the river and used for power generation before the water is returned to the Kaweah River. This represents an important series of lessons in hydroelectic power generation, flume construction and maintenance, park values and its co-location with the Mineral King Road.

I and many of my family members are in favor of re-conditioning or repairing the existing bridge, keeping its appearance as close to the present appearance as possible, and with a minimum of disturbance of the historic landscape at the bridge site.

Kenneth Homer Hulick (great Grandson of Joseph William Homer, for whom Homer's Nose it named, Landowner at Silver City, user of the Mineral King Road for almost 75 years, and National Park Service Superintendent, retired)

18015 Stoney Creek Way

Morgan Hill, CA 95037

cell 408-706-4792

From: Laile Di Silvestro <laile@mindspring.com>
To: <jvivian@co.tulare.ca.us>
Date: 1/22/2016 12:31 PM
Subject: Oak Grove Bridge (M375A)

Hi Jason,

I am writing in regard to the Oak Grove Bridge (HAER #CA-142). I have a few questions/requests concerning the project:

- Could you please have all people involved in the project resume using the historic name of the bridge? The use of the name Mineral King Bridge is confusing stakeholders because there is already a Mineral King Bridge in Sequoia National Park, and the Oak Grove Bridge has been known as such since 1923. Many people I have spoken to do not realize that the project will affect the historic Oak Grove Bridge, and instead think that it will affect the non-historic Mineral King Bridge.

- Have GPA consulting and CalTrans (Brian Wickstrom) engaged SHPO as yet? If not, when will collaboration with SHPO commence?

- GPA Consulting lists the following items among its deliverables. Could you tell me the status of each one?
NEPA & CEQA Documentation
Historic Reports for Section 106 Compliance
Memorandum of Agreement
Biological Surveys
Section 4(f) Evaluation
Natural Environment Study
Water Quality Report
Visual Impact Assessment
Caltrans Local Assistance
- The immediate vicinity of the bridge is culturally significant, with historic sites dating from the early 1860s through the New Deal period, as well as the potential for prehistoric sites and artifacts. Does the agreement with GPA Consulting include assessment of these sites to determine appropriate mitigation?

- Has the road leading to the bridge been assessed to determine whether it is structurally able to allow the safe replacement and/or rehabilitation of the bridge? If so, could you please send me or point me to the results of the assessment? If not, when will that assessment take place?

Kind regards,

Laile Di Silvestro

L. Laile Di Silvestro
Messages: 1.559.465.5022
Mobile: 1.425.444.2805
Email: laile@mindspring.com <mailto:laile@mindspring.com>
Web: www.lailedisilvestro.com <http://www.lailedisilvestro.com/>

From: Laile Di Silvestro <laile@mindspring.com>
To: <jvivian@co.tulare.ca.us>
Date: 2/8/2016 3:08 PM
Subject: Re: Oak Grove Bridge (M375A)

Hi Jason,

I know you must be swamped with queries and work related to this project, and haven't had a chance to reply. I'll be at the meeting tonight, though. Do you mind if I raise these questions there? It is quite possible, of course, that Park representatives and others at the meeting may raise these questions.

Kind regards,

Laile

L. Laile Di Silvestro
Messages: 1.559.465.5022
Mobile: 1.425.444.2805
Email: laile@mindspring.com <mailto:laile@mindspring.com>
Web: www.lailedisilvestro.com <http://www.lailedisilvestro.com/>
> On Jan 22, 2016, at 12:31 PM, Laile Di Silvestro <laile@mindspring.com> wrote:
>
> Hi Jason,
>
> I am writing in regard to the Oak Grove Bridge (HAER #CA-142). I have a few questions/requests concerning the project:
>
> - Could you please have all people involved in the project resume using the historic name of the bridge? The use of the name Mineral King Bridge is confusing stakeholders because there is already a Mineral King Bridge in Sequoia National Park, and the Oak Grove Bridge has been known as such since 1923. Many people I have spoken to do not realize that the project will affect the historic Oak Grove Bridge, and instead think that it will affect the non-historic Mineral King Bridge.
>
> - Have GPA consulting and CalTrans (Brian Wickstrom) engaged SHPO as yet? If not, when will collaboration with SHPO commence?
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> - GPA Consulting lists the following items among its deliverables. Could you tell me the status of each one?
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>
> Kind regards,
>
> Laile Di Silvestro
>
> L. Laile Di Silvestro
> Messages: 1.559.465.5022
> Mobile: 1.425.444.2805
> Email: laile@mindspring.com <mailto:laile@mindspring.com>
> Web: www.lailedisilvestro.com <http://www.lailedisilvestro.com/>

Jenna Kachour

From: Laile Di Silvestro <laile@mindspring.com>
Sent: Monday, April 17, 2017 5:47 PM
To: Jason Vivian
Cc: Jenna Kachour
Subject: Re: Request for Public Comments and Information Regarding the Oak Grove Bridge Rehabilitation Project

Hi Jason,

Thank you so much for checking in. I apologize, but I am still filling in gaps and reviewing the document for errors. The prehistory and history associated with areas of potential adverse effect is quite extensive, and it has been a bit of a challenge to pull it all together during my spare time. I am now almost done with the first draft, however, and will send you the link as soon as I upload the document. It looks like it will be almost 60 pages.

Kind regards,

Laile

L. Laile Di Silvestro
Mobile: 1.425.444.2805
Email: laile@mindspring.com

> On Apr 17, 2017, at 5:27 PM, Jason Vivian <JVivian@co.tulare.ca.us> wrote:
>
> Hi Laile,
>
> I was just checking to see if you sent me the link to the document you were working on.
>
> Sometimes mail gets hung up in our span filter and I just wanted to make sure I didn't miss it.
>
> Thanks!
>
> Jason K. Vivian, PE
> Engineer IV
> Tulare County
> RMA Public Works - Design
> 5961 S. Mooney Blvd.
> Visalia, CA 93277-9394
> Office: (559) 624-7135
> Work Cell: (559) 747-8569
> Fax: (559) 740-4448
>
> >>> Laile Di Silvestro <laile@mindspring.com> 4/13/2017 5:27 PM >>>
> Hi Jason,
>
> I have been working on a relatively detailed document that identifies the cultural resources associated with the Oak Grove Bridge Rehabilitation Project's areas of potential adverse effect. It briefly describes

the cultural resources and characterizes their significance in terms of research potential and association with significant historic people and events. The document is currently 37 pages long; however, I have a few more pages and some editing to complete before I submit it to you. The document is too large to email, so would it be acceptable for me to send you a link to the PDF file by end of day tomorrow, April 14th?

Kind regards,

Laile

P.S., I have edited the title of the email to clarify that I am referring to the Oak Grove Bridge in Oak Grove, and to avoid potential confusion with the Mineral King Bridge in Mineral King, which, like the Oak Grove Bridge, is a component of the Mineral King Road that crosses the East Fork of the Kaweah River. ;)

L. Laile Di Silvestro
Mobile: 1.425.444.2805
Email: laile@mindspring.com

> On Mar 28, 2017, at 2:04 PM, Jenna Kachour <jenna@gpaconsulting-us.com> wrote:
>
> Dear Potential Interested Party,
> On March 16, 2017, a printed version of this letter was sent to you via U.S. mail. This email serves as a follow-up to that letter, in the event that it was not delivered.
>
> The Tulare County Resource Management Agency (County), in cooperation with Caltrans and the Federal Highway Administration (FHWA), is proposing to either rehabilitate the existing Mineral King Bridge (Caltrans Bridge No. 46C0196, also named Historic Oak Grove Bridge) over the East Fork of the Kaweah River or construct a replacement bridge structure while retaining the existing bridge. The bridge is located approximately 5.0 miles from State Route 198, east of the community of Three Rivers along Mineral King Road (see attached regional and project location maps). The bridge was constructed in 1923 and is eligible for listing in the National Register of Historic Places.
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> Because the project will utilize federal funding, it must comply with Section 106 of the National Historic Preservation Act (36 CFR §800). As part of the environmental process associated with compliance, GPA Consulting, sub-consultant to the County, is soliciting comments and information from potentially interested parties. In particular, we are seeking information regarding the potential of the proposed project to impact historic resources in the vicinity. Your response allows us to identify concerns relating to the proposed project and to gather valuable information on local historic resources. We are already aware that the Mineral King Bridge (Historic Oak Grove Bridge) is a historic resource and we will be analyzing the proposed project for its potential to impact the bridge. In addition, the location of any sensitive archaeological resources will remain confidential but the potential project impacts to these resources will also will be addressed.
>
> Your prior comments submitted regarding this project, if any, were noted in the printed version of this letter mailed to you on March 16, 2017. If you have information regarding additional historic resources that may be potentially impacted by the project, we would greatly appreciate your response by April 14, 2017, so we can include it in our technical report. Please contact Jason Vivian, Engineer IV, Tulare County Resource Management Agency, by phone (559) 624-7135 or e-mail jvivian@co.tulare.ca.us to provide comments in response to this letter.

Sincerely,

JENNA KACHOUR
Senior Preservation Planner | jenna@gpaconsulting-us.com | (310) 792-2690
GPA CONSULTING | www.gpaconsulting-us.com
<Map 1_Regional Location Map.pdf><Map 2_Project Area and Staging Areas.pdf>

<Jason Vivian.vcf>

SUMMARY *of Public Comment and Information Regarding the Oak Grove Bridge Rehabilitation Project Near the Community of Three Rivers, Tulare County (Caltrans Bridge No. 46C0196; HAER #CA-142)*

SUMMMARY of Input provide by **L. Laile Di Silvestro**, Three Rivers and Mineral King Resident; Volunteer for the Sequoia and Kings Canyon National Parks Cultural Resources Management and Interpretive Programs in Mineral King; and Fifth-Generation Descendent of Mineral King Miner and Road Builder.

SUMMARY Draft – 19 April 2017

This document comprises a **SUMMARY** of public input for consideration in the NHPA Section 106 review process and associated NEPA/CEQA reviews in advance of the Oak Grove Bridge Rehabilitation Project.

The full document provides more details on the author's understanding of potential adverse effects to cultural resources as a result of the proposed project. It briefly characterizes these resources in relation to their potential research value, as well as their associations with significant historic people and events. Finally, it includes the author's recommended mitigations to the anticipated potential adverse effects.

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4 Cultural Resource Significance ..... Error! Bookmark not defined.

4.1 Research value ..... **Error! Bookmark not defined.**
4.2 Association with Significant Events ..... **Error! Bookmark not defined.**
4.3 Association with Significant People ..... **Error! Bookmark not defined.**
4.4 Association with Intangible Cultural Resources ..... **Error! Bookmark not defined.**

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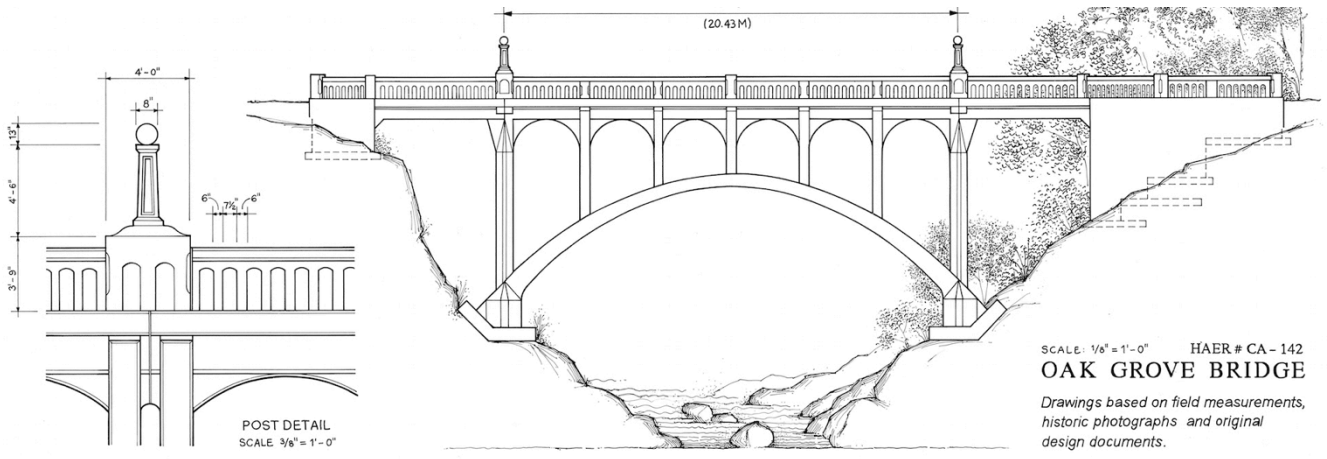


Figure 1: Engineering drawings of the Oak Grove Bridge [HAER #CA-142].

1 Introduction

This document provides information pertaining to the Oak Grove Bridge Rehabilitation Project, which involves either rehabilitation of the existing Oak Grove Bridge (Caltrans Bridge No. 46C0196) on the Mineral King Road or construction of an adjacent replacement bridge (Kachour 2017). This information is intended to serve as public stakeholder input for consideration in the NHPA Section 106 review process (36 CFR 800), as well as the NEPA and CEQA review processes that are presumably occurring in coordination with the Section 106 review.

This document summarizes cultural resources that may be negatively impacted by the project. Although the bridge itself has been determined eligible for the National Registry of Historic Places (HAER #CA-142), that determination was based on its design (National Park Service 2002), and did not take into account a) its association with significant events, b) its association with significant people, c) its relationship to cultural resources in the immediate proximity, and c) its cultural significance to the community. The project design should take into account all aspects of significance (Advisory Council on Historic Preservation 2004).

The project must also take into account the potential adverse effects on areas in the vicinity of the bridge that are under consideration as staging areas. These areas are in a locale that has been known as Oak Grove since the late nineteenth century. **From an archaeological perspective, Oak Grove has been considered "the most important site in the [Mineral King Road] corridor" because of its significant prehistoric and historic artifacts and features** (Morehead 1975:12). Without adequate mitigation, the project's adverse effects on these resources would reduce or obviate invaluable data that can a) increase our understanding of Foothill Yokut and Western Monache cultures prior to Euro-

American settlement and b) facilitate interpretation of significant events in the development of California and Sequoia and Kings Canyon National Parks.

Oak Grove is located 6.6 miles from the base of the current Mineral King Road. It is a relatively flat area of approximately thirty acres. It was occupied by **Westen Monache** starting 400-700 year ago, and may have previously been a seasonal camp for **Foothill Yokuts** as early as 3000-6000 years ago (Jackson 2010:104). Initially known as Cain's Flat,[1] it became a roadside camp for miners (including the Cain family) in 1877, when a trail replacing Meadows trial on south side of the Kaweah River was constructed by **Chinese immigrants** to facilitate access to the Mineral King mines at the end of the first **silver rush** (Jackson 2006:29; Porter 2002:40). In 1885 William Hill acquired a patent to the western and central portion of the flat (BLM CA1570__.195). However, the earliest detailed map (published in 1892 but surveyed years earlier) shows the entire flat under the ownership of **Judge Allen Jeffrey Atwell** (Thomson 1892). In the spring of 1891, a troop of cavalry soldiers tasked with protecting the newly formed **Sequoia National Park** camped in Cain's Flat and helped repair the road (Dilsaver and Tweed 1990:76; Jackson 2006:104). That year, the flat also hosted the roadside camp for members of the **Kaweah Colony**, a utopian society that was logging at Atwell's Mill. The Jamison family (Colony members) took up full-time residence, and authored frequent "Notes from Kane's Flat" in the original Kaweah Commonwealth newspaper (Kozakavich 2007). 1891 was also the year that the well-publicized **Smithsonian Institution's Death Valley Expedition** spent the night at "Kane's Flat" on July 26 (Coville 1893). In 1898, the **Griffes family** homesteaded 80 acres on the eastern portion of the flat, and hosted Mineral King Road travellers for several decades thereafter (Britten 2013:168-170; Jackson 2013:10). The Griffes family and prior Kaweah Colony members were integrally involved in the introduction of **hydroelectric power** to the San Joaquin Valley. In 1898, the wealthy, politically powerful, and internationally influential **John Hays Hammond** financed construction of a hydroelectric plant at the base of the Mineral King Road and a six-mile long flume that commenced in Oak Grove. Prior Colony families helped build the flume, and the Griffes family maintained it (Britten 2013:168-170; Jackson 2012:3-5; Jackson 2013:10,12). At some point during this period (before 1903), the first Oak Grove bridge over the East Fork of the Kaweah River was constructed. It was located to the east of the current service bridge, and provided access to the flume intake, as well as the sequoia groves on Case Mountain to the south (USGA 1904). In 1903, **Captain Charles Young** of the Ninth Cavalry of **Buffalo Soldiers**, acting superintendent of Sequoia and General Grant National Parks, passed through Oak Grove multiple times. He purchased Three Rivers property from Marion Griffes in 1904, where he lived until 1905. The advent of automobiles necessitated a better road to Oak Grove, which was constructed between 1912 and 1918 on the south side of the river. The first automobile bridge was built in 1912, and Oak Grove hosted the road construction camp. The first automobile drove up the Mineral Road in 1918 (Jackson 2013:9). A gas pump was installed shortly after 1918 (Jackson 2013:12). In 1923 **Nathaniel Lovelace** engineered and built the historic Oak Grove Bridge, which became a destination due to its aesthetic characteristics and scenic environs (National Park Service 2002). From 1933 to 1936, Oak Grove hosted the Cain's Flat **Civilian Conservation Corp Camp** (Jackson 2006:151; Jackson 2013:11). The famous poet **William Everson** was one of the notable workers at the camp, and the

[1] Initially, the entire flat was known as Cain's Flat. When the Griffes family established its homestead in 1898, the eastern portion became known as Oak Grove, while the western retained the designation of Cain's Flat. By the late 1950s, the entire area was referred to as Oak Grove.

experience influenced his writing (Bartlett 1988:13-17). In more recent history, **Walt Disney** was one of the most famous people to cross the Oak Grove Bridge. He did so for the last time on September 19, 1965, when he attended the final press conference of his life in Mineral King. The Walt Disney Corporation planned to build a **year-round resort** in Mineral King, with the primary lodging facilities in Oak Grove. The base of a cog-assisted electric railroad would have transported visitors from Oak Grove to ski slopes and trails in the Mineral King valley (Mineral King Preservation Society 2014). The Disney development period divided the Three Rivers community, gave the area international attention, and was instrumental in forming the **national conservation movement of the 1970s** (Earth Justice 2011; Earth Justice 2017; Jackson 2006:160-190). For many of the area's residents today, Oak Grove and its scenic bridge serve as poignant testimony to a conflict that resulted in the preservation of our natural and cultural heritage.

To mitigate adverse effects to the cultural resources associated with Oak Grove's prehistoric occupation and significant historic events, I recommend the following:

- Rehabilitate the existing bridge. Retaining the bridge and constructing an adjacent bridge would substantively diminish the quality of significance of the current bridge as defined in the HAER documentation (National Park Service 2002).
- Retain the bridge's historic function as a destination and a scenic attraction for travellers to Mineral King. Retain turnouts for parking and enable visitors to cross the bridge on foot (along with vehicles) and linger.
- Retain and avoid damage to the foundations of the original wooden bridge (1913-1923) to the immediate west of the 1923 bridge.
- Avoid any and all ground disturbance in the two proposed staging areas to the northeast of the project area. Avoid damage to historic features in the southernmost of the two staging areas; conduct a surface survey and record the historic features in advance to mitigate unintended adverse impact.
- Plan for unexpected discovery of archaeological features and artifacts, including but not limited to American Indian remains, funerary objects, sacred objects, and objects of cultural patrimony.

2 Cultural Resource Locations

The map below depicts the locations of known cultural resources in Oak Grove, in addition to the 1923 Oak Grove Bridge. The project area and eastern staging areas of the Oak Grove Bridge Rehabilitation Project overlap areas with known archaeological features and artifacts.

NOTE: **The locations of the areas, points, and linear features on the map are approximate only**, and based on historic maps, archaeological survey reports, photographs, journals, newspaper articles, conversations with locals, and personal reconnaissance.

A: Northeastern staging area.
B: Southeastern staging area.
C: Project area.

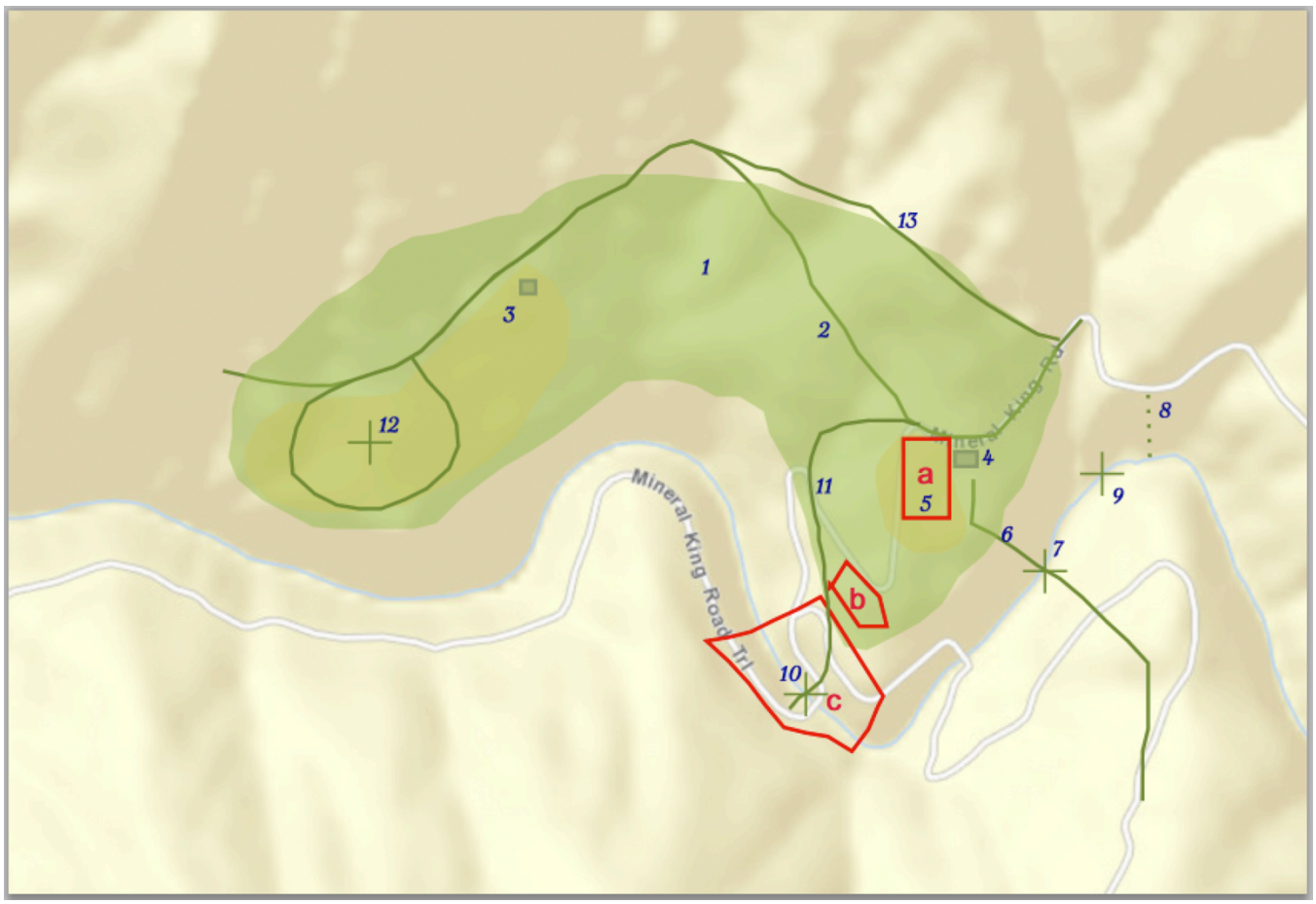


Figure 2: Map created by author using ArcGIS and Esri data.

1: Prehistoric artifacts and potential features.
2: Original 1877 road.
3: Cain's Flat, stagecoach relay station, William Hill's homestead. Entire gold area used as camp.
4: Griffes homestead.
5: Griffes camp. Entire gold area used as camp.
6. 1898 trail across river and to top of Case Mountain and its sequoia groves.
7. 1898 bridge or cable crossing.
8. V-flume strung from cables used to transport sequoia lumber from road to flume intake.
9. Granite masonry diversion dam and flume intake.
10: 1912 wooden bridge.
11: 1912 road. NOTE: Author has not yet determined when switchback was added. Photos from the era suggest that the road curved sharply west from the bridge before turning north.
12: Cain's Flat Civilian Conservation Corps Camp and Tulare County Industrial Road Camp. The road terminated at a loop around the camp.
13: 1933 road to Cain's Flat. Road 2 does not appear on maps of the time; however, it is in use today.

Figure 2: Map created by author using ArcGIS and ESRI data.

3 Cultural Resource Descriptions

3.1 Prehistoric Sites

The entire Oak Grove area (1), including the areas of potential adverse effect, features varying densities of prehistoric artifacts and features, including projectile points, lithic scatter, over one hundred bedrock mortar cups, pestles, and manos (Morehead 1975:10-12). Non-Indians have been collecting artifacts from Oak Grove since the late 1870s; however, subsurface artifacts and features are likely to be present in the project area (c) and both eastern staging areas (a and b), and there is a possibility of human remains and funerary objects. Although no excavation or thorough survey has been conducted in the area, three sites have been recorded: TUL-359 in the eastern portion and the large TUL-332 and TUL-360 of towards the west (Morehead 1975:10-12). These were mapped in 1959 and by A. B. Elasser and in 1975 by Morehead in anticipation of the Disney resort. All relevant documentation (including maps and photographs) is available at SEKI headquarters.

3.2 Linear features

The original mule trail to Mineral King (the Meadows Trail) followed the south side of the river, and crossed it via the McGinnis Bridge at a location just above Lookout Point. In 1877, Chinese laborers helped construct a new trail on the north side of the river, passing through Oak Grove (2) and skirting the northern edge of proposed staging area (a).

In 1912, work began on a replacement automobile road on the south side of the river. That year road segment (11) was built, along with a wooden bridge (10). According to the USGS maps, it followed a more direct route to the 1877 road (2) than the road does today. (The author is still trying to determine when the switchback was added.) According to the early maps, the route remnants bisect the project area (c) and skirt the west edge of proposed staging area (b).

In 1933, a road was constructed to the Civilian Conservation Corp (CCC) camp (12). Although some of the road followed the original 1877 road (2), it branched from the Mineral King Road to the northeast and followed a more northerly route to the west before connecting with the 1877 road and ultimately looping around Cain's Flat.[2]

In about 1898, a trail (6) was built to the south from the Griffes home (4). It crossed the river via an as-yet undetermined mechanism (bridge or cable system), ascended to the ridge, and proceeded to the summit of Case Mountain sequoia grove.

The areas on both sides of all historic roads and trails should have a relatively high density of historic artifacts.

[2] It is possible that the northeast entrance shown on the map dated to the Industrial Road Camp and that the CCC camp used the original 1877 road (2) to access the camp. (The CCC/Road Camp location doesn't appear until the 1948 map.)

3.3 Flume-Related Sites

Oak Grove includes several features and sites related to the construction of the flume in 1898. Most of these or to the east of the areas of potential adverse effect, including the platform from which a v-shaped flume hung from cables transported lumber from the road to the river (8) and the granite masonry diversion and flume intake (9). However, the location of the construction camp has not yet been located. Both staging areas (a) and (b) and portions of the project area (c) are possible sites of this camp. **Artifacts could include personal items, culinary items, and tools**.

3.4 Wooden Bridge Footings

To the west of the 1923 bridge lie the remnants of its predecessor—a wooden bridge that survived only a decade and generated cautionary stories of the dangers of cutting corners and tales of the courage of drivers who made it over the sagging bridge. The rock masonry footings were still visible recently (10). They are used as an interpretive aid by historians who lead tours up the Mineral King Road. **If a temporary bridge is created over the footings, care should be taken to preserve them.**



Figure 3: Original Oak Grove Bridge circa 1920. [Photo courtesy of the Mineral King Preservation Society Sophie Britten collection]

3.5 Griffes Homestead

According to family history Orlin (Orin) Albert Griffes and his wife Mary "Mollie" A. Tillottson Griffes homestead at Oak Grove (5) in 1898, the same year that the flume was constructed. It is likely that the flume construction camp was located on the property (5), most likely in the vicinity of staging area (a); however, the flat areas associated with staging area (b) and project area (c) may have been used in addition or instead. According to local history and news articles, the property also hosted a road construction camp between 1912 and 1918. Again, the most likely locations of this camp are the flat areas associated with the staging and project areas. **Artifacts for both periods could include personal items, culinary items, and tools.** The artifacts could provide insight into the role and daily experiences of people working on the construction crews and the tools and methods used. The fact that both the road (after it enters SEKI) and portions of the hydroelectric power system are already on the National Registry is indicative of the potential research value of such artifacts, and care should be taken not to disturb them until they are properly surveyed and recorded in compliance with NHPA Section 110.

The entire area, including both staging areas and the project area, also include **artifacts pertaining to homesteading in the Southern Sierra foothills and the early tourist hospitality industry** associated with SEKI. There should be a relatively high density of agricultural artifacts, as well as artifacts and features associated with a roadside camp, a roadside fruit and vegetable stand, a gas pump, and other structures. The roadside camp artifacts should be most dense at site (5), which is associated with staging area (a).

3.6 Cain's Flat

The Cain's Flat area (3) is not an area of potential adverse effect; however, the events that occurred there would have produced artifacts in staging area (a), especially the northern edge, and consideration of Cain's Flat occupation and usage will be essential to identifying, recording, and interpreting such artifacts correctly.

The flat was first associated with the Cain family, who were among the first Mineral King miners in 1873. By 1877, when the road was moved to the north side of the river, the flat was used as a roadside campsite and stagecoach relay station. Concurrently, the flat was homestead by William Hill who was awarded the land patent in 1885. Later, Cain's flat (including Oak Grove) was under the ownership of Judge Allen Jeffrey Atwell. During the entire silver mining rush, the road passed by the northern edge of staging area (a), and it is possible that this area was also used as a campsite. There is also a possibility that the Chinese laborers who were the primary builders of the 1977 road camped in the vicinity of staging area (a). (The Chinese camps were separate from the camps of the Euro-Americans, and typically less optimally situated.)

In 1891, Cain's flat was used by the U.S. cavalry tasked with protecting the newly-created Sequoia National Park, the Kaweah Colony, and the Smithsonian Institution's Death Valley Expedition. From 1877 until World War II, it was used by livestock herders on their way to the mines or summer pastures.[3] From 1933 through 1936, it was used by the Civilian Conservation Corps (CCC) and from

[3] The last time it was thus used is not precisely known; oral histories indicate that it was toward the end of the Great Depression.

1937 through 1940 as a correctional facility housing inmates that worked on the Mineral King Road (12).

In summary, staging area (a) may include **artifacts relating to Cain's Flat occupation and usage, including 1977 Chinese laborers and other road builders, the silver mining community, the military occupation of 1891, the Kaweah Colony, livestock herding, the CCC, and a storied correctional facility**.

4 Conclusion

The Oak Grove Bridge (Caltrans Bridge No. 46C0196; HAER #CA-142) is a valuable cultural resource that is integrally associated with a proximate environment that features prehistoric and historic artifacts and archaeological features, as well as intangible cultural and natural resources that render the Oak Grove Bridge both a symbol of community and a destination.

Both of the proposed alternatives, rehabilitation of the bridge and its retention adjacent to a new bridge, entail potential adverse effects to the bridge and cultural resources in both the project area and the staging areas to the northeast of the project area. These areas are known to contain prehistoric artifacts, which may date to seasonal occupation by Foothill Yokuts as long as 3,000 to 6,000 years ago, and historic artifacts and features dating to 1877, which are associated with significant historic events and people.

As of autumn 2016, the potentially impacted areas had not been adequately surveyed to ascertain the density and significance of the resources they contain; any cursory pedestrian survey (especially when the grass has not been removed) would not provide an adequate indication of the extent of the resources that would be subject to adverse effect if the ground is disturbed. Accordingly, the author recommends that a) all areas of potential adverse effect undergo a thorough surface survey to record all surface features and to record and collect all surface artifacts in accordance with NHPA Section 110; b) TCRMA avoid creating any ground disturbance that could expose or damage artifacts; and c) TCRMA prepare a Plan of Action (POA) in advance of the project that would facilitate an appropriate response in the event of unexpected discovery of archaeological features and artifacts, including but not limited to American Indian remains, funerary objects, sacred objects, and objects of cultural patrimony.

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Public Comment and Information Regarding the Oak Grove Bridge Rehabilitation Project Near the Community of Three Rivers, Tulare County (Caltrans Bridge No. 46C0196; HAER #CA-142)

Input provide by **L. Laile Di Silvestro**, Three Rivers and Mineral King Resident; Volunteer for the Sequoia and Kings Canyon National Parks Cultural Resources Management and Interpretive Programs in Mineral King; and Fifth-Generation Descendent of Mineral King Miner and Road Builder.

First Draft – 12 May 2017

Summary:
This document comprises public input for consideration in the NHPA Section 106 review process and associated NEPA/CEQA reviews in advance of the Oak Grove Bridge Rehabilitation Project.

This document summarizes the author's understanding of potential adverse effects to cultural resources as a result of the proposed project. It briefly characterizes these resources in relation to their potential research value, as well as their associations with significant historic people and events. Finally, it includes the author's recommended mitigations to the anticipated potential adverse effects.

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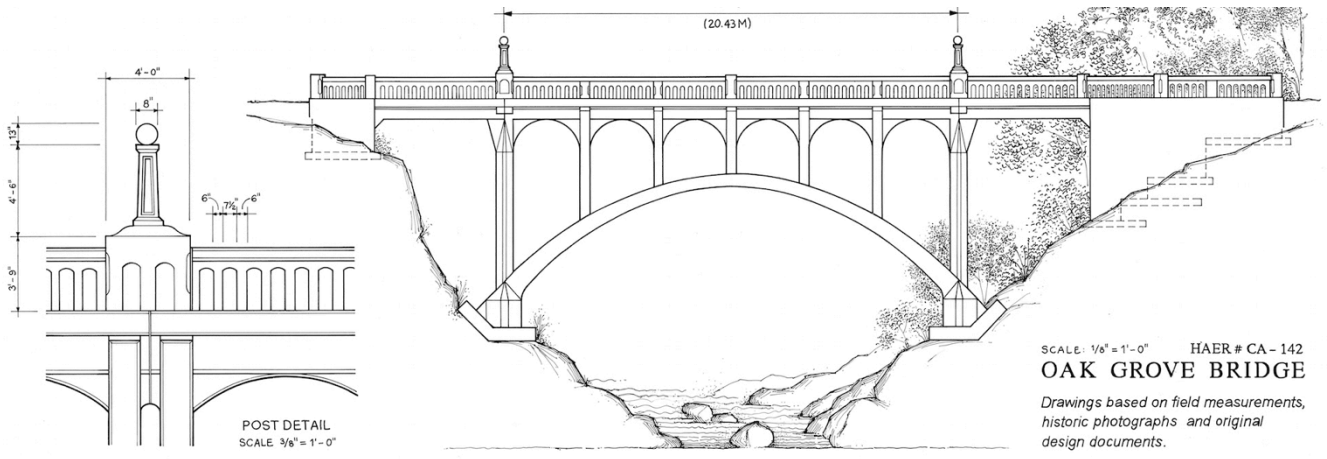


Figure 1: Engineering drawings of the Oak Grove Bridge [HAER #CA-142].

1 Introduction

This document provides information pertaining to the Oak Grove Bridge Rehabilitation Project, which involves either rehabilitation of the existing Oak Grove Bridge (Caltrans Bridge No. 46C0196) on the Mineral King Road or construction of an adjacent replacement bridge (Kachour 2017). This information is intended to serve as public stakeholder input for consideration in the NHPA Section 106 review process (36 CFR 800), as well as the NEPA and CEQA review processes that are presumably occurring in coordination with the Section 106 review.

This document summarizes cultural resources that may be negatively impacted by the project. Although the bridge itself has been determined eligible for the National Registry of Historic Places (HAER #CA-142), that determination was based on its design (National Park Service 2002), and did not take into account a) its association with significant events, b) its association with significant people, c) its relationship to cultural resources in the immediate proximity, and c) its cultural significance to the community. The project design should take into account all aspects of significance (Advisory Council on Historic Preservation 2004).

The project must also take into account the potential adverse effects on areas in the vicinity of the bridge that are under consideration as staging areas. These areas are in a locale that has been known as Oak Grove since the late nineteenth century. **From an archaeological perspective, Oak Grove has been considered "the most important site in the [Mineral King Road] corridor" because of its significant prehistoric and historic artifacts and features** (Morehead 1975:12). Without adequate mitigation, the project's adverse effects on these resources would reduce or obviate invaluable data that can a) increase our understanding of Foothill Yokut and Western Monache cultures prior to Euro-

American settlement and b) facilitate interpretation of significant events in the development of California and Sequoia and Kings Canyon National Parks.

Oak Grove is located 6.6 miles from the base of the current Mineral King Road. It is a relatively flat area of approximately thirty acres. It was occupied by **Westen Monache** starting 400-700 year ago, and may have previously been a seasonal camp for **Foothill Yokuts** as early as 3000-6000 years ago (Jackson 2010:104). Initially known as Cain's Flat,[1] it became a roadside camp for miners (including the Cain family) in 1877, when a trail replacing Meadows trial on south side of the Kaweah River was constructed by **Chinese immigrants** to facilitate access to the Mineral King mines at the end of the first **silver rush** (Jackson 2006:29; Porter 2002:40). In 1885 William Hill acquired a patent to the western and central portion of the flat (BLM CA1570__.195). However, the earliest detailed map (published in 1892 but surveyed years earlier) shows the entire flat under the ownership of **Judge Allen Jeffrey Atwell** (Thomson 1892). In the spring of 1891, a troop of cavalry soldiers tasked with protecting the newly formed **Sequoia National Park** camped in Cain's Flat and helped repair the road (Dilsaver and Tweed 1990:76; Jackson 2006:104). That year, the flat also hosted the roadside camp for members of the **Kaweah Colony**, a utopian society that was logging at Atwell's Mill. The Jamison family (Colony members) took up full-time residence, and authored frequent "Notes from Kane's Flat" in the original Kaweah Commonwealth newspaper (Kozakavich 2007). 1891 was also the year that the well-publicized **Smithsonian Institution's Death Valley Expedition** spent the night at "Kane's Flat" on July 26 (Coville 1893). In 1898, the **Griffes family** homesteaded 80 acres on the eastern portion of the flat, and hosted Mineral King Road travellers for several decades thereafter (Britten 2013:168-170; Jackson 2013:10). The Griffes family and prior Kaweah Colony members were integrally involved in the introduction of **hydroelectric power** to the San Joaquin Valley. In 1898, the wealthy, politically powerful, and internationally influential **John Hays Hammond** financed construction of a hydroelectric plant at the base of the Mineral King Road and a six-mile long flume that commenced in Oak Grove. Prior Colony families helped build the flume, and the Griffes family maintained it (Britten 2013:168-170; Jackson 2012:3-5; Jackson 2013:10,12). At some point during this period (before 1903), the first Oak Grove bridge over the East Fork of the Kaweah River was constructed. It was located to the east of the current service bridge, and provided access to the flume intake, as well as the sequoia groves on Case Mountain to the south (USGA 1904). In 1903, **Captain Charles Young** of the Ninth Cavalry of **Buffalo Soldiers**, acting superintendent of Sequoia and General Grant National Parks, passed through Oak Grove multiple times. He purchased Three Rivers property from Marion Griffes in 1904, where he lived until 1905. The advent of automobiles necessitated a better road to Oak Grove, which was constructed between 1912 and 1918 on the south side of the river. The first automobile bridge was built in 1912, and Oak Grove hosted the road construction camp. The first automobile drove up the Mineral Road in 1918 (Jackson 2013:9). A gas pump was installed shortly after 1918 (Jackson 2013:12). In 1923 **Nathaniel Lovelace** engineered and built the historic Oak Grove Bridge, which became a destination due to its aesthetic characteristics and scenic environs (National Park Service 2002). From 1933 to 1936, Oak Grove hosted the Cain's Flat **Civilian Conservation Corp Camp** (Jackson 2006:151; Jackson 2013:11). The famous poet **William Everson** was one of the notable workers at the camp, and the

[1] Initially, the entire flat was known as Cain's Flat. When the Griffes family established its homestead in 1898, the eastern portion became known as Oak Grove, while the western retained the designation of Cain's Flat. By the late 1950s, the entire area was referred to as Oak Grove.

experience influenced his writing (Bartlett 1988:13-17). In more recent history, **Walt Disney** was one of the most famous people to cross the Oak Grove Bridge. He did so for the last time on September 19, 1965, when he attended the final press conference of his life in Mineral King. The Walt Disney Corporation planned to build a **year-round resort** in Mineral King, with the primary lodging facilities in Oak Grove. The base of a cog-assisted electric railroad would have transported visitors from Oak Grove to ski slopes and trails in the Mineral King valley (Mineral King Preservation Society 2014). The Disney development period divided the Three Rivers community, gave the area international attention, and was instrumental in forming the **national conservation movement of the 1970s** (Earth Justice 2011; Earth Justice 2017; Jackson 2006:160-190). For many of the area's residents today, Oak Grove and its scenic bridge serve as poignant testimony to a conflict that resulted in the preservation of our natural and cultural heritage.

To mitigate adverse effects to the cultural resources associated with Oak Grove's prehistoric occupation and significant historic events, I recommend the following:

- Rehabilitate the existing bridge. Retaining the bridge and constructing an adjacent bridge would substantively diminish the quality of significance of the current bridge as defined in the HAER documentation (National Park Service 2002).
- Retain the bridge's historic function as a destination and a scenic attraction for travellers to Mineral King. Retain turnouts for parking and enable visitors to cross the bridge on foot (along with vehicles) and linger.
- Retain and avoid damage to the foundations of the original wooden bridge (1913-1923) to the immediate west of the 1923 bridge.
- Avoid any and all ground disturbance in the two proposed staging areas to the northeast of the project area. Avoid damage to historic features in the southernmost of the two staging areas; conduct a surface survey and record the historic features in advance to mitigate unintended adverse impact.
- Plan for unexpected discovery of archaeological features and artifacts, including but not limited to American Indian remains, funerary objects, sacred objects, and objects of cultural patrimony.

2 Cultural Resource Locations

The map below depicts the locations of known cultural resources in Oak Grove, in addition to the 1923 Oak Grove Bridge. The project area and eastern staging areas of the Oak Grove Bridge Rehabilitation Project overlap areas with known archaeological features and artifacts.

NOTE: **The locations of the areas, points, and linear features on the map are approximate only**, and based on historic maps, archaeological survey reports, photographs, journals, newspaper articles, conversations with locals, and personal reconnaissance.

A: Northeastern staging area.
B: Southeastern staging area.
C: Project area.

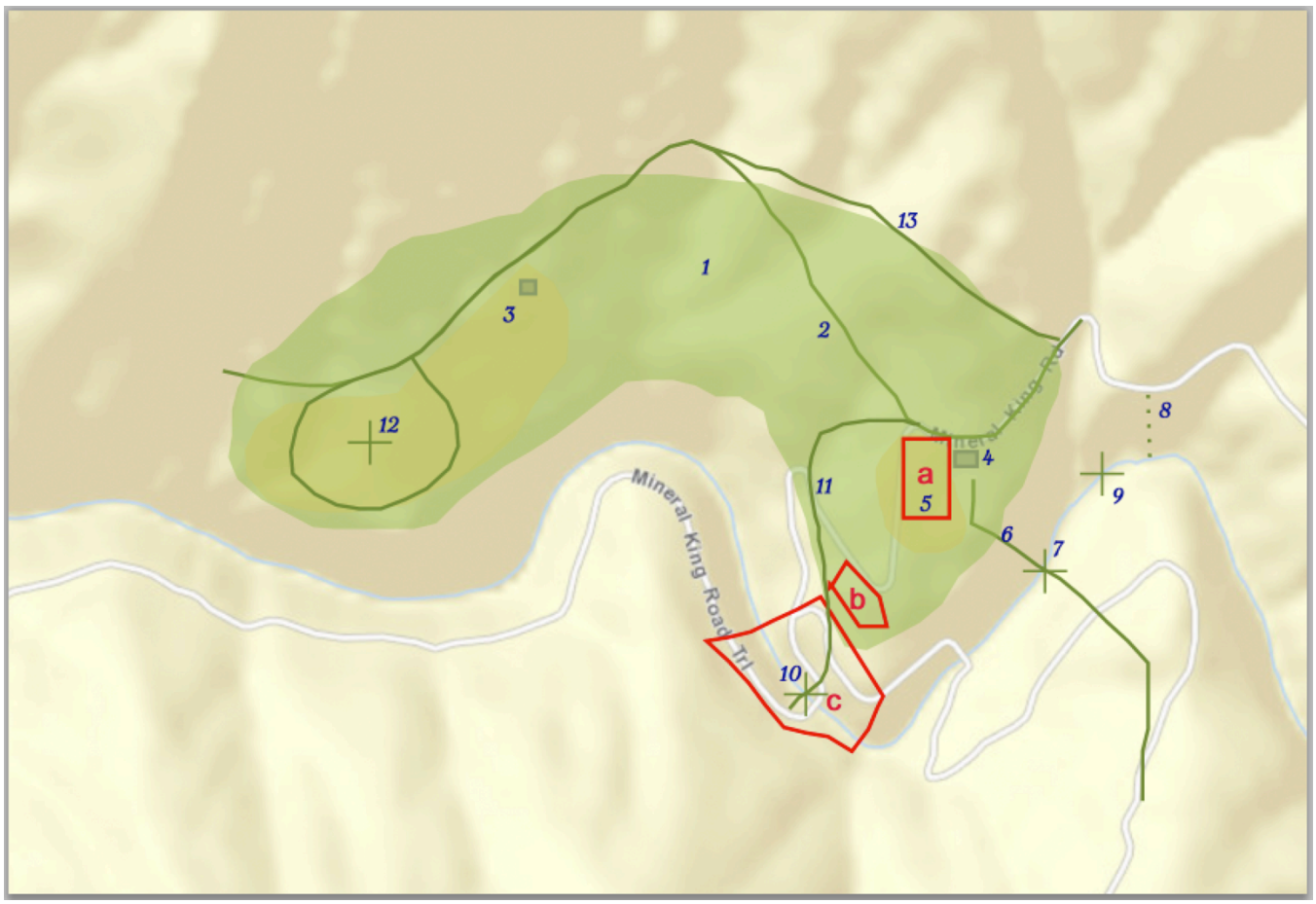


Figure 2: Map created by author using ArcGIS and Esri data.

1: Prehistoric artifacts and potential features.
2: Original 1877 road.
3: Cain's Flat, stagecoach relay station, William Hill's homestead. Entire gold area used as camp.
4: Griffes homestead.
5: Griffes camp. Entire gold area used as camp.
6. 1898 trail across river and to top of Case Mountain and its sequoia groves.
7. 1898 bridge or cable crossing.
8. V-flume strung from cables used to transport sequoia lumber from road to flume intake.
9. Granite masonry diversion dam and flume intake.
10: 1912 wooden bridge.
11: 1912 road. NOTE: Author has not yet determined when switchback was added. Photos from the era suggest that the road curved sharply west from the bridge before turning north.
12: Cain's Flat Civilian Conservation Corps Camp and Tulare County Industrial Road Camp. The road terminated at a loop around the camp.
13: 1933 road to Cain's Flat. Road 2 does not appear on maps of the time; however, it is in use today.

Figure 2: Map created by author using ArcGIS and ESRI data.

3 Cultural Resource Descriptions

3.1 Prehistoric Sites

The entire Oak Grove area (1), including the areas of potential adverse effect, features varying densities of prehistoric artifacts and features, including projectile points, lithic scatter, over one hundred bedrock mortar cups, pestles, and manos (Morehead 1975:10-12). Non-Indians have been collecting artifacts from Oak Grove since the late 1870s; however, subsurface artifacts and features are likely to be present in the project area (c) and both eastern staging areas (a and b), and there is a possibility of human remains and funerary objects. Although no excavation or thorough survey has been conducted in the area, three sites have been recorded: TUL-359 in the eastern portion and the large TUL-332 and TUL-360 of towards the west (Morehead 1975:10-12). These were mapped in 1959 and by A. B. Elasser and in 1975 by Morehead in anticipation of the Disney resort. All relevant documentation (including maps and photographs) is available at SEKI headquarters.

3.2 Linear features

The original mule trail to Mineral King (the Meadows Trail) followed the south side of the river, and crossed it via the McGinnis Bridge at a location just above Lookout Point. In 1877, Chinese laborers helped construct a new trail on the north side of the river, passing through Oak Grove (2) and skirting the northern edge of proposed staging area (a).

In 1912, work began on a replacement automobile road on the south side of the river. That year road segment (11) was built, along with a wooden bridge (10). According to the USGS maps, it followed a more direct route to the 1877 road (2) than the road does today. (The author is still trying to determine when the switchback was added.) According to the early maps, the route remnants bisect the project area (c) and skirt the west edge of proposed staging area (b).

In 1933, a road was constructed to the Civilian Conservation Corp (CCC) camp (12). Although some of the road followed the original 1877 road (2), it branched from the Mineral King Road to the northeast and followed a more northerly route to the west before connecting with the 1877 road and ultimately looping around Cain's Flat.[2]

In about 1898, a trail (6) was built to the south from the Griffes home (4). It crossed the river via an as-yet undetermined mechanism (bridge or cable system), ascended to the ridge, and proceeded to the summit of Case Mountain sequoia grove.

The areas on both sides of all historic roads and trails should have a relatively high density of historic artifacts.

[2] It is possible that the northeast entrance shown on the map dated to the Industrial Road Camp and that the CCC camp used the original 1877 road (2) to access the camp. (The CCC/Road Camp location doesn't appear until the 1948 map.)

3.3 Flume-Related Sites

Oak Grove includes several features and sites related to the construction of the flume in 1898. Most of these or to the east of the areas of potential adverse effect, including the platform from which a v-shaped flume hung from cables transported lumber from the road to the river (8) and the granite masonry diversion and flume intake (9). However, the location of the construction camp has not yet been located. Both staging areas (a) and (b) and portions of the project area (c) are possible sites of this camp. **Artifacts could include personal items, culinary items, and tools**.

3.4 Wooden Bridge Footings

To the west of the 1923 bridge lie the remnants of its predecessor—a wooden bridge that survived only a decade and generated cautionary stories of the dangers of cutting corners and tales of the courage of drivers who made it over the sagging bridge. The rock masonry footings were still visible recently (10). They are used as an interpretive aid by historians who lead tours up the Mineral King Road. **If a temporary bridge is created over the footings, care should be taken to preserve them.**



Figure 3: Original Oak Grove Bridge circa 1920. [Photo courtesy of the Mineral King Preservation Society Sophie Britten collection]

3.5 Griffes Homestead

According to family history Orlin (Orin) Albert Griffes and his wife Mary "Mollie" A. Tillottson Griffes homestead at Oak Grove (5) in 1898, the same year that the flume was constructed. It is likely that the flume construction camp was located on the property (5), most likely in the vicinity of staging area (a); however, the flat areas associated with staging area (b) and project area (c) may have been used in addition or instead. According to local history and news articles, the property also hosted a road construction camp between 1912 and 1918. Again, the most likely locations of this camp are the flat areas associated with the staging and project areas. **Artifacts for both periods could include personal items, culinary items, and tools.** The artifacts could provide insight into the role and daily experiences of people working on the construction crews and the tools and methods used. The fact that both the road (after it enters SEKI) and portions of the hydroelectric power system are already on the National Registry is indicative of the potential research value of such artifacts, and care should be taken not to disturb them until they are properly surveyed and recorded in compliance with NHPA Section 110.

The entire area, including both staging areas and the project area, also include **artifacts pertaining to homesteading in the Southern Sierra foothills and the early tourist hospitality industry** associated with SEKI. There should be a relatively high density of agricultural artifacts, as well as artifacts and features associated with a roadside camp, a roadside fruit and vegetable stand, a gas pump, and other structures. The roadside camp artifacts should be most dense at site (5), which is associated with staging area (a).

3.6 Cain's Flat

The Cain's Flat area (3) is not an area of potential adverse effect; however, the events that occurred there would have produced artifacts in staging area (a), especially the northern edge, and consideration of Cain's Flat occupation and usage will be essential to identifying, recording, and interpreting such artifacts correctly.

The flat was first associated with the Cain family, who were among the first Mineral King miners in 1873. By 1877, when the road was moved to the north side of the river, the flat was used as a roadside campsite and stagecoach relay station. Concurrently, the flat was homestead by William Hill who was awarded the land patent in 1885. Later, Cain's flat (including Oak Grove) was under the ownership of Judge Allen Jeffrey Atwell. During the entire silver mining rush, the road passed by the northern edge of staging area (a), and it is possible that this area was also used as a campsite. There is also a possibility that the Chinese laborers who were the primary builders of the 1977 road camped in the vicinity of staging area (a). (The Chinese camps were separate from the camps of the Euro-Americans, and typically less optimally situated.)

In 1891, Cain's flat was used by the U.S. cavalry tasked with protecting the newly-created Sequoia National Park, the Kaweah Colony, and the Smithsonian Institution's Death Valley Expedition. From 1877 until World War II, it was used by livestock herders on their way to the mines or summer pastures.[3] From 1933 through 1936, it was used by the Civilian Conservation Corps (CCC) and from

[3] The last time it was thus used is not precisely known; oral histories indicate that it was toward the end of the Great Depression.

1937 through 1940 as a correctional facility housing inmates that worked on the Mineral King Road (12).

In summary, staging area (a) may include **artifacts relating to Cain's Flat occupation and usage, including 1977 Chinese laborers and other road builders, the silver mining community, the military occupation of 1891, the Kaweah Colony, livestock herding, the CCC, and a storied correctional facility**.

4 Cultural Resource Significance

As perceived by members of the community, Oak Grove possesses considerable archaeological significance in that it is "capable of providing scientific or humanistic understandings of past human behavior, cultural adaptation, and related topics through the application of scientific or scholarly techniques such as controlled observation, contextual measurement, controlled collection, analysis, interpretation, and explanation" (43 CFR 7.3(a)(1)).[4] From an NHPA perspective, it includes unique structural remains and artifacts of more than fifty years of age that can provide insight about prehistoric occupation, significant historic events that had regional relevance, and the role of influential people of the later half of the nineteenth century and first half of the twentieth century. **The significance of the site has been noted by archaeologists who have recommended it for inclusion in the National Registry of Historic Places** (Morehead 1975:12).

4.1 Research value

Archaeologist Mary Thul Morehead has declared Oak Grove "the most important site in the [Mineral King Road] corridor," noting that it "has been important both historically and prehistorically" and is "especially rich with both historic and prehistoric resources" (Morehead 1975:12-13). Modern excavations would provide data that could contribute substantive knowledge about prehistoric and historic occupation and use of the area and the broader region.

4.1.1 Prehistoric Period

Morehead has concluded that the data from this site "would have significance for interpretation of past cultures throughout this entire region of California" (Morehead 1975:12). It could provide insight on settlement patterns, trade routes, subsistence patterns, and interactions between the Foothill Yokuts and Western Monache. Unfortunately, the area has been heavily "collected" for about 150 years; however, it is probable that a substantial subsurface assemblage still exists, as well as features such as hearths and post-hole discoloration.

4.1.2 Historic Period

Although the period of historical significance is relatively short (1877-1967), it pertains to events of regional importance. The staging areas, in particular, may hold artifacts that could provide new information on these events. Refer to the section below for more detail.

[4] Although ARPA does not apply, its definition of archaeological significance value is useful in explaining the perception of significance held by many members of the community, many of whom are historians, scientists, and employees of Sequoia and Kings Canyon National Park.

4.2 Association with Significant Events

4.2.1 Mining Period

***Timeframe**: 1877-1940s*

***Archaeological Evidence**: Features may include the adobe structure that served in part as the stage coach relay station; tent sites. Artifacts may include personal items, culinary items, tools, transportation artifacts.*

***Affected Area(s)**: Primarily northernmost of the eastern staging areas (a). The northern edge would be most affected; however, due to its flat nature, the entire staging area could include mining era artifacts dating to 1877.*

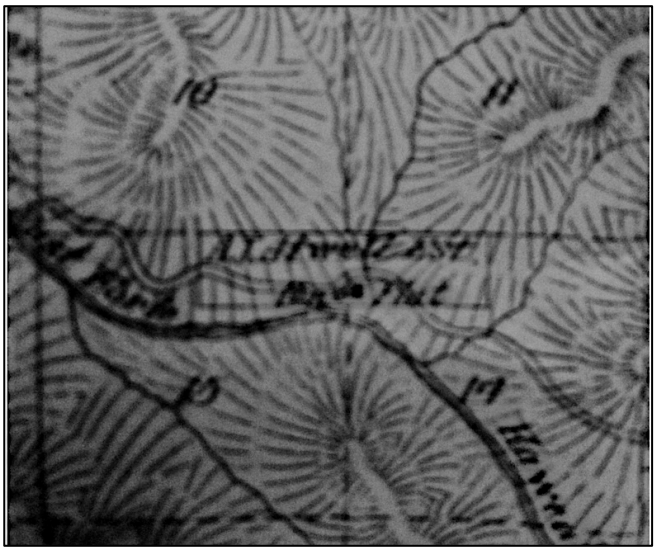


Figure 3: Detail of 1992 Thos. H Thompson map, purportedly surveyed in 1886. Text reads "A.J. Atwell Est. Cain's Flat". [Courtesy of the Tulare County Library. Public domain.]

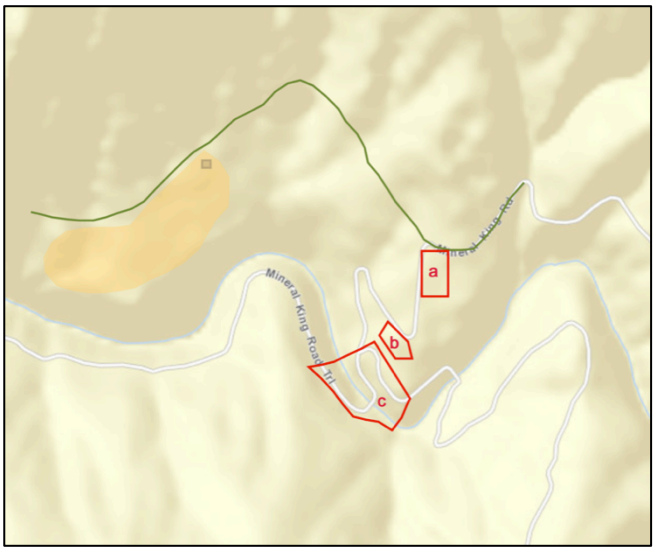


Figure 5: Location on ArcGIS map using Esri data. Note the significant difference due to the fictional survey conducted by the Benson Syndicate.

On September 12th, 1873, three ranchers showed up in Porterville with silver bearing ore. Almost immediately, dozens of prospective miners clambered up the trails, and by the time the winter snows hit, over sixty mine claims had been filed. The first Mineral King silver rush lasted from 1873 to 1878, and was orchestrated by a potentially corrupt stock company known as the New England Tunnel and Smelting Company. The company failed as the result of mismanagement, difficulty in extracting silver from the ore, and avalanches. However, prior to its demise, the company established a stock company to create a wagon road, with Charles Baker as president. In February 1877, the company had raised $6000 from Visalia residents and businessmen, and hired Charlie Turner as foreman (Wallace 2004:20). Turner, in turn, "hired" Chinese and other laborers to build a wagon road on the north side of the East Fork of the Kaweah River (Jackson 2006:29[5]; Porter 2002:40; Wallace 2004:20-21). This new road included a 35-42% grade that terminated just before Cain's Flat, where horses, mules, and humans invariably paused to recover, and Cain's Flat became a roadside rest site and camp, as well as a stagecoach relay station (Jackson 2006:29; Morehead 1975:11). The road builders were never compensated for their labor, and the initial road ended up being little more than a mule trail (Jackson

[5] Jackson indicates the year was 1874; however, the evidence indicates this was a typographical error.

Local Lore

Fowler couldn't wait for the road to be completed, and rode up 11 days early in a buckboard carriage pulled by a matched black team. Workmen had to carry it over 600 yards of unfinished road so that he could drive the carriage into town. Several salutes were fired upon his arrival. The evening of the day the road officially opened was even more exciting. 150 wagons rolled into town, accompanied by a raucous crowd of men, women, children, dogs, horses, mules, sheep, goats, chickens, and hogs. Multiple saloons awaited them, along with dulcimers and fiddles (Crowley).

2006:38 Porter 2002:56). This was sufficient, however, for weekly by-foot mail service through Cain's Flat to Mineral King. It was also sufficient for transporting all the equipment and goods needed by the mining community that summer, including the materials for the Smith House, Mineral King's finest hotel, saloon, and market (Jackson 2006:22-23[6]; Porter 2002:41).

Despite the failure of the New England Tunnel and Smelting Company (now known as the New England Thieving and Swindling Company), The Honorable Thomas Fowler, Tulare County rancher and politician, was able excited new interest in Mineral King in 1878. He purchased the Empire Mine and formed the Empire Gold and Silver Mining Company, starting the second "silver rush" of Mineral King. Fowler hired men to work the mine and purchased a stamp mill in Grass Valley to crush the ore. He needed a way to transport that mill and other mining equipment up to the mines, and a stock trail would not do the job. The Mineral King Wagon and Toll Road Company was formed and in March of 1879, work was begun on its construction. It is likely that Cain's Flat was a significant camp for the road construction crew. The road was officially finished on August 20th, 1879 (Jackson 2006:43; Porter 2002:60-61). Arthur Crowley served as timekeeper and remarked upon daily events in his journal during road construction, as well as the subsequent mining years (Crowley, Jackson 2006:39-43 Porter 2002:60).

During the two silver rushes, Cain's flat was possibly developed and maintained by the Cain family. The Cain family was among the first to join the Mineral King silver rush in 1873, and actively mined through until the mid 1880s. At some point, William Hill acquired the property, and was awarded a land patent in 1885 (Bureau of Land Management). The Hills arrived in Visalia as early as April 11, 1867, when William H. Hill registered (Tulare County Great Register 1869). Shortly after the Hills received their patent, however, Judge Allen Jeffrey Atwell acquired the property, possibly in 1886 when he purchased Atwell's Mill further up the road, which would eventually provide the sequoia lumber used to construct the flume (Jackson 2013:10; Jackson 2006:115; Thompson 1892).[7]

The second silver rush ended in 1882, and mining continued at a slower pace until the 1940s. After Atwell's death in 1891, Cain's Flat continued to host the mining community.[8] Meanwhile, Mineral King was transitioning to a resort community, and Oak Grove usage was transitioning to meet the needs of San Joaquin Valley families travelling to mountain resorts in order to escape valley heat and disease.

[6] The records are contradictory regarding the year that the Smith House was constructed; Jackson indicated 1874.
[7] 1886 is also purportedly the year when the Oak Grove (then Cain's Flat) area was surveyed. The map based on the survey day was published in 1892. It indicates that the area was owned by Judge Atwell, who died in 1891 (Thompson 1892).
[8] The author has not yet determined who owned the land after 1891; however, the county records should readily available. Local lore suggests it was someone named Arnold.

4.2.2 Chinese Immigrants

***Timeframe**: 1876-1877*

***Archaeological Evidence**: Features may include hearth and earthen tent platforms associated with a Chinese camp. Artifacts may include personal items, culinary items, and tools.*

***Affected Area(s)**: The northern edge of the northernmost of the eastern staging areas (a) would be most affected by Chinese roadwork; any flat portion of the staging and project areas could have hosted the Chinese laborers' camp.*

> Last Saturday morning a Chinaman employed on the Mineral King Road concluded that he had lived long enough, went out and suspended himself to a limb of a tree and afterwards was found dead. His fellow countrymen in ascribing the cause of this rash act put it thusly: He eatee to muchee, he talkee to muchee (*Iron Age* March 29, 1877).

The unnamed Chinese worker died[9] somewhere in the vicinity of Cain's Flat, which is believed to have been the primary camp for the workers during road construction (Crowley). The location of the Chinese camp is unknown, however; the Chinese resided separately from the other workers, and it is possible that they stayed in the eastern portion of the flat, rather than the western portion with its spring. The Chinese worked for the New England Tunnel and Smelting Company February through June of 1877,[10] completing the roadwork while Euro-American workers labored in the mines (Porter 2002:39-40).[11] During the prior summer of 1876, the Chinese laborers had experience the mines themselves. Initially, the New England Tunnel and Smelting Company had sent 16 Chinese laborers to do the most difficult and dangerous work in the mines, and later recruited 40 more (Porter 2002:36).

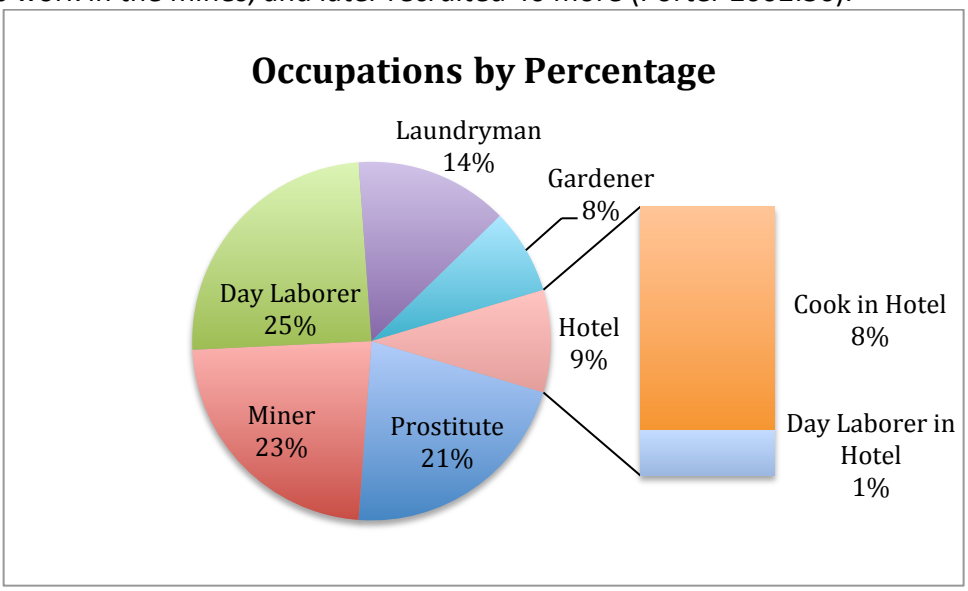


Figure 4: Tulare County Census 1870.

[9] According to local lore, the Chinese worker was hung by a Euro-American; however, some readers interpret the text otherwise, and conclude that the worker committed suicide.

[10] The Chinese may have worked on the road longer; however, the author has found no record as yet. The New England Tunnel and Smelting Company was undergoing financial and organizational stress by the end of June.

[11] According to local lore, the Chinese were not paid due to the company's insolvency. Porter (2002:42) alludes to this as well.

Assuming the same Chinese laborers worked on the road, in the spring of 1877 as many as 55 Chinese laborers were constructing the road. This number represented a significant percentage of Chinese men in the area. The total population in Tulare County comprised approximately 99 in 1870 and 324 in 1880 (Chan 1986:156-157). Most of the Chinese workers had immigrated to California from Canton (Guangzhou) to work in the gold mining communities and construct the railroads; however, after railroad completion in 1870 and the demise of the gold mines in Northern California, they transitioned to other work (Chan 1986:41; Hoexter 1979:91). In the San Joaquin Valley as a whole, about 15.3% of the Chinese worked in agriculture, 14.4% were non-agricultural laborers, and 14.9% were cooks (Chan 1986:72-73). Most of Tulare County's Chinese immigrants lived in Eastern Visalia (Chan 1986:236). There, the statistics differed from those of the overall valley. The census-taker recorded 65 living in Visalia in 1870. All the women were listed as prostitutes; the majority of the men were day laborers and miners (*Tulare County Census* 1870). By 1876, the Chinese population in Visalia would have been larger, but the skillsets similar. They would have been familiar with the labor required to build a road and tunnel into granite (Jackson 2006:56-59; Porter 1960:36,40).

Although some people believe that the deceased Chinese worker on the Mineral King Road had committed suicide, most local historians suspect that he was lynched. Intense discrimination against the Chinese was prevalent in California at the time, and its effects were becoming increasingly apparent in Tulare County. When the first Mineral King silver rush commenced in 1873, Tulare County employers had no qualms about hiring Chinese laborers (Chan 1986:72-73; Crowley).[12] The state as a whole, however, had passed several anti-Chinese laws. By 1873, most of these laws had been found unconstitutional; nevertheless, they reflected prevailing sentiment in the state (Jackson 2006:56-57). Tulare County seemed to be an island in the storm, with no notable anti-Chinese activism. By 1877, things had changed, however. Agricultural California was in the midst of its first wave of violent anti-Chinese activism, influenced by the world-wide depression, a burgeoning population, and news editorials and reports (Chan 1986:370-371). The California legislature commenced a biased investigation in early 1877, and issued a petition to end Chinese immigration (Hoexter 1979:105-106).

In February and March of 1877, when the Chinese started working on the road to Oak Grove, anti-Chinese violence broke out in the agricultural communities to the north in Chico and Butte County (Chan 1986:371-374). Anti-Chinese riots broke out in San Francisco (Hoexter 1979:107-108). Violence quickly spread to other counties (Chan 1986:371-374). In Tulare County, the violence that year appeared to be limited to the hanging on the Mineral King Road; however, by 1879, when John Crowley recruited laborers for road construction, employing the Chinese was out of the question (Jackson 2006:57). Discrimination continued along the road, however, and it was documented by John Crowley's son Arthur. Chinese entrepreneurs planning to start a laundry in Mineral King were stopped about halfway up River Hill, the steepest section of road, which terminated just below Oak Grove. The road construction crew threatened to hang the Chinese and hit their mounts with shovels, setting them down the road at a dangerous pace. Later, J. C. Hoy, a hotel proprietor, brought Chinese cook to

[12] John Crowley's 1873 diary suggests that he paid his Chinese laborers well. Nevertheless, he although he always referred to his Euro-American laborers by name, he consistently referred to the Chinese laborers as "Chinaman."

Mineral King with him by stage. The miners threatened to hang both him and the cook, so the cook left on the next stage (Jackson 2006:56-59).

Despite the discrimination and persecution, the Chinese community in Tulare County persisted and made significant contributions in citrus cultivation (Chan 1986:370). Many Chinese remained in the area, establishing a thriving China Town in Visalia. Sixteen even remained in the Kaweah and Mineral King Township, working for Mineral King mining families such as the Hamiltons, Pogues, and Ragles as cooks, gardeners, sheepherders, orchard workers, and a broom maker (*Tulare County Census* 1880*).*

Little is known about the Chinese community that built the 1877 road into Oak Grove and worked in Mineral King in 1876. Oak Grove has the potential to provide valuable insight into the lives of the Chinese and the extent to which they were integrated into or isolated from the rest of the community and regional society as a whole.

4.2.3 Long Depression

Timeframe*: 1873-1890s*
Archaeological Evidence*: Artifacts: Archaeological correlates of class potentially providing insight into the differential effect of the Long Depression on miners and laborers, and Mineral King's role in the region's response to economic stress.*
Affected Area(s)*: Primarily northernmost of the eastern staging areas (a). The northern edge along the road corridor edge would be most affected; however, due to its flat nature, the entire staging area could include artifacts associated with the Long Depression.*

The early development of Oak Grove was influenced by the first worldwide Great Depression, now known as the Long Depression. Although the depression impacted most parts of the country from 1873 to 1879, it lasted longer in Tulare County, where it motivated the search for mineral wealth and exacerbated prejudices and systemic discrimination against the Chinese immigrants (Hicks 1937; Jackson 2006:56-57).[13]

The effects of the Long Depression didn't officially reach California until about 1876 (Hicks 1937.); however, poverty was already a challenge in the area. Property, census, and voting records indicate that many of the principal Mineral King mining families, including the Cains and other families associated with Oak Grove, were illiterate landless laborers in the 1870s (Tulare County Census 1870, 1880). Most had families to support, and they were competing with Chinese laborers who had recently lost their jobs in the gold mines and on the railroads. Financial hardship was not limited to the poor, however. Recently-enacted pro-agriculture laws were reducing grazing areas (Menafee and Dodge 1913:46-48), and the 1877 drought decimated the area's primary industry—livestock—as well as the burgeoning agriculture sector (Austin 2015:212-213; Menafee and Dodge 1913:4).

[13] It is possible that economic stresses in Tulare County exacerbated discrimination against other populations, including prior slaves (and others of African descent) and the remnants of the local Yokut and Western Monache tribes. Historic records indicate that they were excluded from Mineral King's labor forces; however, Crowley family diary and letter accounts suggest that the local Indians avoided Mineral King for other reasons. Preliminary research on Mineral King settlement patterns suggests that class conflict, Civil war era divisions, and religious differences also influenced settlement patterns at this time. The role of the Long Depression in these patterns is to be determined.

The advent of the Long Depression coincided with the start of Mineral King's first silver rush and the General Mining Act of 1872, which legalized mining on federal lands (30 U.S.C. 28 et seq).[14] Although there was no definitive evidence that Mineral King's silver-bearing ore was extensive or that its extraction and processing would be cost-effective (especially since the United States had switched from the silver to the gold standard in 1873), the New England Tunnel and Smelting Company and Thomas Fowler were able to attract considerable attention (and funding) from San Joaquin Valley residents and business people, as well as investors in San Francisco. This interest was generated in part by optimism fueled by the success California's gold rush in the late 1840s and early 1850s and the Comstock Lode during the 1860s. This optimism led Mineral King's most influential backers to lobby Congress to mitigate the effects of the 1873 switch from the gold to silver standard (the Crime of 1873)(Rhomberg 1921). By the middle of the century, however, the depression affected California families associated with the banking industry or heavily invested in stocks (Hicks 1937), a factor that contributed to the demise of the Mineral King mining dreams... and Oak Grove's role as a significant waypoint and seasonal camp for the mining community.

Because Oak Grove was the most heavily occupied site on the Mineral King corridor during the height of the Long Depression, it may provide a unique opportunity to ascertain its differential impact on the lives of area's residents and on the region as a whole.

4.2.4 Land Use Conflicts

***Timeframe**: pre-1877 to approximately 1940*
***Archaeological Evidence**: Features may include hard-packed corral areas. Artifacts may include livestock herding implements and personal items and culinary items associated with livestock camps.*
***Affected Area(s)**: All areas of potential adverse effect, especially flat areas.*

In 1891, the United States Fourth Cavalry's Troop K arrived at Oak Grove on a mission to protect the new Sequoia National Park from livestock. Even before the road had arrived there in 1877, however, Oak Grove was influenced by conflicts between livestock ranchers and the valley's agriculturalists. This conflict, along with the drought, had reduced the amount of grazing land on the valley floor, and increased the size the number of herds driven to the mountain meadows and flats (Menafee and Dodge 1913:46-48). Local lore suggests that Oak Grove was a destination as well as a temporary camp for sheep and cattle herders.[15]

Oak Grove's use as a livestock camp continued after the Mineral King road was routed through it in 1877. After its upgrade in 1878, the route was a toll road with a charge of fifty cents per man, and ten cents each for horses, cattle, sheep, hogs, and goats (Jackson 2006:44). Thomas Fowler, who orchestrated the second silver rush of 1878, used the camp heavily to provide sheep, cattle, pigs, and fowl as food for his laborers (Crowley). Fowler was deeply involved in the politics of the time, and

[14] Due to unintended gaps, the law gave children and woman the right to own mine claims in Mineral King, which led to their unprecedented participation in a mining district election.
[15] The Lovelaces purportedly used the flat for their livestock prior to 1873; additional research should reveal the names of the earliest livestock herders that utilized Oak Grove.

significantly affected by the valley's economic transition from livestock to agriculture (Ludeke 1980).[16] Although an opponent of the "No-Fence Law," Fowler supported farmers in another socio-economic development of the time that pitted regional settlers against the Southern Pacific Railroad. Not only did the railroad charge farmers exorbitant prices to transport their produce to market (Crowley), but it received land subsidies from the government, encouraged settlement, and then apparently offered to sell the land to the settlers at high prices that took into account the improvements made by the settlers. The conflict eventually led to the Mussel Slough Tragedy; a battle that resulted in eight deaths.[17] Fowler strongly opposed the railroad subsidy, and supported the settlers. Indeed, despite Fowlers' financial difficulties and apparent failure at Mineral King, the Mussel Slough settlers selected the "Hon. Thomas Fowler" as an "old and respected citizen of Visalia" to help mediate with the Southern Pacific Railroad in 1883 (Sacramento Daily Union 1883). The series of events purportedly helped inform Theodore Roosevelt's efforts to control and redress the perceived corporate abuses of the time (Brown 2001:126). It is possible that Fowler's attitudes about corporate power influenced his decisions at Mineral King, and may have motivated his tendencies pay well and to "spare no expense" on the well-being of his workers; tendencies that resulted in considerable use of Oak Grove to restrain and feed livestock, and provide hospitality to their herders.

It is likely that the herding of pigs and fowl ceased by the early 20th century; however, ranchers continued to send cattle and sheep up the Mineral King Road—through Park property and perhaps into it—until second world war.[18] Permission was sometimes granted, but not always, and local lore tells of armed standoffs. The cattle guard on the eastern edge of Oak Grove provides noisome testimony to the historic conflict.

4.2.5 Benson Syndicate

***Timeframe**: 1875-1898*
***Archaeological Evidence**: Features include remnants of trail/road from Griffes home to the top of Case Mountain and possible survey monuments.*
***Affected Area(s)**: To be determined; the fictional surveys resulted in considerable adjustment of section and township boundaries. Some of the Oak Grove readjustments would have taken place in 1898.*

In 1875 a criminal syndicate comprising surveyor generals, leading politicians, bankers, and lumber companies embarked on a creative and intricately illicit scheme involving fictional surveys of sparsely populated lands in the west, especially those with potentially valuable timber lands (General Land Office 1888). The Benson Syndicate, as it was later known, included Oak Grove in its fictional surveys, as well as the sequoia groves on Case Mountain, which loomed just to the south of the flat and included a stand of sequoias (Thompson 1892). The scheme was complex. The syndicate generated a false demand for public surveys, which it executed on a minimal basis in return for government funds.

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[16] See http://www.tularehistoricalmuseum.org/cowmenvscrops.html for background on the conflict between ranchers and farmers in the 1870s that highlight's Fowler's involvement.
[17] The Griffes, who homesteaded Oak Grove in 1898 were from Mussel Slough (Britten 2013:168).
[18] According to local families, their ancestors continued using the road to herd livestock through Park property and into Forest Service land. The Department of Interior issued a limited number of permits. In 1919, for example, the Department of Interior gave local Jason Barton permission to herd forty head of cattle on Park property (Department of the Interior 1920:259).

It also created fictional surveys that placed more than the 160 acres of timber within an apparently 160 acre tract, enabling associates to acquire and profit from more timberland allowed by law. The scheme involved the use of intermediaries, often immigrants, recruited by the syndicate to purchase timberlands and illegally transfer them to the lumber companies or associated investors with the complicity of county recorders (General Land Office 1888).

When the Kaweah Colony arrived in the area, the members were incorrectly identified as such intermediaries. The attention this drew to the Colony contributed to its failure (Disalver and Tweed 1990:54). It also led to a freeze on the harvesting of timber on some tracts, including Case Mountain (General Land Office 1888).

Mineral King and Oak Grove notables were involved. In particular, Arthur Crowley, miner and son of the man who acquired the contract to build the Mineral King wagon road in 1878; timekeeper for the road construction crew; and county tax assessor purchased a tract of sequoia timber land rendered smaller on the map than it was in actuality. This property was located on Case Mountain, just south of Oak Grove. In 1895, he petitioned the U.S. Congress for permission to harvest the timbers on his land, without success (United States Congress 1895). In theory, the sequoia grove was protected.

The 1898 construction of a flume from Oak Grove to power the region's first hydroelectric power plan necessitated an accurate survey of the area. Mysteriously, although the Mt. Whitney Power and Electric Company purportedly constructed the flume using only sequoias from Atwell Mill (which the Kaweah Colony had been prevented from logging), at about this time a trail or road was constructed from Oak Grove to the sequoia grove on nearby Case Mountain (USGS 1904).

4.2.6 Kaweah Colony

***Timeframe**: 1891*
***Archaeological Evidence**: Features would include camps from the period and remnants of the lodging of the Jamison family. Artifacts would include personal and culinary items of the Jamison family and other Colony members who resided there on a shorter term basis.*
***Affected Area(s)**: The locations of the roadside camp of the Kaweah Colony members and the longer-term residence of the Jamison family are not currently known. Staging area (a) is a location where artifacts associated with the Kaweah Colony's occupancy are likely to be found, however.*

In 1891, members of the Kaweah Colony, a utopian society, climbed up the Mineral King Road mostly on foot. They stopped in "Kane's Flat" on their way to Atwell Mill, where they hoped to earn enough money from the sale of lumber to support their community (Kozakavich 2007).

Although much has been written about the Kaweah Colony,[19] little has been written about their use of Oak Grove and the role of the area in sustaining former colony members after the dissolution of the Colony. The scant information available, however, suggests that the "Kain's Flat" camp at Oak Grove was a hub of communication during the Colony's final year (Kozakavich 2007).

[19] Dilsaver and Tweed, Kozakavich, O'Connell, and Tweed are great sources of contextual background.

The members of the Kaweah Cooperative Commonwealth of California initially filed claims for timberlands in the Giant Forest area in 1885. Their claims would have been approved, and perhaps the Colony would have remained unnoticed, except that they were suspected (incorrectly) of serving as fronts for the Benson Syndicate. Title was withheld pending an investigation by the General Land Office (GLO); however, the Colonists assumed that the investigation would prove the validity of their claims and they proceeded with plans to build a road to Giant Forest to harvest timber. The GLO investigation commenced in 1889. Although the investigator concluded that he had "never seen a case of timber entry where the spirit and intention of the land laws were being carried out in better faith", the GLO did not close the investigation and instead assigned a new agent who was antagonistic towards the Colony. In October of 1890, President Harrison signed a bill expanding Sequoia National Park to include Giant Forest. Although the legislation specifically stated that existing private lands would remain private, the Department of the Interior declared the Colonists' claims void because the claims process had not been completed. The five trustees of the Colony were arrested and found guilty of timber trespass, and U.S. Cavalry troops were dispatched to protect the Park from incursion (Dilsaver and Tweed 1990:64-75; Tweed 2002).

Perhaps surprisingly, the Colony didn't collapse. The Colony leased Atwell Mill, a private inholding on the Mineral King Road, and the Colonist took up residence in Oak Grove until the snow melted enough for them to move up to the mill site (Kozakavich 2007). Interestingly, the fifty-eight men of the Fourth Cavalry's Troop K, sixty horses, and twenty mules under the command of Captain Joseph H. Dorst also set up camp there until the snows melted in the Mineral King valley (Jackson 2006:104). Throughout the summer, the colonists continued to use the flat as a waypoint on their way to and from the mill. One Colony family, the Jamisons, took up full-time residence in Oak Grove, and authored frequent "Notes from Kane's Flat" in the original Kaweah Commonwealth newspaper (Kozakavich 2007).[20]

Captain Dorst and his men helped ensure that the Kaweah Colony's time at Atwell Mill did not go smoothly. Even though they were working on private land over which the Deparment of the Interior had not jurisdiction, Dorst ordered the colonists to stop work in July after months of tension and confrontation. The government reversed its position a few weeks later, but the order had turned out to be the final blow to the Colony. It did not resume logging, and the Colony officially disbanded the following spring (Disalver and Tweed 1990:77-83; Tweed 2002).

Many members of the Kaweah Colony remained in the Three Rivers area after the Colony's demise, however, and some became close friends with Oak Grove's Griffes family (Britten 2013:169).[21] Ironically, several were hired to log Atwell Mill's sequoias for the Mt. Whitney Power and Electric Company in 1898, and several resided in Oak Grove that year as laborers working on the flume.

[20] The *Kaweah Commonwealth* is now the weekly newspaper of Three Rivers. It is co-owned and edited by Sarah Barton Elliott, a descendent of the miners who built the first cabin at Mineral King, livestock herders who brought their animals through Oak Grove, and a CCC camp supervisor and Park Ranger.

[21] Britten 2013 provides short biographies of several notable Three Rivers families associated with the Colony.

4.2.7 Establishment of Sequoia and Kings Canyon National Parks

Timeframe: 1891-1893
Archaeological Evidence: *Artifacts would include personal and culinary items of the soldiers.*
***Affected Area(s)**: Staging area (a), especially the northern portion, is a location where artifacts associated with military are likely to be found.*

On September 25, 1890, President William Henry Harrison signed the document that established Sequoia National Park (Dilsaver and Tweed 1993:68; Jackson 2006:99). On May 14, 1891, Acting Superintendent Captain Joseph H. Dorst, the fifty-eight men of the Fourth Cavalry's Troop K, sixty horses, and twenty mules left San Francisco and boarded a train to the Park. Their mission was to locate the Park's boundaries and develop a plan to protect the Park from livestock grazing. Two days after boarding the train, the troop set up camp near the base of the Mineral King wagon road (Jackson 2006:99-104; Dilsaver and Tweed 1993:76-77). It didn't take long for Dorst to note what later was characterized as a "peculiarity" of the Park. "No place exists within the confines where it is practicable to obtain a fair camp for troops accessible by wagons. The only practicable wagon road which reaches the park runs through the canyon of the East Fork on steep side slopes all the way" (Parker 1893). Accordingly, Dorst decided to make Mineral King the troop's base.

The winter of 1890-1891 was one of the heaviest in memory, with snow five to ten feet deep in the Mineral King valley at the end of May. The cavalry stayed in Cain's Flat until the snow melted enough for them to ascend to Weishar Mill (near present Silver City). According to a newspaper report, Arthur Crowley, who had established the Mineral King Resort the prior year, killed a two-year old bear and provided half of the meat to the cavalry (Elliott 1994:51). The cavalry helped Crowley repair the road (Jackson 2006:99-104).

In subsequent years, the cavalry continued to use Oak Grove as a waypoint, noting it in their reports as a "good camp" (Parker 1893:639).

4.2.8 Smithsonian Institution Death Valley Expedition

***Timeframe**: 1891*
***Archaeological Evidence**: N/A*
***Affected Area(s)**: N/A*

On July 26, 1891, members of the Smithsonian Institution's Death Valley Expedition road into "Kane's Flat." Congress funded the expedition in 1890, and it was the first biological survey of its kind. Although the expedition left only a negligible imprint on Oak Grove, its trip up the Mineral King Road had a significant effect on federal land-use policy.

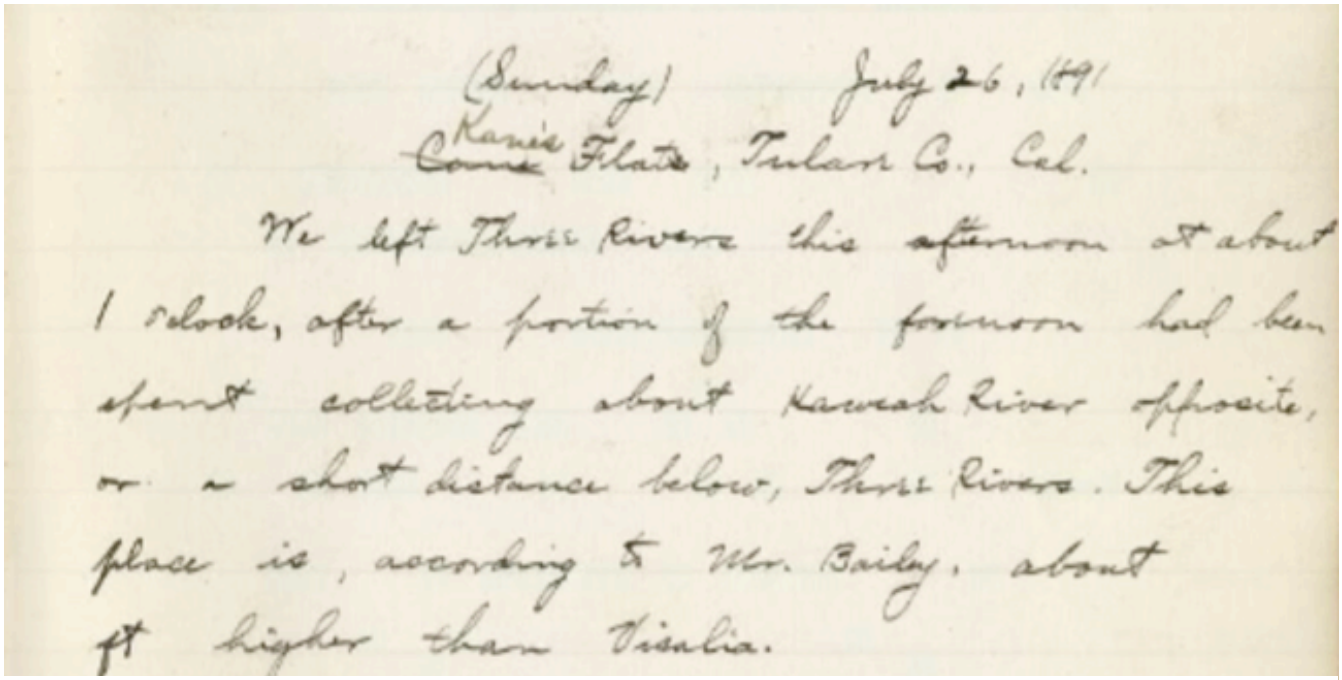
The expedition was ostensibly led by naturalist Clinton Hart Merriman; however, he was called away for much of the trip and ornithologist Theodore S. Palmer filled in. The ten participating scientists included botanist Fredrick Vernon Covillle (1867-937), who's detailed notes record the expedition's trip up the Mineral King Road, zoologist Vernon Bailey, and ornithologist Albert K. Fisher. The scientists gathered in San Berardino at the end of December 1890, and embarked on their adventure on January 3rd (Coville 1893).

The party didn't stay together for long. Coville's account indicates that groups splintered off to follow their own interests, or perhaps to avoid an arduous trek. Although the expedition did explore Death Valley thoroughly, they explored portions of Nevada, Arizona, and Utah, and headed into the Sierra Nevada before completing disbanding completely in early September (Coville 1893:1-10).

A subgroup comprising Palmer, Coville, Bailey, and Fisher met in Visalia late July. The four of them left for Three Rivers on July 25th, but only Coville and Bailey continued up the Mineral King Road from there. On July 26, they road into Oak Grove (Coville 1893:9).

In the summer of 1891, Oak Grove would have been a busy place. As the largest way station on the Mineral King Road, it was typically busy. Even though the silver rush had ended a decade earlier, some miners hadn't given up hope. More notably, however, the residents of Visalia and surrounding communities had discovered the merits of spending summers in the mountains to avoid the summer diseases that plagued the marshy valley floor (Jackson 2006:104-105). In addition to this traffic, Oak Grove would have been bustling with the activities of the Kaweah Colony. The Jamison family had taken up permanent residence in Oak Grove, and colony members involved in logging at Atwell Mill would have stopped for the night. The members of the 4th Cavalry tasked with stopping them and policing livestock herders in the new National Park would have passed through as well. It would, most likely, have been a dusty and lively place for Coville and Bailey to spend the night.

With all the livestock that stopped and passed through Oak Grove, it would have been a disappointing place for Coville to explore. Native plants would have been cropped to the ground, and non-native grasses and other invasives would already be taking hold. As he was soon to discover, the situation was no better in the Sierra backcountry.



(Sunday) July 26, 1891

~~Camp~~ Kaweah Flats, Tulare Co., Cal.

We left Three Rivers this afternoon at about 1 o'clock, after a portion of the forenoon had been spent collecting about Kaweah River opposite, or a short distance below, Three Rivers. This place is, according to Mr. Bailey, about ft higher than Visalia.

Figure 7: Fredrick Coville's journal entry for July 26, 1891. [Public domain image courtesy of the Smithsonian Institution]

Coville and Bailey left Oak Grove the next day, intent on their first glimpse of giant sequoias. They spent two nights in Redwood Canyon and a night near Atwell Mill before heading to Mineral King Valley. They stayed there for five days and then moved to "a group of red firs halfway to Farewell Gap," which they used as a base camp for another five days (Coville 1893:9). They exited the valley through Farewell Gap on August 10th and spent the remainder of the month exploring the high sierra meadows and slopes. Due to extensive sheep grazing, they had a difficult time finding forage for their horses. "All the low vegetation was stripped to the ground" (Coville 1893:9). Coville's subsequent re-orts and articles on the effects of livestock grazing in forest and mountain environments formed the basis of livestock policy in National Forest land.[22]

4.2.9 Powering the Food Basket of the World

***Timeframe**: 1898*

***Archaeological Evidence**: Features include granite masonry diversion dam (flume intake); may include remnants of construction camp (including latrine), trail/road to bridge, bridge supports, supports for cable-strung V flume used to transport logs from road to flume intake. Artifacts may include tools, square nails, nuts, bolts; personal items, culinary items.*

***Affected Area(s)**: Primarily southernmost(b) of the eastern staging areas; northernmost staging area (a) may include remnants of camp.*

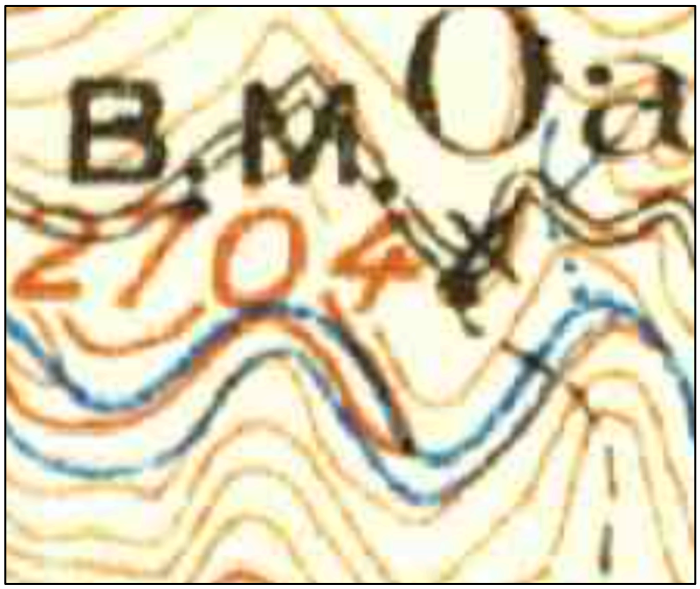


Figure 8: 1948 USGS map with the flume indicated, as well as the two extant structures and the new trail/road crossing the river and proceeding to the peak of Case Mountain. [Public domain]

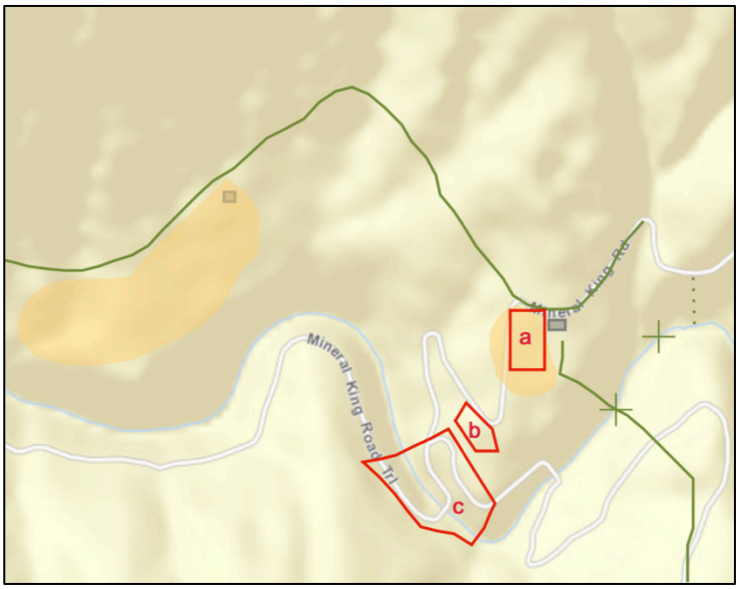


Figure 9: Location on ArcGIS map created by author using Esri data. Note that the topography of the 1904 map and the modern map match; the need for an accurate survey in order to engineer the flume resulted in a map update for this area in advance of other locales.

In 1898, the first immense sequoia tree was cut and hewn into lumber for a flume that would run six miles from Oak Grove on the East Fork of the Kaweah to Holland Mountain. There the water would

[22] (Rakestraw and Rakestraw 2006:4) provides an excellent summary of Colville's actions and their influence.

drop about 1320[23] feet down the longest penstock ever built to run the first turbines that would electrify California's San Joaquin Valley (Menafee and Dodge 1913:130; Jackson 2012:3-6; Jackson 2013:10).

The idea that led to the sequoia's demise burgeoned in 1891 (Jackson 2012:3; Menafee and Dodge 1913:130). San Joaquin Valley agriculture had drained the largest lake west of the Mississippi, and the artesian wells that had blossomed with no or minimal power, now needed pumps to draw water. A small group of Tulare County men asked each other what if a cheap source of electricity could be found to power wells? What if that same electricity could power a railroad to serve the prosperous new agricultural communities that would develop with the advent of water? Men in the land business found the idea captivating. They hoped to "get control of several large tracks of land, build electric roads [...] to them, then subdivide and place them on the market in small parcels at a sufficiently increased price to [...] leave a margin of profit" (September 1991 *Tulare County Times* qtd. in Jackson 2013:10).

No one had the means to finance the scheme, however, so they turned to the Hammond family. Local landowner and businessman William H. Hammond raised enough money to travel to London, where he pitched the idea to his wealthy and well-connected brother John. John contributed half the funds and Leopold Hirsch the remainder.[24] Work on the Mt. Whitney Power and Electric Company flume began autumn 1898 (Jackson 2012:3-5; Jackson 2013:10; Menafee and Dodge 1913:130)

Local Lore

"Traversing a narrow ledge, [flume builder] John [Grunigen] slipped on some rubble and started sliding down the cliff. He landed 80 feet below, with the ends of his fingers worn off from trying to hold on to the cliff side. On regaining consciousness back at camp, he was informed that when his co-workers picked him up, they found a crushed rattlesnake underneath him" (Jackson 2013:10).

The project had a deadline. John Grunigen, who worked at both the mill and the flume, reported that there were so many workers, they "fell over each other" (Jackson 2013:10). About seventy-five men, including prior members of the utopian Kaweah Colony, worked at the mill and on flume construction. They finished the 30,000-foot flume in only eight months, and celebrated with a surge of ozone (Jackson 2013:10).

Oak Grove is the ideal place to contemplate the achievement. Here mule-drawn wagons carrying sequoia posts and planks from Atwell's Mill stopped and unloaded. Here the flume builders began their labors each day and returned in the evening for food and sleep. There was no road to the south side of the river,[25] so the flume builders crossed the river on a bridge just below the intake and walked the flume to work each day. They used the flume itself to transport their lumber from Oak Grove to the end of the lengthening flume. They clung to the sides of cliffs, blasting a purchase with dynamite (Jackson 2013:10).

[23] Menafee and Dodge indicate it was only 900 feet.
[24] Their total investment was $100,000.00. John Hammond bought out Hirsch's interest in 1902.
[25] There was only an abandoned mule trail built by John Meadows to provide access to the Mineral King mines from 1872 to 1877 (Porter 2002:36-40).

> The head carpenter on the project rode a bicycle from the construction camp to the work sites, using a 2 by 12-inch plank in the center of the completed section as his bike path. This, in spite of the fact the grade of the flume was "rather heavy" at 20 feet to the mile, and the timber structure supporting him could rise more than 50 feet above the ground in some areas (Jackson 2013:10).

The Griffes family, who owned the eighty acres at the head of the flume, hosted the flume laborers in a camp on their land, and Albert Griffes created all the metalwork for the flume (Jackson:22).

When construction was complete, the power station provided electricity to agricultural pumps, and eventually to the Visalia Electric Railroad. The power station fascinated and terrified the author's grandmother, who first visited it in 1899 as a young girl. "The men were bold enough to step inside the power house and look at the strange equipment in operation," she recalled. "It was too frighteningly noisy for the rest of us to go near. We children [...] huddled against a fence and hoped nothing would happen to us there. We were certain we could see electricity flashing inside the building and snapping like lightning" (Jackson).

The flume and power station required ongoing maintenance, which provided numerous employment opportunities for local residents (Jackson 2013:10). Perhaps the most dangerous job was flume maintenance, a job that grew more difficult with each passing year until the wood planks were replaced with metal in 1947. In 1945, local Ben Hardin, aged 56, died suddenly of a heart attack on Monday while working on the flume in Oak Grove, (*Fresno Bee*, 29 August 1945: 26), but injuries were surprisingly rare. Albert Griffes was one of the first flume walkers. In 1918, his son Freddie took over and held the job for 41 years.

Today, water fed by dams on the National Register of Historic Places still runs from Oak Grove down the flume to site of the first hydroelectric plant, which still contributes its power to the most profitable agricultural industry in the United States.

4.2.10 Recreation Period

***Timeframe**: 1890-1959*
***Archaeological Evidence**: Features include the adobe stagecoach relay station and wagon stop, hard-packed camp floors, CCC camp foundations, roadside service structure foundations, bridge, and road. Artifacts include personal and culinary items, as well as tools and livery items.*
***Affected Area(s)**: All areas of potential adverse effect are affected.*

The Mineral King Road started as a toll road carrying giddy dreamers to the mines, but by 1890 it found its true calling as the primary route to the recreational wonders of Sequoia National Park and the Southern Sierra backcountry. Then as now, families and adventurers braved the steep and windy road with its dangerous drop-offs to seek the beauty and respite of Mineral King and its backcountry. No portion of the road is more tangibly associated with the full spectrum of Mineral King's recreational use than Oak Grove.

The Mineral King Road Cultural Landscape District commences at the Sequoia National Park boundary three miles up the road from Oak Grove, and continues to the end of the road in Mineral King. The district was deemed eligible for inclusion in the National Register of Historic Places because of its tangible association with the history of recreational development on federal lands, and in particular the development of the USFS and NPS recreation and conservation programs between 1915 and 1942. The statement of significance highlights the work of the Civilian Conservation Corp Camp located at Oak Grove (National Park Service 2008:21-22).

As the most archaeologically significant site on the Mineral King Road corridor (Morehead 1975:10-12) and one of the sites most tangibly associated with the period of interest, it is ironic that Oak Grove is not included in the Mineral King Road Cultural Landscape District. Indeed, Oak Grove and the entire 9.3 miles of the Mineral King Road owned by Tulare County have been determined associated with the historic significance of the Cultural Landscape District, and therefore both contributing and eligible for inclusion in the National Register. They are excluded because the National Park Service did not have legal enforceable interest (National Park Service 2008:19).

Oak Grove's involvement in recreational use extends beyond the Mineral King Road Cultural Landscape District's period of interest, however. Oak Grove's role in establishing and maintaining the summer refuge of Mineral King began in earnest in 1890, the year that Sequoia and General Grant National Parks were created, and the year that Arthur Crowley began building a resort at Mineral King. Early that year, Crowley purchased the dilapidated Smith House hotel in Mineral King. In a related move, he filed a relocation claim on the Empire Number One, Extension North on May 26, and on June 20 he filed a claim for an associated five-acre mill site on the valley floor. It was not a coincidence that the Smith House was included in these five acres (Crowley; Jackson 2006:102).

In the spring of 1891, Crowley started repairing the road to Mineral King with funding from the county and local residents and help from the Fourth Cavalry that had been tasked with protecting the new Park. They used Oak Grove as their base until the snow melted enough for them to head to Mineral King in late June. By July, the local newspapers reported that there were at least 200 people camped Mineral King. Crowley and his family resided in the Smith House while he worked on the road and did the mandatory improvements on his mine claim and mill site (Crowley; Jackson 2006:104).

It wasn't until June of 1895 that Crowley had the Smith House and road ready for visitors. From the start the resort could keep up with demand, and Crowley began building more structures. In 1896, Henry Alles started running a stage to Mineral King, and Crowley petitioned for a post office. In 1897, the petition was approved and Crowley became the postmaster, a post he held until 1930. In 1898, Crowley was charging 2$ per night for board and lodging, $10 per week, and $40 per month. In 1902, telephone line was run from Mineral King to Oak Grove, where it connected with an existing line down to the valley. In 1905, a water system was installed to the resort. By 1906, the resort included a "luxury" two-store hotel with lace curtains, a store, a butcher shop, a barn, a stable, a covered dance hall, and at least eight "cottages." The resort hosted visiting notables, as well as families from the San Joaquin Valley (Crowley; Jackson 2006:104-108).

Crowley began to take active steps to protect the resort from potential Park expansion in 1904. In 1903, the Department of the Interior had issued its first permit for cabin usage in Mineral King, and had consented to continued occupancy and use as a resort by Crowley. In 1904, however, Sierra Forest Reserve Supervisor Harrison White informed the General Land Office (GLO) that Crowley was abusing the mill site claim. The GLO Commissioner determined that the location notice for the Empire Mill site had been filed before the Forestry Reserves existed and the use of such lands restricted. Accordingly he granted Crowley special privilege to continue occupancy. In 1905, the forest reserves were transferred to the Department of Agriculture, and Crowley applied for a patent to the mill site. Supervisor White reported to the department that the patent claim was fraudulent, and litigation against Crowley commenced. It took two years for the United States v. Crowley to go to court. On May 18, 1908, Crowley won the case, and Theodore Roosevelt signed his patent on December 17 (Crowley; Jackson 2006:129-131).

Meanwhile, however, on April 18, 1906 the San Francisco earthquake struck. It triggered a series of avalanches that demolished the Smith House and destroyed or damaged almost every other building in the resort. Crowley began repairs that summer, and was able to reopen for business. In 1920s he upgrade the resort to include a waiting room, dining room, bathhouse, tent cabins, and a concrete dance floor. In 1928, he added an electric generator and lit up the resort (Crowley; Jackson 2006:124-128).

The 1920s witnessed considerable growth to the community surrounding the resort. After the Mineral King Road was improved and the first automobile drove up in 1918, the Forest Service decided to issue permits under the 1915 Term Occupancy Act. By 1924, lots had been demarcated, and permittees began building new cabins (Elliott 1994:63-67; National Park Service 2008:82)

Crowley sold his resort in 1928, and died in 1932. The Great Depression proved to be a boon to Mineral King, however. The Civilian Conservation Corps camp in Oak Grove spent three years improving the road, building campsites and picnic areas, and developing trails. With the improvement of the road, George L. Mauger abandoned his stage service between Three Rivers and Mineral king in 1932 after nine years of service (California State Railroad Commission 1932:923).

During the entire period, Oak Grove was the principal roadside stop and overnight camp for travellers. There were other lodges and camps on the road (including the Grunigen's at Lake Canyon and Slapjack Smith's further up the road), but Oak Grove was the largest and it provided the most amenities. Until the new road and bridge were built to Oak Grove in 1912, Cain's Flat (a.k.a. Kane's Flat) on the western half was a primary camp area. It featured the road's first spring, with a pond to water livestock, an adobe stagecoach relay station, and corrals (Jackson 2013:11). In 1894, Will Bell rented Cain's Flat Ranch, and fed traveller's horses at the cost of 25 cents per head (Jackson 2013:11). Cain's Flat served freighters, for the most part (Jackson). In the 1930s, it was converted into a camp for the Civilian Conservation Corps, and later into an internment facility for inmates assigned to roadwork.

By 1898, the western portion of the flat was known as Oak Grove. There the Griffes family provided storied hospitality. They had a lodge and provided meals made from livestock and produce grown on the ranch (Jackson; Jackson 2013:12). When they road from Oak Grove to Mineral King was too

dangerous, they provided parking for automobiles left by travellers who continued via a horse-drawn stage. Later, they also provided a roadside camp for travellers, a produce stand, and a gas pump. The Griffes famly hospitality continued until they moved away and sold the property in 1959 (Jackson 2013:12).

4.2.11 The Advent of Automobiles

***Timeframe**: 1812-1823*

***Archaeological Evidence**: Features include remnants of the footings of the 1812 bridge and remnants of the original road (before the switchback was added); they should also include the latrines and site of the road construction camp. Artifacts include personal items, culinary items, and tools.*



Figure 10: 1934 USGS map with the road on the south side of the East Fork of the Kaweah. The 1915, 1921, 1926 updates did not show the new road configuration. [Public domain]

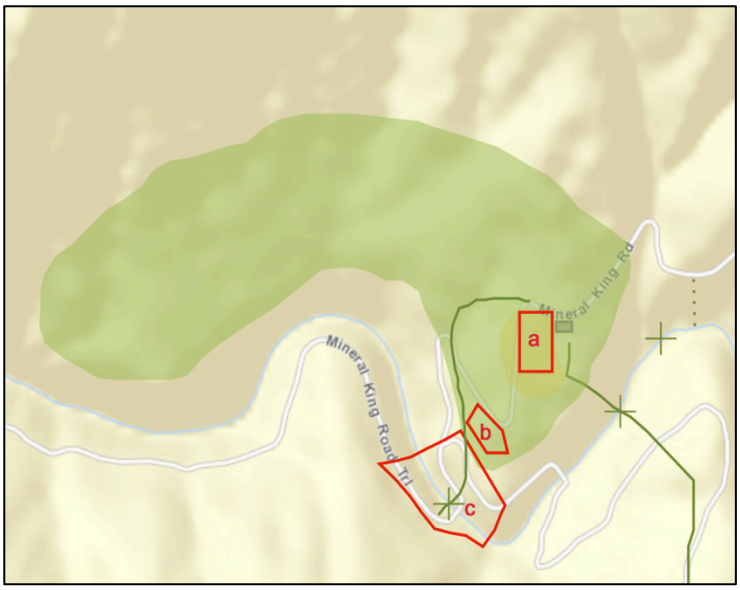


Figure 11: Location on ArcGIS map created by author using Esri data. Period photographs (1912-1923) indicate that the road turned sharply the west after crossing the Kaweah, rather than following the route indicated on the map. There is on-the-ground evidence, however, that the original road did not include a switchback.

***Affected Area(s)**:*

Both of the staging areas (a and b) are affected, as is project area (c).

By 1910, it was clear that a new road to Oak Grove was essential. If the 25-35% River Hill grade to Oak Grove was difficult and deadly for horses and mules, it was impossible for automobiles. The Mt. Whitney Power and Electric Company wanted an easier route to the flume intake and its dams in Mineral King, and resort owners wanted to appeal to a new breed or tourism. In particular, the Oriole Corporation needed an automobile route to its proposed Oriole Lodge Summer and Winter Resort above Oak Grove (Jackson 2013:9).

The Tulare County Board of Supervisors responded by posting a bond that enabled locals Jason Barton and County Surveyor Byron Lovelace, along with John Taylor to survey and locate the route on the south side of the East Fork of the Kaweah to Oak Grove, where it would cross on a wooden bridge. The cost was estimated at $16,000 for the road and $1,600 the bridge. The County stalled until The Oriole Lodge Corporation offered to provide up to 100,000 board feet of lumber for the construction of

culverts and bridges at no cost to the county. The county then acquired the necessary right-of-ways, and put the project out to bid. The sole bid was rejected as too high, so the county's road commissioner hired day labor to build Road No. 981 (Jackson 2013:9).

The Griffes family hosted the road construction camp, as work commenced on the bridge. From the start, the project was challenging. The roadway was to be twelve feet wide with eight feet of "solid roadbed." The specifications stated it must be smooth and free from all projecting roots and rocks; however, the grade wasn't specified and anything less than one-foot square was considered dirt (Jackson 2013:9). According to Jackson, the Oak Grove Bridge proved to be especially problematic:

> It had to span 115 feet of the canyon. The original specifications called for redwood or cedar timbers 14 inches in diameter. But the Oriole Lodge owners had trouble providing such large pieces so the specifications were lowered to 10 by 12 inch pieces with 14 inch timbers used only for the piles. Two 60 foot stringers were made of four 3 by 12 inch by 16 foot boards belted and clamped together. It was a breathtaking bridge to cross (Jackson 2013:9).

The bridge was completed in 1912, and the new road to Oak Grove officially opened in the summer of 1913. It didn't open to automobile traffic, however. In 1915, the steep section at the lower portion of the road was reconstructed. The portion above Oak Grove remained impassable by automobile for some time however (Jackson 2013:9).

Local Lore

On the way up the Mineral King Road with his herd of cattle, Bob Barton would spend the night at the old location of Trauger's Last Chance Ranch (above Oak Grove). He put his bed right in the road below the cattle. The road was much narrower then, and the cattle would not come down past him. Bob would be pretty frazzled after spending a day on the road herding cattle clear from Three Rivers, where he had to work hard to keep them out of people's yards. One morning Bob woke up and there was a tire track right across his pillow. He hadn't even woken up when the car went by (Barton Oral History).

The first automobile drove all the way up the Mineral King road in 1918, a full six years after work began to modify the road for this purpose. In 1919, 694 automobiles carrying 3,506 people dove up the Mineral King Road. Another 1,045 ascended "wagon, horse, and afoot" (Department of the Interior 1919:1115). In 1920, 1,267 automobiles carried 7,918 people, and 908 people ascended via non-mechanical means (Department of the Interior 1920:261).

Despite the years of effort to make the road automobile worthy, the road had to be repaired early 1919, and it required maintenance by the county throughout the 1919 season (Department of the Interior 1919:1116). In 1920, the National Park Service described the road as "in very bad repair, no steps taken by the county for its repair" (Department of the Interior 1920:259). Still, it did note that the county had "put [the road] in better repair than last year" (Department of the Interior 1920:210).[26] The poor road made the trip up the Mineral King an adventure. "Automobile tires were not very good then and they just couldn't

[26] According to local tales, the road was in such bad shape, most people drove up to Oak Grove, parked, and then took a mule-drawn shuttle to the valley. The author has not been able to confirm that this actually occurred.

take the wear they got," Monroe Griggs recalled. "I have changed tires as often as nine times in one day. I tried all kinds of tire patches and inner linings but none of them helped much" (Jackson 2012:9).

The wooden bridge was the most dangerous part of the new road, however. Built of sub-standard materials, it didn't take long for it to begin to sag (Jackson 2012:9). When Bob Barton drove a two-ton Nash truck across, he would "set the hand throttle, get out of the truck, and walk along side it holding on to the wheel, so he could try running if he heard cracking timbers" (Barton Oral History).

In 1923 Nate Lovelace, a local and a brother of the County Surveyor Byron Lovelace who had petitioned for the road, won a bid to construct the concrete Oak Grove bridge to replace the wooden one (HAER #CA-142). Upon construction, the picturesque bridge became a destination in its own right. The footings for the old wooden bridge remained next to the new bridge, a testament to the risks of cutting corners.

4.2.12 Jobs for Men and Country: The Civilian Conservation Corps

***Timeframe**: 1933-1937*

***Archaeological Evidence**: Features include compacted areas where structures and roads were located, the remnants of the road that led to the camp, and the subsurface remains of the latrine. Artifacts include tools, personal, and culinary items, as well as materials used to form the structures.*

***Affected Area(s)**: All project and staging areas are adjacent to the 1923 road (11 and 4) and are likely to include artifacts from this era, as well as road features developed by the CCC.*

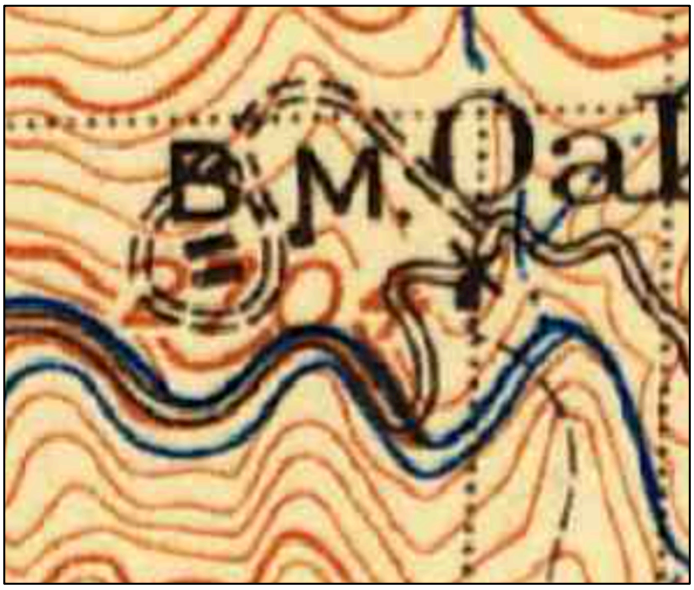


Figure 12: 1948 USGS map the road to the camp loop indicated. It is possible that the CCC camp used the original 1877 road rather than the new configuration, which may have been added to isolated the Industrial Road Camp from the Griffes home. [Public domain]

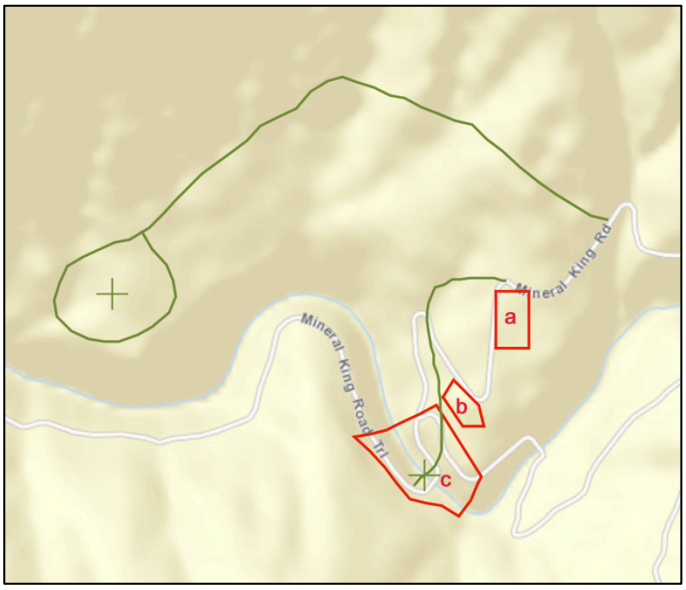


Figure 13: Location on ArcGIS map created by author using Esri data. Note that the 1912 road rather than the current switchbacks were still apparently in use. The location of the 1912 road is approximate. The southern portion probably turned right more immediately; however, there are still surface features that suggest the route of the original road.

In November of 1933, over one hundred young, unemployed men crossed the Oak Grove Bridge to the newly established Civilian Conservation Corps (CCC) camp on the western half of Oak Grove (*Fresno Bee* 17 October 1933: 21). Known as Cain's Flat, the camp was one of about 101 camps in California established by President Franklin D. Roosevelt to reduce the unemployment of the Great Depression of 1929 to 1939. As many as ten thousand CCC men per month were responsible for building and repairing roads and trails; creating public structures, picnic areas, and campgrounds; and conducting fire suppression activities. In other parts of the country unemployed men were hired to excavate archaeological sites; CCC men, however, removed remnants of the past in an effort to tidy the National Parks (Smith 2011).

The Cain's Flat CCC camp was relatively typical. Camps normally housed 110 enrollees, a company commander, an army assistant, an educational advisor, a forest project superintendent, and 5 project foremen (*Fresno Bee* 10 May 1936: 40). Captain Rees Skinner commanded the CCC camp the first winter. It was a challenge at first. Not only were the buildings incomplete, but initially there were no uniforms or equipment for the men (Bartlett 1988:13). It didn't take long however for him to get the men settled. By February they had a baseball team and were publishing a newspaper. They were improving the Mineral King Road and building a road to a fire lookout on the top of Milk Ranch Peak with shovels and blasting powder, they were attending classes, watching movies, and they were eating enough food for the average man to gain twelve to thirty pounds in six months (Jackson 2013:11).

Life wasn't all work, education and play. One young man stabbed another who wasn't sharing his newspaper (*Fresno Bee* 29 April 1934: 7). The camp was quarantined for a time due to menangitis (*Fresno Bee* 13 February 1936: 20). There were accidents. In March of 1934, CCC enrollees set a fire to clear some brush. Such activities were intended to create firebreaks to mitigate the threat of future fires; however, in this case it had the opposite effect. The fire broke away from the men and burned sixty acres of brush, oak, and yellow pine above Traugers' Ranch on the Mineral King Road. It was halted about five miles below the Atwell sequoia grove (*Fresno Bee* 14 March 1934: 9).

The CCC men left an indelible legacy. During the three and a half years that Oak Grove hosted the CCC camp, the men built ranger stations, hiking trails, campgrounds, hundreds of fireplaces, and overnight shelters. They erected telephone lines. They improved springs, reservoirs, and water troughs. They built fire trails and conducted prescribed burns. And they made the Mineral King Road what it is today… a cultural resource deemed worthy of protection (*Fresno Bee* 10 May 1936: 40; Jackson 2013:11).

4.2.13 The Fugitive Years: The Industrial Road Camp

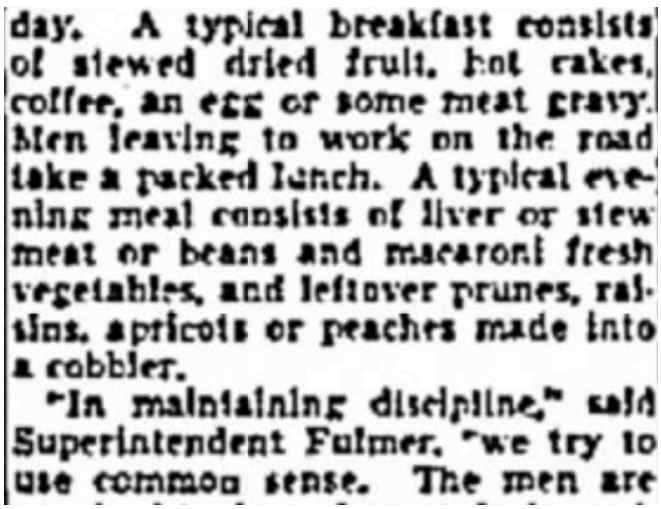
***Timeframe**: 1937-1948*
***Archaeological Evidence**: Features include compacted areas where structures and roads were located, the remnants of the road that led to the camp, and the subsurface remains of the latrine. Artifacts include tools, personal, and culinary items, as well as materials used to form the structures.*
***Affected Area(s)**: All project and staging areas are adjacent to the 1923 road (11 and 4) and are likely to include artifacts from this era.*

When the Civilian Conservation Corps (CCC) left the Cain's Flat camp, the men who had improved and maintained the Mineral King Road left with it. Tulare County's crowded prisons provided a solution… and some intrigue.[27]

The CCC abandoned Cain's Flat 1937,[28] and the Federal government transferred it to Tulare County. The structures remained, however, and the camp was immediately converted into a correctional facility—the first Industrial Road Camp in Tulare County. Such camps became popular in the early 20th century as a means for transportation departments to build and maintain roads at low cost. Tulare County viewed the road camp as a means to decrease purported population pressure in its prisons and maintain the Mineral King Road at minimal cost (*Fresno Bee* August 1937: 23).

The Tulare County Industrial Road Camp interred young non-violent male inmates such as a man who was convicted of intoxication (and received a three month sentence at the camp), a check forger (who signed someone else's name on a $20 check), a petty burglar (who stole $5 worth of goods including a razor, food, alcohol, and cigarettes), an unemployed man who had not made alimony payments, drunken and reckless drivers, an automobile thief, and very young men who "had contributed to the delinquency" of underage girls. County Supervisor Roscoe Patterson pitched the road camp in altruistic terms: "We believe that a healthful life in the open and wholesome outdoor work will help give the offender a new start in life" (*Fresno Bee* August 1937: 23).

The road camp must have been an unpleasant place, however, and even prisoners with short sentences sought to escape (including the 21 year-old man who was given a three month sentence for intoxication). From December 1937 through March 1938, twelve inmates fled (*Fresno Bee* 21 March 1938:11), and reports of numerous escapes continued until the camp was abandoned.


day. A typical breakfast consists of stewed dried fruit, hot cakes, coffee, an egg or some meat gravy. Men leaving to work on the road take a packed lunch. A typical evening meal consists of liver or stew meat or beans and macaroni fresh vegetables, and leftover prunes, raisins, apricots or peaches made into a cobbler.

"In maintaining discipline," said Superintendent Fulmer, "we try to use common sense. The men are

Figure 14: An excerpt from page 11 of the 19 August 1940 *Fresno Bee*.

The camp's inmates didn't just maintain the Mineral King Road.[29] In 1937, for example, the forty-five prisoners straightened and widened the North Fork road (*Fresno Bee* 28 October 1937:8). In July 1939, they engaged in a different sort of work. The road camp was surrounded by forest fire, and thirty trapped inmates constructed firebreaks and saved both themselves and the structures (*San Bernardino County Sun* 6 July 1939:5). The road

[27] Information about the camp should be available in Tulare County Records. The summary in this document was based on period newspaper reports and local lore.

[28] The CCC didn't completely abandon the area. The June 8, 1940 Fresno Bee reported on page 9 that a CCC enrollee from the nearby Buckeye Camp had died a mile above the Industrial Road Camp at Cain Flat when the CCC truck struck the side of the road and overturned.

[29] The road's switchback through Oak Grove didn't appear on the maps in the 1940s; it is possible (but not confirmed) that the convicts added it.

camp was downgraded from the county's primary road camp to stub camp in 1940, when a new Camp No. 1 was established in Woodlake. Inmates dismantled the CCC camp structures, and used them to construct the new road camp headquarters (*Fresno Bee* August 1940: 11).

Despite assurances in 1940 that the men were treated with "common sense" and fed three meals per day (at the cost of "10.6 cents per man") (*Fresno Bee* 19 August 1940:11),[30] two men staged the year's final escape from the Cain's Flat camp in late December (*Fresno Bee* 30 December 1940:11). In 1948, men were still risking prison to flee the camp, even if they had been given the minimum sentence of 30 days. Law enforcement suspected that local residents might have been assisting the fugitives (*Fresno Bee* 23 March 1948: 20).

The Tulare County Industrial Road Camp in Oak Grove apparently operated for at least a decade.[31] What made life at Cain's Flat so unbearable that inmates risked prison and longer sentences to escape? Any artifactual remnants of the inmates' lives still hold their secrets. A local man, Oscar Alles (1906-1971), served as the county's road maintenance foreman during this period, however, and lived at Cain's Flat with his wife (*Fresno Bee* 17 February 1940: 6). In small communities, rumors spread.[32]

4.2.14 Disney's Dream

***Timeframe**: 1965-1975*
***Archaeological Evidence**: N/A*
***Affected Area(s)**: N/A.*

Between 1945 and 1960, federal agencies promoted increased commercial use of Sierra resources, and the potential of a Mineral King Valley ski resort emerged. In 1948 the Sierra Club, along with several other organizations, local communities, and businesses, publicly backed a proposal for Mineral King's recreational development. In response, the Sequoia National Forest issued a prospectus for a small winter sports complex. There were no qualified bids, but in 1965 the Sequoia National Forest tried again. This time it issued a new prospectus for a huge multi-million dollar sports complex. The agency received six bids, four of them far exceeding the prospectus requirements.

Meanwhile, the national environmental movement was growing. When the scope of the Mineral King project was publicized, the proposed commercial development of a "pristine" Sierra valley became a national issue. Although in 1965 the Sierra Club once again released a statement backing the concept of a Mineral King ski area, two months later its members voted to oppose it. When Disney's WED Corporation won the bid in December, the Sierra Club led a fight to stop the $35 million development.

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[30] The following year, the per-meal cost per man had increased to 11.5 cents. The total prisoner cost per man day was 47.2 cents (*Fresno Bee* 30 July 1941: 14).

[31] The last reference to the Industrial Camp found by the author was from 1948.

[32] He was the son of Philip Alles (1867-1953), who purportedly drove the shuttle to Mineral King in 1917. His father was also the prior owner of Atwell Mill, which had provided the sequoias for the flume and the lumber used in most of the cabins at Mineral King. The family cabin in Mineral King (the Alles cabin) is a historic site used extensively to educate the public. Oscar Alles was also the nephew of Luther Mullenix (1891-1916), who was murdered on February 19, 1916 in Lake Canyon just east of Oak Grove. According to multiple generations of locals, Luther haunted the area until a recent exorcism (which some locals lament).

Despite increasing opposition, the Forest Service and Disney Corporation forged ahead with their plans. By 1968, with several years of research, development of a master plan, and state funding lined up for an all-season road, the resort appeared to be an accomplished fact. However, the next year the Sierra Club won an injunction against the building and maintenance of the planned all-season highway and a ten-year journey through the nation's district and federal court system began. Finally, the lawsuit reached the Supreme Court of the United States. On April 19, 1972, by a vote of four to three, it rendered its decision. The Sierra Club could not show that the club itself would suffer economic or other injury from development of the valley so it lacked standing to sue. Disney and the Forest Service resumed their planning, but altered the proposed resort design to address environmental concerns. A key part of the new plan entailed utilization of Oak Grove as the base of a cog-assisted electric railway to Mineral King. Meanwhile, environmentalists and Mineral King cabin owns pursued a different approach to block the Forest Service and Disney –inclusion of Mineral King in Sequoia National Park. On October 12, 1978 they succeeded.

Although Disney's impression on Oak Grove is visible only videos and images, an archaeological survey of Oak Grove conducted as part of the Environmental Impact Statement in 1975 has relevance today.

4.3 Association with Significant People

4.3.1 The Cain Family

The entire Oak Grove areas was first known as Cain's Flat. Although it is unclear at this point how and when the family first became associated with the flat, the family was actively involved in the first and second silver rushes in Mineral King.

James Alexander Cain was born in 1822 in Kentucky. He married Mary Jane Williams in Missouri where they welcomed their son Henry S. in 1848. They headed out west via Arkansas, Colorado, and Montana, and arrived in Tulare County by 1870 with nine offspring aged four to twenty-three. In 1870, the family had no personal wealth. James was a day laborer, and their three oldest children were farm laborers. None had learned to read or write, although two of the boys (Joseph aged 12 and Samuel R. aged 10) were in school (Tulare County Census 1870).

The family was among the first to rush to Mineral King in the autumn of 1873, and they recorded three claims that year. The family returned as soon as the snow melted in 1874, along with the Harmon, Meadows, Mankins, and McGinnis families (amongst whom there was already intermarriage). It is possible that they were among the founders of Harmonville, the most religious settlement in Mineral King (located at the southern end of the valley) (Porter 2002:110-111).

The families associated with the Harmonville were somewhat unique in that the women owned mine claims independently. Rebecca Elizabeth "Betty" *Harmon* Cain, the eighteen-year-old wife of Giles Lee Cain (the second son of James and Mary) acquired two claims by transfer in 1874, and filed one on her own in 1879, later selling one for $300[33] (Porter 1960:111,136). Rebecca and Giles also gave birth to

[33] This was much more than any of the men in her family earned from their claims.

their second child, Minnie Ollie Cain on November 15, 1875 in Mineral King (Tulare County Census 1880).[34]

The family actively mined in Mineral King throughout the first and second silver rushes; and Giles, Betty, and their two daughters were still living in the Mineral King/Kaweah area for the 1880 census. It is possible that they were farming Cain's Flat at this time (Tulare County Census 1880).

The Cain families dispersed to Exeter, Fresno, and Bakersfield and turned to farming after the Mineral King silver rush.[35] They didn't all fade into obscurity, however, and by the end of the century some were showing up in news reports featuring infidelity and murder.[36]

4.3.2 Judge Allen Jeffrey Atwell

About 6200 feet below Atwell Mill and 80 miles to the southwest lies Alpaugh. It is an exceptionally impoverished and dusty town, surrounded by rectangles of drought-smitten fields. It is hard to imagine this place as an island overrun by hogs and surrounded by the largest fresh water lake west of the Mississippi. It is hard to imagine the clattering din produced by the steam engine as it propelled a boatload of hogs from the island to their demise.

In 1875, much of Tulare County was covered by Tulare Lake. An ambitious Visalia attorney named Allen Jeffrey Atwell bought a large island on the southern shore to raise Razorback and Poland China hogs. Atwell's Island was perfect in that it didn't require fencing to keep the hogs contained and predators at bay. The lake covered almost 1,000 square miles of the valley floor, however, and Atwell needed an efficient way to transport his hogs to market.

The *Mose Andross* was the solution. It was a flat-bottomed steamship, about fifteen feet wide, and fifty long. It was the first steamboat on Tulare Lake, and the namesake of Moses C. Andross, who ran the United States Land Office in Visalia and received Atwell's payment for the island.

The *Mose Andross* transported hogs to Atwell's Landing on the northeastern shore for four years. During this time, it also took paying guests on pleasure trips. Concurrently, irrigation and stream diversion began to rapidly reduce the lake to a small fraction of its original acreage. Soon, Atwell's Island was no longer an island, and his hogs scattered through the tules to spawn some of the feral swine that plague the region to this day.

Atwell abandoned the *Mose Andross* in 1879 near Lemoore. John Chism and Oliver McCoy converted a part of her into a ferry, but their enterprise ended shortly after it began. The renowned 'boat hermit' James Mac lived in her for a while, floating freely on the lake until the receding waters stranded the vessel.

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[34] Minnie was evidently the second child born in Mineral King. The first, the daughter of her friend Rhoda Kansas *Meadows* McGinnis and Abraham McGinnis, was named Minnie as well (Tulare County Census 1880).

[35] In 1891, James Cain was in Fresno, where he was growing nectarines and earning $2-300 per acre. (1910. The Pacific Rural Press and California Farmer, Volume 80: 467)

[36] Search the Bakersfield and San Francisco newspapers for the 1899 murder of James A. Cain Jr. (son of the Cain patriarch) by Justin Brown, or the June 1899 shooting of Giles' son in law, John Arnold, an Exeter saloonkeeper of bad reputation.

Despite the failure of his hog raising and pleasure cruise ventures, Atwell continued to prosper. He purchased the *Visalia Times* to help further a political career, and became district attorney and a representative in the state legislature. People began to call him "Judge." At some point in the 1880s, he owned all of Oak Grove (known at that time as Cain's Flat) (Thompson 1892). In 1886, Atwell purchased 140 acres in the mountain community of Mineral King from "Doc" Mullenix. The land included a lumber mill where Mullenix had been splitting Sequoia shakes for the roofs of miners' cabins and other buildings for about seven years.

The demise of the *Mose Andross* didn't stop our little steam engine, either, and some historians believe that Atwell salvaged it from the abandoned ship. Manufactured by the Erie City Iron Works in Pennsylvania, the steam engine had already traveled a formidable distance to California's Central Valley. Now it may have embarked on an arduous trip up a steep wagon road, through Oak Grove, to Atwell's mill.[37]

With the steam engine, Atwell was able to expand the mill's operations. He harvested fir, pine, cedar, and sequoia from his acreage to support a building boom in Visalia and other regional towns. At the turn of the century, the mill provided the lumber for the flume that fed the first Hammond Power Station at the bottom of Mineral King Road, which in turn powered the Visalia Electric Railroad and well pumps, which in turn supported an agricultural industry that accelerated Tulare Lake's disappearance.

The steam engine outlasted Atwell. It operated until 1929, when it was replaced by a Caterpillar tractor. It is the last surviving remnant of Atwell's Mill and is listed on the National Register of Historic Places. Recently stabilized by the National Park Service, it appears impervious to the record drought that scorched the surrounding meadow by the middle of June.

As for Atwell, water was his undoing. In 1891, the man who had built the valley's first industry on an island in Tulare Lake, commissioned the lake's first steamboat, and contributed substantively to the disappearance of that lake, fell into a vat of hot water.

Before his passing, Atwell left us with an account of a June shower in Oak Grove. "He says [he] was refreshed, not only by the pure pearly rain drops, falling like angel's tears upon his hoary head, but by the grand spectacle of the snow, which fell in large quantities on the higher peaks of the Sierras" (Los Angeles Herald, June 10, 1886).

4.3.3 Thomas Fowler (1829-1884)

Thomas Fowler was the orchestrator of the second Silver Rush from 1878 to 1883, and the man behind the construction of the Mineral King road through Oak Grove.

[37] Some historians believe that the steam engine remains at Atwell Mill came from the Empire Mine, and were brought up by Thomas Fowler in 1879.

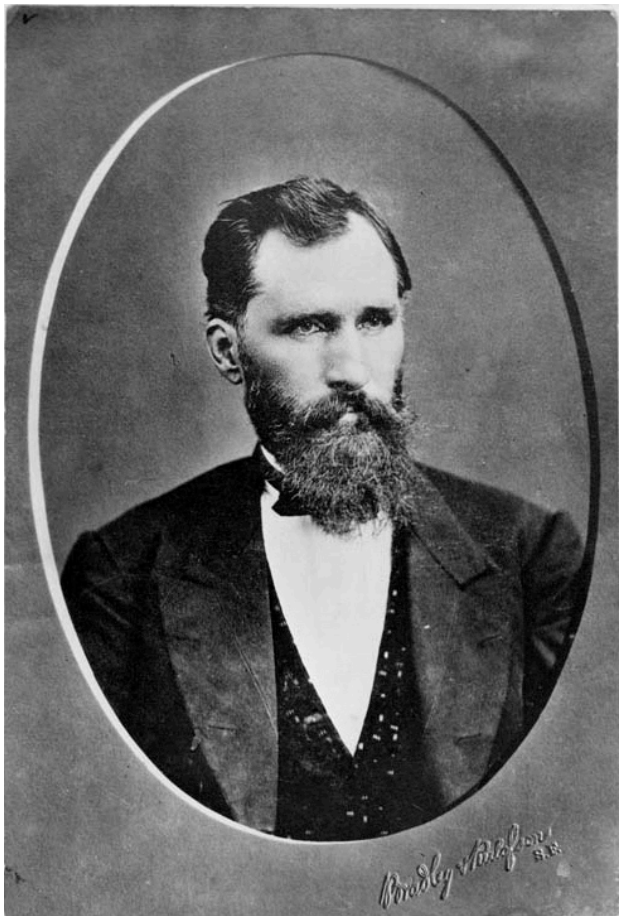


Figure 15: Thomas Fowler [public domain image]

Fowler was born in Ireland on March 17, 1829, during its great famine, and had migrated to New York when he was only fourteen. He worked in a machine shop, but the iron dust caused lung problems. He drifted about Canada and the United States until 1853 when, at the age of twenty-four, he decided to settle in Tulare County with a herd of Mexican cattle. He eventually became a very wealthy cattle rancher,[38] landowner,[39] and politician. He was a Democrat, and served in the California State Senate twice.[40] He was Grand Marshall in the Democratic Torchlight Procession in San Francisco in 1868. In 1878, when he came to Mineral King he was expected to be the next California state governor. That year, he purchased the Empire Mine in Mineral King, and formed the Empire Gold and Silver Mining Company. The stock company was worth $1,000,000.00, with 100,000 shares worth $10 each. Fowler anticipated a return from his investment great enough to pay off the national debt and buy Ireland back from the queen. (Elliott 36-9, Jackson 36-49, Porter 49-70).

Fowler was known for standing up for the underdog and downtrodden, especially in what was a time of deep global depression when farmers felt that they were suffering under the political and economic manipulations of the "railroad barons," and ranchers were losing rangeland to agriculture.[41] He was considered a large, well-built, brawny man; plain, blunt, and honest. He was also known to get into fist brawls when his honor was attacked.[42] Despite his

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[38] See page 149 of *The Scotch-Irish in America: Proceedings and Addresses of the Third Congress at Louisville, KY, May 14 to 17, 1891*. Nashville: Barbee 7 Smith, 1891. The book is available in digitized form at https://books.google.com/books?id=UngoAAAAMAAJ.

[39] On May 15, 1869, Fowler was awarded three large land patents: two tracts of 480 acres and one of 481.50 acres. On August 10, 1869 he was awarded four tracts of 560 acres and two tracts of 640 acres. On May 25, 1872, he acquired a patent on 1120 acres. Most were in the Visalia area, to the west of Mineral King (http://www.glorecords.blm.gov/search/default.aspx).

[40] For a list of his offices, see page 164 of Menafee, Eugene L. and Fred A Dodge. *History of Tulare and Kings Counties, California: With Biographical Sketches of the Leading Men and Women of the Counties who Have Been Identified with Their Growth and Development from the Early Days to the Present*. Los Angeles: Historic Record Company, 1913.

[41] See http://cdnc.ucr.edu/cgi-bin/cdnc?a=d&d=SDU18730717.2.12 for an account of his opposition to the "No Fence" law, as well as page 109 of Menafee, Eugene L. and Fred A Dodge. *History of Tulare and Kings Counties, California: With Biographical Sketches of the Leading Men and Women of the Counties who Have Been Identified with Their Growth and Development from the Early Days to the Present*. Los Angeles: Historic Record Company, 1913.

[42] See, for example http://query.nytimes.com/mem/archive-free/pdf?_r=1&res=9D0CEFD91E3FE63BBC4C53DFB1668382669FDE. For a great 1878 description of Fowler's personality and background, read pages 34-5 of *Pen Portraits: Autobiographies of State Officers, Legislators, Prominent Business and*

physical stature, he was plagued with poor health, as was his family. Shortly before his arrival in Mineral King in 1878, his son Clarence (almost three years old) died of diphtheria. The next year, his eight-year old daughter Amy died.[43] He returned to Mineral King two days later (Crowley). Fowler was obsessed with ensuring that his Empire Mine was a success, and spared no expense on his endeavor. Fowler believed in efficiency, and decided to use state-of-the art innovations to reduce the operational costs of his mine while increasing its output. One such innovation was the tramway invented by Andrew Hallidie, who also originated the San Francisco cable car.

On the night of April 16th, 1880, less than six months after the tramway was completed, an avalanche destroyed the mine's bunkhouse, tramway towers, and the mill roof. Fowler tried to make repairs and resume operations, but his creditors filed multiple lawsuits. He became quite ill, and, some said, increasingly took to drink. He tried to get back into politics, running unsuccessfully for the seat of Lieutenant Governor and then for State Railway Commissioner, both on an anti-railroad company platform. Then he went to Mexico to try to purchase cattle to restart his career as he had begun it. He returned penniless and in worse health than before. In April of 1884, he went to San Francisco seeking financial and legal support from his old friends. His efforts met with no success, and on April 16, 1884 returned home on the railroad he had been fighting. As he stepped off the still-moving train, he fell. He died the next night in Visalia, at the age of fifty-five (Elliott 41-5, Jackson 78-86, Porter 71-84).[44]

4.3.4 The Crowley Family[45]

The Crowley family arrived in the San Joaquin Valley in 1862. Once in the valley, they exerted a quiet, though significant, impact on the events that shaped the region. Their most substantive contribution, however, may have been the extensive corpus of journals, letters, and memoirs that they created.[46] Included among this collection are the journal entries and letters of a young Arthur Crowley, who served as timekeeper during the construction of the Mineral King Road from Oak Grove to Mineral King in 1879.

Arthur Crowley (1859-1931) acquired the job as the result of connections. Not only had he previously worked for Thomas Fowler (the orchestrator and financial power behind the second Mineral King silver rush from 1878 to 1882), but his father John William Crowley (1836-1881) owned the right of way and franchise to construct and maintain the Mineral King Wagon and Toll Road. His father, John, was also the second-largest stockholder (and financier) of the Mineral King Road Wagon and Toll Road Company[47] (Jackson 2006:39; Porter 2002:57,60).

Professional Men of the Capital of the State of California; Also of Newspaper Proprietors, Editors, and Members of the Corps Reportorial. San Francisco: Alta California Print, 1878. A digitized version of the book is available at https://books.google.com/books?id=Fhw1AQAAMAAJ.

[43] See census and cemetery records at http://www.usgwarchives.net/ca/tulare/tulare.html.

[44] See http://files.usgwarchives.net/ca/tulare/obits/f/fowler3636gob.txt for an account of Fowler's death in the Visalia Delta, April 17, 1884.

[45] The author is a Crowley family descendent.

[46] These have been scanned, and the originals are stored in the archives at the Fresno State University Henry Madden Library's Special Collections Research Center (https://library.fresnostate.edu/find/special-collections).

[47] Thomas Fowler owned the most shares.



Figure 16: Arthur Crowley [Photo courtesy of Crowley Family Collection]

Unlike many pioneer immigrants to the San Joaquin Valley, John had both education and some funds when he arrived in 1862. Accompanied by his wife America Jane Clements (1837-1868), their five-year-old son Arthur, three-year-old son James ("Jim"), infant daughter Frances ("Frankie"), and at least one slave (Tulare County Census records),[48] he invested his savings in cattle, sheep, and hogs, which he ran on thousands of acres of land in multiple locations.[49] In 1866, John acquired 800 acres near present-day Lemon Cove, and in 1867, he acquired additional land south of Visalia in what is now Farmersville. There he established a general story with his brother in law Merrill Jasper, which they sold in 1868 (Crowley).[50] At the end of the same year, John's wife America Jane died,[51] and he married Phoebe Ann Matilda "Tillie" Keifer (1847-1900) a few months later[52] (Tulare County obituary and marriage records). Within few years, John, Tillie, and Arthur purportedly visited Mineral King for the first time, probably by way of the Lovelace trail (Crowley; Jackson 2006:39).[53] Despite their early visit to the valley, they did not become involved in the first Mineral King silver rush (1873-1878) (Crowley; Porter 2002:113); however, Arthur purportedly spent the summer of 1874 in the Mineral King valley with his brother Jim and sister Frankie (Crowley; Jackson 2006:39).

[48] Their slave Jack Crowley, who accompanied the family from Missouri, would have been about thirteen year's old at the time. He was listed as mulatto (half African and half European ancestry) initially, and as black later. It is uncertain whether his mother came to the valley with them. In the 1900 census, Jack was about fifty years of age, and lived with twenty-year-old Sarah Crowley (listed as black) in Orosi. According to family lore, after being freed, Jack moved to Squaw Valley and married an Indian. His offspring retained the Crowley surname. In the 1940s, John Arthur Crowley, a Euro-American descended from John Crowley met a African-Indian-American named Jack Arthur Crowley in Mineral King, where they were both working as packers. The author's grandmother last visited the "Crowley Tribe" in the 1950s after they had moved to a camp on the White River.

[49] According to his son Arthur's memoir, one of these locations was Whitaker Forest, where he paid Indians "a pint of shorts a day and a portion of beef" to fence 8000 acres. "Shorts" were the outer portion of the wheat kernel. They were the by-product of milling and were typically fed to livestock; however, it is likely that the Indians were cooking and consuming them.

[50] Euro-American history books have credited Crowley and Jasper as the founders of Farmersville; however, some could argue that Wiley Hinds, a former slave of African and European descent who settled in the area in 1858, was the founder. He purportedly ran a farm in the vicinity before Crowley and Jasper arrived, and people used it as a stopover on their way to Visalia for food and mail. Regardless, Farmersville didn't become a destination until Thomas J. Brundage bought Crowley and Jasper's store and added a post office.

[51] 27 November 1868 (Tulare County Obituary Records).

[52] 25 March 1869 (Tulare County Marriage Records)

[53] Per family lore, this visit took place in 1870; however, per John's diary, during that year he spent almost every day but Sundays, camp meeting days, and sick days working with his livestock, orchard, cornfields, barley fields, and garden.

John, Tillie, and their children spent very little time recreating and exploring their world, however. Although John was wealthy enough to hire laborers, his diary suggests that the family labored at least as hard on the ranch as the hired hands. John's diary also indicates that he kept thorough financial records, rigorously paid his debts, and settled suits against debtors. In 1873, his reputation established, he was elected as Tulare County Treasurer for two consecutive terms (Crowley; Menafee and Dodge 1913:166).

In 1878, despite some protest, Tulare County granted him the right-of-way and the franchise to build and maintain the Mineral King Road (Jackson 2006:38-39; Porter 2002: 57,60). According to historian Louise Jackson, he "formed the Mineral King Wagon and Toll Road Company, collected the funds to build it, and organized the work to be done" (Jackson 2006:39). He and Arthur contributed $10,000 to the road's construction. In the midst of the Long Depression, John easily hired about two hundred men, and paid each $20 per month plus board (Jackson 2006:39).

Twenty-year-old Arthur had been ill for three months before work commenced on March 19, 1879. According to family lore, he was transported by wagon on a mattress to Oak Grove. There, about half the workers had set up base camp, with the other half in Mineral King. Within ten days, he was healthy again and actively engaged in life in the camp, and had set his sites of Mineral King itself (Jackson 2006:41).[54] By June 23rd, he had a lot in Mineral King and interest in the Little Giant mine claim. On July 7th, he recorded his first discovery claim, the White Wolf (Crowley).

Arthur's diary and letters provide valuable insight into the road's construction, the role of Oak Flat, the progress made in developing the Empire Mine, and some of the logistical challenges involved. They also provide details on camp life during the silver rush. After the road was completed on August 20, 1879, Arthur drove the first wagon from Visalia to Mineral King. John set up an assay office in Mineral King, and Arthur started performing assays on the local ore samples. On September 17th, "rich ore was struck on the Big Jim." Arthur rushed up the next day and located the First Extension South. Meanwhile, John also prospecting for claims, and eventually located the First Extension North of the Black Wolf (now known as the Crowley Copper) (Crowley). By the end of the summer, Arthur had filed two claims and John had filed three (Porter 2002:113).

John's wasn't actively involved in the mining, however, and he hired local workers to improve his mine claims. Until his death in 1881 at the age of forty-five, he became increasingly busy in banking, local business management, and legal matters, and did the paperwork to incorporate Mineral King mining companies in return for stock (Crowley; Jackson 2006:65).

Arthur took over his father's many business concerns after his death, he continued to ranch, was a census-taker, tax collector, and co-owner of the Visalia Water Works. He maintained strong times to Mineral King, however, and returned there every season except one from 1874 until his death in 1931.

[54] Unfortunately, we have journal entries from only June 24th forward, even though earlier entries have been recorded. Due to scanning errors, we have portions of letters addressed to Arthur in "Cains Flat" dated as early as March 31st. Arthur moved up the road to Trauger's Last Chance Ranch on June 22nd

He continued to acquire and work claims into the 1920s. In 1890, he acquired the Smith House and established the Mineral King resort, which he ran until 1928. He also served as the postmaster from 1897 to 130 (Crowley; Jackson 2006: 104-108).

Although Arthur was on good terms with Sequoia Park personnel,[55] he took steps to protect his resort and the cabins of other community members in the valley from Park expansion. Per policy, all national parks were required to exclude private lands within their boundaries. This policy did not affect Mineral King; however, it did engender concerns that government interference might increase and eventually impact the Mineral King community, especially after the National Park Service was created in 1916. In 1890, Arthur filed a claim for the five-acre Empire mill site that—not coincidentally—included the Smith House hotel and would be the site of his Mineral King Resort within a few years. In 1900, Arthur, his brother James, and Judge William B. Wallace filed another claim for the Cherokee mill site on the valley floor in a location that held about a dozen cabins. In 1908, he was awarded a patent for the Empire Mill site, assuring the preservation of his resort. In 1916, just after the National Park Service was established, Arthur filed for a patent on the Cherokee mill site (Crowley). In 1917, the California Mining Bureau sent a team to Mineral King to assess the mines. They visited and documented the Cherokee mine and noted that Arthur Crowley was the owner and stated that the mine was idle (Huguenin et. al. 1917:139). That same year, the government rejected the mill site claim because there was no mill on the property. The men lost a subsequent appeal (Warren and Patterson 1919:178-181). In 1939, Elsie and Alice Crowley, daughters of the now deceased Arthur, filed another application for title. It was again denied because of the lack of a mill (Crowley).

Arthur's children maintained the tradition established by their forbearers. They wrote detailed letters and memoirs, and collected Mineral King photos and documents in order to preserve them. Alice wrote an account of a trip up the Mineral King Road in the late 1890s, including her impression of Oak Grove. Her daughter, Louise Jackson, wrote the seminal history of Mineral King. The family became involve in the Disney resort controversy of the 1860s and 1870s, and the Disney Corporation acquired the Empire Mill site that Arthur had patented to preserve the resort. As of this writing, the corporation still owns the property, and the Crowley family cabin (est. 1929) lies on it.

In many ways, the road through Oak Grove shaped the Crowley family, and continues to do so. For seven generations, the road has carried family members to Mineral King, where the Crowleys have had a profound influence on land-use policies that continue to have nation-wide impact.

4.3.5 Frederick Vernon Coville

The botanist Frederick Vernon Coville (1867-1937) spent the night in Oak Grove on July 26, 1891. His visit came seven months into an eight-month scientific expedition, and he didn't have much to say about the locale in his journal. He might be forgiven, however, as he was looking forward to seeing

[55] Arthur purportedly provided a bear for consumption to the military in Cains Flat in 1891 (Elliott 1994:51).



Figure 5: Fredrick Vernon Coville [public domain image]

giant sequoias for the first time the next day. He did find time to collect at least fifty-one other specimens on the way, however.[56]

Although Coville rode into camp on a horse, he spent much of the expedition on foot, a feat facilitated by his apparent athleticism. Coville was born in New York and attended Cornell University. There is distinguished himself as both an honors student and an athlete. After graduation, he taught for a short period before taking a job as an assistant botanist at the U.S. Department of Agriculture. He had been there only two years when he was assigned a position on the Death Valley Expedition in 1890. Coville's night at Oak Grove took place while he was on this expedition.

Coville kept relatively detailed notes about his expedition and published a thorough report in 1893. Accordingly, we are able to imagine how he must have appeared to the miners, loggers, and families who occupied Oak Grove at that time. He was a dusty twenty-four-year-old. He had "thick-bottomed miner's shoes, their soles and heals thickly set with hobnails." He wore a cork helmet, and carried a canvas hunting coat and felt sombrero for the colder weather. He also carried a knife normally used to slash cotton bale sacking, a steel pick with a 5" curved blade, an aneroid barometer, and of course his press boards and journal (Coville 1893:4)

Only two years after the Death Valley Expedition, Coville became a USDA botanist and curator of the National Herbarium. He achieved senior botanist in 1924 and principal botanist in 1928. He became director of the National Arboretum in 1929. His USGS bio summarizes additional achievements: "He was president of the Biological Society of Washington from 1899 to 1900, the Botanical Society of Washington in 1903, the Washington Academy of Sciences in 1912, the Cosmos Club in 1915, and the Arts Club from 1927 to 1929. He received an honorary DSc degree from George Washington University in 1921. He served as vice president of American Association for the Advancement of Science in 1903. He served as chairman of the National Geographic Society's Research Committee from 1920 to 1937" (USGS 2008).

[56] Go to http://collections.nmnh.si.edu/search/botany/?q=ex+Death%20Valley%20Expedition, scroll down to the search tabs, click on the 'search by field' tab, enter 'Tulare' for District/County and 'Kaweah River Valley' for Precise Locality.

4.3.6 The Griffes Family

According to the stories, Fay E. "Freddie" Griffes (1894-1991) was one of the people who found the body of his friend Luther Mullenix in the house up the road from Oak Grove in February 1919. Freddie ran home to tell his adoptive father, who called the Hammond Power Station. An as-yet unsolved murder investigation commenced, along with a ghost story that haunts the area to this day.

This was not the tale that defined Freddie, however. Despite living much of his 93-year life in Oak Grove, his days didn't lack adventure and intrigue.

Local lore suggests that Freddie's parents Orlin Albert and (1845-1926) and his wife Mary "Mollie" A. Tillottson (1849-1935) purchased eighty-acres on the eastern side of Oak Grove in 1898. This was the year that they are said to have adopted Freddie, and the year that the Hammonds began to build the Whitney Power and Electric Company flume, a project that was to last eight months. Albert and Mollie purportedly hosted the dozens of workers, beginning a tradition of hospitality that lasted until the Great Depression (Britten 2013:168-170; Jackson 2013:12).

Albert was a blacksmith, and he created all the metalwork for the flume. Later, he became a flume walker for the Mt. Whitney Power and Electric Company, but he and Mollie spent much of their time building a hospitable waypoint for travellers. According to the author's grandmother, Alice Crowley Jackson, the "Griffes raised practically everything they needed for food," including vegetables, fruits, and locally famous white blackberries."Mrs. Griffes [known as Aunt Mollie] served meals to travelers and such meals as they were! She was famous for her breakfasts; meat, sausage, bacon, eggs, home-made bread, home-made jams, cream thick enough to cut, home-churned butter, real milk, cake, pie, coffee. It is hard to believe, but that was breakfast […]. After evening meals they took part in the mountain tales and the mountain gossip their guests enjoyed listening to" (Jackson:22).

In 1903, Charles Young (1864-1922) would have experienced Griffes hospitality. Young, who had been born in slavery, was now captain of the Buffalo Soldiers and acting superintendent of Sequoia and General Grant National Parks—and the first man of African descent to be a National Park superintendent. Because the Army was racially segregated at the time, his men were all of African descent. In early 1903 the Mineral King Road through Oak Grove will still the only way wheeled vehicles could enter the park. Accordingly, Young and his men completed and improved the road to the Giant Forest that had been initiated by the Kaweah Colony, thereby reducing Oak Grove's importance to Park tourism. Young maintained his connection to the Griffes family, however. Albert's brother Marion had a ranch and famed apple orchard nearby to the north of Oak Grove, as well a homestead in Three Rivers. Young purchased the Three Rivers property from Marion in 1904, and lived there until redeployment in 1905 when he sold the property back to Marion (Britten 2013:168).

The quiet period that resulted from the decrease in Park traffic ended in 1912 when the county built the Visalia-Mineral King Cutoff that crossed the river and reconnected with the 1877 road on the Griffes property. The family hosted the construction camp, and between 1912 and 1918, maintained an auto camp where travellers could park their cars and take a horse-drawn stage up to the valley on the dangerous road (Jackson 2013:12). They provided a gas pump, a roadside vegetable stand, and both food and lodging. Albert died in 1926, and then the Great Depression came, and with it gas

rationing (Jackson 2006:153). Then there was the storm of January 1933. A record six feet of snow was recorded at Oak Grove at the height of the storm, breaking the prior record by more than two feet. Freddie and his mother were trapped. Mineral King packer Phil Davis came to the rescue with ten pack mules loaded with supplies (*Fresno Bee 26* January 1933: 25). Aunt Mollie's generosity was returned in kind.

Local Lore

Freddie claimed that a bear fell into the flume once, and was carried by the water all the way down to the end of the flume. Freddie said the bear gave the flume such a good scouring, it didn't need to be cleaned that year (Britten 2013:169).

Albert died in 1926 and Mollie in 1935, but Freddie and his wife Ruby continued to live in Oak Grove. According to local lore, Freddie had arrived when about four-years old when his adoptive parents were in their fifties. The 1900 census indicates that Freddie was "born at sea,"[57] and there are unconfirmed rumors that he was the son or grandson of Abraham Baldwin Burdick (1839-1935), one of Three Rivers' legendary denizens.[58] Abe had been a member of t he Kaweah Colony. After the Colony disbanded, he took up residence on Yucca Creek with a pet bobcat.[59]

Freddie, like Abe, seemed to have a close connection with animals and had a pet fox (Britten 2013:170). He spent his childhood hunting, helping on the ranch, and tending the gas pumps. In 1918, he took over flume walking, and married a woman named Ruby who drove to the bottom of the Mineral King Road to pick up Freddie after he had walked its 6.5 miles (Britten 2013:169; Jackson 2013:12). Freddie and Ruby sold the Oak Grove property in 1959 when Ruby became ill, and moved closer to Three Rivers. Freddie died in 1991 at 97 years of age. Perhaps flume walking is the secret to a long life.

> For years, a man could be seen walking along [the flume's] top on the 2" x 12" catwalk, checking for leaks, breaks, wash-outs, trapped animals, and clogging debris. In the early days that man might have been […] Albert Griffes. After 1918, it was [his son] Freddie who walked the six-mile stretch from Oak Grove to the flume's end high on Holland Mountain above the power house. Neither heat, rain, snow, high winds, nor ice coatings on the catwalk ever stopped Freddie. It was estimated that after 41 years on the job he had walked the equivalent of six journeys around the world (Jackson 2013:10).

[57] This was a common euphemism for illegitimacy.
[58] Freddie is given the last name of Burdick in some photos, some of which include Abe.
[59] There are numerous accounts of Burdick's life. Britten 2013:238-241 provides an engaging summary. Although Abe claimed to have a wife and daughter in New York, he is listed as widowed on all census records.



Figure 6: Freddie Griffes and his pet fox. [Photo courtesy of the Mineral King Preservation Society Sophie Britten Collection.]

4.3.7 The Hammonds

The Hammond family had a penchant for humor, adventure, money, and power. All of these elements came together in Oak Grove at the turn of the 19th century. It started with John Hays Hammond and a scaffold in 1896.

It was June 1896, and John was in Transvaal, a Boer republic in southern Africa. He had just pleaded guilty to high treason. “The scaffold for our execution had been erected, and all other preparations made with much ostentation," John Hays Hammond purportedly remarked (Ireland 1918).

At this point, John was a man of considerable stature and esteem, but he had humble roots. John was born in San Francisco in 1855, a child of the California Gold Rush. His father, Major Richard Pindell Hammond, was a veteran of the Mexican War who had traveled west to prospect. Richard met Sarah Hays in San Francisco, and they married in 1854 (Hammond 1935:3-17).

Perhaps John's childhood association with prospecting colored his life. He worked in mining endeavors for much of his career, and amassed enough personal wealth to be said to have the Midas Touch. He earned a degree from Yale University's Sheffield Scientific School in 1876, and then attended the Royal School of Mines in Germany for three years. There he met Natalie Harris, whom he married in 1879.

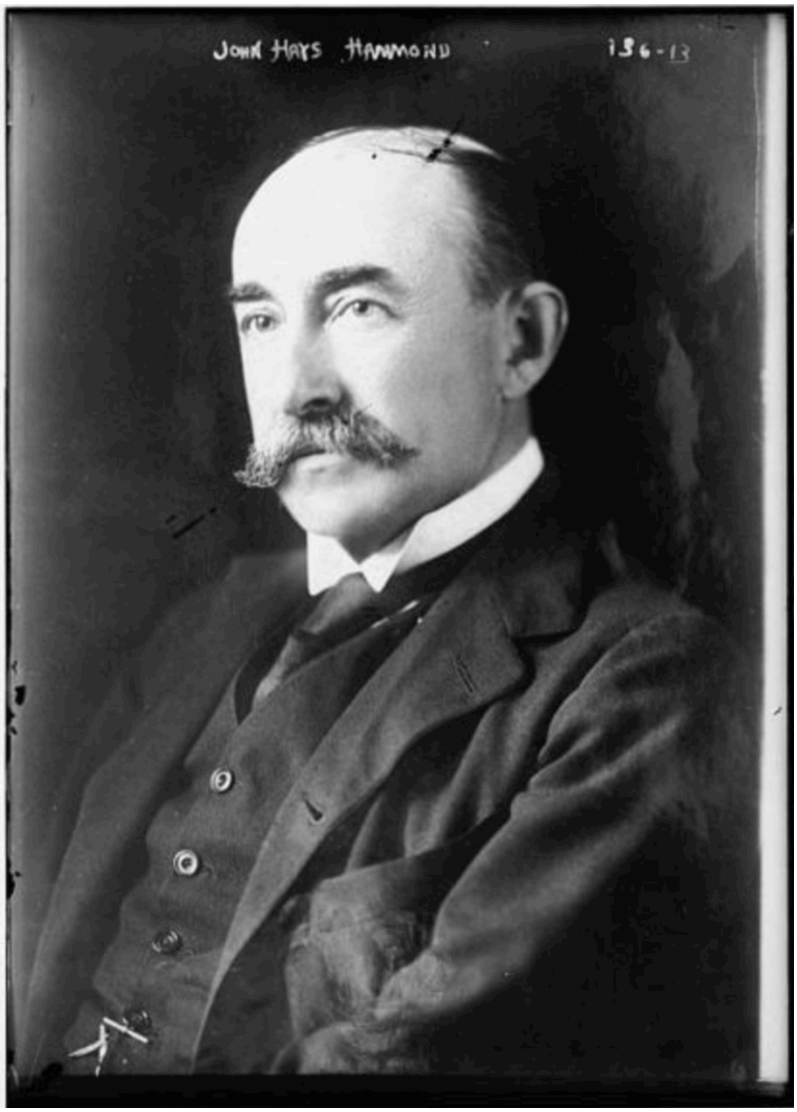


Figure 7: John Hays Hammond [Image courtesy of the George Grantham Bain Collection, Library of Congress Prints and Photographs Division]

The U.S. Geological Survey gave him his first job that same year. He served as a mining expert in Washington, D.C. for a short time before returning to California in 1881 to work for George Hearst, a U.S. Senator, owner the largest private mining firm in the United States, and father of the now famous William Randolph Hearst (Hammond 1935:33-74; Jackson 2006:118).

At this point, John's life took an adventurous turn. George sent him to Mexico to supervise mining operations near Sonora. He found himself in the midst of a long-term armed conflict between the Mexican Army and the remaining indigenous Yaqui people. He and his wife Natalie purportedly had to barricade themselves in their house and fend off attackers. It is unclear, however, whether these attacks were related to the local conflict or if they were a rebellion against the mining company (Hammond 1935:106-144).

John returned to California for almost ten years of relative quiet, working as a consulting engineer for the Union Iron Works, the Central Pacific Railway, and the Southern Pacific Railway. In 1893, however, John took a consulting job in the Transvaal, an independent republic in southern Africa controlled by Afrikaners of Dutch descent. He traveled there with his wife Natalie, along with their two sons and John's younger sister Betty (Hammond 1935:197-217; Jackson 2006:119). John had been hired as a consulting mine engineer, purportedly assured that he would "not be involved in any extraprofessional activities" (Ireland 1918)

He took a position with Cecil Rhodes, who was a powerful British mining mogul for whom the country Rhodesia was named. John soon found himself managing Rhodes' gold mining operation in the Transvaal and arguably involved in "extraprofessional activities."

The discovery of gold in Transvaal in 1886 had attracted thousands of Europeans and Americans. By the time John arrived, the number of foreigners was close to twice the number of ruling Afrikaners. Furthermore, many of the foreigners were in the employ of Rhodes, who openly sought to control the

gold mining industry. The government perceived a threat, and responded with heavy taxes, restrictions on the gold-seeking immigrants' right to vote, monopolistic control over dynamite, the closure of river fords, and other levers (Hammond 1935:307-329).

Rhodes decided to take action, and by 1895, John was immersed in a plot to overthrow the Transvaal government and return the republic to British colonial rule. "Our general scheme was to get some thousands of guns into Johannesburg, and then, on some dark night, to take [...] the capital, seize the arsenal, carry [President] Kruger off with us, and to negotiate at leisure for the redress of our grievances" (Hammond 1935:329-354).

By his own account, John's role was to arrange for importation of the guns by a group of Americans, the taking of the capital, and the capture the president. Presumably, this is not the sort of work for which mining engineers were trained in Yale. The plot didn't go as planned, and John was arrested on January 9th (Hammond 1935:329-354).

Though Natalie had slipped him some chocolate, John didn't fare well in the prison and became weak with dysentery. According to John, it was Natalie's personal appeals to the government that resulted in a move to more salutary conditions that saved his life. She was also responsible for communications to United States politicians and government officials that led to an effort on the part of the Senate to secure John's release. She related John's situation to the Hearst family, which publicized it across the United States (Hammond 1935:355-383)

Despite, these efforts, John found himself in court on April 28th, 1896. He had pleaded guilty to high treason and awaited the judge's decision. The judge joked briefly, then asked that the courtroom be cleared of all women. John later wrote in his autobiography "The room had become so still that I could clearly distinguish his solemn words [...] 'you [will] be taken to the place of execution to be there hanged by the neck till you are dead'" (Hammond 1935:383).

The worldwide outcry against the death sentence was immediate and loud. The United States and British governments helped negotiate an amnesty, and after considerable bargaining, John was released upon payment of a large fine by Rhodes. He and his family went to, where they were hosted by the Rothschilds and other powerfully wealthy friends. According to the periodicals of the day, he and his fellow conspirators were celebrated in England (Hammond 1935:387-430).

John was presumably enjoying his fame, when he received a message. His brother William Hall Hammond had arrived with a grand idea (Hammond 1935:736; Jackson 2012:4; Menafee and Dodge 1913:130; Jackson 2006:119).

□□□□□

William had found himself in a quandary in 1896. He and his friends a grand vision to bring power to the San Joaquin Valley, but they didn't have the money to turn it into reality. William’s older brother John Hays Hammond was an obvious person to approach; John was extremely wealthy and had influential friends (Hammond 1935:736-737; Jackson 2006:118; Jackson 2012:4). Unfortunately, he was

under arrest in southern Africa.

William was just two years younger than John, but lived a very different sort of life. Unlike John, who traveled to other continents, fraternized with powerful businessmen and politicians, and built his personal wealth by facilitating the world's quest for gold, William's feet trod on San Joaquin Valley agricultural ground (Guin 1905).

It was 1857 when his mother Sarah pushed William into the world, or rather the metropolis of San Francisco. California was only seven years old, and William's father Richard was thriving in the opportunities that abounded in the burgeoning state. Only a year after the state's acceptance into the Union, he became speaker of the House of Representatives. The year William was born, Richard took a job as a collector of customs at the Port of San Francisco. This evidently was a lucrative position, and Richard became a man of considerable influence in the city of 50,000 souls. He was involved in the Southern Pacific Railroad and was president of the California Pacific Railroad Company. He was president of the Board of Police Commissioners. His wealth enabled him to provide a solid education for his sons (Guin 1905; Hammond 1935:3-17).

William followed in his brother John's footsteps and attended Yale. He returned to California after two years, however. Conveniently, his father was also Regent of the University of California, and William was able to complete his education there in 1879 (Guin 1905; Hammond 1935:531).

William traveled down south into the San Joaquin Valley, where he took up stock raising and farming. After a few years William moved to Visalia where he married May Brown and went into real estate and appraisal. He also dabbled in politics. He was elected to one term as county clerk in 1883 and served multiple terms as mayor of Visalia. He kept his foot in farming matters by serving on the District Board of Agriculture. May gave birth to a healthy boy in 1887 (Guin 1905; Menafee and Dodge 1913:163-166).

It reads like a respectable, busy life. Yet, with the wealth and accomplishments of his father and older brother dangling before him, one might imagine he yearned to be involved in greater things.

It was in this context that Ben Maddox, editor of the *Visalia Times*, and Albert Wishon, a colleague in the real estate business, approached him in 1891 with an ambitious scheme to generate the valley's first hydroelectric dam. William Hall Hammond was captivated by the scheme. Not only was he in real estate, but, through his father, he had connections with potential investors in San Francisco, including men associated with the Southern Pacific Railroad and the California Pacific Railroad Company. Unfortunately, William's father died that same year, and William was unable to find anyone willing to invest in such an ambitious and risky project. Undaunted, William and his fellow collaborators continued to solicit funding for years. Finally, William decided to seek out his wealthy brother John. He raised $1000, and embarked on his first overseas adventure (Hammond 1935:736; Jackson 2006:119; Jackson 2012:3-5; Jackson 2013:10; Menafee and Dodge 1913:130).

□□□□□

William Hall Hammond's grand scheme came to fruition in 1899 (Hammond 1935:737-739; Jackson 2012:4-6; Jackson 2013:10; Menafee and Dodge 1913:130). John Hayes Hays provided $100,000.00 for the construction and maintenance of a power plant on Kaweah River. When John and his wife Natalie visited Hammond a few years later, they found a large powerhouse at the base of the Mineral King Road fed by a 30,000 foot sequoia timber flume that originated in Oak Grove. The area pleased John and Natalie. While she fell in love with the sequoias, John bought seventy-five acres downstream and opened up a bathing resort and picnic grounds. He then launched the project that would become the Visalia Electric Railroad before he resumed dining with presidents, emperors, and kings (Hammond 1935:730; Jackson 2012:5-6; Jackson 2013:10).

John left behind a family dedicated to the land and their grand scheme. William and a cousin ran the company operations, and his nephew worked in the plant (Jackson 2013:10; Menafee and Dodge 1913:130). Several of his friends and colleagues from southern Africa came to live in the area, and some are buried in the Three Rivers Cemetery.

4.3.8 The Lovelaces

Nathan "Nate" Franklin Lovelace was the first person to cross the Oak Grove Bridge. That first crossing took place in 1922—in his imagination, as he designed a magnificent replacement for the dangerously sagging wooden bridge built in 1912. His numerous bridges were to provide the symbolic imagery that people associate with significant places and events to this day. Nate was not the only member of his family to create lasting stories and structures significant enough to warrant inclusion on the National Register of Historic Places, however. His brother Joseph Walter "Shorty" Lovelace built a series of trapping cabins, each a day's walk from the other, several of which are now protected. His brother Byron O. Lovelace was the Tulare County Surveyor and road engineer responsible for creating the highway system through Tulare County. And their grandparents were the first Euro-Americans to build a trail to Mineral King.

John Washington and Arminta Stallard Lovelace arrived in Tulare County in 1863 (eleven years after the county was formed). During the Civil War John fought as a Confederate. Upon his return, he bought the Farmersville market of John W. Crowley[60] and his brother in law Merrill Jasper, and ran it in partnership with Thomas. J. Brundage (Britten 2013:151; Menafee and Dodge 1913: 631-632)[61] In 1867, shortly after the death of her fifth child and the birth of her sixth, Arminita became the victim of violent paranoia. In 1868, about two months pregnant with her seventh child, Arminita was committed to the California State Insane Asylum at Stockton. There, she gave birth to her final child and died in 1891.[62] In 1869, John purportedly purchased a cattle ranch in Three Rivers. John and his older sons built the first trail into Mineral King in 1871, and drove three hundred head of cattle up it in 1872. The current road connects to and follows the old Lovelace Trail at Atwell Mill (Britten 2013:151-152). John

[60] This is the very same John W. Crowley who acquired the right-of-way and franchise to build the Mineral King Road in 1879.

[61] Brundage's first wife was Mary F. Burnett, the widow of William H. Lovelace, and his second wife was Rosalind "Rosie" Crowley, John W. Crowley's niece.

[62] From Register Volume 4; 1862-1870, page 200, California State Hospital Records, 1856-1923. Stockton State Hospital, Commitment Registers, accessible via ancestry.com.

recorded a silver claim in Mineral King in 1874 (Porter 2002:122), but moved to Texas the following year and died in 1886 (Menafee and Dodge 1913: 631-632).

John's son Joseph Walter (1858-1831) remained to run the Three Rivers ranch. After twelve years on the ranch, he married Helen Schlichting, and they moved to Visalia to raise five boys: Byron Olney Lovelace, Nathan Franklin Lovelace, Joseph Walter "Shorty" Lovelace, William Clay "Doby" Lovelace, and Lee H. Lovelace (Menafee and Dodge 1913: 631-632). According to Menafee and Dodge, Joe dabbled in real estate and owned a 120-acre grain ranch (1913: 631-632). Other records suggest that Joe became involved in road maintenance, a job with beneficial connections to the occupations of his two oldest sons.[63]

Byron Olney (1882-1957), Joe's oldest, achieved considerable prominence. After attending school in Visalia, he went to San Francisco, where he attended the Van der Naillen School of Engineering and Mines of San Francisco and worked for six years as a government surveyor focused on National Forests.[64] In 1910, he returned to Visalia, married Eula Simmons, became the city's fire warden (Forest and Fire Laws 1910:62), ran for the elected office of County Surveyor, and won (Menafee and Dodge 1913: 396-397). He immediately focused his attention on the Mineral King road, surveying and locating a new route on south side of the East Fork of the Kaweah River that would cross the river and meet the 1877 road at Oak Grove, and petitioning for the construction funds. He then set his sights on Tulare County's bridges and highway system, which needed to be improved and pave to support the trucking traffic that would boost Tulare County's agriculture industry. By 1920, when he lost his position as County Surveyor, his work was broadly recognized (Blow 1920:276-281).[65] In 1920, Byron began to compete with other firms for road engineering and construction jobs, winning the Camp Nelson road contract in 1920.[66]

There is remarkably little information available about Nathan Franklin "Nate" (1884-1935). He attended Visalia schools, but it is not clear where he acquired his engineering skills. By 1916, however, he was winning bids.[67] According to family lore, he served in World War I as an engineer. Upon his return, he married Viola Evelyn "Ola" Wilson on November 14, 1919 and began building bridges in earnest, including the Oak Grove Bridge in 1923.[68] In 1924 he ran for county supervisor, but lost (*The Bakersfield Californian*, 21 April 1924:3). Towards the end of his life, Nate transitioned from bridges to

[63] Engineering News 82:17 states that J. W. Lovelace was awarded a $12,887 contract to improve eight miles of road in 1919. The J.W. could have been either Shorty or his father; however, Shorty was beginning to transition from his mechanic job to trapping at this time.

[64] He was involved in the early years of surveying that commenced in an effort to rectify the fictional surveys of the Benson Syndicate.

[65] *Building and Engineering News* provided a record of Byron's accomplishments as County Surveyor in the form of bid and award notices. Volume 17(1):25 calls for bids for ten steel and concrete bridges, for example.

[66] See *Southwest Builder and Contractor 1920:29*, for example. It is unclear whether he spent the remainder of his life in competition or collaboration with his brother Nate.

[67] He won the contract for the Elk Bayou Canyon Bridge in July 1916 (*Building and Engineering News* 16(2):5).

[68] Bridges included a 1921 bridge over a canal (*Southwest Builder and Contractor* 57(2):40), a 1921 bridge over the St. John's River, (*Southwest Builder and Contractor* 57(19):40), a 1921 bridge over Dry Creek (*Southwest Builder and Contractor* 58(15):47), the Pumpkin Hollow Bridge in 1922, a 1925 bridge across Salt Creek in Shasta County (*California Highways* 2(10):13), the Inlet Canal Bridge in 1925 (*Bakersfield Morning Echo*, 19 March 2015:10),

roads. Nate died on September 20, 1935. According to local lore, he died building the road up Mount Lassen; however, a L.A. Times news story suggests that he died in Palo Alto after a long illness (*L.A. Times* 22 September 1935:35).[69]

Joseph Walter "Shorty" (1886-1963) was the third oldest son. Although he did not achieve the academic, social, and professional prominence of his older brothers, more has been written about him than anyone else in his family. Trained as a mechanic, Shorty loved the mountains and earned his fame as a trapper and drunkard. He left behind a legacy of stories and a trail of cabins that are on the National Register of Historic Places.[70]

The three Lovelace brothers left an indelible mark on Tulare County, but nowhere do they have more fame than in Three Rivers. There, the Oak Grove Bridge wasn't built by the county; rather, it was built by a member of the community with deep connections to the Mineral King road. **The bridge symbolizes many things to the community, but one of the values it manifests is pride.**



Figure 20: Nathan F. Lovelace (left) with his wife, daughters, and grandchildren. [Public domain image provided by descendants]

[69] Nate won a bid to construct six miles of the northwest entrance road to Mt. Lassen in August of 1925 (*Oakland Tribune*, 5 August 1925:11). In June of 1930, California Highways and Public Works (1930:32) reported that Nate's work on the between Bay View Rest and Eagle Falls was 30% complete, and that Nate had "speeded up his progress" and expected the work to be done by December. During this time, he also won the bid to grade 4.9 miles of state highway between Shingle Springs and El Dorado (The San Bernardino Sun, 7 March 1928:7).

[70] See, for example the Shorty Lovelace Historic District (78000293). Other cabins in Sequoia National Park are considered eligible for inclusion.

4.3.9 William Everson

William Everson (1912 -1994) was only 21 when he saw an advertisement in the *Fresno Bee*. After two years of depression-era unemployment, Everson jumped at the opportunity it offered: six months with the newly-created Civilian Conservation Corps (CCC), $30 per month salary, plus food and clothing.

Everson didn't hesitate. He immediately headed to the CCC office in downtown Fresno and applied. The CCC didn't hesitate either, and they signed him up—effective immediately. Everson, in his street clothes with no belongings, found himself boarding an army truck. He didn't have an opportunity to tell anyone what he was doing. It was November 1, 1933 (Bartlett 1988:13).

William Everson was a poet. He had started writing four years earlier, while a junior in high school. He was prolific, especially after 1930 when he met Edwa Poulson who became the subject of daily love poems. When Everson disappeared on that autumn day, she spent a week wondering what had happened to him (Bartlett 1988:13).

First Winter Storm (exerpt)

All day long the clouds formed in the peaks,
Screening the crags,
While the pines stared through the mist.
Late-afternoon the sky hung close and black,
And when the darkness settled down,
The first large drops rapped at the roof.
In the night the wind came up and drove the rain,
Pounded at the walls with doubled fists,
And hollered in the chimney
Till I felt the fear run down my back
And grip me as I lay. [1934]

The army truck drove Everson and other recruits south to Visalia and then east to Three Rivers. Then they began to climb the Mineral King road. By evening Everson crossed the Oak Grove Bridge for the first time.

Everson was given one phone call. He chose to call his mother and ask her to send his work clothes. He had been told there would be a uniform for him upon arrival, but the camp was only just completed and it was inadequately provisioned (Bartlett 1988:13).[71]

Everson completed his six-month commitment, and then reenlisted for another (possibly because Edwa had started dating another man, and possibly because he had been promoted to crew leader with a $6 per month wage increase). During his time with the CCC, his crew was responsible for multiple projects. Upon his arrival, his crew was tasked with building the road to the fire lookout on top of Milk Ranch Peak. According to his memoirs, the crew "had no bulldozers or jackhammers—just shovels and blasting powder" (Bartlett 1988:14). The crew then went to Hockett Meadow to address a pine beetle infestation. They then, under his leadership, went to the stub camp at Atwell Mill, where they built the ranger station, fenced pasture for pack animals, and built campground fireplaces (Bartlett 1988:14).[72]

[71] Newspaper articles of the time indicate that the camp was 10% complete in mid October (Fresno Bee 18 October 1933:27). A scrapbook digitized by the Sequoia and Kings Canyon National Park includes an image of the camp before it was completed and landscaped: http://museum.nps.gov/FullImages/SEKI%2012701%20LO0.pdf.

[72] The Sequoia and Kings Canyon National Park Archives curates a collection of materials from this period, including photos and reports of he work conducted by Everson's crew. See http://museum.nps.gov/FullImages/SEKI%2012701%20LO0.pdf for images of his projects. Coincidentally, the NPS supervisor of the Atwell Mill stub camp was Bob Barton, the man who

By August 1934, Edwa was no longer dating another man, and Everson applied for early leave so that he could attend Fresno State College with her. The CCC enrollees at Oak Grove continued their work without him until the camp was disbanded three years later. Everson and his crew left a physical legacy that is now included in the National Register of Historic Places.[73] Oak Grove shaped another legacy, however, embodied in the works of the region's greatest poet. Everson later wrote of his time at Oak Grove as a "crystalizing experience":

> That time was very important to me, away from home and women, among my peers. It was an important crystallizing experience, especially to be thrown out into the expanse of nature like that (Bartlett 1988:14).

Upon his return to Fresno, Everson began to write what he considered his first true poetry.



Figure 21: Cain Flat CCC crew under Captain Rees Skinner (center front), after all the enrollees had received their uniforms. The grass suggests the photograph was taken spring 1934. William Everson is assumed to be one of the young men. [Photo courtesy of Mainerd Sorensen, grandchild of Rees Skinner]

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walked beside his truck on the old wooden bridge, and who herded cattle up the Mineral King road. His son Jim Barton (now in his 90s) remembers watching a feature film at the Atwell Mill camp.

[73] Some of the work of Everson and his crew are now contributing elements of the Mineral King Road Cultural Landscape District on the National Register of Historic Places.

4.3.10 Walt Disney[74]

Walt Disney (1901-1966) was born on December 5, 1901, in Chicago, Illinois, to Elias and Flora Call Disney. Disney grew up on a farm in Marceline, Missouri, where he developed the deep appreciation for animals and the rural life that would be so evident in his films. The family moved to Kansas City when Disney was eight years old, and he began to demonstrate a talent for drawing and acting in grammar school.

Disney served briefly in France as an ambulance driver at the end of World War I, and then he returned to Kansas City to find employment in the film industry. After a job with the Kansas City Film Ad Company, he started his own company (Laugh-O-gram Films) and made his first animated cartoons with some of his talented friends. When that business failed, Walt moved to California. There, with his brother Roy, he started the Disney Company in 1923 and married Lillian Bounds in 1925. They raised two daughters, Diane and Sharon.

The Disney Company first made a series of animated comedies and cartoons. Then in 1928, Disney made history by creating the character of Mickey Mouse. The Mickey Mouse cartoons were immediately popular and ensured the success of the company. The 1937 film *Snow White and the Seven Dwarfs* became the highest grossing film of all time (until it was surpassed by Gone with the Wind).

With the profits from *Snow White*, Disney was able to build a new studio in Burbank. With World War II the company took a detour into training and propaganda films for the military. *Cinderella* and Disney's first live-action film *Treasure Island* in 1950 re-established the Disney's financial success. The Disney Studio gained further recognition when it moved into television with a regular weekly program.[75]

Despite Disney's success in movies and television it was the 1955 opening of Disneyland that truly made Walt Disney Corporation financially secure. The added cash flow from the park, along with infusions of cash from merchandise licensing, enabled Walt Disney to attempt new projects. One of these projects was a year-round resort at Mineral King.

Disney's life was replete with successful "firsts": The first synchronized sound cartoon, the first use of the storyboard, the first full color cartoon, the first animated feature film, the first stereophonic theater installations with Fantasyland, the first popular nature series, the first major movie producer to go onto television, the first CinemaScope cartoon, the first 3D cartoon, the first use of the Xerox process to facilitate the animation process, the first stereophonic television broadcast, the first theme park. All of these innovations became standard elements the entertainment industry. Disney intended his resort at Mineral King to set a standard, as well, as the largest and finest affordable year-round family resort in the world. Disney's dream was not to come true. He crossed the Oak Grove Bridge on

[74] The information for this section was provided by Jason Schultz, Supervisory Archivist for the National Archives and historian. His Masters thesis on roads and wilderness areas in California includes a section devoted to the proposed Disney ski resort in Mineral King that covers Oak Grove and the Mineral King Road.

[75] Interestingly, during 1967 and 1968, Walt Disney Corporation filmed three television shows and one full-length feature in Three Rivers and Sequoia National Park, using local residents as actors and extras.

September 19, 1966 on his way to Mineral King to deliver the last press conference of his life. He died of lung cancer on December 15, 1966.



Figure 22: Clip of a press video of the Disney cavalcade crossing the Oak Grove Bridge on September 19, 1966. Disney was on his way to Mineral King to deliver his last press conference before his death on December 15, 1966.

4.4 Association with Intangible Cultural Resources

Although intangible cultural resources are not typically considered in a Section 106 review of this kind, such a review should be conducted in coordination with NEPA/CEQA reviews. Accordingly, the bridge's association with intangible cultural resources should be considered as ell. Such intangibles include the bridge's aesthetic qualities, its relationship to the surrounding area (including the view); its symbolic value to the community; its economic, educational, and cultural value as a destination and waypoint; and its role in preserving, illustrating, and relating the stories that help define the local community.

5 Recommendations

In consideration of the significant prehistoric and historic cultural resources within the areas of adverse effect, the author recommends the following five mitigations:

Rehabilitate the existing bridge. Retaining the bridge and constructing an adjacent bridge would substantively diminish the quality of significance of the current bridge as defined in the HAER documentation (HAER #CA-142). The bridge's historical significance, as documented, is based on its "modern quality," which contrasts with the more rustic bridges that the National Park Service built in the 1920s. Although the aesthetic contrasts with other bridges associated with Sequoia National Park, it also fits in with its national environment, echoing the coloring and features of the granite canyon

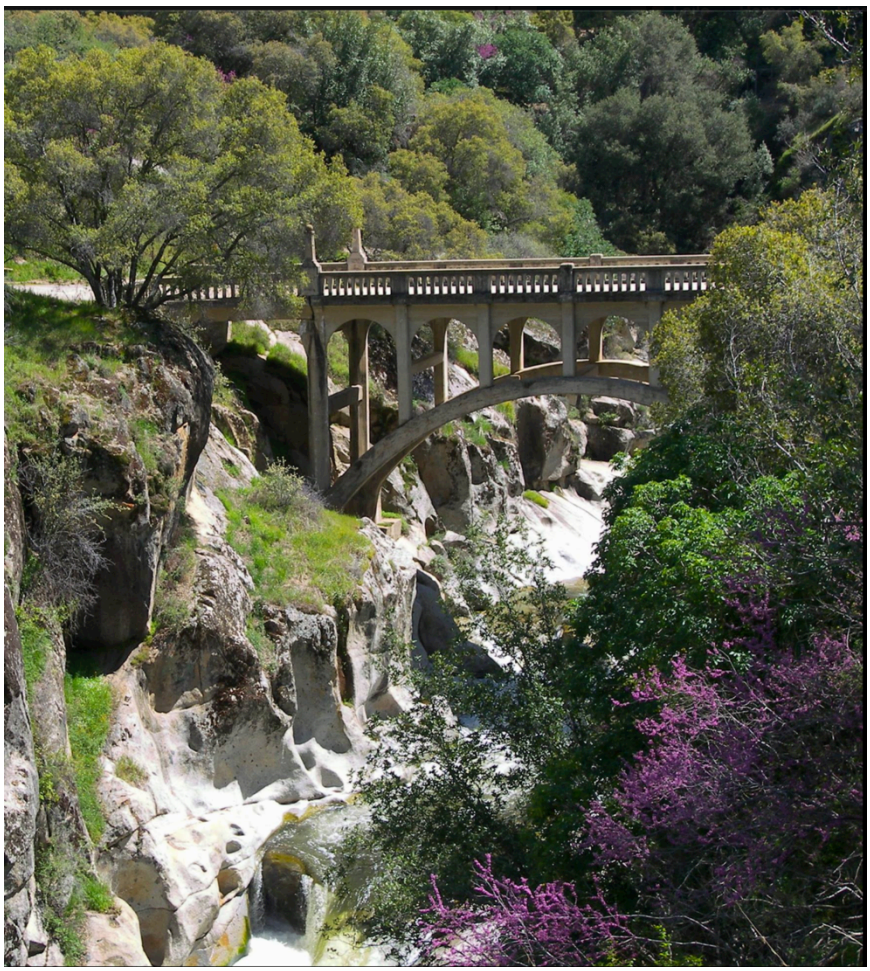


Figure 8: Photo by author.

below and peaks above. Construction of a contemporary highway bridge adjacent to it would diminish the aesthetic characteristics of the bridge and the environment in which it is integrated.

Retain the bridge's historic function as a destination and a scenic attraction for travellers to Mineral King. Retain turnouts for parking and enable visitors to cross the bridge on foot (along with vehicles) and linger. Aside from its historic significance, the Oak Grove Bridge is a cultural resource in the broader sense in that that it is among "those aspects of the environment—both physical and intangible, but natural and built—that have cultural value to a group of people" (King 2013:3). The bridge has always been a destination and scenic stop for both locals and tourists. To retain its cultural value, the bridge must continue to be a place where people can stop, walk across the bridge, stand on the bridge, and picnic. Additionally, its photographic value (for people standing on the bridge and off) must be retained in and from all directions. The bridge provides one of the four classic images that symbolize the historic Mineral King Road, and it must not be compromised.

Retain and avoid damage to the footings of the original wooden bridge (1912-1923) to the immediate west of the 1923 bridge. The Oak Grove Bridge is one of the interpretive locations used by historians and tourist guides. From the bridge, the footings of the 1912 wooden bridge are typically visible, and they provide a 'hook' upon which interpreters can 'hang' a story. These stories pertain to the role of the automobiles in providing access to National Parks, and the challenges they created; the consequences of cutting corners during construction; and the risks people are willing to take to earn a living. These stories are as relevant today as when they were first told.

Avoid disturbing the ground and archaeological features in the two proposed staging areas to the northeast of the project area. Avoid damage to historic features southernmost staging area; conduct a surface survey and record the historic features in advance to mitigate unintended adverse impact. Oak Grove has been rightfully called the site with the most archaeological significance on the Mineral King

Road. Not only does it appear to have had a long period of prehistoric occupation, but its historic features and artifacts are significant in terms of their association with significant people and events. Unless construction is to be preceded by a thorough excavation, it is extremely important that steps be taken to avoid disturbing any artifacts and features on or below the surface in the areas of potential adverse effect. A pedestrian survey through thick grass is not a sufficient means to determine the extent and nature of archeological resources that are certainly present in the staging areas.

Plan for unexpected discovery of archaeological features and artifacts, including but not limited to American Indian remains, funerary objects, sacred objects, and objects of cultural patrimony. The existence of burial grounds in the areas of adverse effect cannot be ruled out yet.

6 Conclusion

The Oak Grove Bridge (Caltrans Bridge No. 46C0196; HAER #CA-142) is a valuable cultural resource that is integrally associated with a proximate environment that features prehistoric and historic artifacts and archaeological features, as well as intangible cultural and natural resources that render the Oak Grove Bridge both a symbol of community and a destination.

Both of the proposed alternatives, rehabilitation of the bridge and its retention adjacent to a new bridge, entail potential adverse effects to the bridge and cultural resources in both the project area and the staging areas to the northeast of the project area. These areas are known to contain prehistoric artifacts, which may date to seasonal occupation by Foothill Yokuts as long as 3,000 to 6,000 years ago, and historic artifacts and features dating to 1877, which are associated with significant historic events and people.

As of autumn 2016, the potentially impacted areas had not been adequately surveyed to ascertain the density and significance of the resources they contain; any cursory pedestrian survey (especially when the grass has not been removed) would not provide an adequate indication of the extent of the resources that would be subject to adverse effect if the ground is disturbed. Accordingly, the author recommends that a) all areas of potential adverse effect undergo a thorough surface survey to record all surface features and to record and collect all surface artifacts in accordance with NHPA Section 110; b) TCRMA avoid creating any ground disturbance that could expose or damage artifacts; and c) TCRMA prepare a Plan of Action (POA) in advance of the project that would facilitate an appropriate response in the event of unexpected discovery of archaeological features and artifacts, including but not limited to American Indian remains, funerary objects, sacred objects, and objects of cultural patrimony.

7 Acknowledgements

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Jim Barton (b. 1924), descendent of the earliest Euro-Americans in the area, provided oral accounts.

The sisters **Margie Ewing** (b. 1923) and **Wilma Kauling** (b. 1925), descendent of the earliest Euro-Americans in the area, provided oral history describing how their ancestors were involved with the significant events associated with Oak Grove since the mid 1880s, including construction of the flume from Oak grove.

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Finally, I am indebted to **Sarah and John Elliott** for their support and the information that they previously complied for a Mineral King contextual history and articles for the local newspaper, *The Kaweah Commonwealth*, which took its name from the newspaper that published "Notes from Kane's Flat" in 1891.

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Jenna Kachour

From: Jason Vivian <JVivian@co.tulare.ca.us>
Sent: Wednesday, April 19, 2017 9:50 AM
To: Jenna Kachour
Subject: Fwd: Oak Grove Bridge Input
Attachments: Jason Vivian.vcf

Hi Jenna,

Think I missed this one when I was on vacation a few weeks back.

Thanks,

Jason K. Vivian, PE
Engineer IV
Tulare County
RMA Public Works - Design
5961 S. Mooney Blvd.
Visalia, CA 93277-9394
Office: (559) 624-7135
Work Cell: (559) 747-8569
Fax: (559) 740-4448

>>> "Mark Bissiri" <mbissiri@us.ibm.com> 4/4/2017 9:08 AM >>>

Dear Tulare County,
I have been going to Mineral King every year of my life for the last 66 years. Prior to me, my parents and grandparents have been visiting Mineral King every summer going back to years before the current bridge and newer road was built in the early 1920s. As you have already stated, this bridge is a beautiful example of 1920s bridge design and is of significant historic importance. Preserving it for future generations should be the County's goal. Ideally, I would hope you could reinforce any unsafe portions without significantly impacting the historic design and that would be the extent of your project. If such an alternative in not possible, the next best alternative would be to build a new bridge on the West side of the current bridge. However, the current bridge should be left in tact as a historic display and would then be closed to vehicle traffic. It could still be open for pedestrians or horses to cross. Limited parking on either end of the old bridge could also be set up using the short portions of the road that would no longer be used for access. This would allow travelers a place to stop and enjoy the historic bridge. Please include my input in your planning process for the Oak Grove Bridge project.

Sincerely,

Mark H. Bissiri
PO BOX 2621
Mill Valley, CA 94942
Cellphone: 415-734-0804
mbissiri@us.ibm.com

From: martin strudwick <martinstrud@yahoo.com>
To: "Jvivian@co.tulare.ca.us" <Jvivian@co.tulare.ca.us>
Date: 1/27/2016 1:49 PM
Subject: The Historic Oak Grove Bridge

Jason VivianProject Manager, Tulare County, Ca.
Re: The Future of the Historic Oak Grove Bridge

I am sending this email in the expectation that you will provide it to the County Board of Supervisors prior to their decision regarding the future of the Historic Oak Grove Bridge.

The Historic Oak Grove Bridge
I having been to Mineral King many times over the past 40 years. Each year, and sometimes twice or more in the same year, I have passed in both directions over this wonderful bridge. Each time my family and I are filled with awe and wonder at its structural and artistic beauty. Our ultimate destination of those many, and certainly future, trips is the Mineral King Valley. Typically, we stop at the Oak Grove Bridge to rest and enjoy it's surroundings; marveling at it's stoic place in the history of the valley and the wonderful, winding road to that special destination. For our family and friends it has become as much a destination as the valley itself, and many lengthy discussions have followed our crossing it.
Mineral King and it's road have faced the danger of exploitation before. The draw of riches, the dream of a ski area and the encroachment of parking lots and telephone poles is not new to its rustic beauty. Men of power and captains of industry have looked at its resources and determined to employ them to their advantage. Each time they have tried, the valley and its road have won out. There have been some smaller conquests; mining and it's remains, the felling of ancient Redwoods, the building of larger, modern housing. For the most part the valley and it's road is as it has been since before modern man trod it's surface.
The need for a sound bridge is critical to the use of the road and there may be argument that in itself that is progress. But it is progress that is offset by the enjoyment of the surroundings and further offset by the majestic beauty of the structure. Many have benefited from the bridge by seeing it, crossing it and experiencing the valley and many more still can.
The Historic Oak Grove Bridge should stay. It should be marveled and enjoyed. It should be shared with future generations and seen by those who come to Mineral King and surroundings. It should be celebrated as a monument to it's locale, to those who built it and to the road itself. It is an intrinsic part of the history of Mineral King.

It is an historic landmark and gateway and it should be kept and preserved for future generations.
I appreciate being heard in this decision and hope for a positive outcome.
Martin A. Strudwick

From:	Jason Vivian
To:	Mary Pat Pinkham
Cc:	Jenna Kachour
Subject:	Re: Oak Grove Bridge
Date:	Monday, April 03, 2017 9:21:24 AM
Attachments:	Jason Vivian.vcf

Hello Mary,

Thank you for your comments. They will be included in our technical report for cultural resources.

Best regards,

Jason K. Vivian, PE
Engineer IV
Tulare County
RMA Public Works - Design
5961 S. Mooney Blvd.
Visalia, CA 93277-9394
Office: (559) 624-7135
Work Cell: (559) 747-8569
Fax: (559) 740-4448

>>> Mary Pat Pinkham <mpatpink@gmail.com> 4/1/2017 6:18 AM >>>
Dear Sir,
Please please rehabilitate the bridge rather than replace !!

Safety is essential so fix the bridge with Federal Funding
but do it right !! Not like The Bay Bridge fix.

Sincerely,
Mary Pat Pinkham
East Mineral King
Cabin # 25

From: Mary Wadsworth <martiniwith3olives@hotmail.com>
To: "jvivian@co.tulare.ca.us" <jvivian@co.tulare.ca.us>
Date: 2/21/2016 7:31 AM
Subject: Fwd: OAK GROVE BRIDGE

Sent from my iPhone

Begin forwarded message:

From: Mary Wadsworth <martiniwith3olives@hotmail.com<mailto:martiniwith3olives@hotmail.com>>
Date: February 20, 2016 at 8:24:52 AM PST
To: "jvivian@tulare.co.ca.us<mailto:jvivian@tulare.co.ca.us>" <jvivian@tulare.co.ca.us<mailto:jvivian@tulare.co.ca.us>>
Subject: OAK GROVE BRIDGE

Dear Jason,

I would like to place my support behind the Tulare County Board of Supervisors to preserve and restore the historic Oak Grove Bridge on the Mineral King Road. I take all our visitors to Mineral King and everyone demands a stop at the bridge for a picture due to it's historic significance and beauty. I believe it's essential to save, repair, and renovate historic structures such as the Oak Grove Bridge so present and future generations may learn and enjoy the area's rich history. Tearing down the physical representation of our past should always be a last resort! Demolition is forever.

There is also an economic benefit to preserve this unique bridge. It's a curiousity to tourists, who will stay, eat, and shop in the Three Rivers area of Tulare County. It's a part of the historical and cultural landscape that is so important to retain, when so many communities are tearing down history. It's worth the expense and effort to recondition the Oak Grove Bridge so it will be safe to use as well as remain a unique, local landmark to residents and visitors, alike.

Regards,

Mary Wadsworth

2336 Gable Avenue

Corcoran, California 93212

From: "Merl Ledford III, Esq." <m.ledford3@ledfordlaw.net>
To: <jvivian@co.tulare.ca.us>
CC: "John M. Lowson" <MAC@LOWSON.COM>, Annie Lowson <qrolo@juno.com>, Hobbs Lowson <Hobbs.Lowson@boh.com>, Diane Ledford <dianeledford@me.com>, Jim Simons <vinredco@sbcglobal.net>, Louise Jackson <mtnlou@earthlink.net>
Date: 1/21/2016 5:23 PM
Subject: Oak Grove Bridge

Ladies & Gentlemen

I strongly oppose any attempt to destroy Oak Grove Bridge or to replace it with a modern structure. To do so would cause immediate and irreparable harm to our community.

Oak Grove Bridge, on the historic Mineral King Road, is a well-recognized part of our County's history. Properly respected weight limits can protect the structural integrity of the bridge for future generations.

When independent engineering studies eventually disclose the need for structural renovation, the bridge must be restored to its original appearance out of respect for our County's past and to fully honor its future.

Merl Ledford III

SENT WITHOUT STAFF PROOFING TO AVOID DELAY

l e d f o r d l a w c o r p o r a t i o n
805 West Oak Avenue Visalia CA 93291-6033 / 559.627.2710

CONFIDENTIAL MESSAGE
The information contained in this email transmission is confidential. It is intended to be sent to and received by the named recipient only. The contents of the email and all statements of fact and/or opinion stated are protected from unauthorized use or dissemination by the attorney-client and/or attorney work-product privileges. If you have received this in error, please (1) delete this transmission and all attachments immediately; (2) destroy all copies of the transmission in any and all forms; and (3) notify LEDFORD LAW CORPORATION by telephone immediately at Sender's expense of the incident. DEPARTMENT OF TREASURY CIRCULAR 230:In order to comply with requirements imposed by the Internal Revenue Service, we inform you that any U.S. tax advice contained in this communication (including any attachments and enclosures) is not intended to be used, and cannot be used, referred to or relied upon, for the purpose of (i) avoiding tax-related penalties under the Internal Revenue Code or (ii) promoting, marketing, or recommending to another party any tax-related transaction or matter addressed in this communication, including any attachments and enclosures. Thank you in advance for your cooperation.

Please consider the environment before printing this email

From: "Michael Asay" <asaymi@gmail.com>
To: <jvivian@co.tulare.ca.us>
Date: 1/20/2016 8:32 AM
Subject: Oak Grove bridge on the Mineral King road

Dear Sirs

I am a Mineral King Cabin owner and find the Oak Grove bridge on the Mineral King road to be part of the important natural experience and history of visiting the Sierras. It would be a shame to tear it down. My family and I want to express our strong desire to retain the historic bridge in its natural state whether or not vehicle traffic continues to use it as a crossing.

Please add us to any distributed information concerning its discussion of its fate!

Sincerely

Michael Asay WMK #14

Tulare County
Resource Management
Agency

MAR 28 2016

Mr. Jason K. Vivian, PE, Project Manager
Tulare County Resource Management Agency
Public Work—Design, Development & Construction
5961 South Mooney Boulevard
Visalia, CA 93277

March 21, 2016

Re: Rehabilitation of the Historic Oak Grove Bridge (AKA—M375A Mineral King Bridge)

Please be advised that the Mineral King Preservation Society, a 501(c) 3 non-profit public benefit corporation formed in 1987, has received dozens of queries and concerns regarding the rehabilitation of the historic Oak Grove Bridge on the Mineral King Road.

Dedicated to "preserve and protect the natural environment, historic archives, records and structures and sites of historic interest located in and related to the Mineral King Valley of Tulare County, California", we are responding here as a representative of a deeply concerned public that values the heritage and preservation of our county's historic structures. As representative of those many individuals, we wish to urge the county to look beyond costs to the actual preservation of the historic Oak Grove Bridge.

We request that the RMA select Alternative 1—Rehab/Retrofit as presented on record to the Public, without verbally stated caveats as to possible cost restrictions or newly emerging concerns regarding feasibility. In conjunction, we also request that the RMA submit a National Historic Places Registration Form for placement of the Oak Grove Bridge on the National Register of Historic Places.

Finally, the need for this process is well defined in the letter to you from Sequoia and Kings Canyon Superintendent Woody Smeck dated February 5, 2016. We urge your department to work in conference with the Park on implementation of the project. The Park's knowledge, resources, experience with and implementation of such projects is invaluable.

Thank you for your dedication to this project.

Mineral King Preservation Society Board of Directors
Stuart Hendricks, President

Stuart Hendricks

Please reply to:
Stuart Hendricks, MKPS President
3026 South Johnson
Visalia, CA 93277

cc: David Humphrey, Cultural Resources Program Manager
Sequoia and Kings Canyon National Parks
47050 Generals Highway
Three Rivers, CA 93271-9651

Julianne Polanco, State Historic Preservation Officer
California Department of Parks and Recreation, Office of Historic Preservation
1725 23rd St, Suite 100
Sacramento, CA 95816

From: "Nadine Hack" <ndghack@comcast.net>
To: <jvivian@co.tulare.ca.us>
Date: 1/20/2016 10:02 AM
Subject: Oak Grove Bridge

It is important to preserve the historic Oak Grove Bridge. Since the upper section of the Mineral King road is in a National Register listed Historic Landscape, this bridge is a part of that history. The bridge is an important structure in the history of Tulare County, is of scenic value and important to preserve as a record for future generations. The option to build another bridge just above this historic one and reroute the road is preferred and possible.

Nadine Hack

From: "Nadine Hack" <ndghack@comcast.net>
To: <jvivian@co.tulare.ca.us>
Date: 3/3/2016 1:52 PM
Subject: Mineral King Bridge Project

Alternative 2B is the best solution for preserving the historic bridge.

Nadine Hack

From:	Jenna Kachour
To:	"Nadine Hack"
Cc:	"Jason Vivian"
Subject:	RE: Request for Public Comments and Information Regarding the Mineral King Bridge Rehabilitation Project
Date:	Friday, March 31, 2017 9:16:00 AM

Dear Nadine,

Thank you for your comments. They will be included in our technical report for cultural resources.

Sincerely,

JENNA KACHOUR
Senior Preservation Planner | jenna@gpaconsulting-us.com | (310) 792-2690
GPA CONSULTING | www.gpaconsulting-us.com

From: Nadine Hack [mailto:ndghack@comcast.net]
Sent: Tuesday, March 28, 2017 8:46 PM
To: Jenna Kachour <jenna@gpaconsulting-us.com>
Subject: Re: Request for Public Comments and Information Regarding the Mineral King Bridge Rehabilitation Project

If rehabilitating the bridge is possible without altering the design of the structure, that is probably the most cost effective option. However, the historic look and fabric of the bridge must not be compromised.

Nadine Hack

From: Jenna Kachour
Sent: Tuesday, March 28, 2017 1:09 PM
To: ndghack@comcast.net
Cc: jvivian@co.tulare.ca.us
Subject: Request for Public Comments and Information Regarding the Mineral King Bridge Rehabilitation Project

Dear Nadine Hack,

The Tulare County Resource Management Agency (County), in cooperation with Caltrans and the Federal Highway Administration (FHWA), is proposing to either rehabilitate the existing Mineral King Bridge (Caltrans Bridge No. 46C0196, also named Historic Oak Grove Bridge) over the East Fork of the Kaweah River or construct a replacement bridge structure while retaining the existing bridge. The bridge is located approximately 5.0 miles from State Route 198, east of the community of Three Rivers along Mineral King Road (see attached regional and project location maps). The bridge was constructed in 1923 and is eligible for listing in the National Register of Historic Places.

Because the project will utilize federal funding, it must comply with Section 106 of the National Historic Preservation Act (36 CFR §800). As part of the environmental process associated with compliance, GPA Consulting, sub-consultant to the County, is soliciting comments and information from potentially interested parties. In particular, we are seeking information

regarding the potential of the proposed project to impact historic resources in the vicinity. Your response allows us to identify concerns relating to the proposed project and to gather valuable information on local historic resources. We are already aware that the Mineral King Bridge (Historic Oak Grove Bridge) is a historic resource and we will be analyzing the proposed project for its potential to impact the bridge. In addition, the location of any sensitive archaeological resources will remain confidential but the potential project impacts to these resources will also will be addressed.

We are in receipt of your comments sent via email on January 20 and March 3, 2016. If you have information regarding additional historic resources that may be potentially impacted by the project, we would greatly appreciate your response by April 14, 2017, so we can include it in our technical report. Please contact Jason Vivian, Engineer IV, Tulare County Resource Management Agency, by phone (559) 624-7135 or e-mail jvivian@co.tulare.ca.us to provide comments in response to this letter.

Sincerely,

JENNA KACHOUR
Senior Preservation Planner | jenna@gpaconsulting-us.com | (310) 792-2690
GPA CONSULTING | www.gpaconsulting-us.com

From: Trish Whitendale <twhitendale@yahoo.com>
To: "jvivian@co.tulare.ca.us" <jvivian@co.tulare.ca.us>
Date: 1/20/2016 2:56 PM
Subject: Oak Grove Bridge on Mineral King Road

My mother, Marjorie Whitendale and I have traveled the MIneral King Road for 85 and 65 years, respectively. The Oak Grove Bridge has always been such a beautiful structure. We have looked forward to seeing it each time we have travelled the road, both going up and coming down. We strongly urge the Tulare County Planning Commission to move to preserve the bridge. It would be very greatly missed as a beautiful sight and also as an historic structure if it was not preserved.
Thank you so much: Patricia Whitendale, Visalia

From: Nadean Bissiri <nadeanbissiri@gmail.com>
To: <jvivian@co.tulare.ca.us>
Date: 2/10/2016 1:02 PM
Subject: Oak Grove Bridge

If the current Oak Grove bridge is unsafe for traffic, could it be maintained as a walking and view bridge? If this is not appropriate, would it be possible to construct the new bridge as a duplicate of the old bridge? Tulare Co. has already lost too many of its historical landmarks; many pleasant memories are attached to the Oak Grove bridge.

Sincerely,
Paul and Nadean Bissiri

1161 Ragatz Lane
Napa, CA
94558

From:	Jenna Kachour
To:	"Nadean Bissiri"
Cc:	"Jason Vivian"
Subject:	RE: Request for Public Comments and Information Regarding the Mineral King Bridge Rehabilitation Project
Date:	Friday, March 31, 2017 9:14:00 AM

Dear Paul and Nadean,

Thank you for your comments. They will be included in our technical report for cultural resources.

Sincerely,

JENNA KACHOUR
Senior Preservation Planner | jenna@gpaconsulting-us.com | (310) 792-2690
GPA CONSULTING | www.gpaconsulting-us.com

From: Nadean Bissiri [mailto:nadeanbissiri@gmail.com]
Sent: Thursday, March 30, 2017 8:39 PM
To: Jenna Kachour <jenna@gpaconsulting-us.com>
Subject: Re: Request for Public Comments and Information Regarding the Mineral King Bridge Rehabilitation Project

we would like to see the old bridge restored. Is it not possible to maintain its present appearance and make it earthquake safe etc.? Is a new bridge nearby absolutely essential?Pa

Paul and Nadean Bissiri
1161 Ragatz Lane
Napa, Calif. 94558

On Tue, Mar 28, 2017 at 2:04 PM, Jenna Kachour <jenna@gpaconsulting-us.com> wrote:

> Dear Potential Interested Party,
>
> On March 16, 2017, a printed version of this letter was sent to you via U.S. mail. This email serves as a follow-up to that letter, in the event that it was not delivered.
>
> The Tulare County Resource Management Agency (County), in cooperation with Caltrans and the Federal Highway Administration (FHWA), is proposing to either rehabilitate the existing Mineral King Bridge (Caltrans Bridge No. 46C0196, also named Historic Oak Grove Bridge) over the East Fork of the Kaweah River or construct a replacement bridge structure while retaining the existing bridge. The bridge is located approximately 5.0 miles from State Route 198, east of the community of Three Rivers along Mineral King Road (see attached regional and project location maps). The bridge was constructed in 1923 and is eligible for listing in the National Register of Historic Places.
>
> Because the project will utilize federal funding, it must comply with Section 106 of the National Historic Preservation Act (36 CFR §800). As part of the environmental process associated with compliance, GPA Consulting, sub-consultant to the County, is soliciting comments and information from potentially interested parties. In particular, we are seeking information regarding the potential of the proposed project to impact historic resources in the vicinity. Your response allows us to identify concerns relating to the proposed project and to gather valuable information on local historic resources. We are already aware that the Mineral King

Bridge (Historic Oak Grove Bridge) is a historic resource and we will be analyzing the proposed project for its potential to impact the bridge. In addition, the location of any sensitive archaeological resources will remain confidential but the potential project impacts to these resources will also will be addressed.

Your prior comments submitted regarding this project, if any, were noted in the printed version of this letter mailed to you on March 16, 2017. If you have information regarding additional historic resources that may be potentially impacted by the project, we would greatly appreciate your response by April 14, 2017, so we can include it in our technical report. Please contact Jason Vivian, Engineer IV, Tulare County Resource Management Agency, by phone (559) 624-7135 or e-mail jvivian@co.tulare.ca.us to provide comments in response to this letter.

Sincerely,

JENNA KACHOUR
Senior Preservation Planner | jenna@gpaconsulting-us.com | (310) 792-2690
GPA CONSULTING | www.gpaconsulting-us.com

From: Paul Dayton <pdayton@ucsd.edu>
To: <jvivian@co.tulare.ca.us>
Date: 1/20/2016 7:59 AM
Subject: Oak Grove Bridge

Dear Mr. Vivian,

I understand that there is a discussion about tearing down the old Oak Grove Bridge. I am sure that there are many complicating factors involved, but I sincerely hope that you and the commission can find a way to preserve the bridge. It is sad to see our California history razed and I understand that sometimes it is necessary, but often I think that people have found that where there is a will, they find a way to preserve our history, and that bridge really is a remarkable structure with an interesting history. I suspect there are economics involved, but sometimes our values are worth some money.

Good luck with your deliberations. I really hope you can find a way to preserve it while maintaining safe access to Mineral King and the homes along the road.

Paul Dayton
(an old regular visiter to Mineral King)

From: Peggy Blanchard <3rivers.peggy@gmail.com>
To: <Jvivian@co.tulare.ca.us>
Date: 2/23/2016 3:31 PM
Subject: Oak Grove Bridge

I can't be at the meeting in 3Rivers tonight due to a prior commitment, but I want to go on record as supporting the proposal to rehabilitate the existing structure rather than just "mothballing" it and constructing a new bridge.
Thanks for your time,
Peggy (Mary Margaret) Blanchard
41011 Meadow Drive
Three Rivers, CA 93271

From: <Otrkennedy@aol.com>
To: <jvivian@co.tulare.ca.us>
Date: 1/20/2016 1:07 PM
Subject: Oak Grove bridge

J vivian, Greetings V V

Is there any thing I can read on the reasoning for taking down the bridge.

Thank You, Ron Kennedy

From: <sjdungan@earthlink.net>
To: <jvivian@co.tulare.ca.us>
Date: 1/20/2016 6:09 PM
Subject: Oak Grove Bridge

I am writing to express my support for the preservation of the Oak Grove Bridge on the Mineral King Road. It is essential that citizens be able to access to the beautiful Sierra Nevada via the trails that lead from the Mineral King Valley. Especially during an era when fewer people have daily opportunities to enjoy the majestic treasures of nature, it is important to ensure transportation into National Parks and Forests. Please vote to enable the maintenance and security of the Oak Grove Bridge.

Sincerely,
Sally J. Dungan
730 N. Highland
Visalia, CA 93291
559-303-3113

From: sjdungan@earthlink.net<sjdungan@earthlink.net>
To: <JVivian@co.tulare.ca.us>
Date: 1/20/2016 10:05 PM
Subject: Re: Oak Grove Bridge

Thank you so much for your quick response. Are the various proposals for the Oak Grove Bridge currently available for public review? If so, please send the link.
Thank you.

Sent from my Verizon 4G LTE Smartphone

------ Original message------From: Jason Vivian Date: Wed, Jan 20, 2016 6:16 PMTo: sjdungan@earthlink.net;Subject:Re: Oak Grove Bridge Thank you for your email Sally.We will be holding a meeting next month to discuss the project. We hope that you can attend as we plan on discussing the various alternatives that have been considered for this project. If you have any questions in the meantime please feel free to email or call. Thanks,Jason K. Vivian, PEEngineer IVTulare County RMA Public Works - Design5961 S. Mooney Blvd.Visalia, CA 93277-9394Office: (559) 624-7135Work Cell: (559) 747-8569Fax: (559) 740-4448>>> 1/20/2016 6:08 PM >>>I am writing to express my support for the preservation of the Oak Grove Bridge on the Mineral King Road. It is essential that citizens be able to access to the beautiful Sierra Nevada via the trails that lead from the Mineral King Valley. Especially during an era when fewer people have daily opportunities to enjoy the majestic treasures of nature, it is important to ensure transportation into National Parks and Forests. Please vote to enable the maintenance and security of the Oak Grove Bridge.Sincerely,Sally J. Dungan730 N. Highland Visalia, CA 93291559-303-3113

From:	Jason Vivian
To:	sallysedwina@aol.com
Cc:	Jenna Kachour
Subject:	Re:
Date:	Monday, April 03, 2017 9:19:47 AM
Attachments:	Jason Vivian.vcf

Hello,

Thank you for your comments. They will be included in our technical report for cultural resources.

Best regards,

Jason K. Vivian, PE
Engineer IV
Tulare County
RMA Public Works - Design
5961 S. Mooney Blvd.
Visalia, CA 93277-9394
Office: (559) 624-7135
Work Cell: (559) 747-8569
Fax: (559) 740-4448

>>> <sallysedwina@aol.com> 4/1/2017 11:05 AM >>>
We ask that you do not restore this bridge in any way except for safety reasons. It is part of our Historic memories and is so beautiful!! How could you possibly exchange this for a rather ugly modern bridge? This bridge is an archaeological structure!!! You will destroy its' very roots of the wonderful road to the headwaters of the east Kaweah!!

United States Department of the Interior

NATIONAL PARK SERVICE

Sequoia and Kings Canyon National Parks
47050 Generals Highway
Three Rivers, California 93271-9651

IN REPLY REFER TO:
1.A.1

CERTIFIED MAIL RETURN RECIEPT REQUESTED

Tulare County
Resource Management
Agency
FEB 29 2016

February 25, 2016

Mr. Jason K. Vivian, PE, Project Manager
Tulare County Resource Management Agency
Public Work – Design, Development & Construction
5961 South Mooney Boulevard
Visalia, CA 93277

Dear Mr. Vivian:

Thank you for hosting the February 23, 2016 Public Scoping Meeting/Open House where the Tulare County Resource Management Agency and your consultants presented the current alternatives under consideration for the rehabilitation of the Historic Oak Grove Bridge (AKA – M375A Mineral King Bridge) over the East Fork of the Kaweah River. We are very interested in this planning effort as the Oak Grove Bridge as well as the nearby Pumpkin Hollow Bridge that crosses the Middle Fork of the Kaweah River both serve as principal structures on the roads that lead into the south end of Sequoia National Park. And, we certainly appreciate the positive impact the proposed bridge rehabilitation will ultimately have on ensuring safe visitor access to and from Sequoia National Park and the Mineral King area in particular.

At the February 23rd meeting three alternatives were presented that are currently under consideration for the rehabilitation of the Oak Grove Bridge; Alternative 1 – "Rehab/Retrofit"; Alternative 2 – "Replacement (Preserve Existing Bridge)"; and Alternative 3 – "Hybrid Rehab/Replacement". It is also our understanding that the Tulare County RMA has formally requested that the public submit their comments regarding the rehabilitation of the Oak Grove Bridge to your attention by no later than March 23, 2016.

After reviewing the range of alternatives presented we recommend that the Tulare County RMA pursue the first alternative, namely to preserve the historic structure by rehabilitating/retrofitting in situ. Additionally, we recommend as part of the ongoing NEPA/CEQA planning/compliance process that is required for this project that the Tulare County RMA complete a National Register of Historic Places Registration Form for the Oak Grove Bridge in accordance with Section 110 of the National Historic Preservation Act (NHPA). We feel that the Oak Grove Bridge as well as the nearby Pumpkin Hollow Bridge are both eligible under Criterion C. The applicable National Register Criteria reads as follows: *Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.*

The nomination of the Oak Grove Bridge (and the Pumpkin Hollow Bridge as well) could serve as one of the mitigation measures that would allow Tulare County RMA to also comply with Section 106 of the NHPA which requires the mitigation of potential adverse effects to historic structures.

Lastly, we are also concerned with the potential for negative impacts to the river and the adjacent riparian habitat from whichever alternative is chosen. We look forward to continuing to coordinate with your agency as this planning and compliance and subsequent implementation effort progresses.

If you have any questions or would like to discuss our recommendation with us please feel free to contact me at 559-565- 3101 or Mr. David Humphrey, Cultural Resources Program Manager at 559-565-3139.

Sincerely,

Woody Smeck

Woody Smeck
Superintendent

cc: David T. Humphrey, Cultural Resources Program Manager, SEKI

Stuart R. Hendricks, President
Mineral King Preservation Society
c/o Teter AE
125 South Bridge Street
Visalia, CA 93291

Julianne Polanco, State Historic Preservation Officer
California Department of Parks and Recreation
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Sharri Bender Ehlert, District 6 Director
California Department of Transportation
1352 West Olive Avenue
PO Box 12616
Fresno, CA 93778-2616

From: <MineralKing@earthlink.net>
To: <jvivian@co.tulare.ca.us>
Date: 1/21/2016 7:47 AM
Subject: Oak Grove Bridge (ref: February 8 Planning Commission meeting)

Hello, Jason.

Since I am unable to attend the Tulare County Planning Commission meeting on February 8, I want to write and add my voice to many others asking the Tulare County Board of Supervisors to preserve and restore the historic Oak Grove Bridge along the Mineral King Road. This wonderful bridge stands out on this historic route and has served as a river crossing for 80 years! As a yearly Mineral King visitor for over 60 years, it was always a delight to reach that point of the road and think, "We're on our way!"

I believe it's essential to save, repair, and renovate historic structures such as the Oak Grove Bridge so present and future generations may learn of and enjoy the area's rich history. Tearing down the physical representation of our past should always be a last resort. Demolition is forever!

There is also an economic benefit to preserve this unique bridge. It's a curiosity to tourists, who will stay, eat, and shop in the Three Rivers area of Tulare County. It's a part of the historical and cultural landscape that is so important to maintain when so many communities are tearing down their structural history. It's worth the expense and effort to recondition the Oak Grove Bridge so it will be safe to use as well as remain a unique, local landmark to residents and visitors, alike.

Please vote to save and restore the Oak Grove Bridge on the Mineral King Road!

Thank you for your consideration.

Sharon Devol
Newhall, California
(and summer Mineral King resident)

From:	Jason Vivian
To:	Sharon Devol
Cc:	Jenna Kachour
Subject:	Re: Mineral King Bridge Rehabilitation Project
Date:	Monday, April 03, 2017 1:32:07 PM

Hello Sharon,

Thank you for your comments. They will be included in our technical report for cultural resources.

Best regards,

Jason K. Vivian, PE
Engineer IV
Tulare County
RMA Public Works - Design
5961 S. Mooney Blvd.
Visalia, CA 93277-9394
Office: (559) 624-7135
Work Cell: (559) 747-8569
Fax: (559) 740-4448

>>> Sharon Devol <mineralking50@gmail.com> 4/3/2017 12:23 PM >>>

Dear Jason:

I am writing in response to the email from Jenna Kachour of GPA Consulting dated March 28, 2017 seeking comments about various options for the Oak Grove Bridge that crosses the East Fork of the Kaweah River near Three Rivers, California.

I am asking the Tulare County Board of Supervisors to preserve this historic bridge (built in 1923) along the Mineral King Road. As a yearly Sequoia National Park visitor for over 60 years, it was always a delight to reach this bridge and think, "We're on our way to Mineral King!"

There is also an economic benefit to Three Rivers and the Tulare County area in preserving this unique bridge. It's a part of the historical and cultural landscape and worth the expense and effort to fix the Oak Grove Bridge so it will be safe for vehicle traffic as well as remain a unique, local landmark to residents and visitors, alike.

Tearing down historical structures such as the Oak Grove Bridge should never be an option, in my opinion. Restore, renovate, rehabilitate, and retrofit so present and future generations may learn of the area's rich history. Remember: demolition is forever!

Please save and restore the 1923 Oak Grove Bridge on the Mineral King Road! Thank you for your consideration.

Sharon Devol

Newhall, California

(and summer Mineral King resident)

From: "Shawn" <shawn@theradioroom.org>
To: <Jvivian@co.tulare.ca.us>
Date: 1/19/2016 12:28 PM
Subject: Preserve the Historic Oak Grove Bridge

Jason Vivian

Project Manager, Tulare County, Ca.

Mr. Vivian,

The purpose of this message is to convey the importance of preserving the historic Oak Grove Bridge on the Mineral King Road. As you have requested comments to be directed to you, I would expect you will provide these comments to the County Board of Supervisors prior to their vote on my behalf.

The Oak Grove Bridge is an iconic landmark setting apart the area from the many other access points to the Sierra and beyond. Leaving the bridge intact, or repairing it, preserves the history of the area for current and future generations to enjoy. The idea that any historic structure would be removed should always be carefully considered as the potential actions to do so cannot be reversed and all is lost into perpetuity. Many, such as myself, consider the Oak Grove Bridge the gateway to Mineral King. Any alteration to the bridge is akin to changing the character and history to Mineral King valley and its history as well.

While my primary message is that of preserving history, there is an economic impact should there be a change or destruction of the Oak Grove Bridge. Having passed over the bridge on countless occasions, it is obvious that many people make it a destination unto itself. Often people will continue on to Mineral King out of curiosity, while others will stay and enjoy the bridge and surrounding views. Either way, Tulare County enjoys the economic benefit from travelers through the area as they make purchases, stay in local hotels, and visit various other attractions in County. The economic benefit should be underscored as a measure of the importance of the historic Oak Grove Bridge and its' influence on people and history.

The Oak Grove Bridge is a reminder of the County's culture and character; its' destruction would be an irreversible act leaving no chance for renovation once it's gone. It brings current and future value to the County in many measurable and unmeasured ways. I urge the Planning Commission and/or County Board of Supervisors to please vote "NO" to any tear down of this important historical landmark.

Respectfully Submitted,

Shawn Dienhart

Paso Robles, Ca.

cc: Tulare County Board of Supervisors

COMMENT CARD

COUNTY OF TULARE, CALIFORNIA
Historic Oak Grove Bridge Project
Public Scoping Meeting
February 23, 2016

NAME: Stephen Crigler DATE: 2-28-16

ADDRESS: 43469 Alta Acres Dr. PHONE: 561-4439

CITY, STATE, ZIP: Three Rivers, CA 93271

E-MAIL ADDRESS: www.Waldo563@gmail.com

☑ I would like to have the following statement filed for the record.
☐ I would like to have the following question answered.

COMMENT:

Please protect the original design any way you can.

S. Crigler

Comments must be received no later than March 23, 2016. Comment cards may be mailed to Jason Vivian; Tulare County RMA Public Works – Design, 5961 S. Mooney Boulevard, Visalia, CA 93277 or emailed to JVivian@co.tulare.ca.us.

From: Stuart Hendricks <stuart.hendricks@teterae.com>
To: "jvivian@co.tulare.ca.us" <jvivian@co.tulare.ca.us>
CC: "Humphrey, David" <dave_humphrey@nps.gov>
Date: 3/23/2016 8:15 AM
Subject: Oak Grove Bridge, Three Rivers - public comment
Attachments: Oak Grove Bridge_Comment_2016-03-22.pdf

Jason,

Attached is a public comment letter regarding the Oak Grove Bridge in Three Rivers on behalf of the Mineral King Preservation Society of which I am a board member.

Thank you very much for consideration.

Best Regards,

Stuart Hendricks

[TETER_AEC_Email.jpg]

Stuart R. Hendricks, CASp

Architect

125 S. Bridge Street, Suite 150

Visalia, CA 93291

T | 559.625.5246

F | 559.625.5282

E | stuart.hendricks@teterae.com<mailto:stuart.hendricks@teterae.com>

From: <Sbaqmerril@aol.com>
To: <cabinart06@sbcglobal.net>, <MineralKing@earthlink.net>, <jvivian@co.tulare.ca.us>
Date: 1/25/2016 8:47 AM
Subject: Re: Oak Grove Bridge Restoration

To all SC people, here is the latest update of the proposed demolition of the Oak Grove Bridge. Please send your comments in to _jvivian@co.tulare.ca.us_ (mailto:jvivian@co.tulare.ca.us) so that the County knows there is a lot of support for the restoration and repair of the bridge and not demolition.

Thanks Sue Merrill

In a message dated 1/24/2016 8:27:33 P.M. Pacific Standard Time, cabinart06@sbcglobal.net writes:

Hi Sue,

We got Terry on board!

jb

Begin forwarded message:

From: _histerry@comcast.net_ (mailto:histerry@comcast.net)

Date: January 24, 2016 8:25:19 PM PST

To: "Botkin, Jana" <_cabinart06@sbcglobal.net_ (mailto:cabinart06@sbcglobal.net) >

Subject: Re: Oak Grove Bridge Restoration

Thanks Jana What a shame if the old timer has to go! It is one of my highlights on that road. It is going to be hard to argue with the public safety issues connected to it, I suspect. Bridges are vulnerable to age like the rest of us non bridges. Personally I believe the county needs to get a solid whiff of community outrage if they are leaning toward demo. What's your feeling about community support for the old timer? I hesitate to go too far without more facts so as you can see I asked Jason to provide some. Even if the bridge is saved I still have concerns about the "fix". Restoration and repair, not just repair, of the existing bridge resulting in the same outward appearance and character , seems to me to be the goal. But as I said I hate to get too far ahead on this. You guys up there are much closer to the bridge than I am, but everyone should agree that the bridge is a functioning historical landmark and deserves respect and saving. As much as you can please share anything further that you hear. I will do the same and let you know what I hear from Jason. Thanks again for the heads up.
Terry

_____

From: "Jana Botkin" <_cabinart06@sbcglobal.net_ (mailto:cabinart06@sbcglobal.net) >
To: _histerry@comcast.net_ (mailto:histerry@comcast.net)
Cc: "Mike Chrisman" <mike.chrisman44@gmail.com>
Sent: Sunday, January 24, 2016 7:09:47 PM
Subject: Re: Oak Grove Bridge Restoration

Terry, thanks for sending it on. (Hi Mike!)

All I know is that the bridge has been deemed unsafe and there are several alternatives being considered. There is an explanation here: _The Latest News - The Cabins of Mineral King_ (https://sites.google.com/site/mineralkingcabins/news)

Not only have I drawn it, I paint it often. . . slightly obsessed, perhaps? I've been showing my paintings and discussing it on my blog. Here is the last post: _The Oak Grove Bridge Saga Begins | Cabin Art_ (http://www.cabinart.net/the-oak-grove-bridge-saga-begins/) On tomorrow's post I am including the text of my email to the County.

Thanks for caring,
Jana

On Jan 24, 2016, at 6:40 PM, _histerry@comcast.net_ (mailto:histerry@comcast.net) wrote:

Thanks Jana: I will pass this along to the TCHS President Mike Chrisman copied here. . Sounds like the picturesque and historic bridge is in some danger. I know you did a beautiful pencil drawing of it and I think I have one as a note card. Do you know any background on the issue regarding it currently? Thanks Terry

_____

From: "Jana Botkin" <_cabinart06@sbcglobal.net_ (mailto:cabinart06@sbcglobal.net) >
To: "Brown Jill" <_jillalyn@sbcglobal.net_ (mailto:jillalyn@sbcglobal.net) >, "Ommen Terry" <_histerry@comcast.net_ (mailto:histerry@comcast.net) >
Sent: Sunday, January 24, 2016 5:36:53 PM
Subject: Oak Grove Bridge Restoration

Hi Terry and Jill,

Sue Merrill sent this email to me in case I knew anyone's email who is part of TCHS. I thought of both of you. Not sure what you want to do with it, but here you go.

I also emailed Jason Vivian and plan to attend the meeting on February 8.

Jana

Jana Botkin
cabinart@cabinart.net (mailto:cabinart@cabinart.net)
http://www.cabinart.net/
http://www.janabotkin.net
http://www.thecabinsofwilsonia.com (http://www.thecabinsofwilsonia.com/)

559-561-7606
P.O. Box 311
Three Rivers, CA 93271

Begin forwarded message:

From: _Sbaqmerril@aol.com_ (mailto:Sbaqmerril@aol.com)

Date: January 24, 2016 1:56:03 PM PST

To: _PBragg4268@aol.com_ (mailto:PBragg4268@aol.com)

Cc: _MineralKing@earthlink.net_ (mailto:MineralKing@earthlink.net) , _cabinart06@sbcglobal.net_ (mailto:cabinart06@sbcglobal.net)

Subject: Fwd: Oak Grove Bridge Restoration

Peggy who should I send this on to at the Historical Society? I really am not sure about the process.

Thanks Sue

_____

From: _Sbaqmerril@aol.com_ (mailto:Sbaqmerril@aol.com)
To: _jvivian@co.tulare.ca.us_ (mailto:jvivian@co.tulare.ca.us)
CC: _PBragg4268@aol.com_ (mailto:PBragg4268@aol.com) , _mtnlou@earthlink.net_ (mailto:mtnlou@earthlink.net)
Sent: 1/24/2016 1:53:51 P.M. Pacific Standard Time
Subj: Oak Grove Bridge Restoration

I won't be able to be at the meeting February 8, at Three Rivers, but wanted to relay to you some of my concerns concerning the "Oak Grove Bridge". Since one of the alternatives that the Commission will be hearing, is for the historic preservation of this Tulare County landmark, I would like to express my desire that this is the outcome of the hearing. As my family has had a cabin in Silver City for over 80 years, and I have been going on this road for the last 70+ years, I am very interested in the fate of this beautiful and historic landmark.

I believe it is essential to save, repair and renovate historic structures such as the Oak Grove Bridge so present generations may learn of and enjoy the area's rich history. Tearing down the physical representation or past should always be last resort. Demolitions are forever.

The Oak Grove Bridge is a reminder of the County's culture and character; its destruction would be an irreversible act leaving no chance for renovation once it's gone. It brings current and future value to the County in
many measurable and unmeasured ways. I urge the Planning Commission and/or County Board of Supervisors to please vote "NO" to any tear down of this important historical landmark.

I am also sending this on to the Tulare County Historical Society as they

certainly need to be aware of these proceedings. We hope the Commission will listen to our concerns.

Thank you
Susan B. Merrill
Silver City Cabin Owner
30007 Road 158
Visalia, CA 93292
559-625-1314

cc. Tulare County Historical Society

=

From: <Sbaqmerril@aol.com>
To: <jvivian@co.tulare.ca.us>
CC: <PBragg4268@aol.com>, <mtnlou@earthlink.net>
Date: 1/24/2016 1:53 PM
Subject: Oak Grove Bridge Restoration

I won't be able to be at the meeting February 8, at Three Rivers, but wanted to relay to you some of my concerns concerning the "Oak Grove Bridge". Since one of the alternatives that the Commission will be hearing, is for the historic preservation of this Tulare County landmark, I would like to express my desire that this is the outcome of the hearing. As my family has had a cabin in Silver City for over 80 years, and I have been going on this road for the last 70+ years, I am very interesting in the fate of this beautiful and historic landmark.

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its' destruction would be an irreversible act leaving no chance for renovation once it's gone. It brings current and future value to the County in
many measurable and unmeasured ways. I urge the Planning Commission and/or
County Board of Supervisors to please vote "NO" to any tear down of this important historical landmark.

I am also sending this on to the Tulare County Historical Society as they certainly need to be aware of these proceedings. We hope the Commission will listen to our concerns.

Thank you
Susan B. Merrill
Silver City Cabin Owner
30007 Road 158
Visalia, CA 93292
559-625-1314

cc. Tulare County Historical Society

From: <histerry@comcast.net>
To: <jvivian@co.tulare.ca.us>
Date: 1/24/2016 8:07 PM
Subject: Oak Grove Bridge

Hello Jason: I recently heard that the Oak Grove Bridge on the Road to Mineral King is being considered for repair or demolition. As a resident of Tulare County, I certainly hope this historic treasure is not demolished. Obviously public Safety is an important consideration but restoration (the keeping of its original character and appearance) should be seriously considered before any drastic action is taken. Please provide relevant facts and material regarding the future of the bridge if you would. I would like to know the details before I consider a future course of action. Thanks Terry

Terry L. Ommen PO Box 3864 Visalia, CA 93278 Tel # 559 901 3227 email: histerry@comcast.net

From: Todd Harris <pcas.sbcglobal.net@gmail.com>
To: <jvivian@co.tulare.ca.us>
CC: todd harris <pcas1@ymail.com>
Date: 2/1/2016 12:24 AM
Subject: Oak Grove Bridge
Attachments: oak bridge letter.pdf

Dear Jason Vivian -

Please find attached a letter with historical photographs from Sandra Lovelace-Hill, niece of Nate Lovelace, prepared over the last three days in response to a request for public comment from the Mineral King District Association to add to the body of information being used by the Tulare County Planning Commission to come to a decision as to the possible future status of the old Oak Grove Bridge.

My Mother is one of the last living people to have grown up with and personally known the generation of folks responsible for the construction of the Oak Grove Bridge - indeed they are her family.

My Mother and members of our family will try to attend the 6:00pm meeting in Three Rivers on February 8, health permitting - Nate Lovelace was quite an engineer, and his pioneering family's story is uniquely historical.

We look forward to meeting you.

Please let me know if you are able to read the attachment - I am happy to resend it if there are any transmission problems leading to lack of legibility.

warmest regards,
Dr. Todd Harris

From: Benjamin Ruiz
To: Vivian, Jason
Date: 1/8/2016 3:49 PM
Subject: Fwd: Supervisor Cox Inquiry: Oak Grove Bridge / MK Road

Jason,
Please include William Martin in your outreach package.

William A. Martin
wam01@comcast.net
Office: 559-625-9089
Cell: 559-731-2623

>>> Michael Spata 11/13/2015 9:41 AM >>>

Will do, Phil, and we will report back.

Ben, please review the email below from Supervisor Cox; contact the property owner; and then please report back.

As always, thank you.

Mike

Michael C. Spata
Interim County Administrative Officer
Tulare County Administration
2800 West Burrel Avenue
Visalia, California 93291
Telephone: (559) 636-5005
Email: MSpata@co.tulare.ca.us

Visit the new Economic Development Website at:
www.tularecountyeconomicdevelopment.org

>>> Phillip Cox 11/13/2015 9:34 AM >>>

Mike,
Where are we on these bridge projects? This gentleman has a cabin in this area. Can someone please contact him with the info. If the info is not good, I will deliver message to him.
Phil

>>> William Martin <wam01@comcast.net> 11/12/2015 2:54 PM >>>
PHIL: I WANTED TO FOLLOW UP ON THE OAK GROVE BRIDGE ON THE MINERAL KING ROAD PROJECT. HAS THE COUNTY DECIDED ON WHICH ALTERNATIVE TO EITHER KEEP OR REMOVE THE HISTORIC BRIDGE? I PROMISED AN UPDATE TO THE GROUP OF CABIN OWNERS, PRESERVATION SOCIETY, AND NPS MANAGEMENT AT OUR NEXT MONTHLY MEETING.

THANKS,

William A. Martin
wam01@comcast.net
Office: 559-625-9089
Cell: 559-731-2623

Attachment F: SHPO Correspondence

- SHPO letter dated January 12, 1987, concurring with the determination of eligibility for Mineral King Bridge
- SHPO Letter dated March 21, 1990, concurring with determination of ineligibility for Kaweah No. 1 of the Kaweah Hydroelectric System.

STATE OF CALIFORNIA—THE RESOURCES AGENCY

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
POST OFFICE BOX 942896
SACRAMENTO, CALIFORNIA 94296-0001
(916) 445-8006

JAN 12 1987

REPLY TO: FHWA 860919Z

Nov 20

439.32
File ~~430.82~~

Mr. Bruce E. Cannon
Division Administrator
California Division
Federal Highway Administration
P.O. Box 1915
Sacramento, CA 95809

Dear Mr. Cannon:

Thematic Determination of National Register of Historic Places Eligibility
Historic Concrete Arch and Other Bridges in California

I have received your request for my concurrence in a determination that 118 highway bridges, reflecting concrete arch, concrete girder, concrete slab, canticrete, stone masonry, suspension, steel girder and steel arch designs, are eligible for inclusion in the National Register of Historic Places.

I am pleased to concur in your determination that these bridges, listed on pages 2-7 of the thematic study, are indeed eligible for inclusion in the Register and delighted to acknowledge the successful completion of what has been an ambitious, challenging and extremely useful enterprise. The sentiments I expressed to you in my letter of September 19, 1985 have not changed: I and my staff are proud to have been associated with this effort.

As was done in the case of the thematic determination on California truss bridges, this second phase thematic study should be forwarded to the Keeper of the National Register of Historic Places for official evaluation and addition to the list of properties determined eligible.

If you have any questions regarding this matter, please call Hans Kreutzberg, Deputy State Historic Preservation Officer, at 322-9621.

Sincerely,

Hans J. Kreutzberg for

Kathryn Gualtieri
State Historic Preservation Officer

BRIDGE NUMBER: 23C-18; 23C-76; 23C-77; 23C-92; 23C-96; 23C-98

County of Solano
Old Courthouse
Fairfield, California 94533

BRIDGE NUMBER: 20C-242; 20C-324

County of Sonoma
Room 117A
575 Administration Drive
Santa Rosa, California 95401

BRIDGE NUMBER: 38C-73

County of Stanislaus
1100 H Street
Modesto, California 95354

BRIDGE NUMBER: 29C-232

City of Stockton
City Hall
425 N. El Dorado Street
Stockton, California 95202

BRIDGE NUMBER: 8C-57; 8C-58

County of Tehama
9380 San Benita Avenue
Gerber, California 96035

BRIDGE NUMBERS: 46C-196; 46C-410

County of Tulare
Civic Center
Visalia, California 93291

BRIDGE NUMBER: 32C-44

County of Tuolumne
230 Green Street
Sonora, California 95370

BRIDGE NUMBER: 22C-3; 22C-35

County of Yolo
292 West Beamer Street
Woodland, California 95695

STATE HISTORICAL RESOURCES COMMISSION
DEPARTMENT OF PARKS AND RECREATION
POST OFFICE BOX 942896
SACRAMENTO, CALIFORNIA 94296-0001
(916) 445-8006

REPLY TO: FERC890210A

March 21, 1990

Mr. Thomas T. Taylor, Archaeologist
Environmental Affairs Division
Southern California Edison Company
P.O.Box 800
Rosemead, CA 91770

Re: Revised Draft History Report dated February 1990, Kaweah Hydroelectric Project Relicensing

Dear Mr. Taylor:

Thank you for submitting the cited report in support of your Kaweah Hydroelectric Project relicensing. We find the revisions to Lehman and other's report fully acceptable, and would like to compliment the authors on the outstanding quality of the investigation they detail.

We concur with your findings that Kaweah Nos. 1 and 2 Powerhouses, their associated features, and water control features at Eagle, Monarch, Crystal, and Franklin Lakes are ineligible to the National Register of Historic Places due to significant alterations of these properties or their lack of distinguishing chacteristics. We also concur with your finding that the Kaweah No. 3 Powerhouse and associated buildings and structures are eligible to the National Register as a district under Criteria A and C for their contribution as a pioneering hydroelectric system built for the purpose of energy supply for irrigation pumping.

Based on our discussions with you today, we understand that the Sequoia and Kings Canyon National Parks staff agree with your revised findings. We will presume that FERC also has no objections to your findings, unless we receive comments from them to the contrary.

We will look forward to receiving a formal National Register nomination for the Kaweah No. 3 district, as well as to further Section 106 consultations relative to your relicensing effort.

Thank you for considering historic properties during project planning. If you have any questions regarding our review of this project, please contact Thad Van Bueren of our staff, at (916) 322-9610.

Sincerely,

Kathryn Gualtieri
State Historic Preservation Officer

Sacred Lands File Search

NATIVE AMERICAN HERITAGE COMMISSION

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Luiseño

VICE CHAIRPERSON
Reginald Pagaling
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Chumash

COMMISSIONER
[**Vacant**]

COMMISSIONER
[**Vacant**]

COMMISSIONER
[**Vacant**]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

April 7, 2021

Hector Guerra
Tulare County Resource Managemento Agency

Via Email to: HGuerra@co.tulare.ca.us; JWillis@co.tulare.ca.us

Re: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, Historic Oak Grove Bridge Replacement, Tulare County

Dear Mr. Guerra:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

- Any report that may contain site forms, site significance, and suggested mitigation measures.

  All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

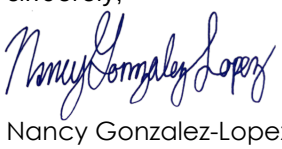
Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Nancy.Gonzalez-Lopez@nahc.ca.gov.

Sincerely,



Nancy Gonzalez-Lopez
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Tribal Consultation List
April 7, 2021

Big Sandy Rancheria of Western Mono Indians
Elizabeth D. Kipp, Chairperson
PO. Box 337 — Western Mono
Auberry , CA 93602
lkipp@bsrnation.com
(559) 374-0066

Dunlap Band of Mono Indians
Benjamin Charley Jr., Tribal Chair
P.O. Box 14 — Mono
Dunlap , CA 93621
ben.charley@yahoo.com
(760) 258-5244

Dunlap Band of Mono Indians
Dirk Charley, Tribal Secretary
5509 E. McKenzie Avenue — Mono
Fresno , CA 93727
dcharley2016@gmail.com
(559) 554-5433

Kern Valley Indian Community
Julie Turner, Secretary
P.O. Box 1010 — Kawaiisu
Lake Isabella , CA 93240 — Tubatulabal
(661) 340-0032 Cell

Kern Valley Indian Community
Robert Robinson, Chairperson
P.O. Box 1010 — Tubatulabal
Lake Isabella , CA 93240 — Kawaiisu
bbutterbredt@gmail.com
(760) 378-2915 Cell

Kern Valley Indian Community
Brandy Kendricks
30741 Foxridge Court — Kawaiisu
Tehachapi , CA 93561 — Tubatulabal
krazykendricks@hotmail.com
(661) 821-1733

Santa Rosa Rancheria Tachi Yokut Tribe
Leo Sisco, Chairperson
P.O. Box 8 — Tache
Lemoore , CA 93245 — Tachi
Yokut
(559) 924-1278

Tubatulabals of Kern Valley
Robert L. Gomez, Jr., Tribal Chairperson
P.O. Box 226 — Tubatulabal
Lake Isabella , CA 93240
(760) 379-4590

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589 — Yokuts
Porterville , CA 93258
neil.peyron@tulerivertribe-nsn.gov
(559) 781-4271

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct. — Foothill Yokuts
Salinas , CA 93906 — Mono
kwood8934@aol.com — Wuksache
(831) 443-9702

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097. 94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list applicable only for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed: Historic Oak Grove Bridge Replacement, Tulare County.

RMA Tribal Consultation Tracking Table

Consultation Notice – MINERAL KING ROAD (HISTORIC OAK GROVE) BRIDGE REPLACEMENT														
TRIBE CONTACTED	**REQUEST TYPE**			**ITEMS & DOCUMENTS SUBMITTED**					**DELIVERY METHOD**			**CONSULTATION PERIOD**		**CONSULTATION / ACTIONS**
	AB 52	**SB 18**	**Sec 106**	**Map**	**Project Description**	**SLF Search Results**	**CHRIS Results**	**Other**	**E-mail**	**FedEx**	**Certified US Mail**	**Return Receipt**	**Period Ends**	**Summary**
SACRED LAND FILE (SLF) REQUEST														
Native American Heritage Commission NAHC@nahc.ca.gov	X			X	X				3/11/21					3/16/21, SLF results letter with "negative" findings and tribal listing received
CONSULTATION REQUEST LETTERS														
Big Sandy Rancheria of Western Mono Indians Elizabeth D. Kipp, Chairperson P.O. Box 337 Auberry, CA 93602 lkipp@bsrnation.com	X			X	X	results in body of letter		link to the Supplemental HPSR on RMA website in body of letter			5/4/21 7020064000 0213953310	5/6/21	6/5/21	
Dunlap Band of Mono Indians Benjamin Charley Jr., Chairperson P.O. Box 14 Dunlap, CA 93621 ben.charley@yahoo.com	X			X	X	results in body of letter		link to the Supplemental HPSR on RMA website in body of letter			5/4/21 7020064000 0213953365	---	---	5/24/21, per the USPS website this item arrived at the USPS facility in Sacramento Distribution Center on 5/23/21 at 6:10 am (arrived at Dunlap Post Office 5/6/21 and returned to sender on 5/17/21 as unclaimed.
Dunlap Band of Mono Indians Dirk Charley, Tribal Secretary 5509 E. McKenzie Ave. Fresno, CA 93727 dcharley2016@gmail.com	X			X	X	results in body of letter		link to the Supplemental HPSR on RMA website in body of letter			5/4/21 7020064000 0213953266	5/12/21	6/11/21	
Kern Valley Indian Community Robert Robinson, Co-Chairperson P.O. Box 1010 Lake Isabella, CA 93240 bbutterbredt@gmail.com	X			X	X	results in body of letter		link to the Supplemental HPSR on RMA website in body of letter			5/4/21 7020064000 0213953358	5/6/21	6/5/21	
Kern Valley Indian Community Julie Turner, Secretary P. Box 1010 Lake Isabella, CA 93240 meindiangirl@sbcglobal.net	X			X	X	results in body of letter		link to the Supplemental HPSR on RMA website in body of letter			5/4/21 7020064000 0213953372	5/6/21	6/5/21	

Consultation Notice – MINERAL KING ROAD (HISTORIC OAK GROVE) BRIDGE REPLACEMENT														
TRIBE CONTACTED	**REQUEST TYPE**			**ITEMS & DOCUMENTS SUBMITTED**					**DELIVERY METHOD**			**CONSULTATION PERIOD**		**CONSULTATION / ACTIONS**
	AB 52	**SB 18**	**Sec 106**	**Map**	**Project Description**	**SLF Search Results**	**CHRIS Results**	**Other**	**E-mail**	**FedEx**	**Certified US Mail**	**Return Receipt**	**Period Ends**	**Summary**
Kern Valley Indian Community Brandi Kendricks 30741 Foxridge Court Tehachapi, CA 93561 krazykendricks@hotmail.com	X			X	X	results in body of letter		link to the Supplemental HPSR on RMA website in body of letter			5/4/21 7020064000 0213953280	5/18/21	6/17/21	
Santa Rosa Rancheria Tachi Yokut Tribe Leo Sisco, Chairperson P. O. Box 8 Lemoore, CA 93245 LSisco@tachi-yokut-nsn.gov	X			X	X	results in body of letter		link to the Supplemental HPSR on RMA website in body of letter			5/4/21 7020064000 0213953334	5/6/21	6/5/21	
Santa Rosa Rancheria Cultural Department Shana Powers, Director P. O. Box 8 Lemoore, CA 93245 SPowers@tachi-yokut-nsn.gov	X			X	X	results in body of letter		link to the Supplemental HPSR on RMA website in body of letter			5/4/21 7020064000 0213953341	5/6/21	6/5/21	2/16/21, letter from S. Powers requesting consultation pursuant to CEQA (in response to the Section 106 notice submitted for review). 5/5/21, phone conversation between J. Willis and S. Powers to schedule consultation meeting; meeting set for 5/24/21 at 2:00 pm. 5/24/21, teleconference meeting between RMA staff and Tribe
Tubatulabals of Kern Valley Robert L. Gomez, Jr., Chairperson P.O. Box 226 Lake Isabella, CA 93240 rgomez@tubatulabal.org	X			X	X	results in body of letter		link to the Supplemental HPSR on RMA website in body of letter			5/4/21 7020064000 0213953297	5/12/21	6/11/21	
Tule River Indian Tribe Neil Peyron, Chairperson P. O. Box 589 Porterville, CA 93258 neil.peyron@tulerivertribe-nsn.gov	X			X	X	results in body of letter		link to the Supplemental HPSR on RMA website in body of letter			5/4/21 7020064000 0213953327	5/10/21	6/9/21	
Tule River Indian Tribe Environmental Department Kerri Vera, Director P. O. Box 589 Porterville, CA 93258 tuleriverenv@yahoo.com	X			X	X	results in body of letter		link to the Supplemental HPSR on RMA website in body of letter			5/4/21 7020064000 0213953273	5/10/21	6/9/21	

Consultation Notice – MINERAL KING ROAD (HISTORIC OAK GROVE) BRIDGE REPLACEMENT													
TRIBE CONTACTED	**REQUEST TYPE**			**ITEMS & DOCUMENTS SUBMITTED**					**DELIVERY METHOD**			**CONSULTATION PERIOD**		**CONSULTATION / ACTIONS**
	AB 52	**SB 18**	**Sec 106**	**Map**	**Project Description**	**SLF Search Results**	**CHRIS Results**	**Other**	**E-mail**	**FedEx**	**Certified US Mail**	**Return Receipt**	**Period Ends**	**Summary**
Tule River Indian Tribe Dept. of Environmental Protection Felix Christman, Archaeological Monitor P. O. Box 589 Porterville, CA 93258 tuleriverarchmon1@gmail.com	X			X	X	results in body of letter		link to the Supplemental HPSR on RMA website in body of letter			5/4/21 7020064000 0213953259	5/10/21	6/9/21	
Wuksache Indian Tribe/ Eshom Valley Band Kenneth Woodrow, Chairperson 1179 Rock Haven Ct. Salinas, CA 93906 kwood8934@aol.com	X			X	X	results in body of letter		link to the Supplemental HPSR on RMA website in body of letter			5/4/21 7020064000 0213953303	5/9/21	6/8/21	

RMA Tribal Consultation Letters

RESOURCE MANAGEMENT AGENCY

5961 SOUTH MOONEY BLVD
VISALIA, CA 93277
PHONE (559) 624-7000
FAX (559) 730-2653

Aaron R. Bock — Economic Development and Planning
Reed Schenke — Public Works
Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

May 3, 2021

Tule River Indian Tribe
Felix Christman, Tribal Archaeological Monitor
P. O. Box 589
Cultural Department
Porterville, CA 93258

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Historic Oak Grove Bridge Replacement Project

Dear Mr. Christman,

Pursuant to the provisions of AB 52, as the lead agency under the California Environmental Quality Act (CEQA), the County of Tulare hereby extends an invitation to consult on the California Environmental Quality Act (CEQA) review of the Historic Oak Grove Bridge Replacement Project (Replacement Project) in order to assist with identifying and/or preserving and/or mitigating project impacts to Native American cultural places including:

- Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine; and
- Native American historic, cultural, or sacred site that is listed or may be eligible for listing in the California Register of Historical Resources including historic or prehistoric ruins and any burial ground, archaeological, or historic site.

In accordance with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), the County of Tulare Resource Management Agency (RMA) will be preparing a Mitigated Negative Declaration (MND) to evaluate the environmental effects associated with the Project.

Project Background

The County previously prepared and the Board of Supervisors approved a Mitigated Negative Declaration (MND) for the Mineral King Road (Historic Oak Grove) Bridge Rehabilitation/ Retrofit Project (Rehabilitation Project). The project at the time included the rehabilitation/retrofitting of Historic Oak Grove Bridge to resolve the structural deficiencies of the bridge while protecting the bridge's historical function and significance. In addition to the bridge, three potential staging areas were being considered. The West Construction Staging Area is located immediately north of Mineral King Road, approximately 1.3 miles west of the existing bridge on APN 069-080-042 (which is owned by the United States Department of Interior, Bureau of Land Management). The East Construction Staging Area is located approximately 800 feet northeast of the existing bridge on APN 069-390-010 (which is privately

owned). The South Construction Staging Area is located approximately 370 feet northeast of the existing bridge on APN 069-390-010 (which is privately owned).

The previouls approved MND, which includes the technical documents prepared, for the Bridge Replacement project is available on the RMA website at: https://tularecounty.ca.gov/rma/index.cfm/projects/public-works-projects/bridge-projects/m375a-historic-oak-grove-bridge/archive/.

To assist in the preparation of the MND and identify potential impacts on cultural and tribal cultural resources an Historic Property Survey Report (HPSR), which included an Archaeological Survey Report (ASR), was was prepared. Due to requirements for confidentiality of sensitive materials, the ASR report was not included in the MND. As noted in the HSPR, in March 2016 the NAHC provided the County's consulting firm (Applied Earth Works, Inc.), with the names and contact information for five tribal representatives. Applied Earth Works sent a letter to each of these representatives describing the project, including a map of its location, and requesting information about the study area. In December 2016 the County extended an invitation to consult to 28 Native American representatives from 21 different tribes identified on the NAHC consultation list of tribes with traditional lands or cultural places within the boundaries of the Tulare County. Tulare County met with three tribes (Santa Rosa Rancheria TachiYokut Indian Tribe, Tule River Indian Tribe, and Wuksache Indian Tribe/Eshom Valley Band), pursuant to the tribes' requests for consultation. Conditions of approval requiring compliance with Section 7050.5 of the California Health and Safety Code and CEQA Guidelines Section 15064.5, were incorporated into the project to reduce potential impacts in the event of discovery of tribal cultural resources during construction-related activities.

In compliance with CEQA Guidelines, the County circulated the previously adopted MND for a 30-day public review and comment period in January 2019 which was then subsequentlyadopted and approved by the Tulare County Board of Supervisors on September 17, 2019. Subsequent evaluation of the bridge has been conducted since the MND was approved. The additional corrosion assessment of the bridge determined that rehabilitation of the bridge infeasible due to poor condition of the entire existing structural section of bridge arches. As such, the County now proposes to construct a new bridge (Replacement Project) on a new alignment immediately upstream of the existing bridge. The existing historic bridge would be retained for non-vehicular use.

Project Description

The proposed Replacement Project includes construction of a replacement bridge with a new cast-in-place tensioned concrete box girder on a new alignment. The new bridge would be constructed immediately upstream (east) of the existing bridge to preserve views from the approach roadway. The replacement bridge would consist of an approximately 120-foot-long single-span bridge. The replacement bridge would be the same width as the existing bridge, approximately 19 feet wide from curb to curb. The total bridge width, with barrier rails, would be 22.5 feet (including a 19-foot travel way plus two 1-foot, 9-inch barrier rails). The replacement bridge would require cutting into mountain sides both north and south of the Kaweah River. Traffic would continue to use the existing bridge until construction is completed. Following construction, the existing bridge will be used as a pedestrian crossing.

Sacred Lands File Search

For the Replacement Project the County requested a Sacred Lands File (SLF) search through the Native American Heritage Commission (NAHC) on March 11, 2021. The SLF search returned on April 7, 2021, with negative results; however, the NAHC recommended consultation with your Tribe. Results of the SLF search will be made available upon the release of the MND for public review. Results may be made available to your Tribal Representatives if a written request for consultation is submitted to the County within thirty (30) days of receipt of this letter.

California Historical Resources Information System

To assist in the preparation of the previous MND for the Rehabilitation Project and to identify potential impacts on cultural and tribal cultural resources an Historic Property Survey Report (HPSR) (which included an Archaeological Survey Report (ASR)) was was prepared. The HPSR was included as Attachment "D" to the previous MND. Due to requirements for confidentiality of sensitive materials, the ASR report was not included (see link on previous page). A Supplemental HPSR is now being prepared for the Replacement Project. The Draft Supplemental HPSR is available on the RMA website at: https://tularecounty.ca.gov/rma/index.cfm/projects/public-works-projects/bridge-projects/m375a-historic-oak-grove-bridge/. .

If your Tribe desires to consult with the County on the review of this project, please respond in writing within thirty (30) days of receipt of this letter. Written correspondence can be mailed to the address provided above or e-mailed to the addresses provided below.

If the County does not receive a response to this notification, it will be presumed that your Tribe has declined the opportunity to consult on this project pursuant to AB 52 and SB 18.

Thank you for your consideration on this matter and please do not hesitate to contact me by phone or e-mail should you have any questions or need additional information. If you need immediate assistance and I am unavailable, please contact, Hector Guerra, Chief of Environmental Planning, by phone at (559) 624-7121, or by email at hguerra@tularecounty.ca.gov.

Sincerely,

Jessica R Willis

Jessica Willis
Planner IV
(559) 624-7121
jwillis@tularecounty.ca.gov

Attachment: AB 52 Project Notification and Tribal Consultation Request

RESOURCE MANAGEMENT AGENCY

5961 SOUTH MOONEY BLVD
VISALIA, CA 93277
PHONE (559) 624-7000
FAX (559) 730-2653

Aaron R. Bock — Economic Development and Planning
Reed Schenke — Public Works
Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

May 3, 2021

Kern Valley Indian Council
Julie Turner, Secretary
P.O. Box 1010
Lake Isabella, CA 93240

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Historic Oak Grove Bridge Replacement Project

Dear Ms. Turner,

Pursuant to the provisions of AB 52, as the lead agency under the California Environmental Quality Act (CEQA), the County of Tulare hereby extends an invitation to consult on the California Environmental Quality Act (CEQA) review of the Historic Oak Grove Bridge Replacement Project (Replacement Project) in order to assist with identifying and/or preserving and/or mitigating project impacts to Native American cultural places including:

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Thank you for your consideration on this matter and please do not hesitate to contact me by phone or e-mail should you have any questions or need additional information. If you need immediate assistance and I am unavailable, please contact, Hector Guerra, Chief of Environmental Planning, by phone at (559) 624-7121, or by email at hguerra@tularecounty.ca.gov.

Sincerely,

Jessica R Willis

Jessica Willis
Planner IV
(559) 624-7121
jwillis@tularecounty.ca.gov

Attachment: AB 52 Project Notification and Tribal Consultation Request

RESOURCE MANAGEMENT AGENCY

5961 SOUTH MOONEY BLVD
VISALIA, CA 93277
PHONE (559) 624-7000
FAX (559) 730-2653

Aaron R. Bock — Economic Development and Planning
Reed Schenke — Public Works
Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

May 3, 2021

Santa Rosa Rancheria Tachi Yokut Tribe
Shana Powers, Director
16835 Alkali Dr. -Cultural Department
Lemoore, CA 93245

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Historic Oak Grove Bridge Replacement Project

Dear Ms. Powers,

Pursuant to the provisions of AB 52, as the lead agency under the California Environmental Quality Act (CEQA), the County of Tulare hereby extends an invitation to consult on the California Environmental Quality Act (CEQA) review of the Historic Oak Grove Bridge Replacement Project (Replacement Project) in order to assist with identifying and/or preserving and/or mitigating project impacts to Native American cultural places including:

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- Native American historic, cultural, or sacred site that is listed or may be eligible for listing in the California Register of Historical Resources including historic or prehistoric ruins and any burial ground, archaeological, or historic site.

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Project Background

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Thank you for your consideration on this matter and please do not hesitate to contact me by phone or e-mail should you have any questions or need additional information. If you need immediate assistance and I am unavailable, please contact, Hector Guerra, Chief of Environmental Planning, by phone at (559) 624-7121, or by email at hguerra@tularecounty.ca.gov.

Sincerely,

Jessica Willis

Jessica Willis
Planner IV
(559) 624-7121
jwillis@tularecounty.ca.gov

Attachment: AB 52 Project Notification and Tribal Consultation Request

RESOURCE MANAGEMENT AGENCY

5961 SOUTH MOONEY BLVD
VISALIA, CA 93277
PHONE (559) 624-7000
FAX (559) 730-2653

Aaron R. Bock — Economic Development and Planning
Reed Schenke — Public Works
Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

May 3, 2021

Santa Rosa Rancheria Tachi Yokut Tribe
Leo Sisco, Chairperson
16835 Alkali Dr. -Cultural Department
Lemoore, CA 93245

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Historic Oak Grove Bridge Replacement Project

Dear Chairperson Sisco,

Pursuant to the provisions of AB 52, as the lead agency under the California Environmental Quality Act (CEQA), the County of Tulare hereby extends an invitation to consult on the California Environmental Quality Act (CEQA) review of the Historic Oak Grove Bridge Replacement Project (Replacement Project) in order to assist with identifying and/or preserving and/or mitigating project impacts to Native American cultural places including:

- Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine; and
- Native American historic, cultural, or sacred site that is listed or may be eligible for listing in the California Register of Historical Resources including historic or prehistoric ruins and any burial ground, archaeological, or historic site.

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Planner IV
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Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

May 3, 2021

Tule River Indian Tribe
Neil Peyron, Chairperson
P. O. Box 589
Porterville, CA 93258

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Historic Oak Grove Bridge Replacement Project

Dear Chairperson Peyron,

Pursuant to the provisions of AB 52, as the lead agency under the California Environmental Quality Act (CEQA), the County of Tulare hereby extends an invitation to consult on the California Environmental Quality Act (CEQA) review of the Historic Oak Grove Bridge Replacement Project (Replacement Project) in order to assist with identifying and/or preserving and/or mitigating project impacts to Native American cultural places including:

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REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

May 3, 2021

Big Sandy Rancheria of Western Mono Indians
Elizabeth D. Kipp, Chairperson
P.O. Box 337
Auberry, CA 93602

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Historic Oak Grove Bridge Replacement Project

Dear Chairperson Kipp,

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REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

May 3, 2021

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct.
Salinas, CA 93906

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Historic Oak Grove Bridge Replacement Project

Dear Chairperson Woodrow,

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The proposed Replacement Project includes construction of a replacement bridge with a new cast-in-place tensioned concrete box girder on a new alignment. The new bridge would be constructed immediately upstream (east) of the existing bridge to preserve views from the approach roadway. The replacement bridge would consist of an approximately 120-foot-long single-span bridge. The replacement bridge would be the same width as the existing bridge, approximately 19 feet wide from curb to curb. The total bridge width, with barrier rails, would be 22.5 feet (including a 19-foot travel way plus two 1-foot, 9-inch barrier rails). The replacement bridge would require cutting into mountain sides both north and south of the Kaweah River. Traffic would continue to use the existing bridge until construction is completed. Following construction, the existing bridge will be used as a pedestrian crossing.

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California Historical Resources Information System

To assist in the preparation of the previous MND for the Rehabilitation Project and to identify potential impacts on cultural and tribal cultural resources an Historic Property Survey Report (HPSR) (which included an Archaeological Survey Report (ASR)) was was prepared. The HPSR was included as Attachment "D" to the previous MND. Due to requirements for confidentiality of sensitive materials, the ASR report was not included (see link on previous page). A Supplemental HPSR is now being prepared for the Replacement Project. The Draft Supplemental HPSR is available on the RMA website at: https://tularecounty.ca.gov/rma/index.cfm/projects/public-works-projects/bridge-projects/m375a-historic-oak-grove-bridge/. .

If your Tribe desires to consult with the County on the review of this project, please respond in writing within thirty (30) days of receipt of this letter. Written correspondence can be mailed to the address provided above or e-mailed to the addresses provided below.

If the County does not receive a response to this notification, it will be presumed that your Tribe has declined the opportunity to consult on this project pursuant to AB 52 and SB 18.

Thank you for your consideration on this matter and please do not hesitate to contact me by phone or e-mail should you have any questions or need additional information. If you need immediate assistance and I am unavailable, please contact, Hector Guerra, Chief of Environmental Planning, by phone at (559) 624-7121, or by email at hguerra@tularecounty.ca.gov.

Sincerely,

Jessica R Willis

Jessica Willis
Planner IV
(559) 624-7121
jwillis@tularecounty.ca.gov

Attachment: AB 52 Project Notification and Tribal Consultation Request

RESOURCE MANAGEMENT AGENCY

5961 SOUTH MOONEY BLVD
VISALIA, CA 93277
PHONE (559) 624-7000
FAX (559) 730-2653

Aaron R. Bock — Economic Development and Planning
Reed Schenke — Public Works
Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

May 3, 2021

Tubatulabals of Kern Valley
Robert L. Gomez Jr., Tribal Chairperson
P.O. Box 226
Lake Isabella, CA 93240

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Historic Oak Grove Bridge Replacement Project

Dear Chairperson Gomez,

Pursuant to the provisions of AB 52, as the lead agency under the California Environmental Quality Act (CEQA), the County of Tulare hereby extends an invitation to consult on the California Environmental Quality Act (CEQA) review of the Historic Oak Grove Bridge Replacement Project (Replacement Project) in order to assist with identifying and/or preserving and/or mitigating project impacts to Native American cultural places including:

- Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine; and
- Native American historic, cultural, or sacred site that is listed or may be eligible for listing in the California Register of Historical Resources including historic or prehistoric ruins and any burial ground, archaeological, or historic site.

In accordance with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), the County of Tulare Resource Management Agency (RMA) will be preparing a Mitigated Negative Declaration (MND) to evaluate the environmental effects associated with the Project.

Project Background

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In compliance with CEQA Guidelines, the County circulated the previously adopted MND for a 30-day public review and comment period in January 2019 which was then subsequentlyadopted and approved by the Tulare County Board of Supervisors on September 17, 2019. Subsequent evaluation of the bridge has been conducted since the MND was approved. The additional corrosion assessment of the bridge determined that rehabilitation of the bridge infeasible due to poor condition of the entire existing structural section of bridge arches. As such, the County now proposes to construct a new bridge (Replacement Project) on a new alignment immediately upstream of the existing bridge. The existing historic bridge would be retained for non-vehicular use.

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Sincerely,

Jessica R Willis

Jessica Willis
Planner IV
(559) 624-7121
jwillis@tularecounty.ca.gov

Attachment: AB 52 Project Notification and Tribal Consultation Request

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Aaron R. Bock — Economic Development and Planning
Reed Schenke — Public Works
Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

May 3, 2021

Dunlap Band of Mono Indians
Dirk Charley, Tribal Secretary
5509 E. McKenzie Ave.
Fresno, CA 93727

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Historic Oak Grove Bridge Replacement Project

Dear Mr. Charley,

Pursuant to the provisions of AB 52, as the lead agency under the California Environmental Quality Act (CEQA), the County of Tulare hereby extends an invitation to consult on the California Environmental Quality Act (CEQA) review of the Historic Oak Grove Bridge Replacement Project (Replacement Project) in order to assist with identifying and/or preserving and/or mitigating project impacts to Native American cultural places including:

- Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine; and
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Project Background

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Planner IV
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Attachment: AB 52 Project Notification and Tribal Consultation Request

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Aaron R. Bock Economic Development and Planning
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Sherman Dix Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

May 3, 2021

Kern Valley Indian Community
Brandi Kendricks
30741 Foxridge Ct.
Tehachapi, CA 93561

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Historic Oak Grove Bridge Replacement Project

Dear Ms. Kendricks,

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Aaron R. Bock — Economic Development and Planning
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REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

May 3, 2021

Kern Valley Indian Council
Robert Robinson, Co-Chairperson
P.O. Box 1010
Lake Isabella, CA 93240

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Historic Oak Grove Bridge Replacement Project

Dear Co-Chairperson Robinson,

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(559) 624-7121
jwillis@tularecounty.ca.gov

Attachment: AB 52 Project Notification and Tribal Consultation Request

RESOURCE MANAGEMENT AGENCY

5961 SOUTH MOONEY BLVD
VISALIA, CA 93277
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REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

May 3, 2021

Dunlap Band of Mono Indians
Benjamin Charley Jr., Chairperson
P.O. Box 14
Dunlap, CA 93621

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Historic Oak Grove Bridge Replacement Project

Dear Chairperson Charley,

Pursuant to the provisions of AB 52, as the lead agency under the California Environmental Quality Act (CEQA), the County of Tulare hereby extends an invitation to consult on the California Environmental Quality Act (CEQA) review of the Historic Oak Grove Bridge Replacement Project (Replacement Project) in order to assist with identifying and/or preserving and/or mitigating project impacts to Native American cultural places including:

- Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine; and
- Native American historic, cultural, or sacred site that is listed or may be eligible for listing in the California Register of Historical Resources including historic or prehistoric ruins and any burial ground, archaeological, or historic site.

In accordance with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), the County of Tulare Resource Management Agency (RMA) will be preparing a Mitigated Negative Declaration (MND) to evaluate the environmental effects associated with the Project.

Project Background

The County previously prepared and the Board of Supervisors approved a Mitigated Negative Declaration (MND) for the Mineral King Road (Historic Oak Grove) Bridge Rehabilitation/ Retrofit Project (Rehabilitation Project). The project at the time included the rehabilitation/retrofitting of Historic Oak Grove Bridge to resolve the structural deficiencies of the bridge while protecting the bridge's historical function and significance. In addition to the bridge, three potential staging areas were being considered. The West Construction Staging Area is located immediately north of Mineral King Road, approximately 1.3 miles west of the existing bridge on APN 069-080-042 (which is owned by the United States Department of Interior, Bureau of Land Management). The East Construction Staging Area is located approximately 800 feet northeast of the existing bridge on APN 069-390-010 (which is privately

owned). The South Construction Staging Area is located approximately 370 feet northeast of the existing bridge on APN 069-390-010 (which is privately owned).

The previouls approved MND, which includes the technical documents prepared, for the Bridge Replacement project is available on the RMA website at: https://tularecounty.ca.gov/rma/index.cfm/projects/public-works-projects/bridge-projects/m375a-historic-oak-grove-bridge/archive/.

To assist in the preparation of the MND and identify potential impacts on cultural and tribal cultural resources an Historic Property Survey Report (HPSR), which included an Archaeological Survey Report (ASR), was was prepared. Due to requirements for confidentiality of sensitive materials, the ASR report was not included in the MND. As noted in the HSPR, in March 2016 the NAHC provided the County's consulting firm (Applied Earth Works, Inc.), with the names and contact information for five tribal representatives. Applied Earth Works sent a letter to each of these representatives describing the project, including a map of its location, and requesting information about the study area. In December 2016 the County extended an invitation to consult to 28 Native American representatives from 21 different tribes identified on the NAHC consultation list of tribes with traditional lands or cultural places within the boundaries of the Tulare County. Tulare County met with three tribes (Santa Rosa Rancheria TachiYokut Indian Tribe, Tule River Indian Tribe, and Wuksache Indian Tribe/Eshom Valley Band), pursuant to the tribes' requests for consultation. Conditions of approval requiring compliance with Section 7050.5 of the California Health and Safety Code and CEQA Guidelines Section 15064.5, were incorporated into the project to reduce potential impacts in the event of discovery of tribal cultural resources during construction-related activities.

In compliance with CEQA Guidelines, the County circulated the previously adopted MND for a 30-day public review and comment period in January 2019 which was then subsequentlyadopted and approved by the Tulare County Board of Supervisors on September 17, 2019. Subsequent evaluation of the bridge has been conducted since the MND was approved. The additional corrosion assessment of the bridge determined that rehabilitation of the bridge infeasible due to poor condition of the entire existing structural section of bridge arches. As such, the County now proposes to construct a new bridge (Replacement Project) on a new alignment immediately upstream of the existing bridge. The existing historic bridge would be retained for non-vehicular use.

Project Description

The proposed Replacement Project includes construction of a replacement bridge with a new cast-in-place tensioned concrete box girder on a new alignment. The new bridge would be constructed immediately upstream (east) of the existing bridge to preserve views from the approach roadway. The replacement bridge would consist of an approximately 120-foot-long single-span bridge. The replacement bridge would be the same width as the existing bridge, approximately 19 feet wide from curb to curb. The total bridge width, with barrier rails, would be 22.5 feet (including a 19-foot travel way plus two 1-foot, 9-inch barrier rails). The replacement bridge would require cutting into mountain sides both north and south of the Kaweah River. Traffic would continue to use the existing bridge until construction is completed. Following construction, the existing bridge will be used as a pedestrian crossing.

Sacred Lands File Search

For the Replacement Project the County requested a Sacred Lands File (SLF) search through the Native American Heritage Commission (NAHC) on March 11, 2021. The SLF search returned on April 7, 2021, with negative results; however, the NAHC recommended consultation with your Tribe. Results of the SLF search will be made available upon the release of the MND for public review. Results may be made available to your Tribal Representatives if a written request for consultation is submitted to the County within thirty (30) days of receipt of this letter.

California Historical Resources Information System

To assist in the preparation of the previous MND for the Rehabilitation Project and to identify potential impacts on cultural and tribal cultural resources an Historic Property Survey Report (HPSR) (which included an Archaeological Survey Report (ASR)) was was prepared. The HPSR was included as Attachment "D" to the previous MND. Due to requirements for confidentiality of sensitive materials, the ASR report was not included (see link on previous page). A Supplemental HPSR is now being prepared for the Replacement Project. The Draft Supplemental HPSR is available on the RMA website at: https://tularecounty.ca.gov/rma/index.cfm/projects/public-works-projects/bridge-projects/m375a-historic-oak-grove-bridge/. .

If your Tribe desires to consult with the County on the review of this project, please respond in writing within thirty (30) days of receipt of this letter. Written correspondence can be mailed to the address provided above or e-mailed to the addresses provided below.

If the County does not receive a response to this notification, it will be presumed that your Tribe has declined the opportunity to consult on this project pursuant to AB 52 and SB 18.

Thank you for your consideration on this matter and please do not hesitate to contact me by phone or e-mail should you have any questions or need additional information. If you need immediate assistance and I am unavailable, please contact, Hector Guerra, Chief of Environmental Planning, by phone at (559) 624-7121, or by email at hguerra@tularecounty.ca.gov.

Sincerely,

Jessica R Willis

Jessica Willis
Planner IV
(559) 624-7121
jwillis@tularecounty.ca.gov

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Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

May 3, 2021

Tule River Indian Tribe
Kerri Vera, Director
P. O. Box 589
Environmental Department
Porterville, CA 93258

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Historic Oak Grove Bridge Replacement Project

Dear Ms. Vera,

Pursuant to the provisions of AB 52, as the lead agency under the California Environmental Quality Act (CEQA), the County of Tulare hereby extends an invitation to consult on the California Environmental Quality Act (CEQA) review of the Historic Oak Grove Bridge Replacement Project (Replacement Project) in order to assist with identifying and/or preserving and/or mitigating project impacts to Native American cultural places including:

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Thank you for your consideration on this matter and please do not hesitate to contact me by phone or e-mail should you have any questions or need additional information. If you need immediate assistance and I am unavailable, please contact, Hector Guerra, Chief of Environmental Planning, by phone at (559) 624-7121, or by email at hguerra@tularecounty.ca.gov.

Sincerely,

Jessica R. Willis

Jessica Willis
Planner IV
(559) 624-7121
jwillis@tularecounty.ca.gov

Attachment: AB 52 Project Notification and Tribal Consultation Request

ATTACHMENT "E"

GEOLOGICAL RESOURCES:

Geotechnical Engineering Scoping Study (2015)

Initial Site Assessment (2018)

Initial Site Assessment (2016)

Geotechnical Engineering Scoping Study

M375A MINERAL KING BRIDGE
DRAFT PROJECT SCOPING STUDY



Prepared For:

County of Tulare
5961 South Mooney Boulevard
Visalia, California 93277

Presented By:

CORNERSTONE
structural
engineering
group

May 20, 2015

The Project Scoping Study contained herein has been prepared by or under the direction of the following registered persons.

DRAFT

Shawn M. Cullers, REGISTERED STRUCTURAL ENGINEER
CORNERSTONE STRUCTURAL ENGINEERING GROUP

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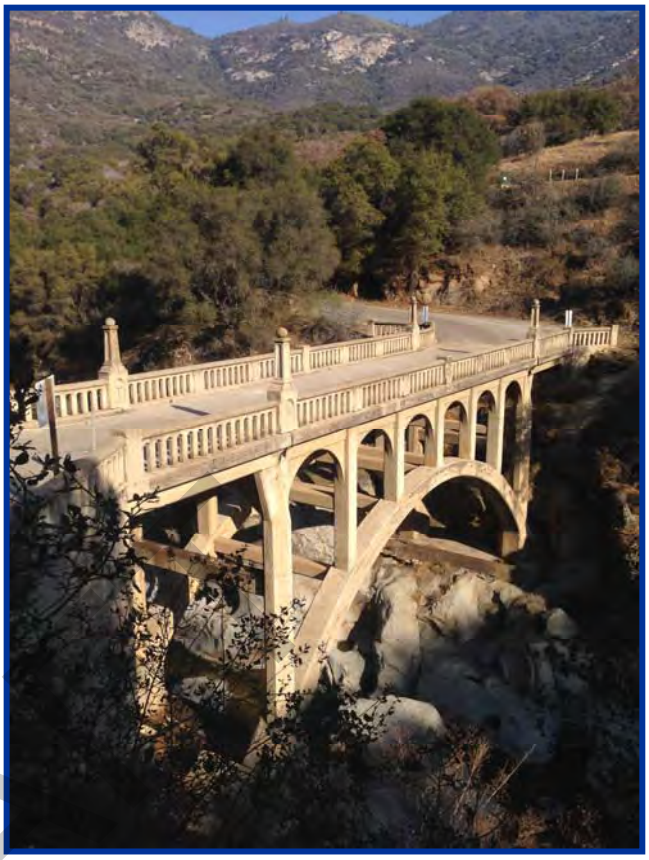
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Executive Summary



Mineral King Bridge

The M375A Mineral King Bridge (also known as the Oak Grove Bridge) is a 107 ft. 6 in. long structure that provides access across the East Fork of the Kaweah River to several private residences located along river canyon, Mineral King Valley located in Sequoia National Park, and provides critical fire access for both state (Cal Fire) and federal agencies (United States Forest Service Fire & Aviation Management). The existing structure is an open spandrel reinforced concrete arch bridge with reinforced concrete "T" beam approach spans. The bridge was constructed in 1923 and is eligible to be listed under the National Register of Historic Places (NRHP). The bridge's current sufficiency rating as documented in the latest California Department of Transportation (Caltrans) Bridge Inspection Report (BIR) dated July 2, 2014 is 78.8 and is flagged Structurally Deficient due to the condition rating of 4 assigned to the deck. However, at the time the bridge was programmed in the Federal Transportation Improvement Program (FTIP) its sufficiency rating was 43.5 and therefore qualified for replacement funding through the Federal Highway Bridge Program (HBP).

Cornerstone Structural Engineering Group's (Cornerstone) project delivery team has completed a Project Scoping Study to identify the load rating and seismic deficiencies of the existing bridge and provide recommendations and alternatives to resolve those deficiencies. Our analysis, which includes field investigations and exploratory work, materials testing, and research of adjacent structures, identified the following deficiencies with the existing bridge:

1. The existing bridge deck over the main arch span has insufficient flexure strength under HS20-44 loading due to inadequate longitudinal flexure reinforcing steel
2. Barrier rails are in poor condition and do not meet current standards for a TL-2 rated barrier
3. The existing spandrel columns fail in shear during the design longitudinal seismic event
4. The existing spandrel columns are insufficient in flexure under HS-2044 loading due to inadequate steel reinforcement.
5. Petrographic examinations of concrete core samples taken from the bridge deck, arch, and wingwalls detected both alkali-silica



Existing Barrier Rail

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reactivity (ASR) and carbonated concrete. Moderate to large cracks (up to 1/4 in. thick) are present in both the substructure and superstructure.

Based on Parsons seismic analysis, the existing bridge does not meet the "no collapse" criteria specified in Caltrans Memo to Designers 20-4. Based on our vertical load rating analysis, Cornerstone believes that the inventory and operating ratings should be revised from 24.0 and 40.2 metric tons to 12.7 and 21.2 metric tons respectively. The revision to the inventory rating would result in the sufficiency rating of the structure being lowered from 78.8 to 58.2. While the sufficiency rating will remain above 50, generally considered the threshold below which bridges are typically eligible for replacement under the HBP, cost comparisons in accordance with Caltrans Local Assistance and Procedures Guidelines (LAPG) were performed in order to help determine whether rehabilitation/retrofit or replacement of the existing bridge was is the best interest of the public.

Given the vertical and seismic deficiencies, concrete degradation, age of the structure and various project constraints a total of eight build alternatives, including a rehabilitation/retrofit alternative and various replacement alternatives. Additionally, a Do Nothing alternative was also considered. Due to the aforementioned deficiencies, the Do Nothing alternative was considered but rejected. The alternatives considered are as follows:

- Alternative 1: Retrofit/Rehabilitation of the Existing Bridge
- Alternative 2A: Replacement with New Reinforced Concrete Arch Bridge on New Alignment Immediately Upstream of Existing Bridge (Remove Existing Bridge)
- Alternative 2B: Replacement with New Cast-in-Place Post Tensioned Concrete Box Girder Bridge on New Alignment Immediately Upstream of Existing Bridge (Preserve Existing Bridge)
- Alternative 3: Hybrid Retrofit/Rehabilitation & Replacement of Existing Bridge
- Alternative 4A: Replacement with New Reinforced Concrete Arch Bridge on New Alignment Downstream of Existing Bridge (Remove Existing Bridge) – Considered but Rejected
- Alternative 4B: Replacement with New Cast-in-Place Post Tensioned Concrete Box Girder Bridge on New Alignment Downstream of Existing Bridge (Preserve Existing Bridge) – Considered but Rejected
- Alternative 5: Replacement with New Cast-in-Place Post Tensioned Box Girder Bridge Located Along New East Alignment Immediately Downstream of Existing Bureau of Land Management Case Mountain Road Bridge – Considered but Rejected
- Alternative 6: Replacement with New Cast-in-Place Post Tensioned Concrete Box Girder Bridge Located Along New West Alignment – Considered but Rejected
- Alternative 7: Do Nothing – Considered but Rejected

Alternatives 4A, 4B, 5, 6, and 7 were not considered viable for various reasons. As a result, detailed analyses of these alternatives were not completed.

The estimated construction costs, as well as the advantages and disadvantages of each alternative as provided in this Project Scoping Study, are summarized in the following table. The costs do not include

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the cost of right-of-way acquisition, professional engineering (i.e. plans, specifications, and estimates), construction support, or construction engineering costs.

Alternative	Advantage	Disadvantage
Alternative 1 Retrofit/Rehabilitation of Existing Bridge $2,832,000	Preserves the significant historic structural elements and overall aesthetics of the existing arch bridge	Projects involving historic structures have a high risk of construction cost and schedule overruns
	County will only be required to maintain a single structure	Requires extensive rehabilitation and retrofit
	Anticipated to result in the least amount of public resistance to the project	Requires a temporary bridge to maintain traffic
	No permanent right-of-way impact	Requires shoring in the creek
		Highest maintenance costs due to maintaining fiber reinforced polymer and reapplication of silane treatment
		Shortest design life of the considered alternatives
Alternative 2A RC Arch Bridge Replacement (Remove Existing Bridge) $2,701,000	Provides the County with a new state-of-the-art aesthetically pleasing reinforced concrete arch bridge	Potential public controversy
		Will require additional permanent right-of-way
	County will only be required to maintain a single structure	Loss of historic arch bridge/NRHP eligible structure
	Does not require a temporary bridge	Requires falsework in the creek
		Requires new retaining walls to accommodate new roadway alignment
		Highest preliminary engineering cost
Alternative 2B CIP/PS Box Girder Replacement (Preserve Existing Bridge) $2,303,000	Provides the County with a new state-of-the-art structure	Requires falsework in the creek
	Preserves existing historic arch bridge for pedestrian use	County is required to maintain two structures
	Maintains existing view shed of existing arch bridge	Will require additional permanent right-of-way
	Does not require temporary bridge	Requires new retaining walls to accommodate new roadway alignment
	Lowest initial construction cost	
Alternative 3 Hybrid between Retrofit/Rehabilitation & Replacement of Existing Bridge $2,956,000	Preserves the significant historic structural elements and overall aesthetics of the existing arch bridge	Requires a temporary bridge to maintain traffic
	Provides the County with a new state-of-the-art structure	Requires shoring in the creek
	County will only be required to maintain a single structure	Highest initial construction cost
	No permanent right-of-way impact	

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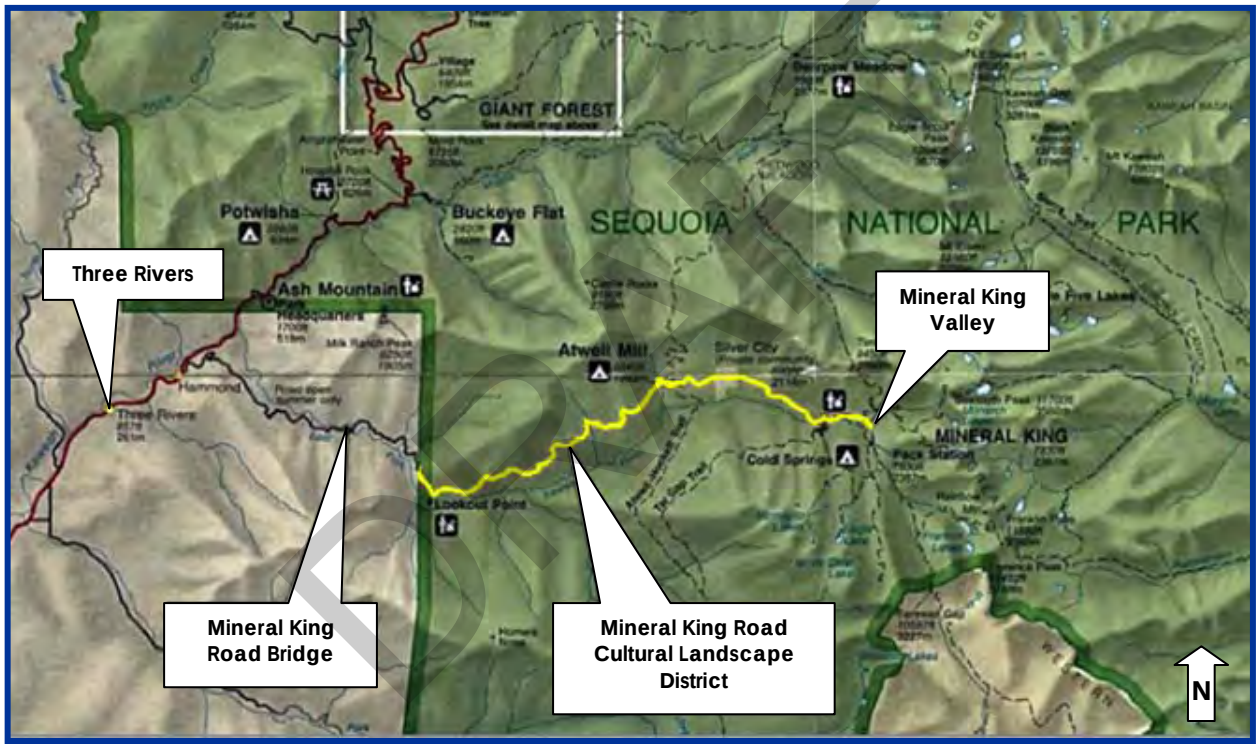
At this time, considering the historic nature of the current arch bridge, the existing structural deficiencies, and the estimated construction costs of the viable alternatives, Cornerstone believes that Alternative 2B is the most promising alternative. This alternative is the least costly, addresses the existing bridge deficiencies by providing the County with a new state of the art structure, and preserves the existing historic arch bridge as well as the view shed observed while approaching the bridge along Mineral King Road. However, Cornerstone recommends that Alternatives 1, 2A, 2B, and 3 be carried thru the environmental studies as the most promising alternative may change depending upon public opinion and as the alternatives are further developed.

The following Project Scoping Study discusses our field observations and exploratory work, the vertical analysis and seismic assessment of the existing bridge, the development and evaluation of the bridge alternatives deemed viable, and the selection of the most promising alternative.

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Introduction

Tulare County Resource Management Agency (County), in cooperation with Caltrans and the Federal Highway Administration (FHWA), is proposing to rehabilitate or replace the existing M375A Mineral King Bridge over the East Fork of the Kaweah River (Bridge No. 46C0196). The existing reinforced concrete open spandrel arch bridge is eligible for inclusion into the National Register of Historic Places and is therefore historically significant. The bridge is located approximately 5.0 miles from State Route 198, east of the community of Three Rivers along Mineral King Road. Mineral King Road is single lane road that parallels the East Fork of the Kaweah River (East Fork) and serves as the primary access route to several residences located along the canyon and the Mineral King Valley located in the Sequoia National Park approximately 30 miles from State Route 198. Mineral King Road also provides critical fire access for the California Department of Forestry and Fire Protection (CAL FIRE) and the National Park Service (NPS) to the Case Mountain area and Sequoia National Park.



Project Location

In August, 2010, the Mineral King Bridge was programmed into the Federal Highway Bridge (HBP) Program; a program that was enacted under the 2005 Federal SAFETEA-LU transportation act that provided federal assistance to States and local agencies to improve the condition of their publicly owned bridges. This program provided up to 88.53% of federal funds to eligible State and local agency projects. However, because it is an off-system bridge, the Mineral King Bridge was also programmed for the use of Toll Credits to pay for the required non-federal 11.47% share that would be typically be required for local agency HBP projects. Using toll credits to substitute for the non-federal share effectively allows the local agency to receive 100% federal aid on eligible bridge projects that otherwise may not have been funded due to limited local resources. A field review for the bridge was held on March 24, 2015.

Currently, Caltrans and FHWA have authorized a portion of the preliminary engineering phase of the project to perform a scoping study for the bridge. The purpose of the scoping study is to identify the significant deficiencies of the existing bridge, determine potential rehabilitations and project alternatives, identify potential historical and environmental impacts, and provide relative costs between project alternatives.

Cornerstone has developed and evaluated three alternatives as described below:

- Alternative 1 – Retrofit/Rehabilitation of the Existing Bridge
- Alternative 2A – Replacement with New Reinforced Concrete Arch Bridge on New Alignment Immediately Upstream of Existing Bridge (Remove Existing Bridge)
- Alternative 2B – Replacement with New Cast-in-Place Post Tensioned Box Girder Bridge on New Alignment Immediately Upstream of Existing Bridge (Preserve Existing Bridge)
- Alternative 3 – Hybrid between Retrofit/Rehabilitation & Replacement of Existing Bridge

Five other alternatives were considered but each was deemed to be infeasible. Therefore detailed analyses of these alternatives were not completed. These alternatives are described below.

- Alternative 4A – Replacement with New Reinforced Concrete Arch Bridge on New Alignment Downstream of Existing Bridge while Removing Existing Bridge (Rejected)
- Alternative 4B – Replacement with New Cast-in-Place Post Tensioned Box Girder Bridge on New Alignment Downstream of Existing Bridge while Preserving Existing Bridge (Rejected)
- Alternative 5 – Replacement with New Cast-in-Place Post Tensioned Box Girder Bridge Located Along New East Alignment Immediately Downstream of Existing Bureau of Land Management Case Mountain Road Bridge (Rejected)
- Alternative 6 – Replacement with New Cast-in-Place Post Tensioned Box Girder Bridge Located Along New West Alignment (Rejected)
- Alternative 7 – Do Nothing (Rejected)

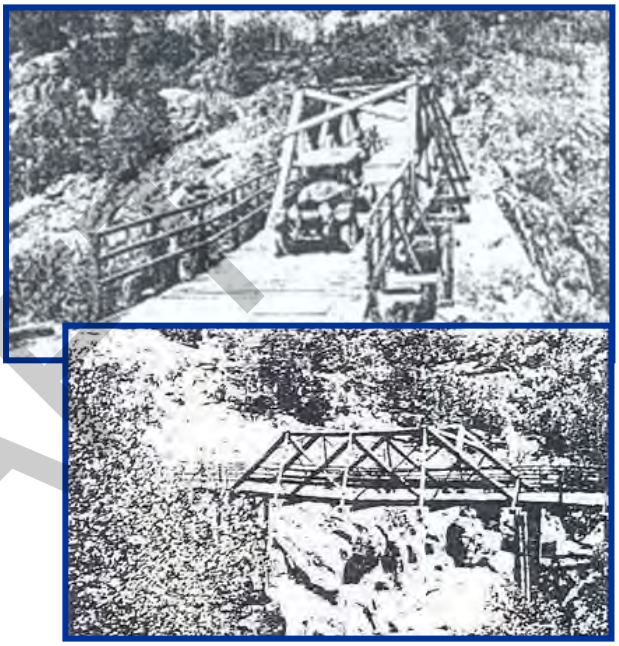
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Existing Bridge

The existing bridge, constructed in 1923, replaced a timber truss bridge which had been located immediately downstream from the current crossing. The current structure consists of an open spandrel reinforced concrete arch main span with reinforced concrete "T" beam end spans. The main arch span of the bridge spans approximately 67 ft. over the East Fork. Two approach spans, both approximately 20 ft. 3 in. in length, span from the abutments to the arch supports, resulting in a total bridge length of 107 ft. 6 in. The bridge is supported on spread footings cast directly on the exposed granite of the canyon at both the abutments and piers.



Current Arch Bridge



Previous Timber Truss Bridge

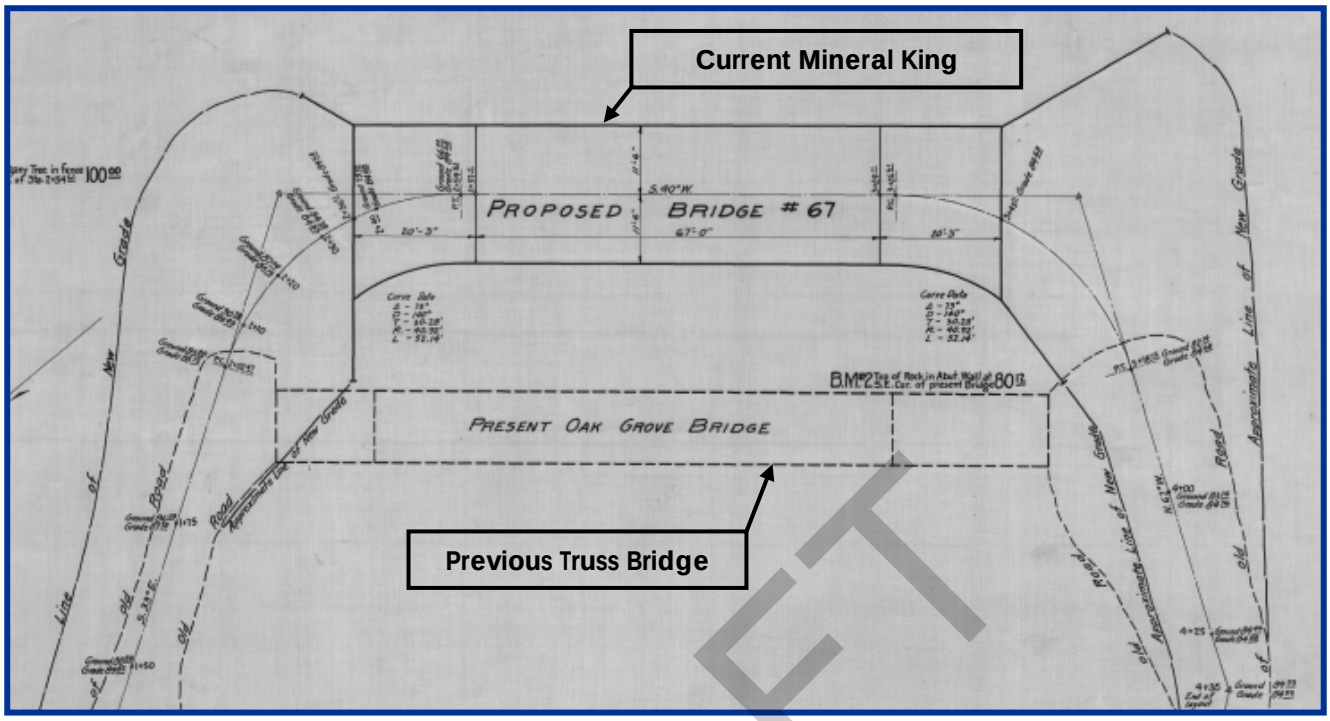
The current bridge measures 23 ft. wide from edge of deck to edge of deck. Per the latest BIR, the structure carries two lanes of travel. The current traveled way width is 19 ft. measured from face of curb to face of curb which meets the current AASHTO design standard. The AASHTO *Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤ 400)* requires a total roadway width (includes both traveled way and shoulders) of 18 ft. for design speeds less than 35 MPH and roadways classified under the recreational and scenic functional subclass. Both the existing bridge and the approach roadway are un-striped.

The existing bridge alignment consists of simple horizontal curves over the approach spans (curve radii approximately 41 ft.) while the main arch span is on a straight tangent bearing S40°00'00"W. The profile of the existing structure is flat with a longitudinal grade of 0%.



Current Traveled Way

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Current Alignment per As-Built Plans

Historical Significance

One of the key aspects of the Mineral King Bridge is its historical significance. To be eligible for the National Register of Historic Places (NRHP), the bridge must be at least 50 years old or possess exceptional importance, must meet one of the NRHP criteria for eligibility, and must retain integrity or historical appearance. Most bridges that meet eligibility requirements under the NRHP do so through NRHP eligibility Criteria C, which is a bridge that "embodies the distinctive characteristics of a type, period, or method of construction."

The Mineral King Bridge is a pristine example of the reinforced concrete open spandrel arch bridge. Reinforced concrete open spandrel arch bridges were first constructed in the United States in the early 1900's and became one of the dominant forms for concrete bridges in the 1920's and 1930's. By the 1940's, the more economical concrete girder bridges began to replace the concrete open spandrel arch as the dominant bridge type. While open spandrel arch bridges were not uncommon during the 1920's and 1930's, surviving examples of this type of bridge construction have become far less common today. Therefore, remaining examples of these bridges are considered significant due to their scarcity and because they embody the evolution of concrete technology in the early 1900's.



Historic Marker

The Mineral King Bridge was determined eligible for listing in the NRHP, as part of a thematic determination of eligibility of historic bridges, prepared by Caltrans in

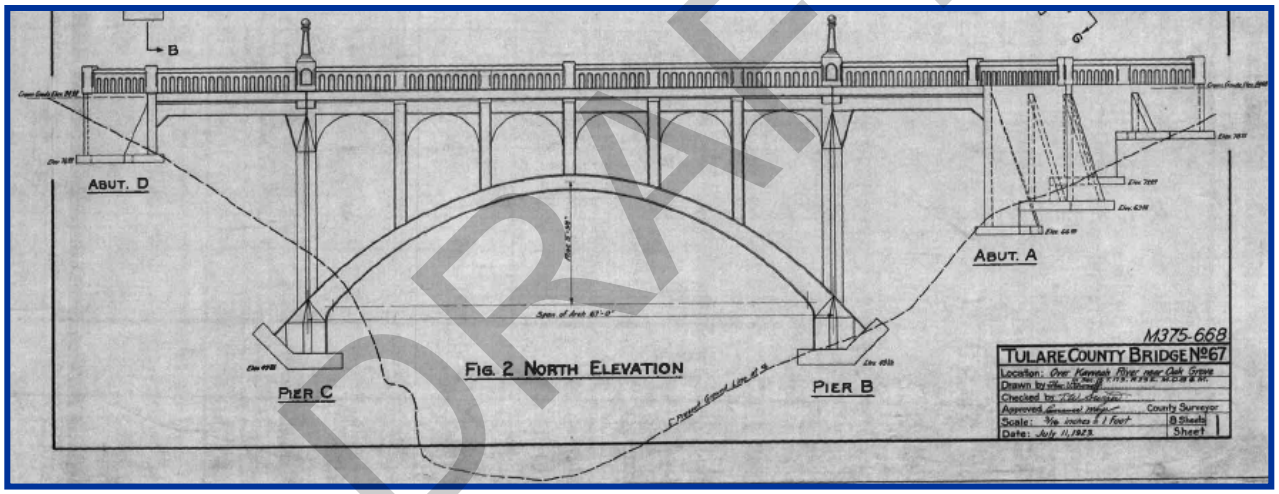
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1986. In 2003, Caltrans updated its historic bridge inventory and the eligibility of the bridge for the National Register was re-confirmed. While the bridge is eligible, it is not currently listed in the NRHP. However, for the purpose of complying with Section 106 of the National Historic Preservation Act, a property that has been determined eligible is treated exactly the same as a property that is fully listed in the NRHP.

Identification of the elements of the bridge that are considered historic is critical during the Project Strategy Phase to ensure that any proposed rehabilitations to the bridge do not adversely impact these elements. Based on our discussions GPA Consulting, we understand that the elements that will be considered historically significant include the arches, spandrel elements, and barrier rail. The arches, spandrel elements, and barrier rail are the main distinctive features of the bridge that embody both the type and method of construction.

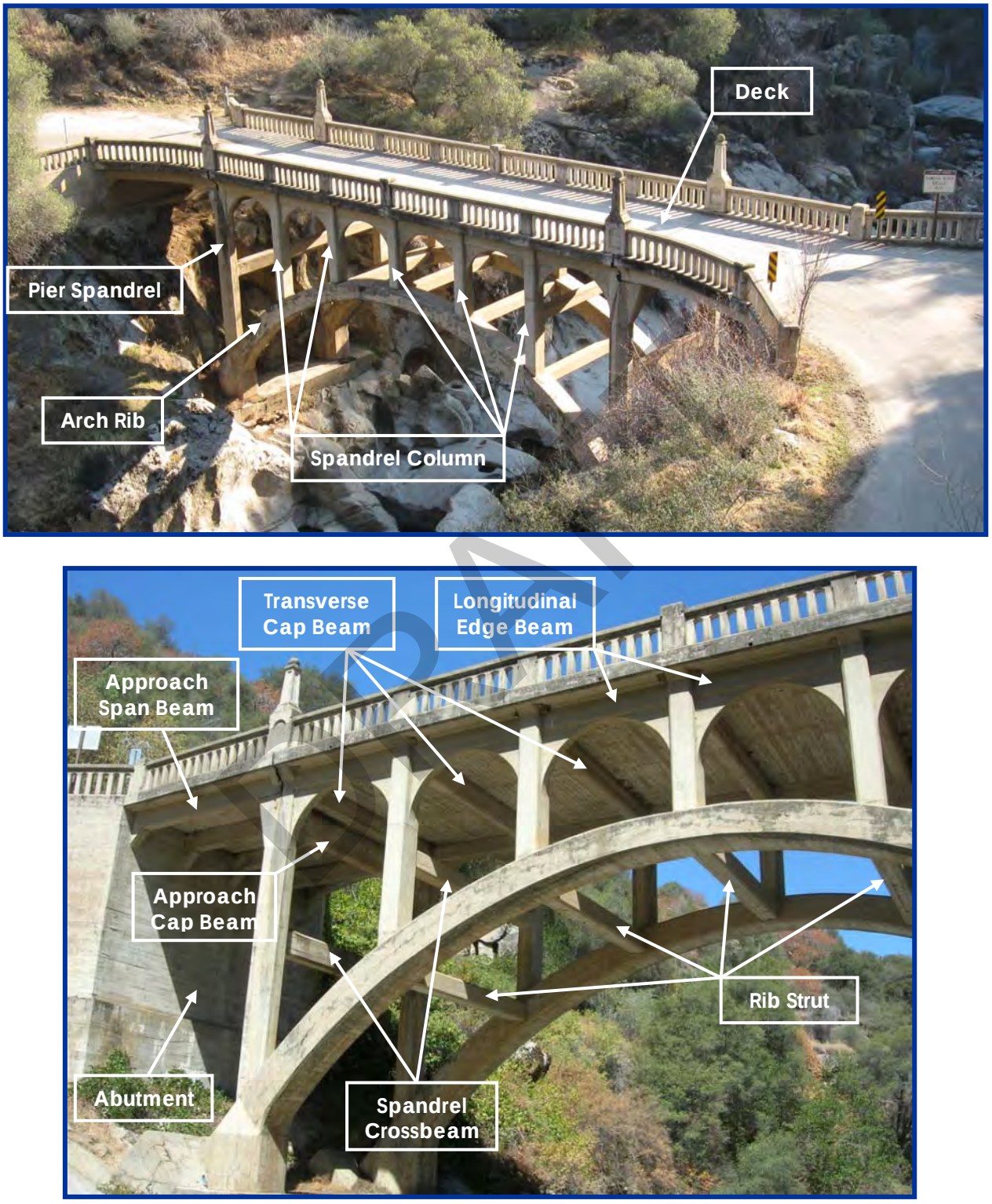
Bridge Nomenclature

The open spandrel arch portion of the bridge contains a number of structural components that are unique to this type of structure. In order to maintain consistency in this report, the naming convention for these structural elements and supports is illustrated in the following figures.



Existing Bridge Supports Per As-Builts – View Looking Upstream

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Bridge Nomenclature

Background Investigation and Field Observations

Cornerstone reviewed the M375A Mineral King Bridge over the East Fork of the Kaweah River as-built plans (see Appendix A), Caltrans Structure Maintenance & Investigations (SM&I) routine biannual BIR's as well as the BIR prepared following the Caltrans SM&I special inspection performed on January 6th, 2015 (see Appendix B). Cornerstone was present during Caltrans SM&I special inspection which served as a follow up, in depth investigation to the routine biannual inspections. Concurrent with the special inspection, Cornerstone's project delivery team procured reinforcing steel and concrete core samples that were used to determine approximate material properties of the existing structure (i.e. concrete compressive strength and yield strength of the reinforcing steel) and to perform petrographic evaluations.



Caltrans Special Inspection with UBIT

Caltrans Bridge Inspection Reports

There are records of Caltrans inspection reports for the M375A Mineral King Bridge over the East Fork of the Kaweah River dating back to June 15th, 1978. Based on that report, one third of the expansion joint material between the arch span and the approach spans was missing and scattered cracks up to $^{3}/_{16}$ in. thick were noted in the foundation and thrust block of Pier B. Longitudinal cracks (up to $^{1}/_{8}$ in. thick) along the full length of the bottom of the arch ribs with scattered efflorescence surrounding the cracks were also noted. Scattered cracking was also noted in faces of both abutments. Numerous minor transverse cracks were noted along the soffit in span 3 with some extending along the vertical face of the approach span girders. The Abutment D footing was also observed as being undermined over a length of approximately 3 ft. and a depth of 1 ft. Despite the cracking noted throughout the structure, the concrete was sound where checked with a geology pick. Overall, the structure was described to be in "fairly good" condition at the time of inspection.



Undermined Footing at Abut D

Caltrans inspection report dated February 2nd, 1992 stated that the cracks throughout the existing bridge are indicative of reactive aggregate. The superstructure, substructure, and deck ratings were all downgraded in this report due to the possibility of reactive aggregate being present. Caltrans recommended that suitable cores be taken from the cracked elements of the existing bridge and be analyzed for reactive aggregate. Caltrans continued to recommend that the existing deck joints at the piers be cleaned out, the void under the footing at Abutment D be filled and slope protection be added to protect against further erosion.



Spall at Pier C Corbel

Caltrans BIR dated April 13th, 2000 noted that overall condition

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of the structure remained as described in Caltrans 1978 inspection report with few exceptions. The most notable was a spall measuring approximately 6 in. in length located at the end of the left exterior girder support bracket at Pier 3 leaving reinforcing steel exposed. The report also suggested that the deterioration of the structure may be due to rusting of the embedded reinforcing steel caused by water entering existing cracks in the concrete. Caltrans BIR dated June 3, 2002 was the first to note many light pattern cracks throughout the bridge deck.



Existing Deck Joint

Caltrans BIR dated May 18th, 2005 addressed scour issues only. At this time, the National Bridge Inventory Item Code 113, vulnerability to scour, was updated from U to 8 which is assigned to bridge foundations determined to be stable for assessed or calculated scour condition. Based on both the site assessment and review of the as-built bridge plans which depict the foundations supported on rock, the bridge was not considered to be scour critical.

The BIR dated June 2nd, 2006 stated that the conditions described in the previous reports had not changed significantly. However, it is worth noting that the bridge was assigned a sufficiency rating of 43.5 and it was flagged Structurally Deficient due to both the deck and substructure (Item 58 and 60) being assigned condition ratings of 4 (poor condition). The sufficiency rating given in the BIR dated May 19th, 2012 increased from 43.5 to 71.7 and the structurally deficient flag was removed as the condition ratings assigned to the deck (Item 58) was increased from 4 to 5 (fair condition) while the condition rating assigned to the substructure (Item 60) was changed from 4 to 6 (satisfactory condition).



Moisture Stain along Southern Arch Rib

The sufficiency rating in the most recent Caltrans BIR dated July 2nd, 2014 has increased to 78.8; however, the Structurally Deficient flag remains due to the condition rating of 4 being reassigned to the deck. However, the sufficiency rating improved due to the increase in Inventory Rating from 19 metric tons (20.9 tons) in 2010 to 24 metric tons (26.4 tons) in 2014 following Caltrans completion of a load rating analysis using the load factor method. Based on conversations with Caltrans Local Assistance staff, Cornerstone understands that the revised sufficiency rating does not jeopardize the currently programmed HBP funding for this project.

On January 6th, 2015 Cornerstone accompanied Caltrans SM&I as they conducted a follow up, in depth investigation to the routine biannual inspection completed in 2014. The purpose of this inspection was to perform a close up inspection of the arch ribs and spandrel columns which included sounding the concrete with a geology pick. An under bridge inspection truck (UBIT) was used to access the structure. During this inspection, Caltrans noted that the transverse beams located immediately below the existing joints between the approach spans and main arch span were water stained. Sounding these elements resulted in a "deadened sound" with less rebound than typical indicating a less competent material may be present at the surface. A delaminated section of concrete, denoted by a distinct hollow sound when tapped with a geology pick,



Moisture Stain Pier 3 Approach Cap Beam

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measuring approximately 1 ft. by 2 ft. at the base of the easternmost spandrel column along the northern arch rib was also identified. A rock pocket was noted in longitudinal deck beam No. 1 in span 1; however, based on sounding it was determined to be surrounded by competent material. The long standing spall noted in the support bracket of Pier 3 below the northernmost longitudinal deck beam in span 3 was also sounded and found to be competent material. Spalls and delaminations were also noted in the aesthetic arch corbels in spans 1, 2 and 3. Despite scattered pattern cracks noted throughout the arch ribs, soffit, and deck beams sounding these areas revealed competent material. Following this inspection, Caltrans recommended that the deck drains be relocated outward to prevent water from being deposited on the structural elements located below deck, repair the concrete corbel at Pier 3, and clean out the impacted joints at both Pier 2 and Pier 3 and place suitable joint seals.



Undermined Footing at Pier C

Field Investigation

During Caltrans SM&I special inspection on January 6th, 2015, Cornerstone performed a field investigation of the existing bridge. The field investigation included a visual examination of the existing bridge to confirm the findings noted in the Caltrans BIR reports and to identify any additional visual deficiencies; testing to identify existing material structural properties; and an initial petrographic evaluation of the existing concrete to determine basic properties and the potential for Alkali Silica Reactivity of the existing concrete.

Our field investigation was generally qualitative in nature and was limited to readily visible elements. Direct access to limited portions of the arch ribs, pier and spandrel columns, and the underside of the deck were provided by the Caltrans UBIT. Due to safety concerns and the limits of the Caltrans UBIT, direct access to the foundations at Pier C was not possible during the field investigation. Pier C was observed from a distance from the bottom of the channel at Pier B.

Based on our field investigation, Cornerstone confirmed the findings of the Caltrans BIR's and noted additional items, which are discussed below:

Concrete Strength

The design concrete strength was not included on the as-built plans of the existing bridge. Therefore, concrete compressive strength tests were completed by Kleinfelder. During the field investigation, two core samples were removed from the existing bridge deck and one core sample was removed from Abutment A. The average compressive strength of the cores was approximately 5,880 psi. No single core break exceeded 6,080 psi while the lowest of the three cores was determined to be 5,490 psi. Kleinfelder's results of the concrete strength tests are provided in Appendix C.



Deck Coring

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Reinforcing Steel Yield and Tensile Strength

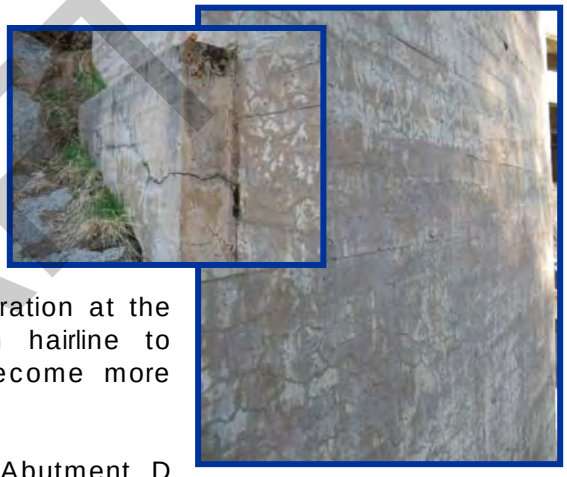
The reinforcing steel yield strength was not included on the as-built plans of the existing bridge. However, a 6 in. long sample of existing reinforcing steel was removed from the north side of Pier B from a piece of reinforcement that was extending out of the arch rib. The sample was a 1 in. square deformed rebar. Based on testing, the yield strength of the sample was determined to be 40,300 psi. and the tensile strength was determined to be 61,300 psi. Kleinfelder's results of the reinforcing steel tests are provided in Appendix C.

Visual Observations of Existing Structure

During our field investigation, Cornerstone performed visual observations and sounding of the existing concrete to determine its general condition. These observations were conducted alongside Caltrans' Maintenance Engineer using the UBIT truck. The findings of our field observations are noted below:

Abutment A and Abutment D

Both abutments are exhibiting pattern cracking and brown staining that is indicative of ASR. At Abutment A, the pattern cracking appears concentrated at the north wingwall and immediately below the north edge of deck, where it appears that water is draining onto the vertical wall face from the deck. Efflorescence was also noted in this area. At Abutment D, the pattern cracking is most notable on the north and south wingwalls, with the highest concentration at the north wall. The pattern cracks vary from hairline to approximately 1/16" wide and appear to become more numerous toward the bottom of the wingwall.



Pattern Cracking at Abut. A

Large horizontal cracks were noted in the Abutment D footing. Pattern cracking was noted at the south, upstream face of the Abutment D footing where the footing appeared damper than other areas. There were also several instances of leachate observed at the front face of the footing. This leachate varied in color from a distinct white to brown-grayish in color and was very hard. It is likely that the leachate is the result of ground water from behind the existing abutments seeping through the footings and carrying the calcium hydroxide (lime) of the cement to the face of the footing. The hardness of the leachate indicates that it has formed into calcium carbonate as a result of exposure to the surrounding carbon dioxide in the air.



Leachate & Pattern Cracking at Abut A

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Arch and Pier Spandrel Supports at Pier B and Pier C



Cracks in Arch Base

All arch and pier spandrel column supports at Pier B and Pier C have significant pattern cracks. Larger pattern cracks, up to 1/16" wide, border smaller, hairline pattern cracks over much of the concrete surface. The largest cracks were noted at the southern face of Pier B, with the largest crack measuring approximately 3/16" wide. Many of the pattern cracks are surrounded by brown stains on the concrete surface that radiate from the crack. Efflorescence was also noted on some of the cracks at the bottom of the Pier B support. The cracks are indicative of ASR.

Both footings of the arch and pier spandrel column supports show horizontal cracks on the vertical channel face of the footing. The horizontal cracks are much more pronounced on the Pier B footing. Large patters cracks in the Pier B support. The cracks at Pier B vary in size from hairline up to approximately 3/16" wide. During the field investigation, it was noted that the cracks at Pier B are concentrated on the south, upstream face of the footing and there was a distinct boundary where the cracks stopped. The area with the largest concentration of cracks appeared wet and had a distinct discoloration from the remainder of the footing.



Cracks in Pier B Footing

Arch Ribs and Pier Spandrel Columns

Moderate to large cracks were noted in the arch ribs and spandrel columns. Pattern cracks with brown stains were observed along the length of the arch ribs, with the largest concentration appearing near the supports. The largest of the cracks, approximately 1/16" wide, run longitudinal and are almost the full length of the arch. The pier spandrel columns also show pattern cracking and staining, but not as pronounced as the arch ribs. The largest cracks run vertical, longitudinal with the pier spandrel columns. A large crack, approximately 1/4" wide, was noted in the northern pier spandrel column on the south face. This crack begins near the support and continues vertically up along the arch approximately 2 ft.



Northern Arch Rib Cracks

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The pier spandrel crossbeams and approach cap beam, which are located immediately below the failed bridge joints, have longitudinal cracks on the bottom surface along the edge of the beam that are distinctly brownish-red in color, indicative of rust staining. The tops of the pier spandrel beams also have debris that appears to have come from the failed joint above. Sounding of these elements provided a distinctly hollow sound compared to the rest of the structure, indicating possible delamination of the concrete.



Southern Arch Rib Cracks

Lichen and greenish-black colored stains were also noted on several areas of the arch ribs and the pier spandrel columns, particularly in areas that appear to receive minimal sunlight and where water from the failed joints and deck drains appears to drain onto the support elements.

Deck, Deck Beams and Spandrel Columns

The top of the deck surface was difficult to observe during the field investigation due to the extent of debris on the deck and the presence of what appeared to be a chip/slurry seal overlaying portions of the western span of the bridge. The areas of deck that were observed were heavily abraded, with aggregate clearly exposed. The deck also exhibited severe pattern cracking over much of its surface. The soffit of the bridge also exhibited pattern cracking and efflorescence.



Deck Pattern Cracks



Deck with Chip Seal

The spandrel columns, transverse cap beams, and longitudinal edge beams had minimal cracking. The color difference between the spandrel columns, transverse cap beams, and longitudinal edge beams and the remainder of the structure was very notable, with the upper portion of the structure exhibiting a typical concrete gray color while the bottom portions of the structure exhibited brown and black staining.

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Petrographic Evaluation

Because the existing structure is showing signs of deterioration, Cornerstone conducted a petrographic analysis of the existing concrete. A total of four (4) concrete core specimens were taken for petrographic examination. The samples were taken from the arch at Pier D (total 1 measuring 1.3 in. in diameter by 2.7 in. in length), the abutment wingwalls at Abut D(total 1 measuring 1.3 in. in diameter by 2.7 in. in length), and the existing bridge deck (total 2 measuring 2.7 in. in diameter by 3.6 in. in length). The concrete core extracted from the arch at Pier D fractured upon removal due to surface cracks in the core. Another core was taken from Pier D during the field investigation in an attempt to get an undamaged specimen for testing but this core also cracked during extraction due to surface cracks.

The objectives of the petrographic examinations were to evaluate the physical properties, mineralogical properties, and the overall quality of the concrete. These examinations are also able to determine if the concrete specimens are exhibiting evidence of alkali-silica reactivity (ASR). The general findings of the petrographic analysis can be found in the Petrographic Examination Reports in Appendix D. A more detailed discussion of the significant findings of the analyses is provided below:

Alkali Silica Reactivity (ASR)

ASR is a reaction which occurs over the time in concrete between the highly alkaline cement paste and non-innocuous aggregates containing certain reactive silica materials when water is present. As certain forms of silica react with the highly alkaline cement paste, a "gel" forms around the aggregate that swells as water is absorbed from the surrounding cement paste and the natural environment. Ultimately, the "gels" can induce enough expansive pressure to damage concrete. Once the concrete has cracked, water and air are able to penetrate the concrete further, thereby accelerating the effects of ASR and the oxidation of newly exposed reinforcing steel. Typical visual indicators of ASR are pattern cracking, gel exudations from the surface cracks, brown surface discoloration that makes the concrete appear continually damp, and occasional spalled concrete.

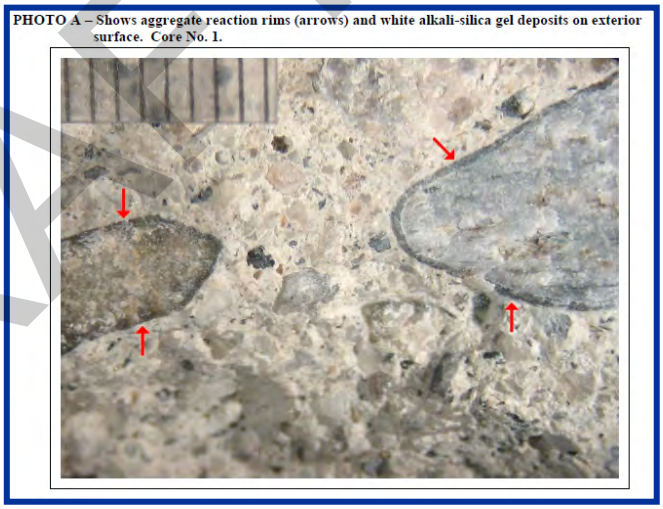


Photo from Petrographic Evaluation Depicting ASR

The petrographic evaluations detected ASR in each of the sampled concrete cores, as evidenced by white alkali-silica gel and reaction rims around the perimeter of the aggregate. The degree of ASR was determined to be more advanced in the cores taken from the deck than those taken from the arch and the abutment wingwall. However, ASR in the existing bridge, as represented by the provided samples, was determined to not be in an advanced stage that would result in widespread expansion cracking and micro-cracking of the concrete.

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Carbonation

Carbonation of concrete is the process of carbon dioxide in the air reacting with the calcium in the concrete to form calcite. The process lowers the high alkaline environment of the concrete from a pH of 12 to 14 to a neutral pH of 7 in fully carbonated paste. In a high alkaline environment, a protective oxide layer forms on the reinforcing steel and reduces the corrosion of the steel to an insignificant level. As the alkalinity of the concrete is reduced, the protective oxide layer is destroyed and the reinforcing steel is susceptible to corrosion.

Potential carbonation of the concrete was noted during the field investigation due to the orange-brown color of the cement paste at the surface of the concrete cores. The petrographic evaluations detected carbonation extending to a maximum depth of 23 mm (approximately 1 in.) below the surface of the core that was extracted from the arch rib at Pier B. Carbonation was also noted to extend along the crack in this specimen to a depth of approximately 45 mm (approximately 1.75 in) below the surface. Carbonation was observed to a depth of 13 mm (approximately 0.5 in) in the concrete core taken from the northeast wingwall at Abut D.

In uncracked concrete, carbonation typically penetrates to a depth proportional to the square root of the age of the structure. Based on the age of the bridge, the expected carbonation depth would be approximately 10 mm., which matches closely with the depth noted in the core from Abut D. However, the carbonation depth of the cracked core from Pier B was approximately 2x the depth at Abut D, indicating that the depth of carbonation is likely extending much deeper in areas of the bridge that are experiencing a higher percentage of cracks. Furthermore, the presence of carbonation along the crack in the Pier B core indicates that the depth of carbonation may be reaching the underlying reinforcing steel at the locations of surface cracks.

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Vertical Analysis

The as-built drawings for the M375A Mineral King Bridge over the East Fork of the Kaweah River do not indicate the live load that the existing structure was designed to support, nor do they indicate the applicable code or design philosophy implemented. Based on the current Caltrans BIR report dated July 2014, the existing bridge has an Inventory Rating of 26.5 tons (24 metric tons) and an Operating Rating of 44.3 tons (40.2 metric tons).

In order to verify the Inventory and Operating Ratings provided in the latest BIR, Cornerstone and Parsons performed a vertical load analysis to determine if the existing bridge has any vertical load deficiencies that would require rehabilitation (refer to Appendix E for the vertical analysis calculations). To perform the vertical analysis, the AASHTO *Manual for Bridge Evaluation, First Edition (MBE*) was used to calculate Rating Factors for the major bridge components. The Rating Factors were calculated using LFD principles to correspond with the rating methodology indicated in Caltrans most recent BIR.

For the vertical analysis of the bridge, material properties obtained from the materials testing program were used. For concrete, the lowest compressive strength obtained from the concrete cores, 5,490 psi was used. For the existing reinforcing steel, yield strength of 40,000 psi was used.

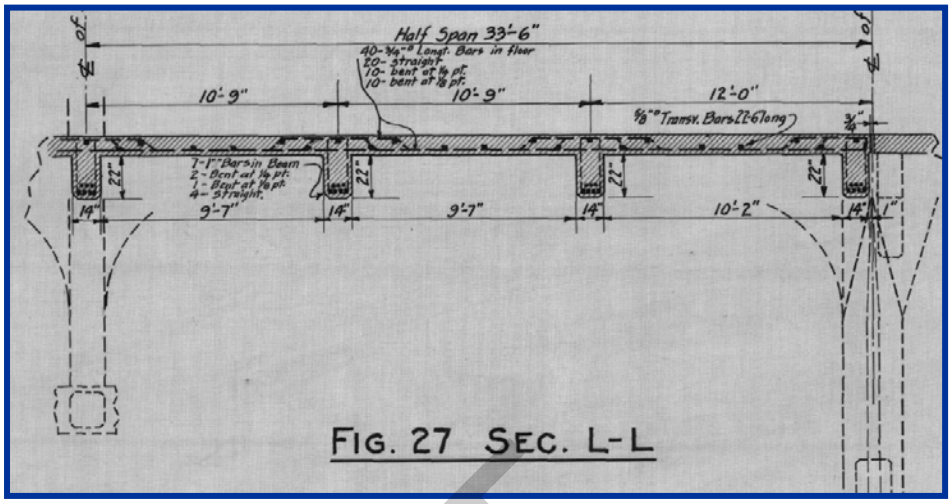
Results Summary

Based on the vertical analysis, the following Inventory Rating and Operating Rating factors under HS20-44 loading were calculated for the major components of the bridge:

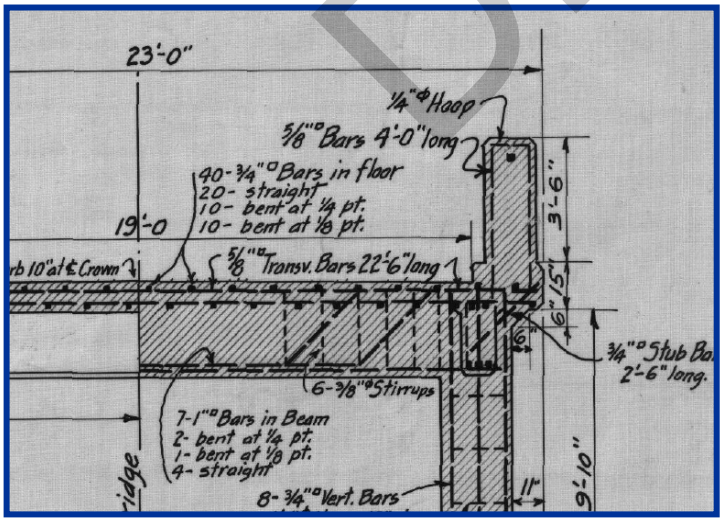
Element	D/C Ratio Inventory Level	Inventory Rating	Operating Rating
Deck Slab over Main Arch Span – Moment	1.33	0.75 (24.5 metric tons)	1.25 (40.8 metric tons)
Deck Slab over Main Arch Span – Negative Moment	2.28	0.39 (12.7 metric tons)	0.65 (21.2 metric tons)
Transverse Cap Beam in Main Arch Span – Positive Moment	0.87	1.18 (38.5 metric tons)	1.97 (64.3 metric tons)
Transverse Cap Beam in Main Arch Span – Shear	1.15	0.84 (27.4 metric tons)	1.41 (46.0 metric tons)
Approach Span Longitudinal Beams – Positive Flexure	0.48	2.35 (76.7 metric tons)	3.92 (128.0 metric tons)
Arch Ribs – Flexure	0.78	1.35 (44.1 metric tons)	2.26 (73.8 metric tons)
Pier Spandrel Column – Flexure	0.66	1.46 (47.6 metric tons)	2.44 (79.5 metric tons)
Spandrel Column – Flexure	1.87	0.46 (15.0 metric tons)	0.76 (24.8 metric tons)

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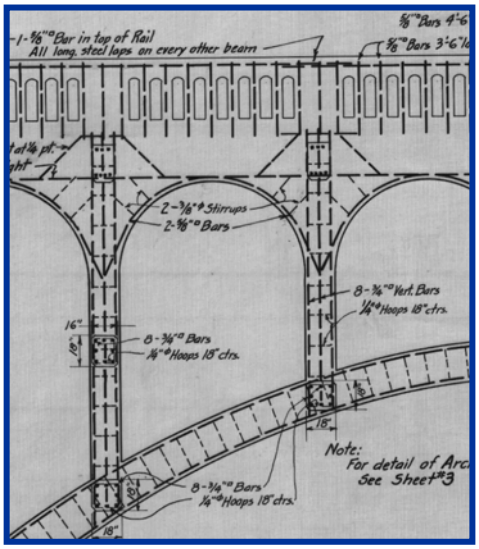
Cornerstone's vertical analysis shows that deck slab over the main arch span is inadequate in flexure under HS20-44 loading due to inadequate positive and negative longitudinal flexural reinforcement. The governing Inventory and Operating Rating is based on negative moment in the deck slab at the 1/8 point of the span between transverse deck beams where approximately one-half of the truss bars bend down from the top of the slab (i.e. negative moment reinforcement) to the bottom of the slab (i.e. positive moment reinforcement). Negative moment was also checked at the supports. Cornerstone's calculated Inventory Rating (12.7 metric tons) and Operating Rating (21.2 metric tons) differ significantly from the ratings provided in the Caltrans SM&I BIR dated July 2014. Tulare County RMA provided Cornerstone with Caltrans SM&I load rating analysis. It should be noted that Caltrans SM&I did not check the deck slab as part of their load rating analysis. Modifying the Inventory and Operating Ratings based on Cornerstone's analysis results in the bridge sufficiency rating dropping from 78.8 to 58.2.



Main Arch Span Deck Flexural Reinforcement



Transverse Cap Beam Details



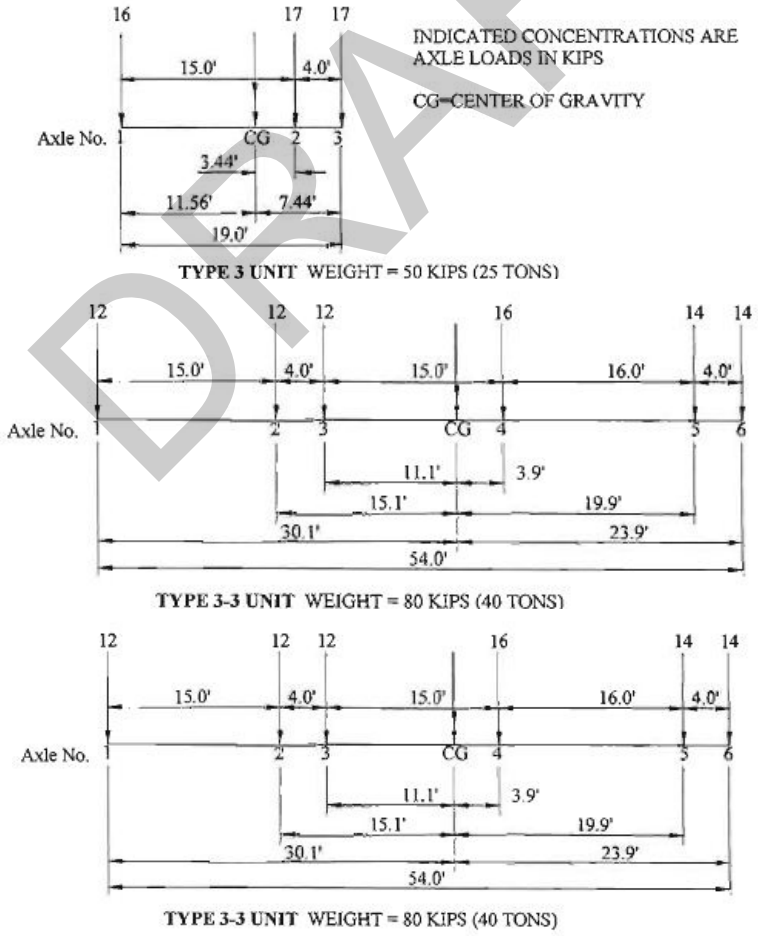
Spandrel Column Details

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Load Posting Analysis

The MBE provides guidelines to determine whether existing structures should have weight limitations imposed conforming to local regulations and policy. It should be noted that the MBE draws a distinction between bridge-load rating and posting. Bridge inspection and rating are classified as engineering related activities, while posting is a policy decision. Per the MBE, bridges must be posted if State legal loads exceed the calculated load capacity of a bridge; however, the bridge may be posted at a lower level. Bridges with live load carrying capacities less than a minimum gross weight of three tons must be closed. Bridge owners, however, are free to close structures to vehicular traffic at any higher posting threshold. Bridge owners are advised to consider the type of traffic expected to use the structure, the volume of traffic, the probability of overweight vehicles, and the enforceability of load posting when deciding between posting and closing a structure.

Per the MBE, the live loads to be used in the general rating equation (MBE Eqn. 6B.5.1-1)for posting considerations may consist of the Type 3 Unit, Type 3S2 Unit, Type 3-3 Unit, SU4 Truck, SU5 Truck, SU6 Truck, SU7 Truck, or State legal loads. Generally, trucks weighing up to 80,000 pounds are permitted unrestricted operation and considered legal so long as they meet the guidelines of Federal Bridge Formula B. However, Cornerstone understands that Caltrans loading posting analyses typically only consider the Type 3 Unit, Type 3S2 Unit, and Type 3-3 Unit in completing their load posting analyses. Therefore, Cornerstone's load posting analysis shall be limited to these particular vehicles.



Caltrans Typical Legal Loads Used for Posting

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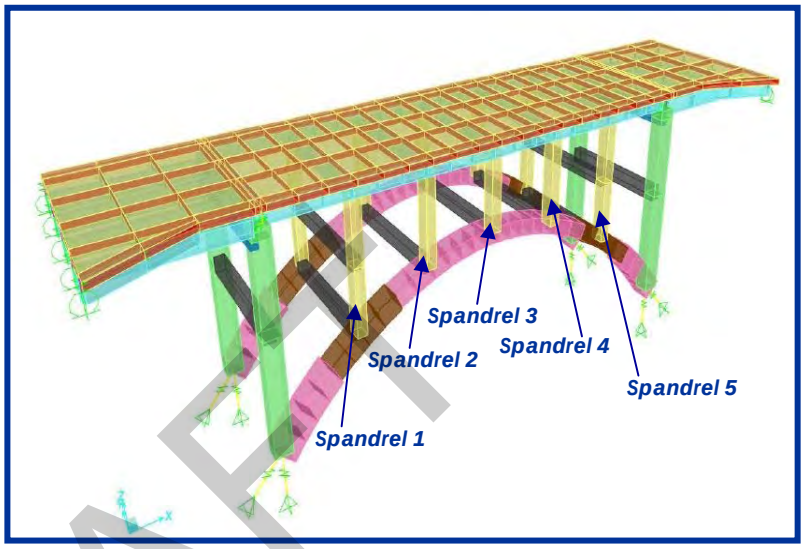
Cornerstone's posting analysis was limited to checking the existing reinforced concrete bridge deck over the main arch span since it was determined to be the critical element based on the calculated demand to capacity ratio, Inventory Rating, and Operating Rating under HS20-44 loading. It should be noted that Caltrans SM&I load rating and posting analysis did not include a check of the existing deck spanning between transverse cap beams in the main arch span. Based on our analysis, the governing posting load, considering moment in the bridge deck, was determined to be the Type 3 Unit and resulted a rating factor of 0.77.

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Bridge Seismic Evaluation

Parsons completed a seismic evaluation of the existing M375A Mineral King Road Bridge in order to identify all structural vulnerabilities under the design earthquake. Refer to Appendix F for Parsons *Seismic & Strength Evaluation Study*.

Parsons seismic evaluation was completed in accordance with the following design and retrofit guidelines including: Caltrans Memo to Designers (MTD) 20-4, *Seismic Retrofit Guidelines for Bridges in California* dated June 2010; Caltrans Seismic Design Criteria (SDC) Volume 1.7 dated April 2013; and Caltrans Bridge Design Aids (BDA) 14-4, *Joint Shear Modeling Guidelines for Existing Structures* dated August 2008. Parsons also utilized the following documents in completing the seismic evaluation: existing bridge as-built plans; BIR dated May 19, 2012; digital photographs of the existing bridge; material testing report prepared by Kleinfelder; and *Concrete Arch Bridge Retrofit Guidelines (DRAFT)* dated October 1995 provided by Caltrans Office of Earthquake Engineering. The existing bridge was evaluated using the "No Collapse" performance standard. The collapse limit state is defined as the condition where any additional deformation will potentially render a bridge incapable of resisting loads generated by its self-weight. The "No Collapse" performance standard prevents failure of this type while allowing for the possible localized failure of some individual components.



Parsons SAP2000 3D Model

Seismic Demand & Capacity Models

Parsons created three dimensional finite-element models for the seismic demand and capacity analyses using SAP2000.

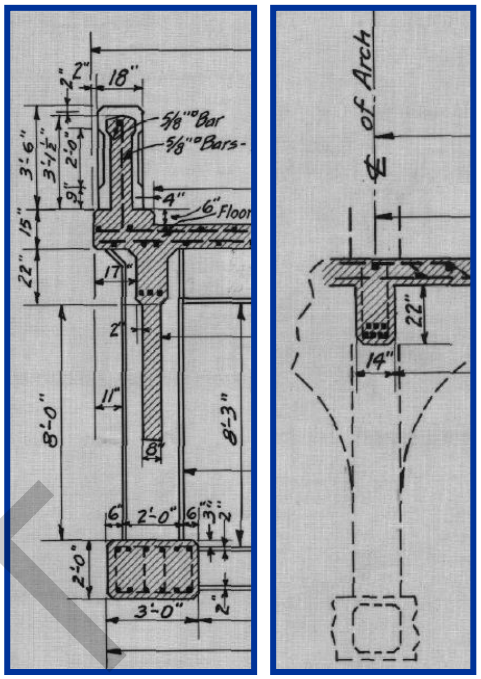
Parsons demand models were created based on the as-built plans and used the results of Kleinfelder's materials testing program. Effective member stiffnesses were utilized in order to account for flexural cracking of the concrete section. Multimodal linear elastic dynamic analyses using the site specific ARS curve (5% damping ratio) provided by Kleinfelder were performed. The resulting demand displacements from the transverse and longitudinal directions were combined using Method 1 from Caltrans Seismic Design Criteria Version 1.7 section 2.1.2.1 (greater combined response resulting from 100% of the transverse loading with the corresponding response from 30% of the longitudinal loading or 100% of the longitudinal loading with the corresponding response from 30% of the transverse loading).

Parsons capacity models were created similarly to the demand models, except that the unreduced member flexural stiffnesses were used since SAP2000 has the ability to automatically adjust the member's degraded stiffness during a non-linear static pushover analysis. End offsets were used to model joint rigidity and flexural hinge definitions were assigned to each frame member. Non-linear pushover analyses were completed separately in each orthogonal direction in order to determine the

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various members' yield displacement capacity. Plastic action under the design earthquake was identified upon comparing the various displacement demands and the yield displacement capacities.

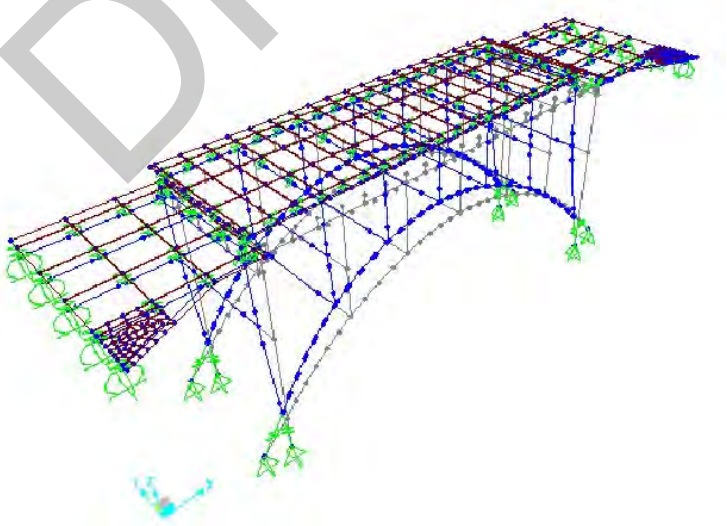
Parsons identified that the joints between the existing spandrel columns, transverse cap beams, and longitudinal edge beams lacked proper joint shear reinforcement within the joint region. Furthermore, the longitudinal edge beams (8 in. wide) and the transverse cap beams (14 in. wide) may not be capable of providing the necessary confinement to the larger spandrel columns in order to prevent the joints from degrading during the design seismic event. In order to account for this possibility and envelope the potential for both rigid (fixed connection) and moment released (pinned) behavior, Parsons demand and capacity models were analyzed for the following two cases: first with the existing spandrel-beam joint modeled as a moment resisting joint (fixed) and second with a moment released joint. The joints between the spandrel columns and the arch ribs were modeled as moment resistant (fixed).



Cap Beam & Longitudinal Edge Beam Framing into Existing Spandrel

Existing Bridge Seismic Analysis Summary

Based on the results of the SAP2000 seismic demand models, Parsons determined that the existing bridge's fundamental seismic mode occurs in the transverse direction (period for fixed spandrel-beam joints is 1.72 seconds and 1.78 seconds for pinned spandrel-beam joints) due to the inherent flexibility of the arch ribs. Relatively stiff torsional and longitudinal modes followed as the second and third modal responses. A summary of the seismic analysis findings is provided in the following list:

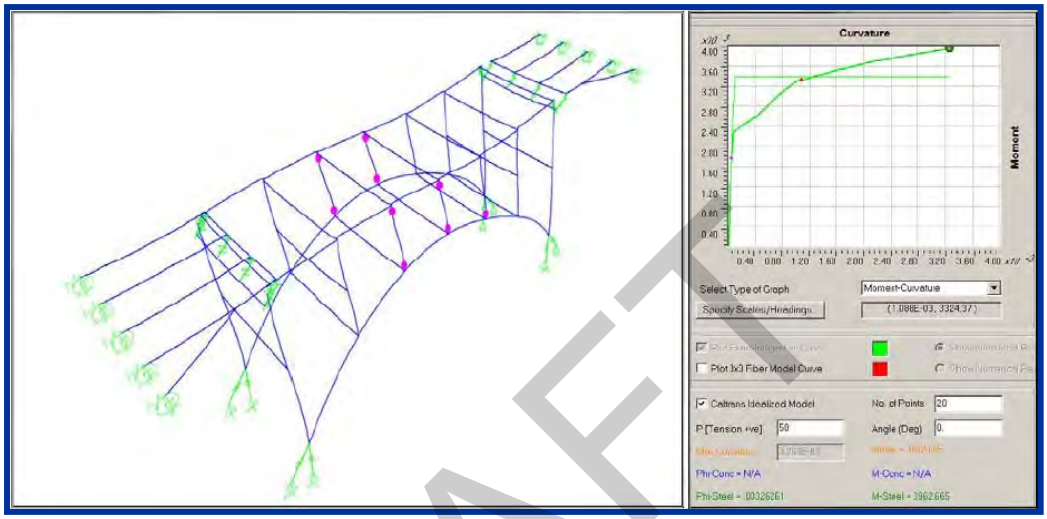


Transverse Mode (Fixed Spandrel-Beam Joint T = 1.72 sec, Pinned Spandrel-Beam Joint T = 1.78 sec)

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- Plastic hinges form in spandrel columns 2, 3, & 4 (three center spandrel columns) during the design earthquake event in the longitudinal direction

- Due to the relatively short heights of spandrel columns 2, 3, and 4 (three center spandrel columns), these elements do not have sufficient shear capacity to meet the plastic shear demand in a longitudinal seismic event. Therefore, the existing bridge was determined to be **Category 1**, which is defined as bridges that may collapse in a seismic event.



Plastic Hinges in Spandrel Columns in Longitudinal Seismic Event

- Plastic hinging occurs in the approach cap beams and exterior rib struts during the design transverse seismic event

- The existing approach cap beam seat width (12 in.) does not meet the current design standard. However, based on the minimal longitudinal seismic displacement and other service displacement demands (i.e. thermal), the existing seat width is adequate for this particular bridge.

- All ductile members meet the SDC prescribed displacement ductility demand and local member displacement ductility requirements in both fixed and pinned spandrel column models

Summary Tables

- Assuming Spandrel to Transverse Cap Beam / Longitudinal Edge Beam Joint is Fixed

    - Longitudinal Seismic Displacement Demand vs. Yield Displacement Capacity

	Step 1	Step 2	Step 3	
Location	**Spandrel 3**	**Spandrels 2 & 4**	**Spandrels 1 & 5**	**Pier Spandrel**
Δ_y (in)	0.122	0.197	0.515	0.652
Δ_D (in)	0.371	0.37	0.367	0.356
Δ_D / Δ_y	3.041*	1.878*	0.713	0.546

*While a plastic hinge will form, it does not result in a collapse mechanism

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- Transverse Seismic Displacement Demand vs. Yield Displacement Capacity

	Step 1	Step 2	Step 3	
Location	Approach Cap Beam	Rib Struts 1 & 5	Pier Spandrel (Top)	Spandrel Crossbeams 1 & 5
Δ_y (in)	0.421	1.477	1.766	2.008
Δ_D (in)	1.504	1.178	1.41	1.441
Δ_D / Δ_y	3.572*	0.798	0.798	0.718

*While a plastic hinge will form, it does not result in a collapse mechanism

- Spandrel Column Displacement Ductility Checks

	Longitudinal			Transverse		
Member	Δ_D / Δ_C	μ_D	μ_C	Δ_D / Δ_C	μ_D	μ_C
Pier Spandrel	0.087	0.55	6.2	Remain Elastic		
Spandrel 1 & 5	0.129	0.74	4			
Spandrel 2 & 4	0.231	2.1	3.4			
Spandrel 3	0.364	3.47	3.4			

- Spandrel Column Shear Demand to Capacity Ratios

Element	D/C Ratio
Pier Spandrel	0.62
Spandrel Columns 1 & 5	0.42
Spandrel Columns 2 & 4	1.04
Spandrel Column 3	7.55

- Assuming Spandrel to Transverse Cap Beam / Longitudinal Edge Beam Joint is Pinned
  - Longitudinal Seismic Displacement Demand vs. Yield Displacement Capacity

	Step 1	Step 2	Step 3	
Location	Spandrel 3	Spandrels 2 & 4	Spandrels 1 & 5	Pier Spandrel
Δ_y (in)	0.169	0.256	0.589	0.808
Δ_D (in)	0.49	0.49	0.49	0.488
Δ_D / Δ_y	2.897*	1.913*	0.831	0.604

*While a plastic hinge will form, it does not result in a collapse mechanism

  - Transverse Seismic Displacement Demand vs. Yield Displacement Capacity

	Step 1	Step 2	
Location	Rib Struts 1 & 5	Rib Struts 2 & 4	Rib Strut 3
Δ_y (in)	1.108	1.343	1.537
Δ_D (in)	1.191	1.44	1.467
Δ_D / Δ_y	1.075*	1.072*	0.955

*While a plastic hinge will form, it does not result in a collapse mechanism

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- Spandrel Column Displacement Ductility Checks

	Longitudinal			Transverse		
Member	**Δ_D / Δ_C**	**μ_D**	**μ_C**	**Δ_D / Δ_C**	**μ_D**	**μ_C**
Pier Spandrel	0.132	0.6	4.9	Remain Elastic		
Spandrel 1 & 5	0.198	0.82	3.4			
Spandrel 2 & 4	0.323	1.9	3.1			
Spandrel 3	0.491	2.95	3.2			

- Spandrel Column Shear Demand to Capacity Ratios

Element	**D/C Ratio**
Pier Spandrel	0.31
Spandrel Columns 1 & 5	0.21
Spandrel Columns 2 & 4	0.45
Spandrel Column 3	1.24

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Roadway Design Criteria

As part of the preliminary engineering phase of this project, multiple bridge locations and roadway alignments were considered by Cornerstone sub-consultant, Mark Thomas & Company. Mark Thomas & Company has prepared a Roadway Design Memorandum that provides a short discussion on the project's background, roadway design criteria, a summary of the various bridge rehabilitation/retrofit alternatives considered as part of this project, and concludes with roadway construction cost estimates for the alternatives deemed viable. The Roadway Design Memorandum is included in Appendix G. The following sections summarize the findings of the Roadway Design Memorandum.

Design Speed

The design speed along permanent bridge Mineral King Road in the vicinity of the project is 10 mph.

Superelevation

Mark Thomas & Company has assumed that the roadway will consist of a normal crown section (e = -2%).

Profile Grade

Based on preliminary historic hydraulic flow data (refer to the following Hydrology and Hydraulics section for a more detailed discussion) the proposed profile grade is not anticipated to be driven by freeboard requirements. Rather, the profile grade will be designed to minimize roadway approach work.

Lighting

It is assumed that lighting will not be provided since both the current rural roadway and bridge do not include overhead lights.

Utilities

The sole known utility within the vicinity of the project is an overhead telephone line that runs along the western edge of the project.

Right-of-Way

The existing right-of-way along Mineral King Road measures 60 ft. in width. However, there is also an existing historic Southern California Edison (SCE) flume located along the southern edge of the project that lies within the existing right-of-way.

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Hydrology and Hydraulics

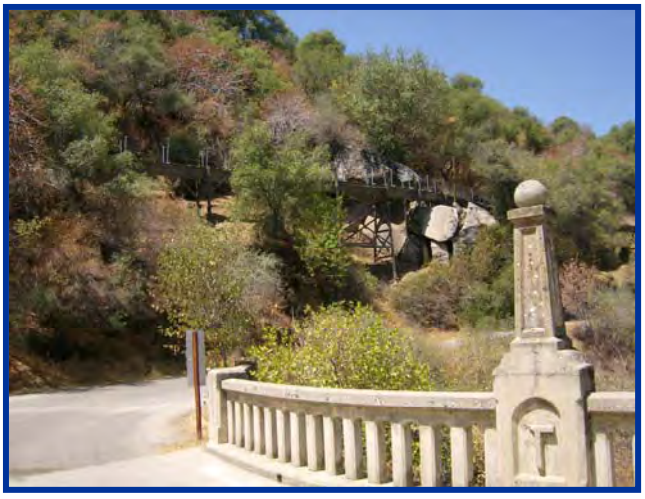
The East Fork is one of five primary branches of the Kaweah River with its headwaters located in the alpine glacial basin of Mineral King approximately 11 miles from the Mineral King Bridge. The river is fed by snowmelt from the high Sierra Nevada, with peak flows occurring in the late spring (May) to early summer (June). Flows in the East Fork typically taper to a small trickle (approximately 20 cfs) through the late summer and into the early fall, fed by four small natural lakes located near Mineral King.



Stream Gauge Upstream of Bridge

Like so many of the western Sierra Nevada rivers, the East Fork has been tapped for hydroelectric power. Because of this, the US Geological Survey (USGS) maintains a stream gage site (USGS 11208730 EF KAWEAH R NR THREE RIVERS CA) approximately ¼ mile upstream of the Mineral King Bridge. This site is located at the natural diversion dam of the Kaweah Conduit No. 1, which is owned and operated by SCE. This conduit consists of approximately 6 miles of tunnel and flume that feeds the SCE Kaweah Power Plant No. 1 located downstream on the Middle Fork of the Kaweah River near Three Rivers. This flume, which is also considered a historic structure, runs directly past the south approach of the Mineral King Bridge.

Based on data that has been collected from this stream gauge site since 1952, the monthly average discharge during peak flows is approximately 300 to 400 cfs. However, maximum peak flows vary widely, varying between 230 cfs in 1977 to a maximum recorded of 13,000 cfs in 1966. During the most recent flood event in 1997, a flow of approximately 11,000 cfs was estimated to have occurred. During the 1966 event, a gage height of 21 ft. was estimated based on flood marks. Based on the gage height from the 1966 flood event and the profile of the river channel, there is approximately 29 ft. of freeboard below the existing bridge. This event is likely a good indicator of the anticipated design discharge and water surface elevation. Therefore the existing bridge, and any replacement structure, if required, will have adequate freeboard over the design water surface elevation. Lastly, Caltrans most recent SM&I BIR coded item 113, scour, a rating factor of 8. A rating factor of 8 is assigned to bridge foundations that have been determined to be stable for assessed or calculated scour conditions.



SCE Historic Flume

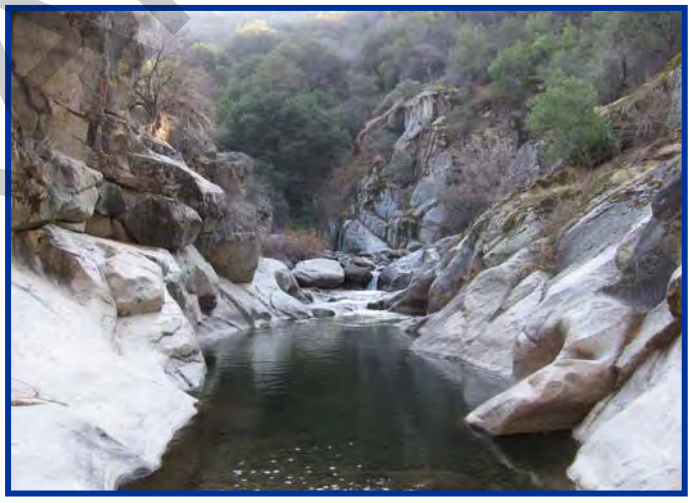
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View Downstream from Bridge of East Fork Kaweah River

While the Kaweah River is listed in Table 8.1 of the California Code of Regulations (CCR Title 23 Section 113) and is under the jurisdiction of the Central Valley Flood Board (CVFB), the East Fork of the Kaweah River is not and therefore any work on the Mineral King Bridge will not require an encroachment permit from CVFB.

During Phase 2, Technical Studies & Support for Environmental Approval, Cornerstone's project delivery team will prepare a Hydraulics Engineering Study Report based on the bridge alternative identified during the Project Initiation Phase. The report will follow the Caltrans Final Hydraulic Report Format and be prepared in accordance with the Caltrans Local Assistance Program Guidelines. Cornerstone's project delivery team will also prepare a Location Hydraulic Study (Floodplain Encroachment Report) in accordance with 23 CFR 650.113 using the information from the hydrology and hydraulics portion of the Hydraulic Engineering Study Report. This report is generally included in the environmental document for the bridge. It is assumed that no insurable structures will be impacted and that the bridge will not cause a significant encroachment into the floodplain or a change in the water surface elevation. It is assumed that no Conditional Letter of Map Revision (CLOMR) will be required for the project.



View Upstream from Bridge of East Fork Kaweah River

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Geology and Geotechnical Criteria

A Preliminary Foundation Report (PFR) has been prepared by Kleinfelder, Inc. dated May 1, 2015 and is included in Appendix H. Kleinfelder's current assessment is based on a site reconnaissance by a geotechnical engineer, Cornerstone's PES Project Description Memo dated March 6th, 2015, and a visual comparison of existing granitic rock at the proposed project site with the exposed rock present at the Mountain Road M319 Bridge replacement project.

The following is a summary of Kleinfelder's major findings presented in the PFR:

Site Geology

The current bridge spans the East Fork of the Kaweah River over a small gorge with steep sides consisting of granitic bedrock. Kleinfelder's preliminary geologic review of available data indicated massive granite exposures with a pattern of infrequent low angle exfoliation jointing and steep near vertical jointing. A thin surface layer of granular soil overlays the granitic rock outside of the active gorge. Field mapping has not yet been completed.



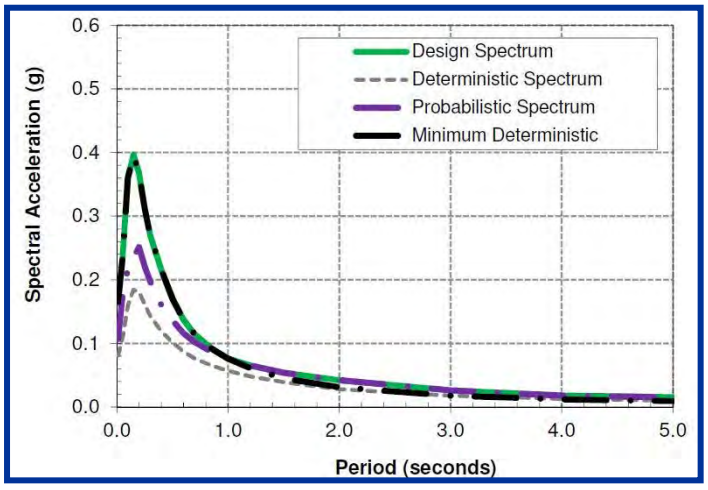
Granitic Exposures Adjacent to Bridge

Cut Recommendations

Based on the anticipated site geology, Kleinfelder has recommended that required cuts into bedrock be made at an average gradient no steeper than 0.5H: 1V. For cuts into residual soils, such as those required for abutment excavations, unsupported cuts should not be planned at gradients steeper than 1.5H: 1V.

Seismicity

Kleinfelder determined that the project site is not located within an Alquist-Priolo Earthquake Fault Zone and no active or potentially active fault traces are known to traverse the site. Kleinfelder's provided site specific ARS curve was developed assuming a soil profile Type B/A (hard rock / rock) and a V_{S30} equal to 1,500 m/s. The resulting peak horizontal ground acceleration is 0.17g, the associated earthquake magnitude is 6.5, and the peak of the ARS curve is approximately 0.40g.



Site Specific ARS Curve

Based on the anticipated site geology, Kleinfelder determined that liquefaction, seismically induced settlement, and lateral spreading will not present any hazard at the proposed project site.

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Foundation Recommendations

Kleinfelder indicated that the proposed bridge foundations may consist of conventional spread footings founded on bedrock or cast-in-drilled-hole concrete piles socketed into bedrock (i.e. rock sockets). Spread footings will need to penetrate into granitic rock a minimum of 0.5 ft. The preliminary factored bearing resistance of the granitic rock is anticipated to be 15 ksf at the service limit state. Should the dead load of the structure prove insufficient to resist uplift due to overturning, Kleinfelder has recommended using post tensioned rock anchors to provide additional resistance.

Construction Considerations

Due to the relatively massive granitic bedrock present at the project site, Kleinfelder anticipates that blasting and / or hydraulic splitting will be required to excavate approach roadway slopes and abutment excavations. Minor fine excavation within proposed structure footings may be accomplished with heavy duty boom mounted demolition hammers. Installing rock sockets will require coring.

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Bridge Design Criteria

The following is a discussion of specific bridge design criteria and constraints that were considered in the development of the bridge retrofit/rehabilitation and replacement alternatives. These constraints are general in nature and apply to all alternatives that were considered in this Project Scoping Study.

Structure Design Standards

The following standards will be used for the design of the retrofit/rehabilitation or replacement bridge structure and the development of the Final PS&E document:

- Vertical Datum: NAVD 88 (Geoid 12A).
- Horizontal Datum: NAD 83 (California State Planes, Zone IV, US Foot).
- AASHTO LRFD Bridge Design Specifications, Sixth Edition, 2012 with California Amendments, January 2014.
    - Dead Load: Tributary dead loads due to structure and utility weights including provision for 35 psf. future wearing surface.
    - Live Load: HS20-44 design live load for rehabilitation/retrofit alternatives. HL-93 and permit design live loads for replacement alternatives.
    - Thermal: The bridge is located in a moderate climate area where $T_{min,Design}$ = 10°F and $T_{max,Design}$ = 80°F. The minimum rise or fall in temperature for design purposes is 35°F.
    - Durability: The bridge is located at an elevation of approximately 2,500 ft.; therefore deicing salts are not anticipated nor is the environment considered corrosive to concrete elements. No special durability measures are required.
- Caltrans Seismic Design Criteria (SDC), Version 1.7, April 2013.
- Caltrans Division of Engineering (DES) engineering publications including Bridge Design Aids (BDA), Bridge Design Details (BDD), Bridge Design Practice (BDP), Bridge Memo to Designers (MTD), and Bridge Standard Detail Sheets (XS Sheets)
- Caltrans 2010 Standard Specifications and Revised Standard Specifications (RSS)
- Caltrans 2010 Standard Plans and associated Revised Standard Plans (RSP)

Bridge Use

Mineral King Road is single lane road that parallels the East Fork of the Kaweah River (East Fork) and serves as the only access route to the public into Mineral King Valley. The road also provides critical fire access for the California Department of Forestry and Fire Protection (CAL FIRE) and the National Park Service (NPS).

Public Access

Mineral King Road is the only publicly accessible road providing access to the upper valley of the East Fork of the Kaweah River. The road serves both private residences and business upstream of the existing bridge including Silver City, a cabin resort located approximately 10

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miles from the existing bridge and a National Park Service ranger station. The road also provides access to the Mineral King Valley located in Sequoia National Park. Mineral King Valley, which is listed on the National Register of Historic Places, is home to several private cabins and provides camping and hiking access to the public

Critical Fire Access

Based on our research including correspondence with both Cal Fire and the United States Bureau of Land Management (BLM), we understand that Mineral King Road serves as a critical fire access route. Based on Cal Fire's Fire Resource Assessment Program (FRAP) maps, we understand that the land immediately surrounding the existing bridge is considered state responsibility area, therefore, it falls under the jurisdiction of Cal Fire. Per our conversations with Doug Taylor, a civil engineer with Cal Fire working out of the Fresno office, we understand that the largest piece of equipment Cal Fire would need to transport across the existing bridge in the event of a fire is a dozer transport. The dozer transport consists of an approximately 28 ft. long detachable gooseneck trailer hauling a Caterpillar D6C dozer. The loaded weight of the transport is approximately 67 kips with a maximum tandem axle load of approximately 31 kips. Forest Cooper, a heavy fire equipment operator (HFEO) out of Woodlake, California confirmed that a dozer transport has been taken over the existing M375A Mineral King Bridge on at least two occasions.



Cal Fire Dozer Transport



Cal Fire Model 34/35

Bridge Geometry

Bridge Length

The minimum bridge length is not anticipated to be based on hydraulic analysis. Therefore, any proposed rehabilitation/retrofit alternative will likely match the existing bridge length while the length of any replacement bridge alternative will vary depending upon the proposed crossing location. The channel of the East Fork widens downstream of the existing bridge and narrows slightly upstream of the existing bridge.

Bridge Cross Section

The current bridge measures 23 ft. wide from edge of deck to edge of deck. The structure currently accommodates two lanes of travel with a total traveled way width of 19 ft. This traveled way width meets the current design standard provided in the AASHTO *Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤ 400)* which requires a total roadway width (includes both traveled way and shoulders) of 18 ft. for roadways classified under the recreational and scenic functional subclass with design speeds less than 35 MPH. Any proposed rehabilitation/retrofit alternative will maintain the existing traveled way width while any proposed replacement bridge alternative will provide a traveled way width, at a minimum, equal to the existing structure.

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Approach Slabs

Per Caltrans Memo to Designers 5-3, Attachment B, a structure approach slab is not required since the facility carried is not a multilane urbanized highway and the structure is not located in a seismic prone area.

Aesthetics & Historic Considerations

The current M375A Mineral King Bridge is considered a pristine example of a reinforced concrete open spandrel arch bridge that is cherished by local residents and revered by motorists traveling to historic Mineral King Valley. Because the structure embodies the distinctive characteristics of open spandrel arch bridges constructed during the same time period, the current bridge is eligible to be listed on the National Register of Historic Places (NRHP). The primary elements which are considered historically significant include the arch ribs, spandrels, and the barrier rail.

Structure Aesthetics

Cornerstone understands that any rehabilitation/retrofit alternative will be required to maintain the existing arch ribs, spandrels, and overall aesthetic appearance of the current bridge while strengthening the structure to meet today's design criteria. In the case that a replacement alternative is selected and the existing bridge is demolished, the replacement structure will need to possess its own aesthetic qualities that are accepted by the public and tie well into the surroundings. Cornerstone acknowledges that task may prove difficult; however, we anticipate that the best method to accomplish these goals will be by using a modern arch type structure that resembles the existing bridge. If a replacement alternative is selected and the existing historic bridge is preserved, Cornerstone does not anticipate that the replacement structure's bridge type will be as critical so long as the existing view shed of the current bridge is maintained.



Existing Bridge Barrier

Bridge Railing

Bridge rails are required to provide safety to the traveling public by safely redirecting errant vehicles and to retain pedestrians and bicyclists. The current concrete barriers on the existing bridge consist of open balustrade bridge rails seen on many historic bridges constructed during the same time period. As previously mentioned, GPA Consulting and Caltrans have indicated that one of the current bridge elements considered historically significant is the existing bridge barrier. The current concrete bridge barriers, however, are in poor condition and do not meet current design or crash test standards. For projects funded under the HBP, Caltrans *Local Assistance Program Guidelines* requires that bridge railing must meet the structural integrity and safety requirements set forth in the AASHTO *LRFD Bridge Design Specifications* and the *Highway Design Manual*. In addition to complying with these structural standards, bridge railings must also meet crash test requirements set by AASHTO and the National Cooperative Highway Research Program (NCHRP). These criteria limit the size, spacing, and allowable openings in a rail; essentially limiting the aesthetic opportunities.

During the project's field review meeting, both Caltrans and GPA Consulting recommended incorporating bridge railing that is visually compatible with open concrete balustrade rails seen on historic bridges as well as salvaging or reconstructing the existing reinforced concrete barrier pilasters on any rehabilitation/retrofit alternative.

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Caltrans has developed various kinds of railings and barriers for use on bridges to satisfy different requirements, including safety, functionality, aesthetics, and maintainability. However, there are no Caltrans approved barrier rails that provide a similar aesthetic to the existing bridge rail. However, the Texas Department of Transportation has developed and successfully crash tested the Classic Type T411 (approved for TL-2 loading per NCHRP 350) see thru open balustrade concrete bridge barrier (refer to Appendix K for structural details of the Texas Type T411 Bridge Barrier). Based on our conversations with Caltrans, we understand that, while on-system bridges must incorporate a Caltrans approved barrier rail, off-system bridges, such as Mineral King, may use out-of-state approved barrier rails as long as they meet NCHRP 350. Therefore, for any rehabilitation alternative, Cornerstone proposes to replace the existing bridge barrier rails with the Texas Classic Type T411 Bridge Barrier. Furthermore, should the existing barrier pilasters be considered important to the overall historic fabric of the bridge, they will be salvaged and incorporated into the new railing or be reconstructed in kind as part of the barrier replacement.



Texas Type T411 Bridge Barrier



Type 80 Bridge Barrier

For replacement bridge alternatives, Cornerstone believes that a Caltrans Concrete Barrier Type 80 would be most suitable. The Type 80 barrier rail, unlike most modern barrier rails, provides an open framework that allows drivers to see through the rail while maintaining safety. The concrete construction of the Type 80 barrier rail also minimizes maintenance cost to the local agency and also provides an appealing modern aesthetic that can be readily modified with the use of concrete form liners, concrete stains, or veneers, to provide a rustic look.

Temporary Bridge

In order to complete any rehabilitation/retrofit alternative involving removal of the existing bridge deck or a replacement alternative along the existing bridge alignment, a temporary bridge will be required downstream of the existing arch bridge in order to maintain traffic. The centerline of the temporary bridge will be located approximately 35 ft. north of the existing arch bridge's northern edge of deck. The span length of this temporary bridge will be approximately 140 ft. We anticipate the use of a prefabricated metal truss bridge (ACROW Bridge) for the temporary bypass. ACROW Bridges are assembled from short modular pieces designed to be assembled at sites with limited access. These bridges are capable of spans in excess of 200 ft. due to the modular ability of adding additional reinforcing trusses. An example of such a bridge is the ACROW Bridge utilized for the temporary span of the I-5 Bridge over the Skagit River in Washington after the original span collapsed in 2013. This same structure type is also being utilized as part of the "temporary" realignment of Highway 140 around the Ferguson Slide. The temporary bridge would be supported



ACROW Bridge on Temporary Supports

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on temporary cast-in-place abutments that would be removed following rehabilitation of the existing bridge.

In order to erect the temporary bridge, it is anticipated that it will be picked and placed in three sections. Two temporary supports located within the existing channel are anticipated during erection. The temporary support towers will need to be anchored to the existing rock within the gorge. Mineral King Road will likely need to be closed for a weekend during fabrication and erection as the current bridge approaches will likely be used as a lay down area during assembly. Lastly, it is currently assumed that the previous stone abutments used to support the previous timber truss bridge may be removed in order to accommodate the temporary structure. Should the previous stone abutments need to be preserved, the temporary bridge alignment will need to be altered and the bridge lengthened in order to avoid the abutments.

Based on our conversations with Cal Fire, we understand that the temporary bridge alignment will not need to accommodate Cal Fire's dozer transport because an alternate route (Case Mountain Road) as well as alternate methods for transporting the dozers across the East Fork of the Kaweah River, including walking the dozer from SR 198, are available in the case of a fire upstream of the existing bridge. Based on this, Cornerstone's team has designed the temporary bridge alignment using AASHTO's Single Unit Truck (SU-30) and Large School Bus (S-BUS-40) as a design vehicles. This provides access that will accommodate Cal Fire's Model 34/35, ICS Type 3 wild land fire engines and the typical traffic that would use Mineral King Road.

Constructability

The following constructability issues have been identified for the construction of the overflow bridge.

Site Access

Due to the project's remote mountainous location as well as narrow traveled way and tight turns along Mineral King Road leading to the current crossing, Cornerstone procured Reeve Trucking Company, Inc. (Reeve Trucking) to complete a route survey beginning at the intersection of SR 198 and Mineral King Road. The purpose of the route survey was to determine the types of vehicles, construction equipment, and materials that could be transported to the site. Reeve Trucking operates in the western United States and is based out of Stockton, California. They specialize in serving the construction industry transporting structural steel, concrete products, precast bridge girders, and heavy construction equipment and have been successfully utilized for route surveys on previous Cornerstone projects located in similarly remote mountainous locations. Upon completion of the route survey, Reeve Trucking concluded that 28 ft. long flat-bed trailers and a 265 ton all terrain hydraulic crane could access the site. It should be noted that the size of flat-bed semi-trailer determined to be able to access the site is in agreement with the size of dozer transport Cal Fire informed Cornerstone has been transported over the existing bridge in



265 Ton All Terrain Hydraulic Crane

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the past. In addition to construction any of the proposed rehabilitation/retrofit or replacement alternatives, these pieces of equipment will be essential in constructing and erecting the proposed temporary bridge.

In addition to performing the route survey, Cornerstone also determined that the nearest Caltrans CT109 ready mix concrete batch plant is CEMEX's facility located in Farmersville, California. The facility is capable of producing concrete at a maximum rate of 170 CY per hour and is located approximately 35 miles from the project site (approximate travel time of 1 hour).

Staged Construction

Staged construction would add significant costs and time to the project and would require that a significantly wider bridge be constructed to maintain at least one travel lane during construction. It is unlikely that staged construction would be beneficial to this project and therefore will not be considered.

Construction Schedule

The required construction duration will vary depending upon the selected alternative. At this time, the construction duration for the rehabilitation/retrofit of the existing bridge is estimated to be approximately 6 to 9 months while a full replacement with an open spandrel reinforced concrete arch bridge is estimated to require up to 18 months.

Staging Area

Two possible construction staging areas have been identified at this time. The first is located approximately 800 ft. northeast of the existing bridge. The second is located immediate north of Mineral King Road approximately 1.3 miles west of the existing bridge



Construction Staging Areas

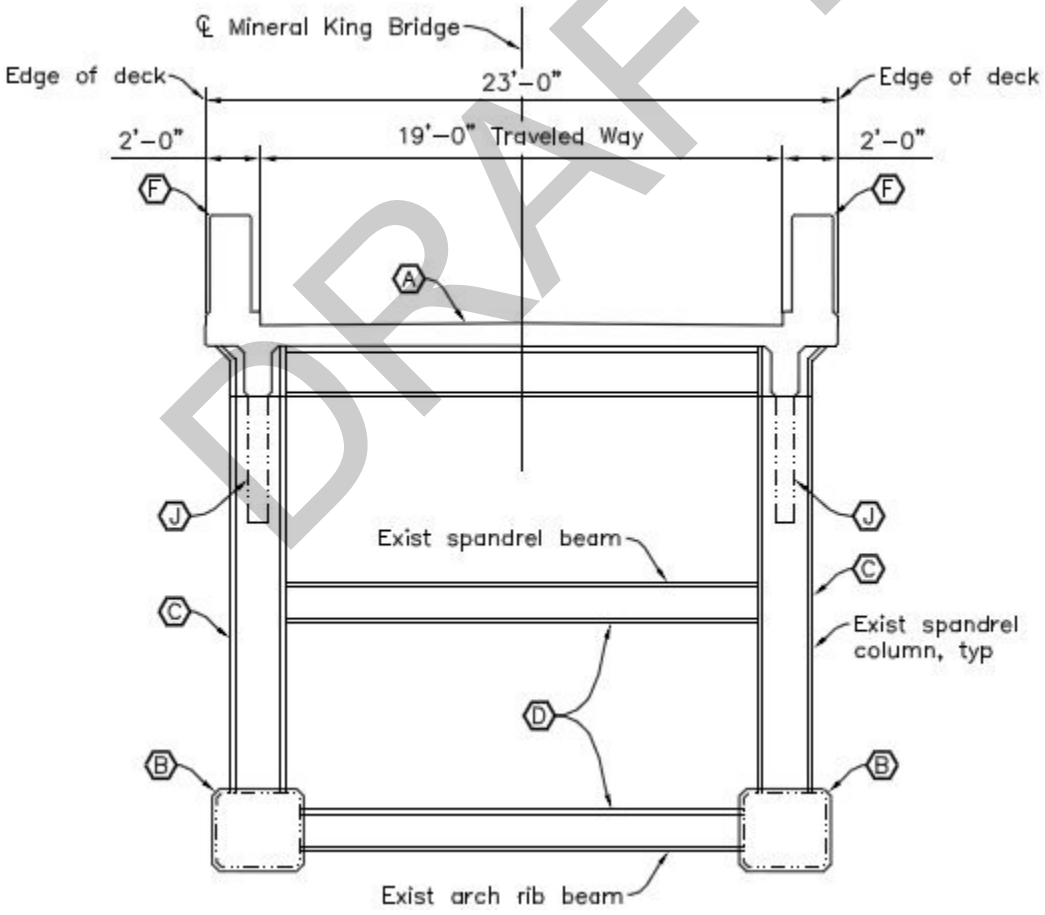
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Project Alternatives

Upon examination of the existing bridge deficiencies, project requirements, various constraints, costs, feasibility, and anticipated public sentiment that the historic bridge features be preserved, a total of eight alternatives including a "Do Nothing" alternative were considered. However, for various reasons, only four alternatives were considered viable and developed past the proposed roadway alignment. The key for each of the proposed alternatives will be twofold: provide the County with the most cost effective bridge solution designed to meet today's current standards while preserving the historic and beloved structural elements of the current arch bridge.

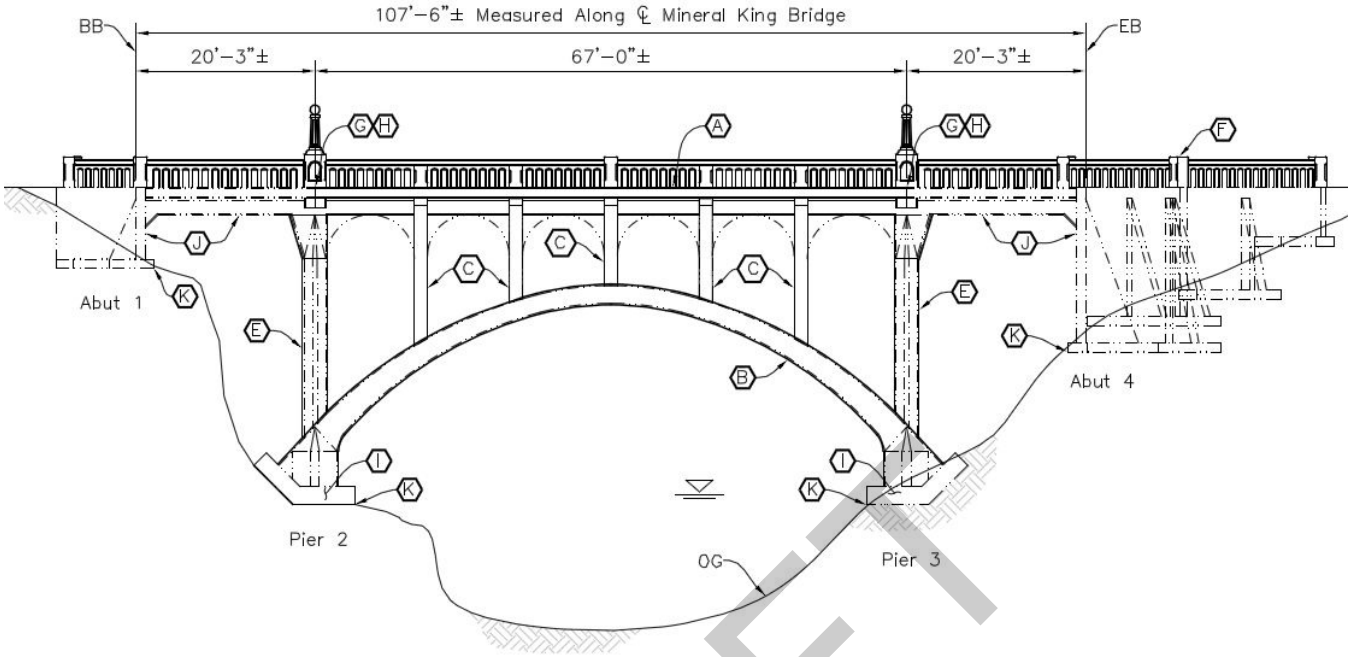
Alternative 1

Alternative 1 proposes to rehabilitate/retrofit the existing bridge and will address each of the identified vertical and seismic deficiencies (refer to Appendix I for the General Plan). During construction of the proposed rehabilitation/retrofit of the existing bridge, a temporary bridge will be required to maintain traffic.



Alternative 1 Typical Section

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Alternative 1 Elevation

SEISMIC RETROFIT/REHABILITATION LEGEND:

- (A) Replace Deck, Transverse Deck Beams, & Longitudinal Exterior Beam over Main Arch Span
- (B) Remove & Replace Carbonated Concrete from Arch Ribs
- (C) Wrap Spandrel Columns with Fiber Reinforced Polymer
- (D) Wrap Arch Rib Beams & Spandrel Beams with Fiber Reinforced Polymer
- (E) Remove & Replace Carbonated Concrete from Pier Spandrel Columns
- (F) Replace Concrete Barrier
- (G) Install Restrainer at Joint
- (H) Replace Joint Seal
- (I) Epoxy Inject Cracks
- (J) Apply Silane Waterproofing Treatment to All Remaining Exposed Surfaces of Existing Concrete
- (K) Pressure Grout Below Existing Footing

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Superstructure

The proposed rehabilitation/retrofit of the existing superstructure will consist of the following:

- Replace existing reinforced concrete transverse deck beams and bridge deck over the main arch span in order to correct the identified vertical load deficiency

- Removal of damaged cover concrete from existing arch ribs and pier spandrel columns (i.e. carbonated concrete, severely cracked concrete, delaminated concrete, etc.) and replacement with trowel finished shotcrete. An alternative to using standard shotcrete would be to use a proprietary product such as Sikacem 103, which is a machine applied (i.e. spray able), silica fume enhanced, cementitious mortar particularly well suited for structural repairs in large area applications on vertical, overhead, and horizontal surfaces. Some of the advantages of this particular product include its excellent adhesion to properly prepared substrates,

high compressive strength, rapid strength, and it can be troweled after application. While the existing bridge consists of board formed concrete, Cornerstone does not anticipate that the trowel finished shotcrete or Sikacem 103 will be discernible compared to the adjacent unmodified concrete located at the abutments and approach spans.

- Wrap existing spandrel columns with fiber reinforced polymer in order to correct shear deficiency under seismic loading and flexural deficiency under vertical loading. Alternatively, the spandrel columns may be replaced.

- Wrap arch rib beams and spandrel beams with fiber reinforced polymer in order to improve ductility of members. Alternatively, the arch rib beams and spandrel beams may be replaced.

- Replace existing concrete barrier with Texas Classic Type T411 TL-2 rated concrete barrier

- Clean out existing joints and install new joint seals

- Apply silane waterproofing treatment to all remaining exposed concrete surfaces of superstructure (approach spans) to aid in preventing further concrete degradation due to ASR and carbonation

In order to access the existing arch ribs, spandrel columns, spandrel beams, etc., to make all necessary repairs a temporary scaffolding system such as that currently being used to repair Malpaso Creek Bridge will be required. The scaffolding system can either be supported entirely from the ground or hung from the existing bridge depending upon the types of repairs and various site specific conditions. For scoping purposes, we recommend that it be assumed that scaffolding will be supported within the creek. Temporary catchments and shrouding of the arch will be required to prevent debris from falling into the existing river channel during all rehabilitation and retrofit operations. Falsework required to support the replacement transverse deck beams and bridge deck over the main arch span is anticipated to be supported on the existing bridge.



Malpaso Creek Bridge Scaffolding

Substructure

The proposed rehabilitation/retrofit of the existing substructure will consist of the following:

- Epoxy inject cracks in the existing pier footings

- Apply silane waterproofing treatment to all remaining exposed concrete surfaces of substructure (pier footings, thrust blocks, abutment footings, abutment walls) to aid in preventing further concrete degradation due to ASR and carbonation

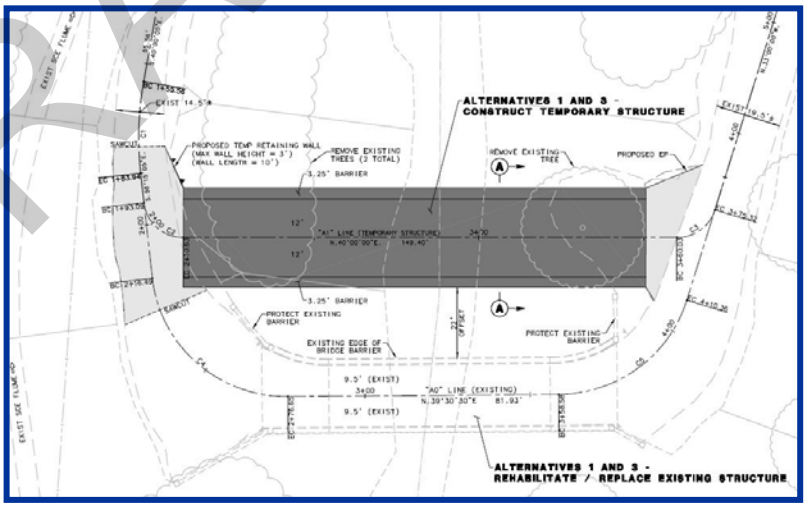
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- Pressure grout voids below pier and abutment footings

As previously stated, based on the results of the limited preliminary petrographic examinations, the initial stages of ASR and carbonation extending to a depth of 1 in. below the surface of the concrete core specimens were detected. However, should a rehabilitation/retrofit alternative be selected, Cornerstone recommends that a more thorough corrosion survey be completed in order to better understand the extents of the concrete deterioration, the root cause of the deterioration observed in the surface of the concrete, quantify the extent of the distressed areas, and develop the most appropriate repair and rehabilitation solutions necessary to successfully extend the service life of the structure. Cornerstone has contacted Vector Corrosion Services, a company specializing in providing corrosion investigations and repairs throughout North and South America. Per our discussions with Vector Corrosion Services, we have learned of a few methods used to treat carbonated concrete including re-alkalization as well as the removal and replacement of cover concrete with shotcrete. Re-alkalization is a treatment that restores the alkalinity of carbonated concrete and reinstates the passivity of the steel. This treatment is accomplished by temporarily applying an electric field between the reinforcement in the concrete and an externally mounted anode. During the treatment an alkaline electrolyte is transported into the concrete, increasing the alkalinity of the cover concrete. Concurrently, electrolysis at the reinforcement surface produces a high pH environment which returns the steel to a passive condition. Advantages of this particular type of treatment are the cause of corrosion is addressed and removed, and the process is non-destructive which does not require structural supports and results in significant time savings. However, this type of treatment is best suited for intricate structures exhibiting widespread carbonation.

Roadway

In order to complete this alternative a temporary structure will be required to maintain vehicular traffic during construction. The temporary bridge will be located approximately 22 ft. downstream from the existing structure. The temporary structure will measure approximately 140 ft. in length. Due to limited available traveled way widths associated with the proposed temporary bridge (ACROW Bridge) and in order to accommodate truck turning movements, a clear width of 24 ft. was selected for the temporary structure. A relatively small retaining wall will be required to make up the approximately 3 ft. grade difference between the temporary approach roadway and the bottom of the structure. Without impacting the historic flume on the uphill side of the roadway and avoiding the steep drop off along the downhill side of the roadway, the largest design vehicle that the temporary structure can accommodate is a 40 ft. long school bus (AASHTO S-BUS-40). Additional coordination with stakeholders including Cal Fire, United States Bureau of Land Management, SCE, Tulare County, and the United States Forest Service may be required to verify that the proposed temporary bridge design vehicle is permissible. However, due to the relatively small impact area, this alternative is considered feasible.



Alternatives 1 & 3 Temporary Bridge Layout

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Construction Cost

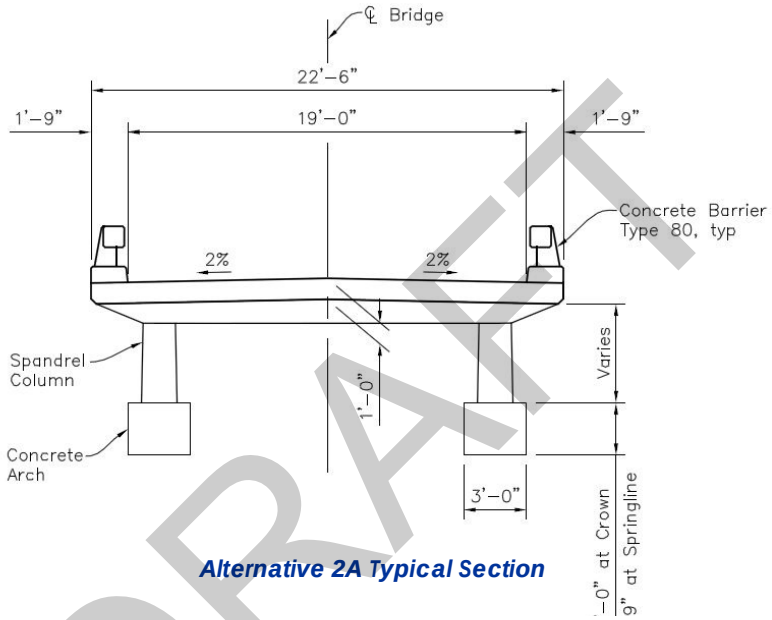
Quantities were calculated using the procedures found in the estimating section of the Bridge Design Aids Manual. Unit prices were determined from Caltrans Contract Cost Data. A 10% Mobilization and a 25% Contingency were added to the sum of the unit prices to determine the total cost of the bridge structure.

The estimated structure construction cost for Alternative 1 is $2,809,000 which equates to a cost of approximately $1,090 per square foot (refer to Appendix J for Alternative 1's General Plan Cost Estimate). The roadway cost for this alternative is approximately $23,000 resulting in a total cost of approximately $2,832,000. This total includes a 25% contingency, but does not include right of way costs, environmental mitigation, utility relocation, scour mitigation, etc., nor construction engineering costs.

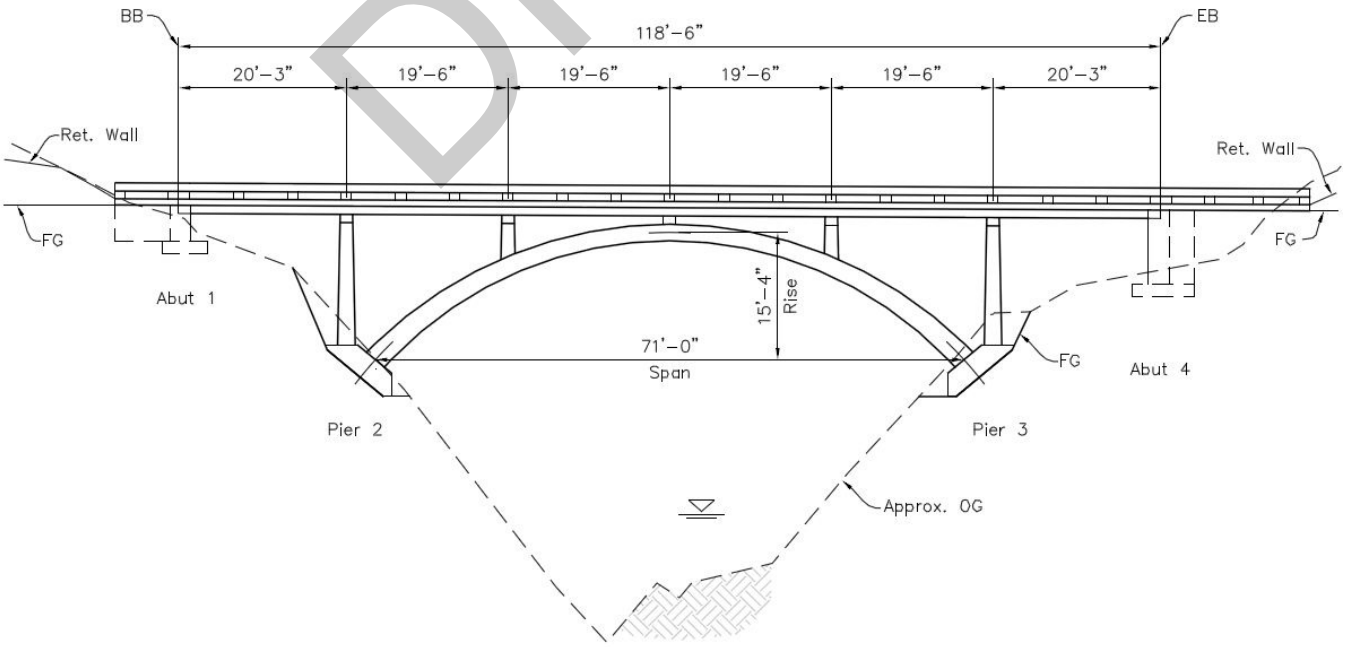
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Alternative 2A

Alternative 2A proposes the replacement of the existing bridge with a new reinforced concrete open spandrel arch bridge on a new alignment located immediately upstream of existing bridge. During construction of the new structure, traffic will be maintained on the existing bridge. The new alignment will require cutting into the existing hillside at both bridge approaches. This will necessitate blasting of the existing rock and construction of retaining walls to accommodate both roadway approaches and bridge abutments. In addition, new fill and retaining walls will also be required to support the proposed alignment at the southwest corner of the structure. Following the completion of the replacement bridge, the existing bridge will be removed.



Alternative 2A Typical Section



Alternative 2A Elevation

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Superstructure



Spanish Creek Bridge Replacement

The proposed replacement bridge superstructure, consisting of an 118 ft. 6 in. long reinforced concrete open spandrel arch bridge (refer to Appendix I for General Plan), is meant to appease the public by providing an aesthetically pleasing crossing that pays homage to the current historic arch bridge while simultaneously providing the County with a new state of the art structure meeting today's design standards. Caltrans has recently completed the Spanish Creek Bridge Replacement, a similar though much larger open spandrel arch bridge in Plumas County. Since the current structure will be removed following the completion of the replacement bridge, the County will only be required to maintain a single structure.

A cast-in-place arch bridge will require the construction of falsework within the creek. Construction of falsework within the canyon will be difficult due to the height of the required falsework, and the difficulty associated with installing falsework in the steep terrain and within the granitic rock. This may require the use of drilling equipment to embed the falsework into the bed rock. Furthermore, depending upon the duration of construction, falsework piers will need to be anchored to the existing rock in the channel if they are to remain in place during periods of high flows. Several falsework piers will be required to construct the arch ribs and exterior spans. However, following completion of the arch ribs, falsework required to support the main deck spans may be supported on the arches themselves.



Spanish Creek Bridge Replacement Falsework

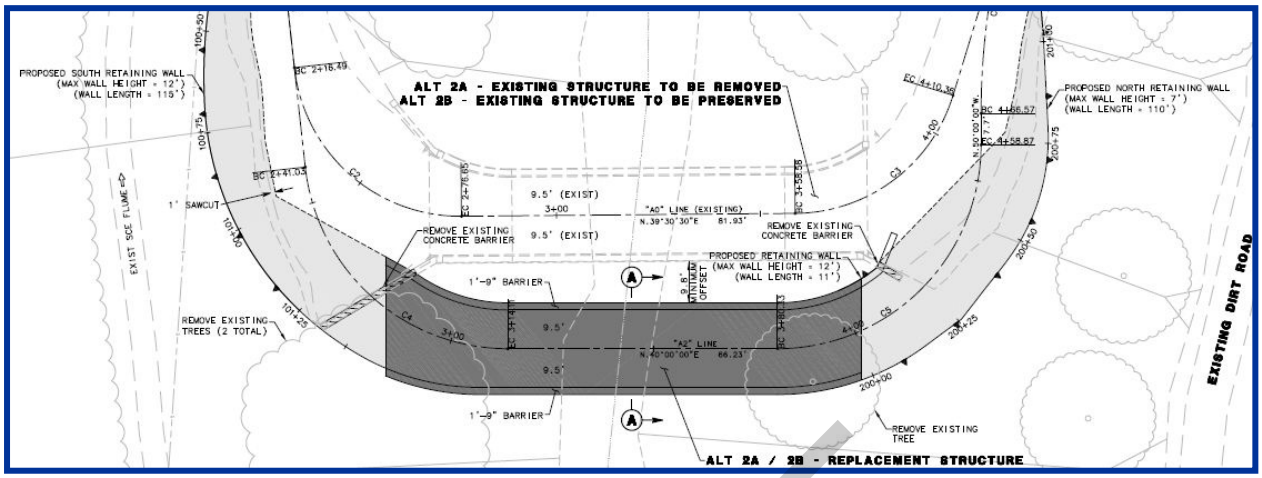
Substructure

The new bridge abutments are anticipated to consist of seat type abutments. Depending upon the depth to bedrock, the abutments and piers will be supported on either CIDH piles with concrete rock sockets or spread footings cast directly on bedrock. In the case that spread footings are selected and dead load of the structure prove insufficient to resist uplift due to overturning, post tensioned rock anchors will be used to provide additional resistance. Ripping and/or blasting of the rock are anticipated at the abutments in order to provide a level surface to construct the abutment foundations.

Roadway

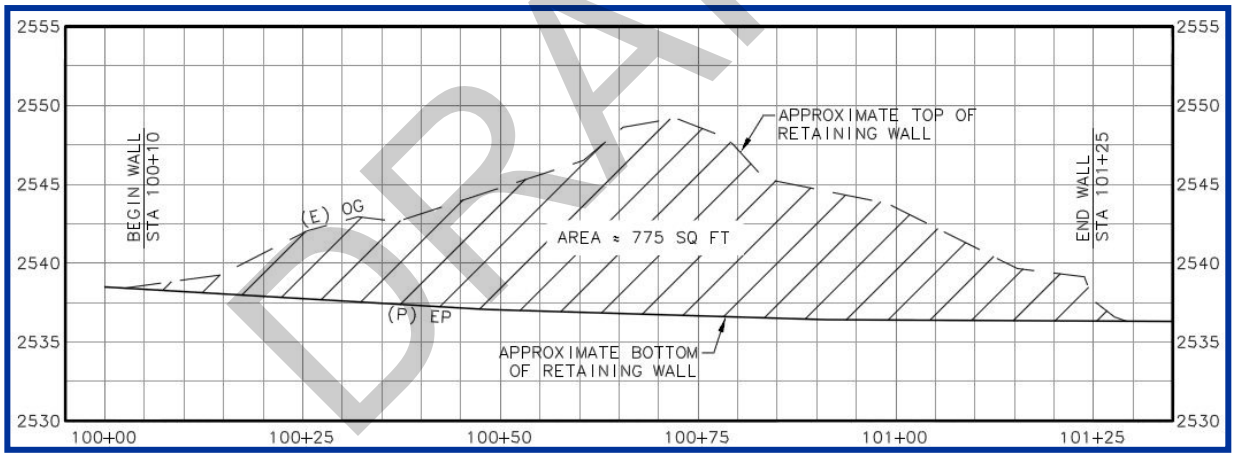
As previously mentioned, the proposed replacement bridge is to be constructed on a new upstream alignment located approximately 10 ft. from the existing southern edge of deck. The proposed replacement bridge traveled way width will match existing at 19 ft. Permanent retaining walls, at this time assumed to consist of rock anchor walls with two layers of shotcrete (a temporary and permanent face), will be required to at both ends of the proposed structure in order to accommodate the new roadway approaches. Aesthetic concrete textures may be

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Alternatives 2A & 2B

added to the exposed faces of the retaining walls, however, the current cost estimates have not accounted for any aesthetic treatments. It should be noted that the western retaining wall will encroach into an easement controlled by SCE; however, the flume should not be impacted. The current bridge will be used to maintain traffic during construction of the new crossing. Due to the relatively small impact area, this alternative is also considered feasible.



South Wall Profile

Construction Cost

Quantities were calculated using the procedures found in the estimating section of the Bridge Design Aids Manual. Unit prices were determined from Caltrans Contract Cost Data. A 10% Mobilization and a 25% Contingency were added to the sum of the unit prices to determine the total cost of the bridge structure.

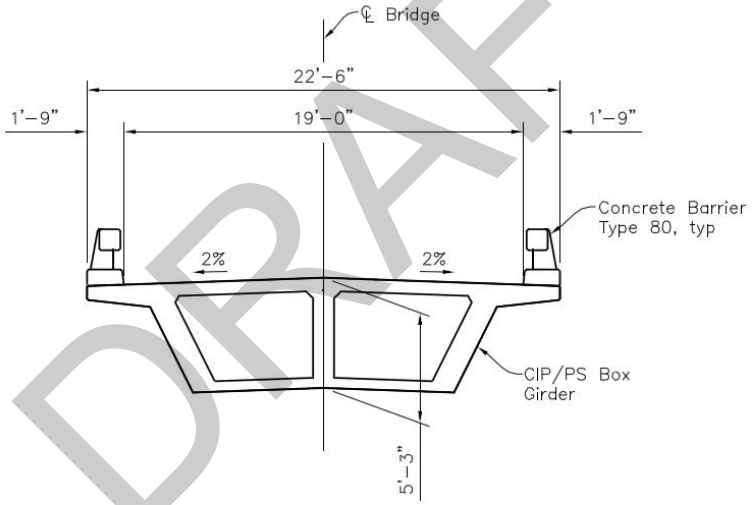
The estimated structure construction cost for Alternative 2A is $2,308,000 which equates to a cost of approximately $832 per square foot (refer to Appendix J for Alternative 2A's General Plan Cost Estimate). The roadway cost for this alternative is approximately $393,000 resulting in a total cost of approximately $2,701,000. This total includes a 25% contingency, but does not include right of way costs, environmental mitigation, utility relocation, scour mitigation, etc., nor construction engineering costs.

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Alternative 2B

Alternative 2B proposes the replacement of the existing bridge with a new cast-in-place post tensioned concrete box girder on a new alignment located immediately upstream of existing bridge (same alignment as Alternative 2A). Similar to Alternative 2A, traffic will be maintained on the existing bridge during construction of the replacement structure. The new alignment will require cutting into the existing hillside at both bridge approaches. This will require blasting of the existing rock and construction of retaining walls to accommodate both roadway approaches and bridge abutments. In addition, new fill and retaining walls will also be required to support the proposed alignment at the southwest corner of the structure.

The existing bridge, as well as the existing view shed of the historic structure while approaching the crossing along Mineral King Road, will be preserved as part of this alternative. It is anticipated that the existing structure may still be used as a pedestrian crossing. Furthermore, the money not spent on removing the existing bridge may be used to perform minor rehabilitation work on the existing structure in order to maximize its remaining life. Such work may include replacing the joint seals, applying methacrylate to the existing bridge deck, and epoxy injecting larger cracks in the arch ribs and pier spandrel columns.



Alternative 2B Typical Section

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Superstructure

The proposed replacement bridge superstructure consists of a new 120 ft. long clear span cast-in-place post-tensioned (CIP/PS) concrete box girder (refer to Appendix I for the General Plan). The depth of the box girder superstructure is 5 ft. 3 in., which provides a depth-to-span ratio of 0.045. This depth-to-span ratio is consistent with the guidelines contained in *AASHTO LRFD Bridge Design Specifications, 6th Edition Table 2.5.2.6.3-1* and as shown on page 10-26 of Caltrans *Bridge Design Aids*.

Advantages of a CIP/PS superstructure include its relatively low cost, long span length, small superstructure depth, ease of maintenance, and familiarity with this type of construction among a variety of contractors. Additionally, closed soffit box girder superstructures have been observed to perform better in seismic events.

Substructure

The new bridge abutments are anticipated to consist of seat type abutments. Depending upon the depth to bedrock, the abutments will be supported on either CIDH piles with concrete rock sockets or spread footings cast directly on bedrock. In the case that spread footings are selected and dead load of the structure prove insufficient to resist uplift due to overturning, post tensioned rock anchors will be used to provide additional resistance. Ripping and/or blasting of the rock is anticipated at the abutments to provide a level surface to construct the abutment foundations.

Roadway

The proposed roadway geometrics as well as the traffic handling plan during construction will be the same as described for Alternative 2A.

Construction Cost

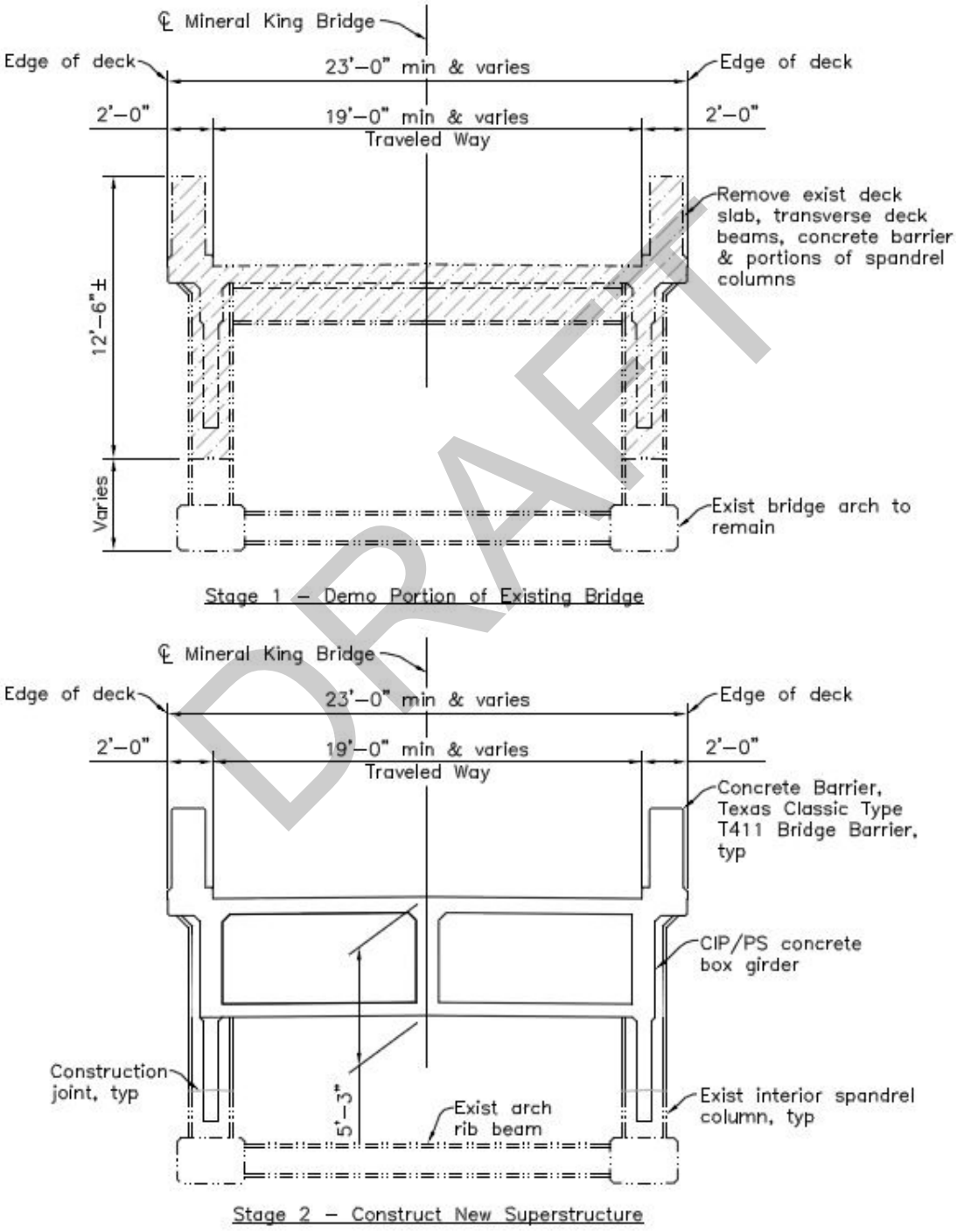
Quantities were calculated using the procedures found in the estimating section of the Bridge Design Aids Manual. Unit prices were determined from Caltrans Contract Cost Data. A 10% Mobilization and a 25% Contingency were added to the sum of the unit prices to determine the total cost of the bridge structure.

The estimated structure construction cost for Alternative 2B is $1,910,000 which equates to a cost of approximately $701 per square foot (refer to Appendix J for Alternative 2B's General Plan Cost Estimate). The roadway cost for this alternative is approximately $393,000 resulting in a total cost of approximately $2,303,000. This total includes a 25% contingency, but does not include right of way costs, environmental mitigation, utility relocation, scour mitigation, etc., nor construction engineering costs.

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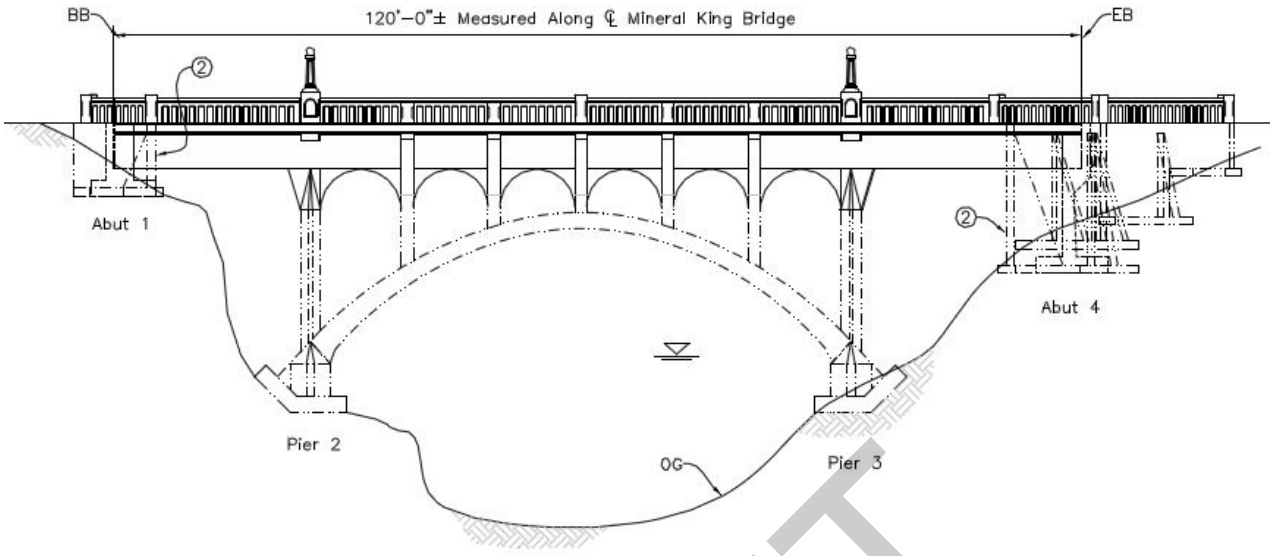
Alternative 3

Alternative 3 is a hybrid between a rehabilitation/retrofit and a replacement structure. Due to the limited width of the existing bridge and the need to completely remove the existing deck, an on-site detour via a temporary bridge will be required.



Alternative 3 Typical Section

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Alternative 3 Elevation

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Superstructure

This alternative maintains the original arches of the existing bridge while reconstructing a new girder type bridge to replace the existing bridge deck. The new girder type bridge will consist of a cast-in-place post-tensioned (CIP/PS) concrete box girder constructed over the existing arch in such a manner as to provide the appearance of the original bridge deck and overhang (refer to Appendix I for General Plan). This will be accomplished by forming the exterior girder to give the appearance of the exterior face along the existing bridge deck. The replacement box girder superstructure's clear span will measure 120 ft. in length. This span would require a box girder depth of 5 ft. 3 in. While this depth is greater than the existing exterior floor beams, which are approximately 2.5 ft. deep, the exterior appearance of the new bridge would be almost identical to the existing bridge. Project team member, Parsons Corporation, used an identical concept for the La Loma Bridge for the City of Pasadena.

This alternative provides benefits of both a rehabilitation option and a replacement structure by maintaining the existing historic arches and spandrels and maintaining the overall aesthetic appearance of the existing bridge while providing the County with a new, state-of-the-art structure. The existing arch ribs and spandrel columns and piers will be laterally stabilized against transverse and longitudinal motion by simple pin dowels into the new box girder bridge.

After erection of the temporary bridge, construction of the new structure would begin with the demolition of the existing deck, spandrel beams to the tops of the spandrel columns, and abutments. New abutments would be constructed behind the existing abutments. Temporary bracing would be provided for the existing arch ribs and spandrel columns. The arches would then be used to help support the temporary falsework for construction of the box girder. Construction of the box girder would be completed and the temporary falsework removed. All above deck aesthetic features would be reconstructed to match the existing aesthetics.

Substructure

The bridge substructure will consist of new seat type abutments constructed behind the existing abutments. These abutments will likely be supported on spread footings with rock anchors.

Roadway

The proposed roadway geometrics as well as the on-site detour during construction will be the same as described for Alternative 1.

Construction Cost

Quantities were calculated using the procedures found in the estimating section of the Bridge Design Aids Manual. Unit prices were determined from Caltrans Contract Cost Data. A 10% Mobilization and a 25% Contingency were added to the sum of the unit prices to determine the total cost of the bridge structure.

The estimated structure construction cost for Alternative 3 is $2,933,000 which equates to a cost of approximately $1,044 per square foot (refer to Appendix J for Alternative 3's General Plan Cost Estimate). The roadway cost for this alternative is approximately $23,000 resulting in a total cost of approximately $2,956,000. This total includes a 25% contingency, but does not include right of way costs, environmental mitigation, utility relocation, scour mitigation, etc., nor construction engineering costs.

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Alternatives 4A/4B

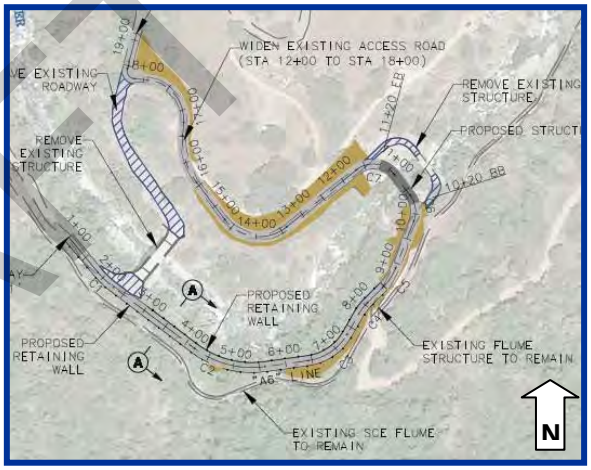
Alternatives 4A and 4B consist of constructing a 160 ft. long crossing on a new downstream alignment located approximately 400 ft. from the existing structure. A retaining wall would be required near the existing SCE flume in order to widen the roadway to accommodate truck turning movements. In order for this alternative to be economically viable, the existing bridge would need to be used to maintain traffic during construction. However, because excavation required to construct the proposed bridge abutments would prohibit vehicular access to the existing crossing, a temporary structure would be needed downstream from the proposed replacement bridge. Therefore, Alternatives 4A/4B were considered but rejected.



Alternatives 4A & 4B

Alternative 5

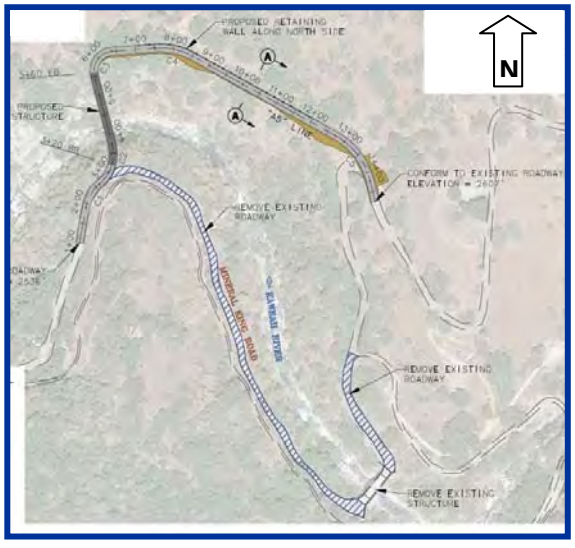
Alternative 5 consists of constructing a new 100 ft. long crossing located approximately 650 ft. upstream from the current bridge along a new east alignment. This alternative would require approximately 800 ft. of new roadway along the southern project limits thereby requiring a significant amount of right-of-way acquisition. This alternative would require significant amounts of earthwork, retaining walls, and right-of-way acquisition. Due to the excessive impacts and prohibitive roadway costs, this alternative was considered but rejected.



Alternative 5

Alternative 6

Alternative 6 consists of constructing a new 240 ft. long crossing located approximately 1,250 ft. downstream from the current bridge along a new west alignment. This alternative would require approximately 800 ft. of new roadway along the northern project limits thereby requiring a significant amount of right-of-way acquisition. Additionally, due to the steep slopes of the existing terrain over 9,000 CY of cut would be required as well as a new retaining wall located along the northern side of the proposed roadway. Due to the excessive impacts and prohibitive roadway costs, this alternative was considered but rejected.



Alternative 6

Alternative 7

Alternative 7 is the do nothing alternative. This alternative was considered but rejected due to the identified structural deficiencies of the existing bridge.

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Most Promising Alternative

Currently, considering the historic nature of the current arch bridge, the existing structural deficiencies, and the estimated construction costs of the viable alternatives, Cornerstone believes that Alternative 2B is the most promising alternative. This alternative is the least costly, addresses the existing bridge deficiencies by providing the County with a new state of the art structure, and preserves the existing historic arch bridge for pedestrian use. Furthermore, the proposed replacement bridge will be constructed behind the existing arch bridge so as to maintain the existing view shed of the historic structure while approaching the bridge along Mineral King Road. Nevertheless, Cornerstone recommends that Alternatives 1, 2A, 2B, and 3 be carried thru the environmental studies as the most promising alternative may change depending upon public opinion and as the alternatives are further developed.

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Appendices

Appendix A: M375A Mineral King Bridge As-Built Plans

Appendix B: M375A Mineral King Bridge Inspection Reports

Appendix C: Materials Testing Program Results

Appendix D: Petrographic Examination Reports

Appendix E: Load Rating Analysis Calculations

Appendix F: Seismic & Strength Evaluation

Appendix G: Roadway Design Memorandum

Appendix H: Preliminary Foundation Report

Appendix I: Bridge General Plans

- Alternative 1 – Retrofit/Rehabilitation of the Existing Bridge
- Alternative 2A – Replacement with New Reinforced Concrete Arch Bridge on New Alignment Immediately Upstream of Existing Bridge (Remove Existing Bridge)
- Alternative 2B – Replacement with New Cast-in-Place Post Tensioned Box Girder Bridge on New Alignment Immediately Upstream of Existing Bridge (Preserve Existing Bridge)
- Alternative 3 – Hybrid between Retrofit/Rehabilitation & Replacement of Existing Bridge

Appendix J: Bridge Cost Estimates

- Alternative 1 – Retrofit/Rehabilitation of the Existing Bridge
- Alternative 2A – Replacement with New Reinforced Concrete Arch Bridge on New Alignment Immediately Upstream of Existing Bridge (Remove Existing Bridge)
- Alternative 2B – Replacement with New Cast-in-Place Post Tensioned Box Girder Bridge on New Alignment Immediately Upstream of Existing Bridge (Preserve Existing Bridge)
- Alternative 3 – Hybrid between Retrofit/Rehabilitation & Replacement of Existing Bridge

Appendix K: Texas Classic Type T411 Barrier Rail Plans

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Appendix A
M375A Mineral King Bridge As-Built Plans

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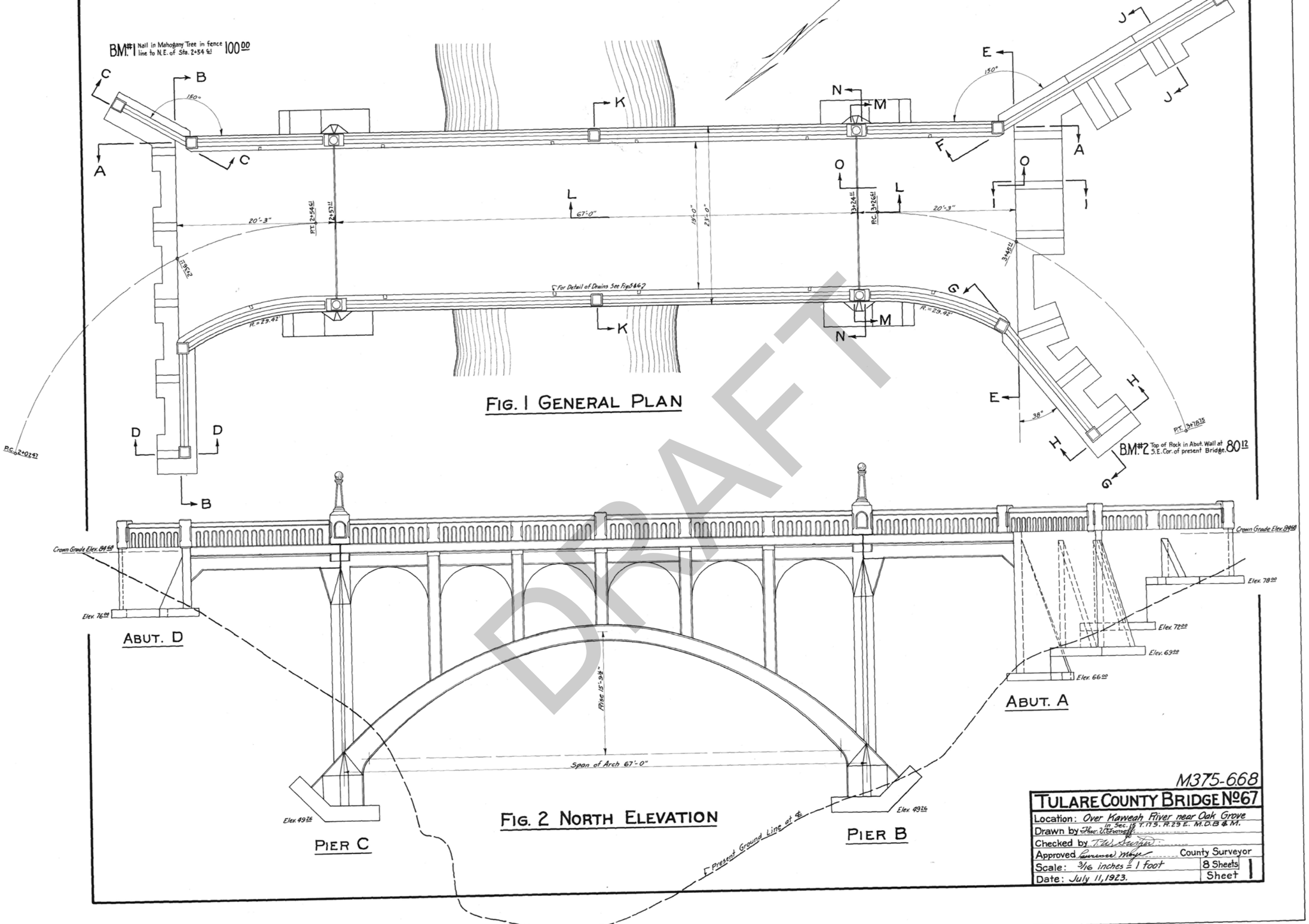


FIG. 1 GENERAL PLAN

ABUT. D

PIER C

PIER B

ABUT. A

FIG. 2 NORTH ELEVATION

M375-668

TULARE COUNTY BRIDGE No. 67

Location: Over Kaweah River near Oak Grove	
In Sec. 15 T. 17 S. R. 29 E. M.D.B & M.	
Drawn by Geo. Uchorsoff	
Checked by T. W. Seeliger	
Approved Lawrence Mayo County Surveyor	
Scale: 3/16 inches = 1 foot	8 Sheets
Date: July 11, 1923.	Sheet 1

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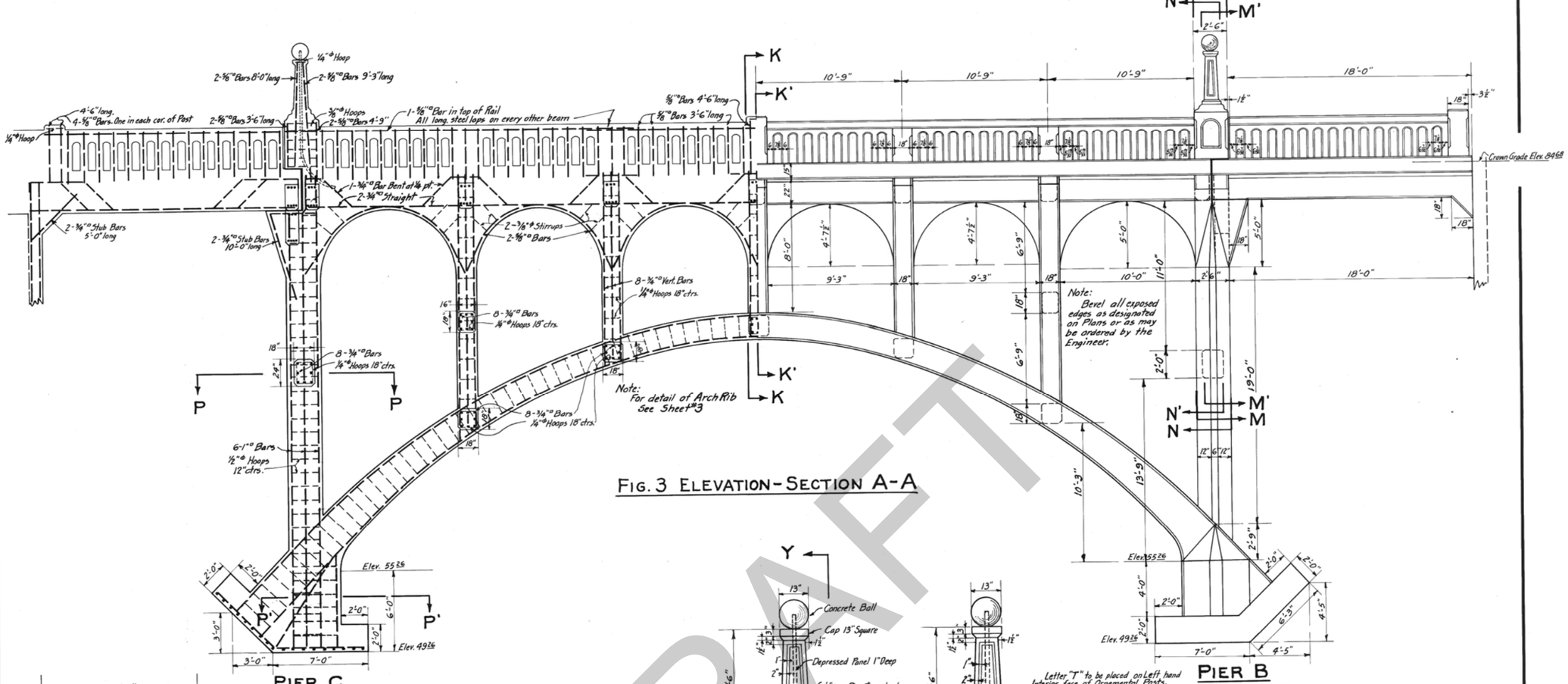


FIG. 3 ELEVATION - SECTION A-A

PIER C

PIER B

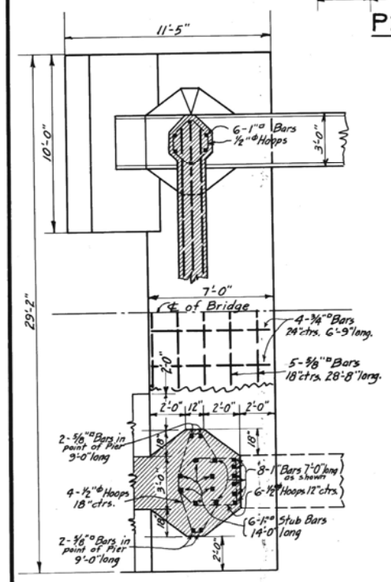


FIG. 4 SECTIONS P-P & P'-P'

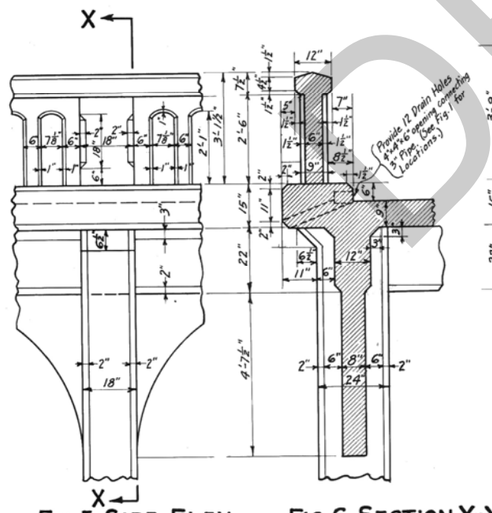


FIG. 5 SIDE ELEV. RAIL POST

FIG. 6 SECTION X-X

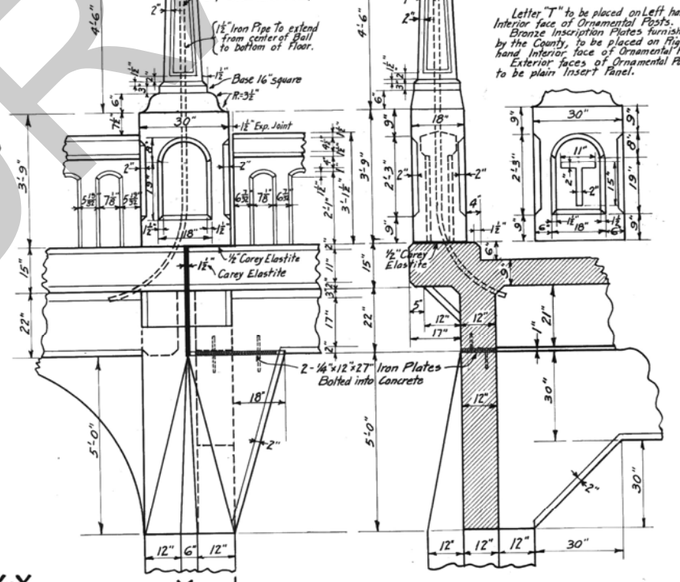


FIG. 7 SIDE ELEV. ORNAMENTAL POST

FIG. 8 SECTION Y-Y

Letter "T" to be placed on Left hand Interior face of Ornamental Posts. Bronze Inscription Plates furnished by the County, to be placed on Right hand Interior face of Ornamental Posts. Exterior faces of Ornamental Posts to be plain Insert Panel.

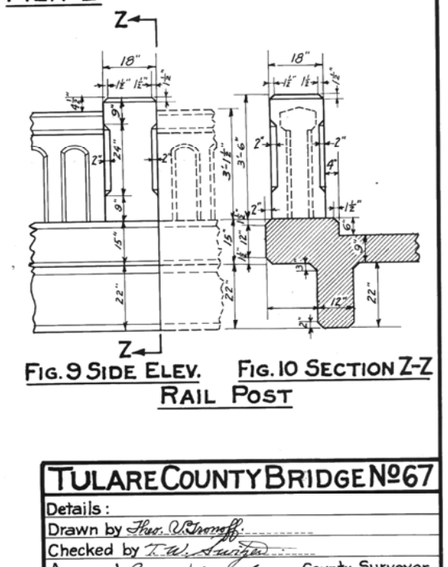


FIG. 9 SIDE ELEV. RAIL POST

FIG. 10 SECTION Z-Z

TULARE COUNTY BRIDGE No. 67	
Details:	
Drawn by Thos. U. Brownell.	
Checked by T. H. Sanford	
Approved Lawrence Mayer County Surveyor	
Scale: Figs. 3-4 ⅛ inch = 1 Foot. Figs. 5-10 ½ inch = 1 Foot	8 Sheets
Date: July 11, 1923.	Sheet 2

DRAFT

M375-6.66

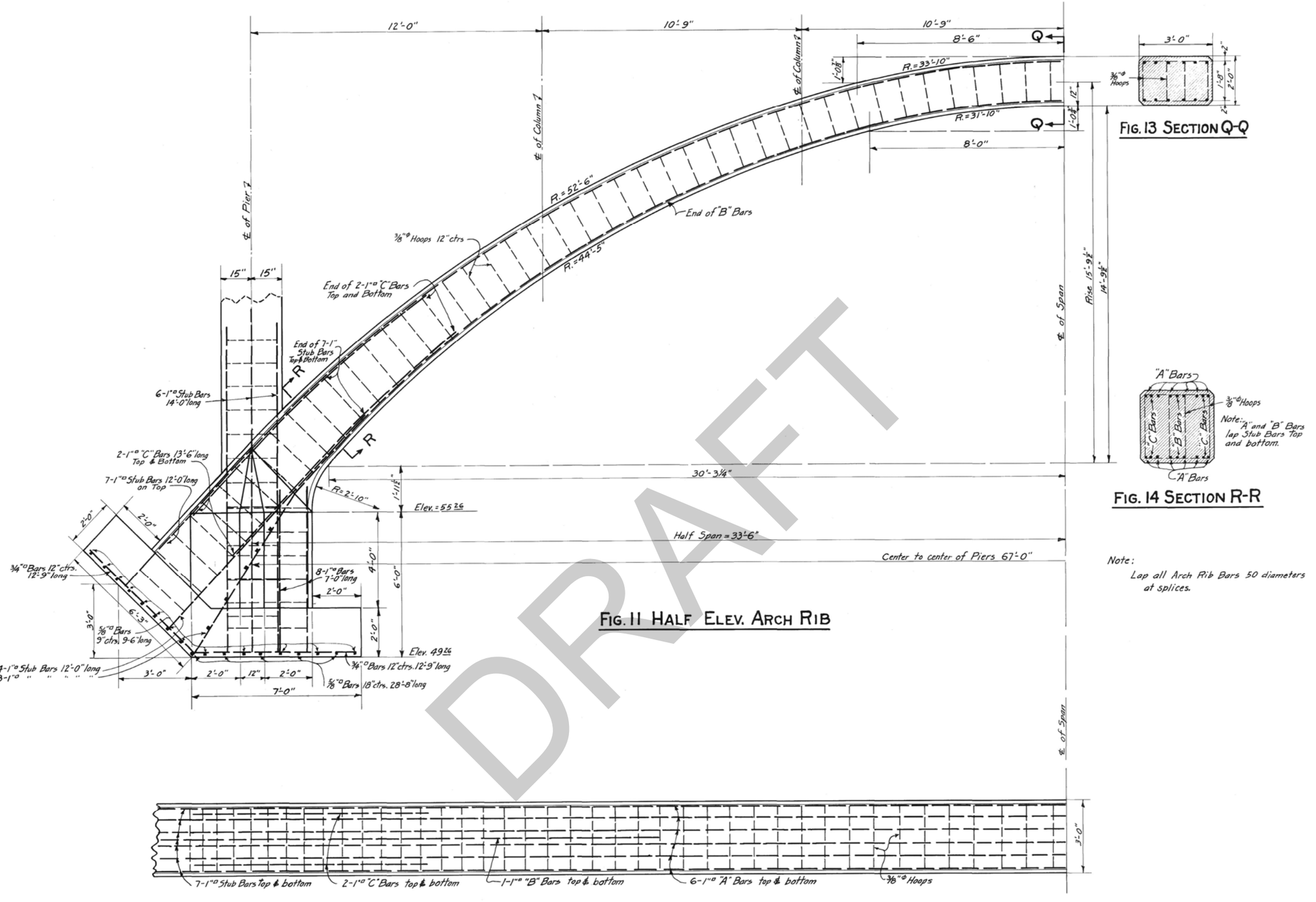


FIG. 13 SECTION Q-Q

FIG. 14 SECTION R-R

FIG. 11 HALF ELEV. ARCH RIB

Note:
Lap all Arch Rib Bars 50 diameters at splices.

FIG. 12 HALF PLAN OF ARCH RIB

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M375-668

TULARE COUNTY BRIDGE No 67	
Details: Arch Rib	
Drawn by Thos. Uhanoff	
Checked by T. W. Sharp	
Approved Laurence Mogle County Surveyor	
Scale: ½ inch = 1 foot	8 Sheets
Date: July 11, 1923.	Sheet 3

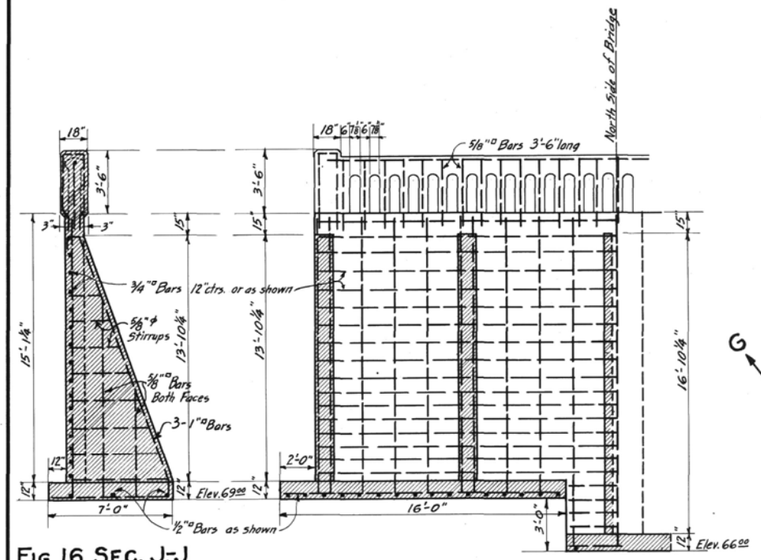


FIG. 16 SEC. J-J

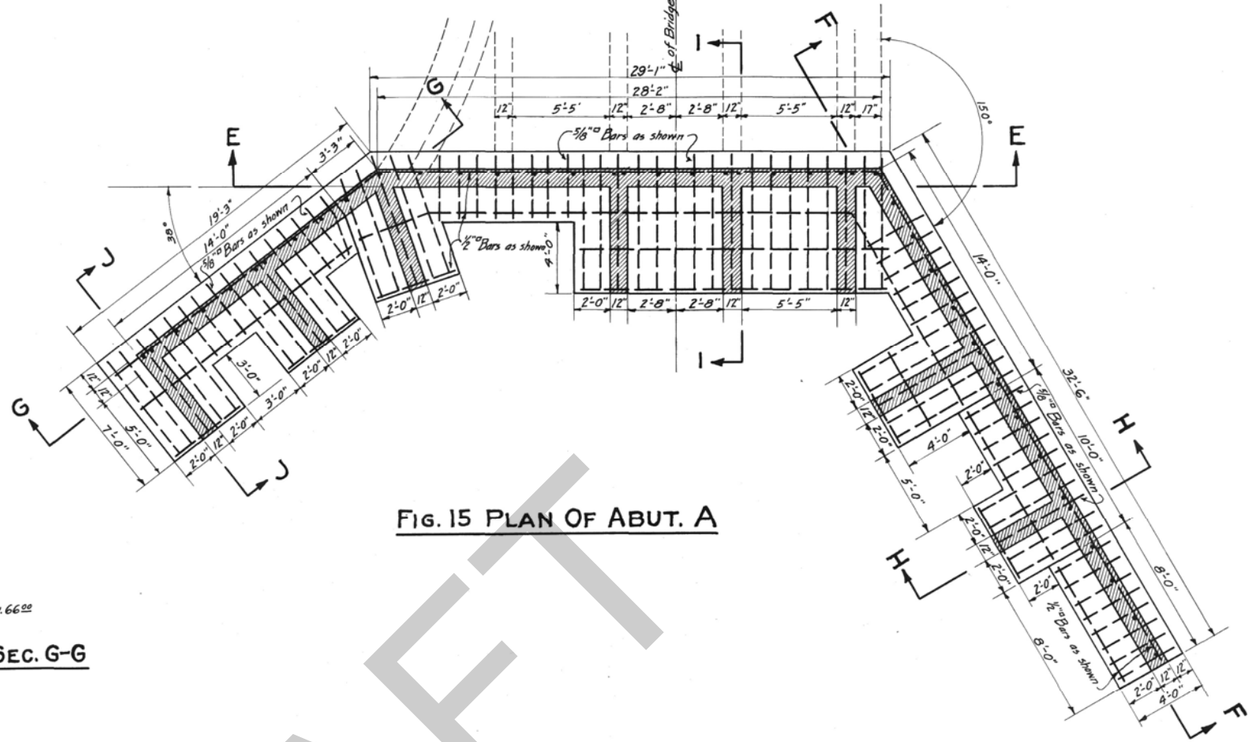


FIG. 15 PLAN OF ABUT. A

FIG. 17 ELEV. OF ABUT. A-LEFT WING WALL-SEC. G-G

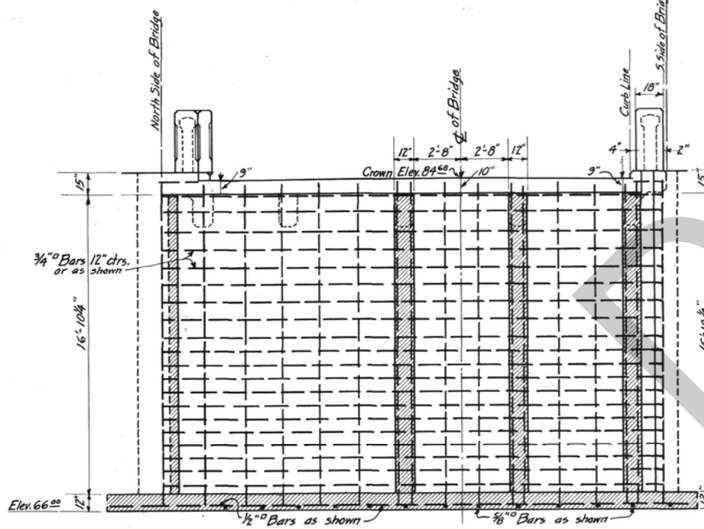


FIG. 18 ELEV. OF ABUT A - SEC. E-E

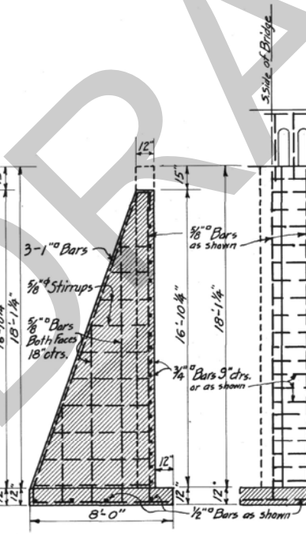


FIG. 19 SEC. 1-1

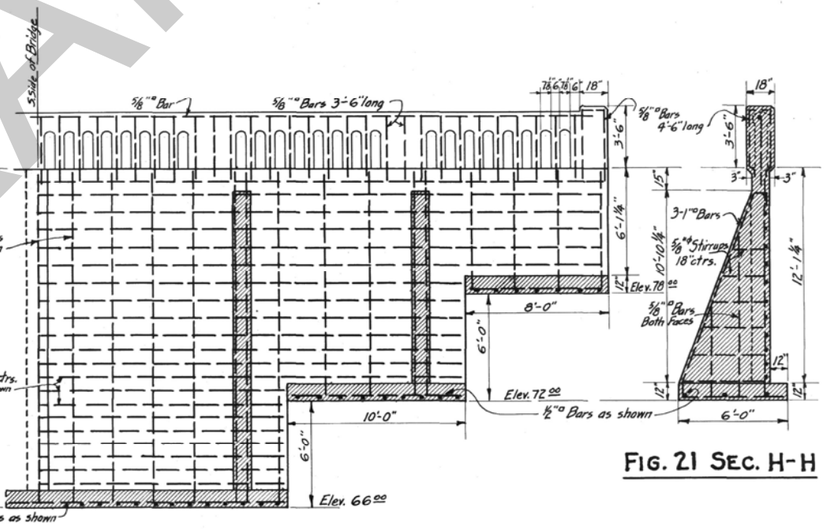


FIG. 20 ELEV. OF ABUT. A-RIGHT WING WALL-SEC. F-F

FIG. 21 SEC. H-H

DRAFT

M375-668

TULARE COUNTY BRIDGE No 67	
Details	
Drawn by Thos. V. Straff	
Checked by F. W. Surgen	
Approved Lawrence Mayo County Surveyor	
Scale: 1/4 inch = 1 foot	8 Sheets
Date: July 11, 1923.	Sheet 4

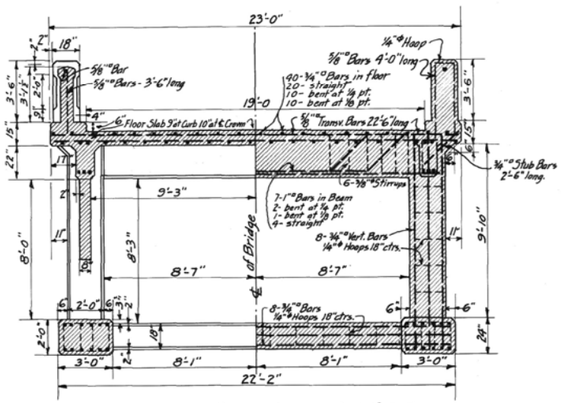


FIG. 26 SEC. K-K & K'-K'

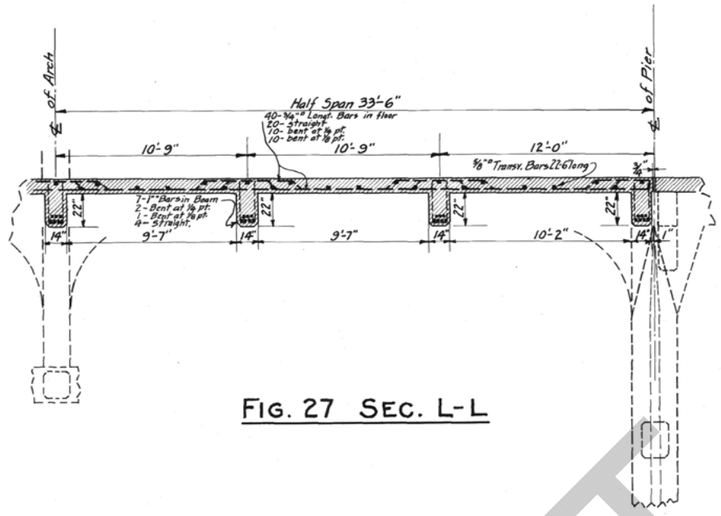


FIG. 27 SEC. L-L

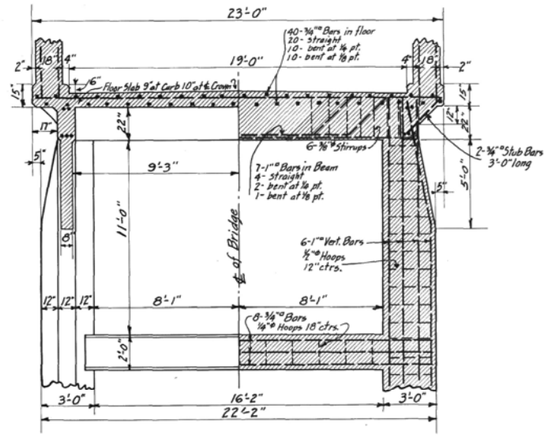


FIG. 28 SEC. M-M & M'-M'

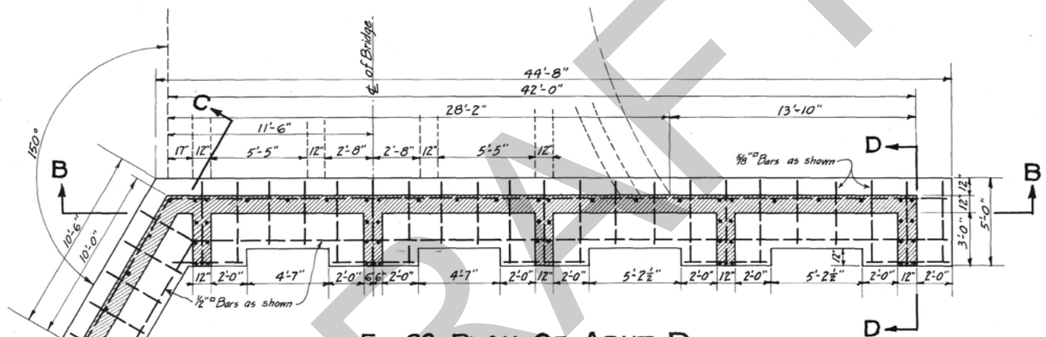


FIG. 22 PLAN OF ABUT. D

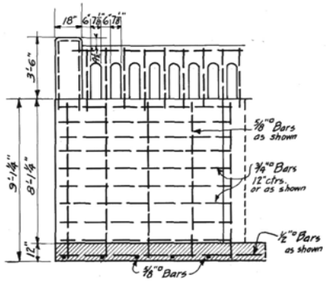


FIG. 23 SEC. C-C

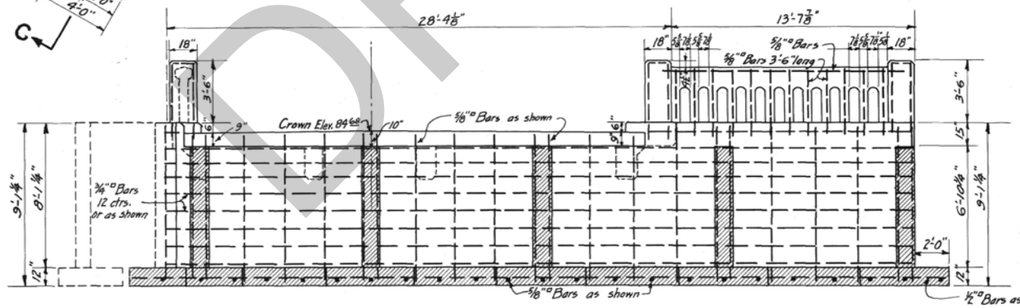


FIG. 24 ELEV. OF ABUT. D SEC. B-B

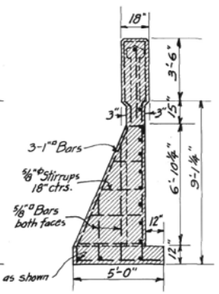


FIG. 25 SEC. D-D

M3 75-6.68

TULARE COUNTY BRIDGE No 67	
Details	
Drawn by Theo. Ustranoff.	
Checked by T. W. Sawtelle	
Approved Laurence Mayo County Surveyor	
Scale: 1/4 inch = 1 foot	8 Sheets
Date: July 11, 1923.	Sheet 5

DRAFT

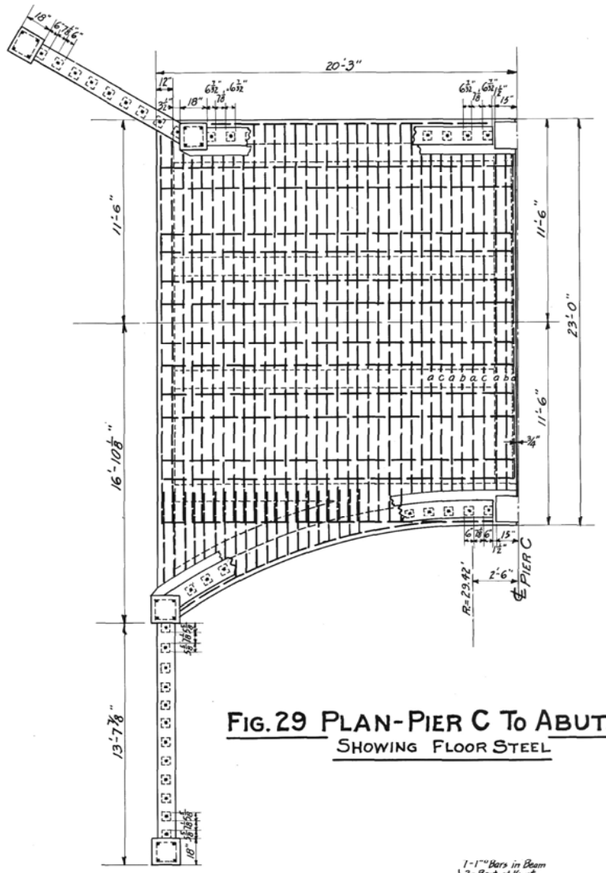


FIG. 29 PLAN-PIER C TO ABUT. D
SHOWING FLOOR STEEL

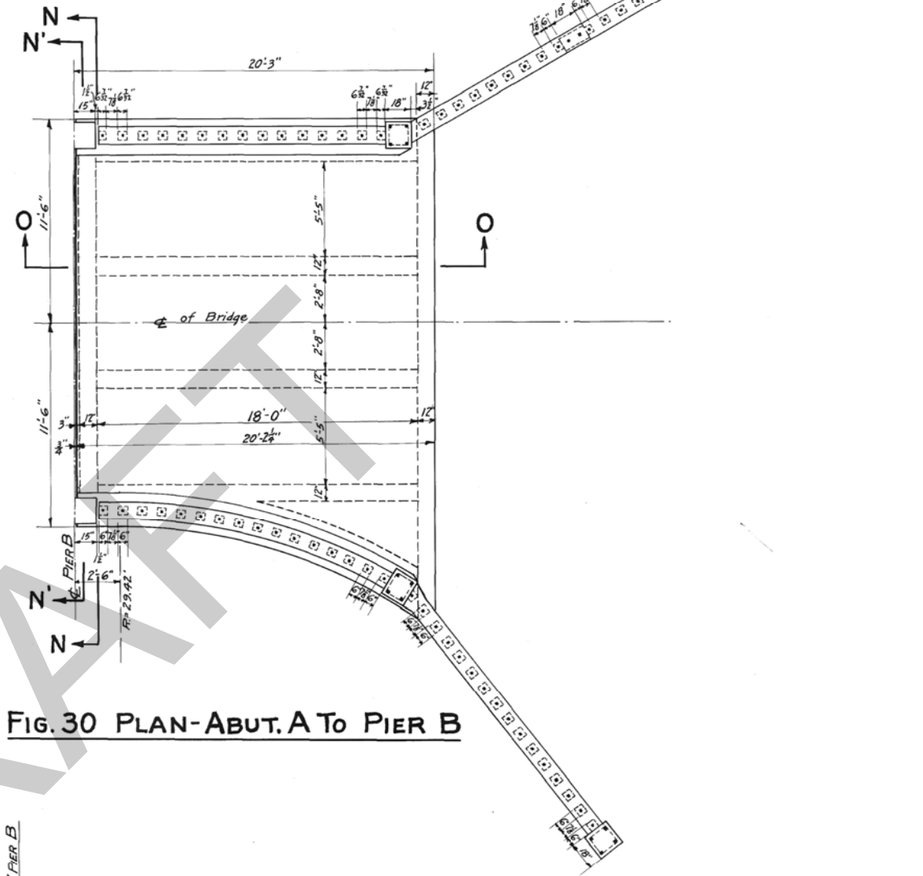


FIG. 30 PLAN-ABUT. A TO PIER B

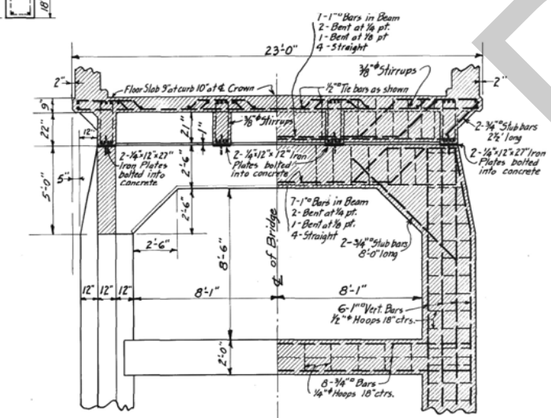


FIG. 31 SEC. N-N & N'-N'

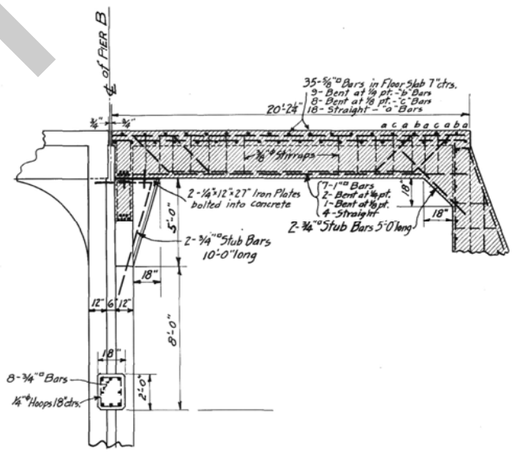
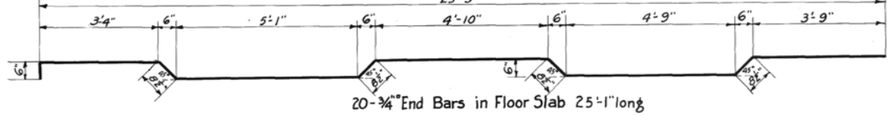


FIG. 32 SEC. O-O

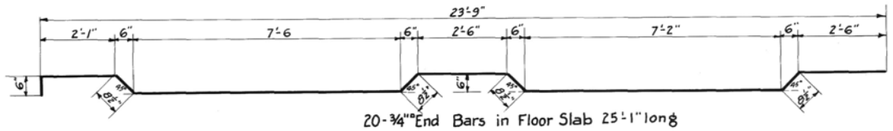
DRAFT

M375-6.68

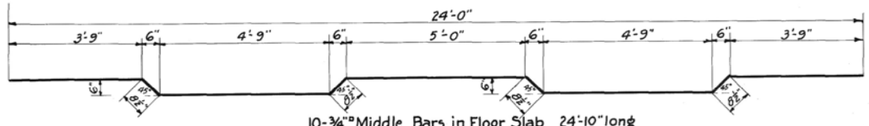
TULARE COUNTY BRIDGE No 67	
Details	
Drawn by Theo. V. Kronoff	
Checked by T.W. Sturgeon	
Approved Lawrence Mayo County Surveyor	
Scale: ¼ inch = 1 foot	8 Sheets
Date: July 11, 1923.	Sheet 6



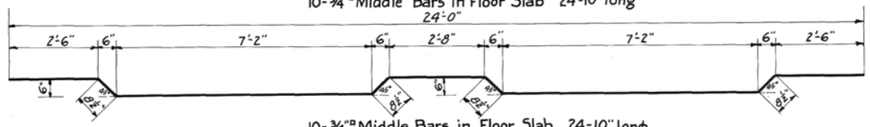
20-¾"□ End Bars in Floor Slab 25'-1" long



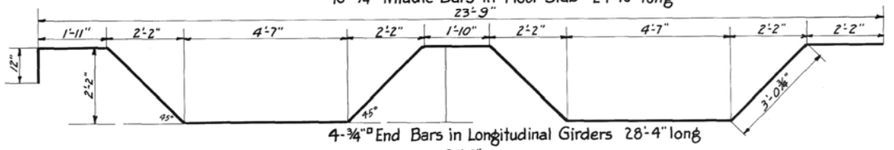
20-¾"□ End Bars in Floor Slab 25'-1" long



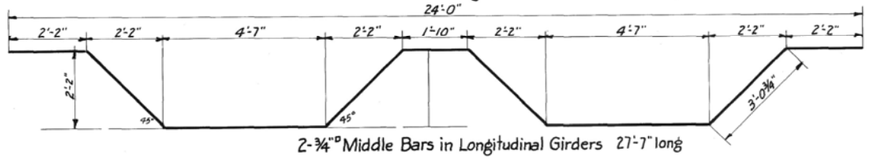
10-¾"□ Middle Bars in Floor Slab 24'-10" long



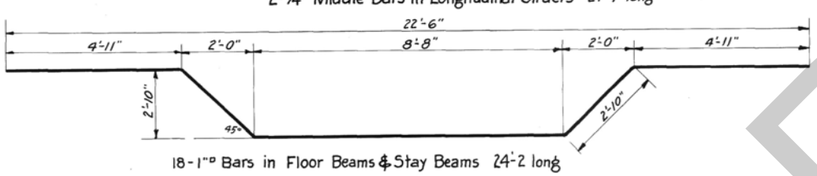
10-¾"□ Middle Bars in Floor Slab 24'-10" long



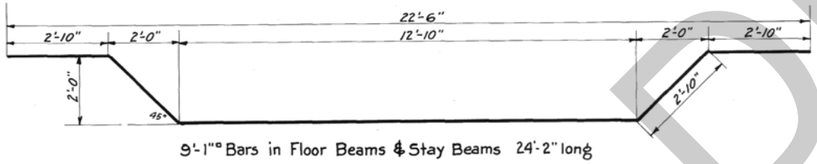
4-¾"□ End Bars in Longitudinal Girders 28'-4" long



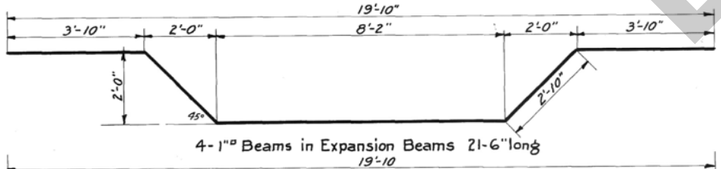
2-¾"□ Middle Bars in Longitudinal Girders 27'-7" long



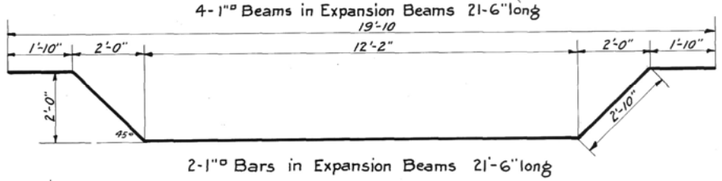
18-1"□ Bars in Floor Beams & Stay Beams 24'-2 long



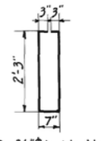
9-1"□ Bars in Floor Beams & Stay Beams 24'-2" long



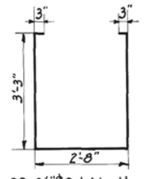
4-1"□ Beams in Expansion Beams 21'-6" long



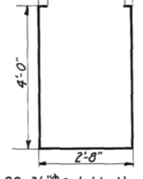
2-1"□ Bars in Expansion Beams 21'-6" long



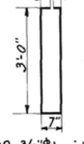
88-⅜"Φ Inside Hoops Upper Part of Arches 5'-7" long



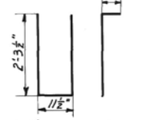
88-⅜"Φ Outside Hoops Upper Part of Arches 9'-8" long



88-⅜"Φ Outside Hoops Lower Part of Arches 11'-2" long



88-⅜"Φ Inside Hoops Lower Part of Arches 7'-1" long



84-⅜"Φ Stirrups for Floor Beams 6'-6½" long

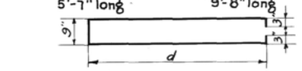
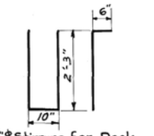
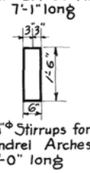


TABLE OF ⅜"Φ COUNTERFORT STIRRUP LENGTHS

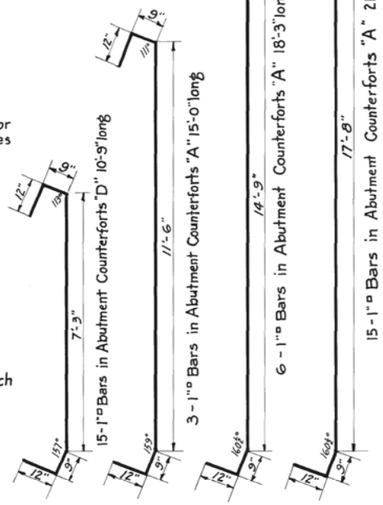
Stirrups in Abut. "A"			Stirrups in Abut "D"		
No. of Bars	Length of "d"	Total Length	No. of Bars	Length of "d"	Total Length
7	1'-9"	4'-9"	5	1'-8"	4'-7"
7	2'-3½"	5'-10"	5	2'-4"	5'-11"
7	2'-10"	6'-11"	5	3'-0"	7'-3"
7	3'-4½"	8'-0"	5	3'-8	8'-7"
7	3'-11"	9'-1"			
7	4'-5½"	10'-2"			
7	5'-0"	11'-3"			
7	5'-6½"	12'-4"			
5	6'-1"	13'-5"			
5	6'-7½"	14'-6"			
1	1'-9"	4'-9"			
1	2'-4"	5'-11"			
1	2'-11"	7'-1"			
1	3'-6"	8'-3"			
1	4'-1"	9'-5"			
1	4'-8"	10'-7"			

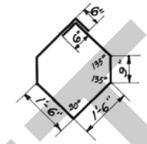


172-⅜"Φ Stirrups for Deck Girders, Expansion Beams & Deck Girder Stay Beams. 6'-4" long

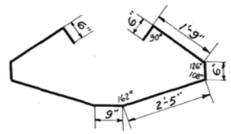


48-⅜"Φ Stirrups for Spandrel Arches 4'-0" long

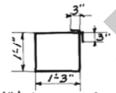




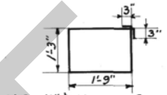
104-½"Φ Hoops for Pier Posts 8'-6" long



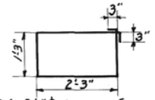
16-½"Φ Hoops for Pier under Arch 11'-1" long



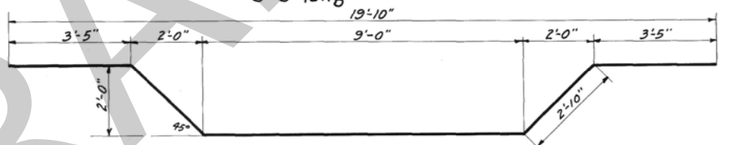
24-¼"Φ Hoops for Arch Post Stay Beams 5'-2" long



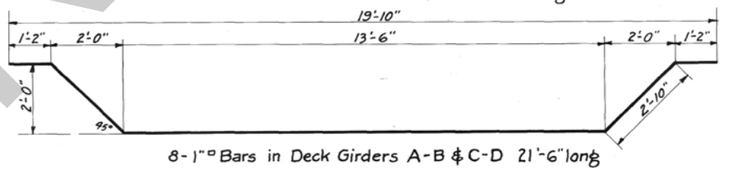
110-¼"Φ Hoops for Pier Post Stay Beams & Arch Post 6'-6" long



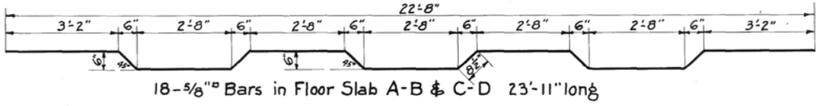
24-⅜"Φ Hoops for Ornamental Post 7'-6" long



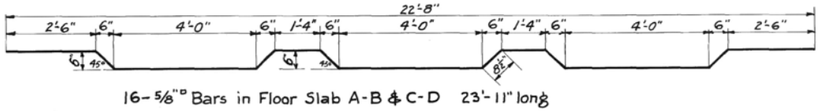
16-1"□ Bars in Deck Girders A-B & C-D 21'-6" long



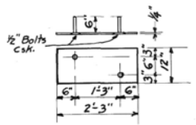
8-1"□ Bars in Deck Girders A-B & C-D 21'-6" long



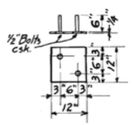
18-⅝"□ Bars in Floor Slab A-B & C-D 23'-11" long



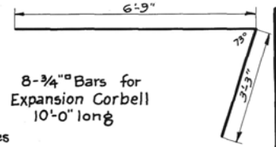
16-⅝"□ Bars in Floor Slab A-B & C-D 23'-11" long



8-¼"×12"×27" Iron Plates

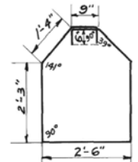


8-¼"×12"×12" Iron Plates

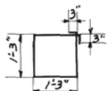


8-¾"□ Bars for Expansion Corbell 10'-0" long

4-¼"Φ Hoops for Ornamental Post 3'-2" long



24-½"Φ Hoops for Pier under Arch 12'-2" long

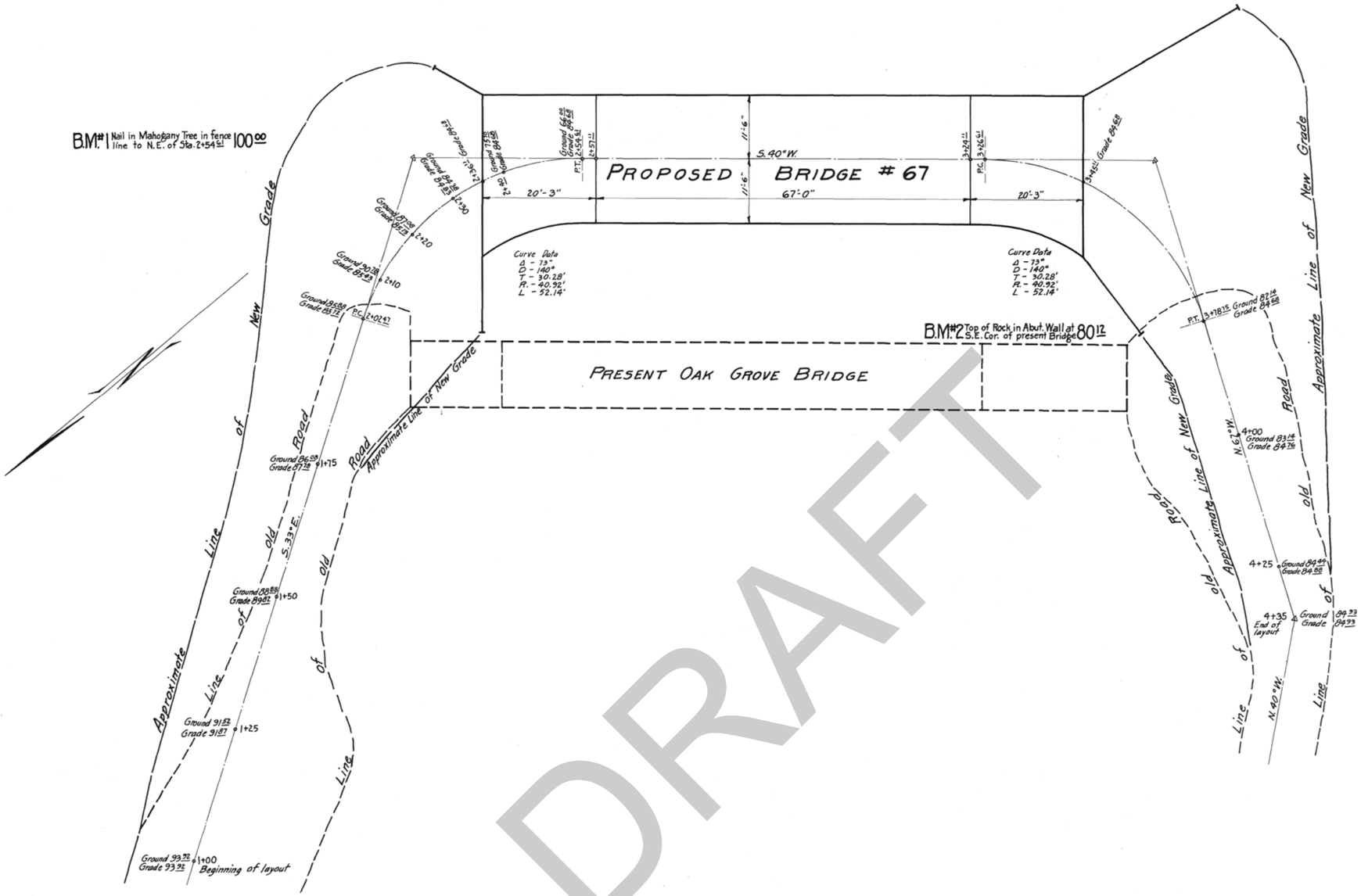


70-¼"Φ Hoops for Rail Post & Arch Stay Beams 5'-6" long

M375-668

TULARE COUNTY BRIDGE No 67	
Details: Bent Steel	
Drawn by Theo. V. Ironoff	
Checked by T. W. Sawyer	
Approved ..... County Surveyor	
Scale: ½ inch = 1 foot	8 Sheets
Date: July 11, 1923.	Sheet 7

DRAFT



DRAFT

M375-668

TULARE COUNTY BRIDGE Nº 67	
Location: Grading to Approaches	
Drawn by Theo. V. Cronoff	
Checked by T. W. Swigart	
Approved Laurence Mayo County Surveyor	
Scale: 1 inch = 10 feet	8 Sheets
Date: July 11, 1923.	Sheet 8

Appendix B
M375A Mineral King Bridge Inspection Reports

DRAFT

DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 46C0196
Facility Carried: M375A MNRL KING RD
Location : 6.68 MI E OF SR 198
City :
Inspection Date : 01/06/2015
Inspection Type
Routine FC Underwater Special Other
[X].Follow Up

Bridge Inspection Report

STRUCTURE NAME: EAST FORK KAWEAH RIVER

CONSTRUCTION INFORMATION

Year Built : 1923
Year Widened: N/A
Length (m) : 32.9
Skew (degrees): 0
No. of Joints : 2
No. of Hinges : 0

Structure Description: RC "T" beam (5) at end spans, RC open spandrel arch center span w/ RC abutments all on spread footings.

Span Configuration : 5.9 m, 20.4 m, 5.9 m

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN
Inventory Rating: RF=0.74 =>24.0 metric tons Calculation Method: LOAD FACTOR
Operating Rating: RF=1.24 =>40.2 metric tons Calculation Method: LOAD FACTOR
Permit Rating : PPPPP
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: 0.5 m rl-0.1 m cu- 5.8 m - 0.1 m cu- 0.5 m rl

Total Width: 7.0 m Net Width: 5.8 m No. of Lanes: 2 Speed: 25 mph
Min. Vertical Clearance: Unimpaired AC Thickness:

Rail Code: 0000

Rail Type	Location	Length (ft)	Rail Modifications
Concrete Baluster	Right/Left	148	

DESCRIPTION UNDER STRUCTURE

Channel Description: Bedrock

INSPECTION COMMENTARY

SCOPE AND ACCESS

This inspection is a follow up, in depth investigation, to the 07/02/2014 routine inspection. The scope of this inspection was to perform a close up inspection on the arch ribs and spandrel columns by sounding the concrete surface with a geology pick. Previous inspections of these elements were made visually from a distance since these elements were inaccessible during past inspections by ordinary means.

The structure was accessed with the UBIT operated by Jeff Bowser. Lane closures and traffic control were provided by the Tulare County maintenance crew.

SUPERSTRUCTURE

There is water leaking down from the deck drains onto the arch rib (see Photos 1 and 2).

There are vertical cracks up to 1/16 inch wide in some of the spandrel columns (see Photo 3). The areas in and around the cracks were sounded with a geology pick that revealed competent concrete material.

INSPECTION COMMENTARY

There is a rock pocket in Girder 4 of Span 1, 2 feet from Abutment 1 (see Photo 4). The area in and around the rock pocket was sounded with a geology pick that revealed competent concrete material.

There is a spall and surrounding delaminations in the corbel under Girder 2 in Span 2 (see Photo 5).

There is a spall (20 inches x 10 inches) with exposed rebar in the corbel at the left exterior girder (Girder 1) at Pier 3 in Span 3. The exposed area of the spall was sounded with a geology pick that revealed competent concrete material. This condition is of long standing and was previously noted in the Original Report dated 06/15/78.

The corbel under Girder 3 in Span 1 at Abutment 1 and the corbel under Girder 4 in Span 3 at Bent 3 are both delaminated. There are no outward signs of distress. However, tapping these surfaces with the geology pick clearly reveals a distinct hollow sound.

The bent caps under both the joints are water stained (see Photo 6). The surfaces of these bent caps were sounded with a geology pick. The results of the sounding indicated a deadened sound with less rebound which may indicate a less competent material at the surface. Spalls have formed at the base of both bent caps, the spall under Joint 2 revealing rebar (see Photo 7).

There is a delamination in Column 6, along the left side of bridge, toward the base which measures 2 feet by 1 foot. There are no outward signs of distress. However, tapping this surface with the geology pick clearly reveals a distinct hollow sound.

There are minor scattered pattern cracks throughout both arch ribs and up to 1/16 inch wide longitudinal cracks which run along the underside. The surface of both arch ribs was sounded with a geology pick that revealed competent concrete material.

The soffit, spandrel arch bent caps and diaphragms all have minor pattern cracks in scattered locations. The surface area in and around the cracks was sounded with a geology pick that revealed competent concrete material.

RECOMMENDATIONS

Extend the deck drains outward far enough so that water draining from above does not contact the structure below.

Repair the corbel at the left side of Pier 3.

Clean out the impacted joints at Piers 2 and 3 and place a suitable joint seal.

Team Leader : Erik J. Halsted

Report Author : Erik J. Halsted

Inspected By : EJ.Halsted/JL.Bowser



Erik J. Halsted (Registered Civil Engineer) 2/24/15 (Date)

EAST FORK KAWEAH RIVER

6.68 MI E OF SR 198 | 01/06/2015 [AAAJ] | 46C0196

109 - PHOTO-Super-Unusual Conditions



Photo No. 1

Water draining from deck drain above.

109 - PHOTO-Super-Unusual Conditions

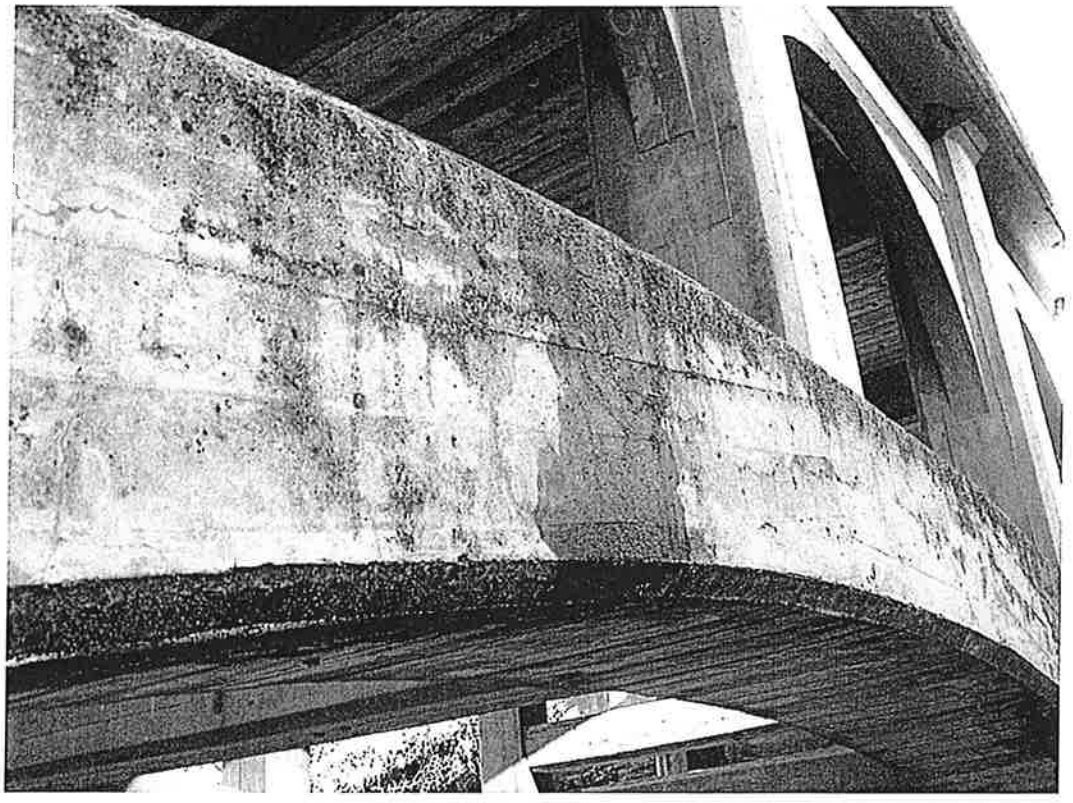


Photo No. 2

Water draining down onto the right arch rib from the deck drain above.

EAST FORK KAWEAH RIVER

107 - PHOTO-Super-Damage/Deteroration



Photo No. 3

Vertical crack measuring up to 1/16 inch wide in the second right spandrel column.

109 - PHOTO-Super-Unusual Conditions

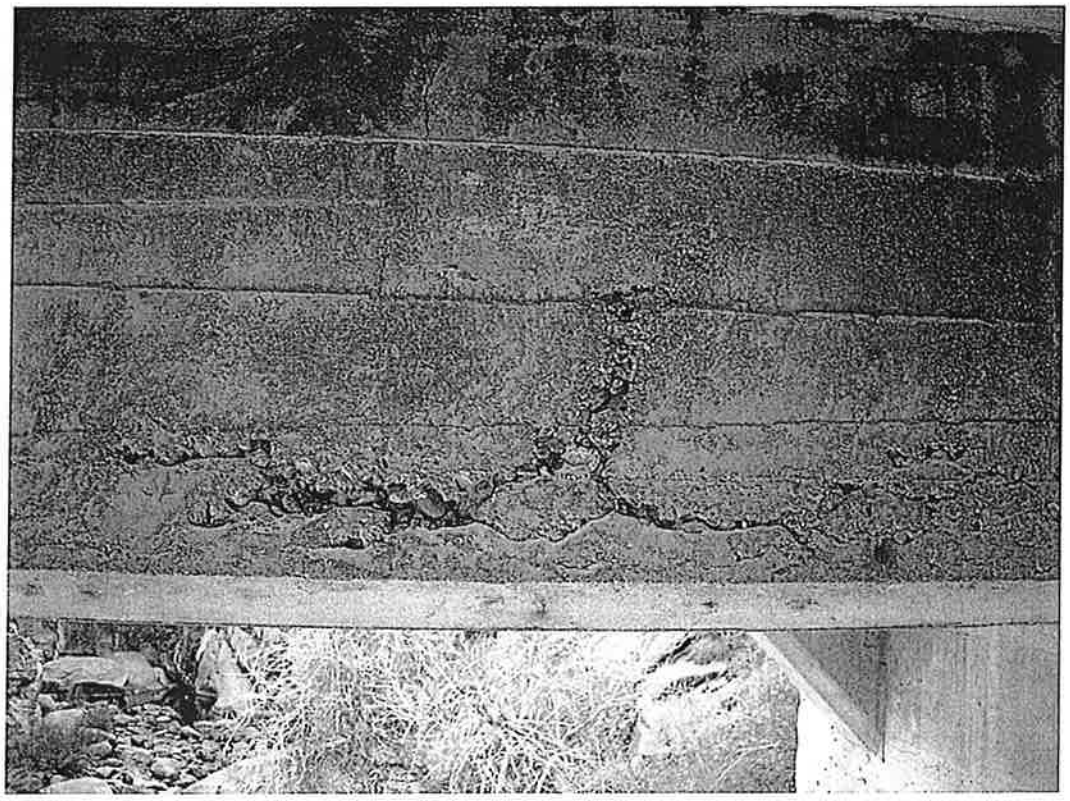


Photo No. 4

Rock pocket in Girder 4 of Span 1, 2 feet from Abutment 1.

EAST FORK KAWEAH RIVER

6.68 MI E OF SR 198 | 01/06/2015 [AAAJ] | 46C0196

107 - PHOTO-Super-Damage/Deteroration



Photo No. 5

Spall and delamination in the cornice below Girder 2 of Span 2.

109 - PHOTO-Super-Unusual Conditions

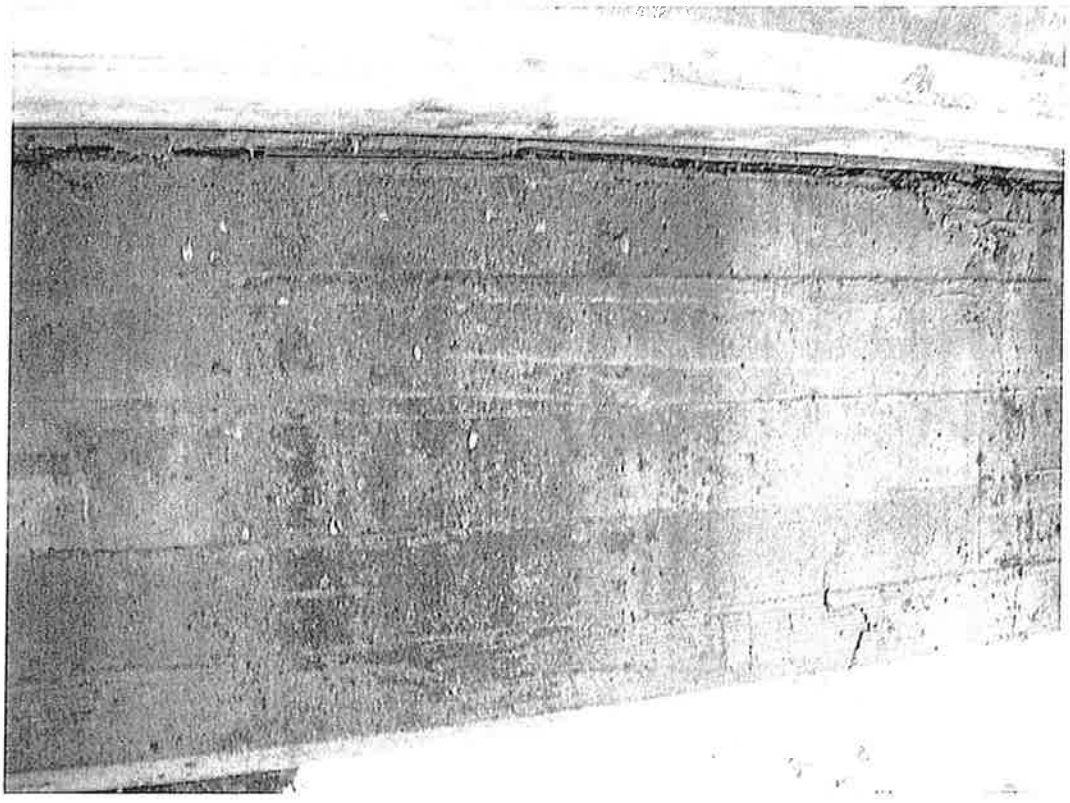


Photo No. 6

Water staining on the bent cap below Joint 2.

EAST FORK KAWEAH RIVER

6.68 MI E OF SR 198 | 01/06/2015 [AAAJ] | 46C0196

107 - PHOTO-Super-Damage/Deteroration

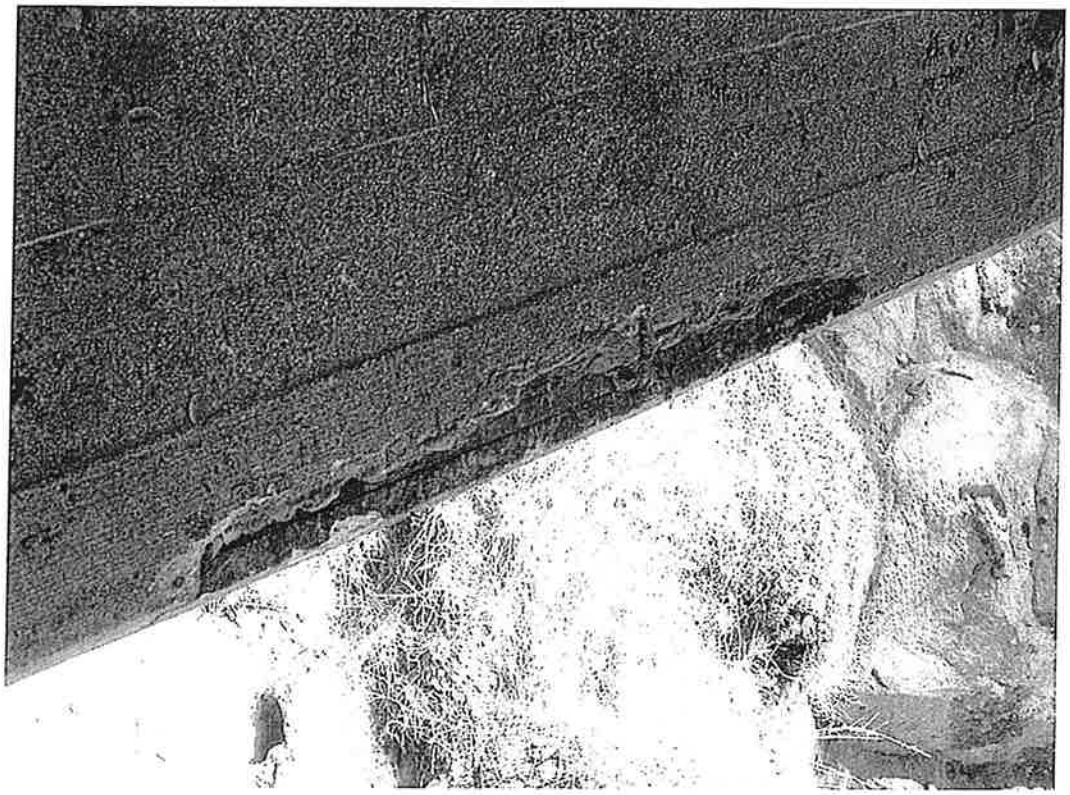


Photo No. 7

Spall in the bent cap below Joint 2 with exposed rebar.

California Department of Transportation
Division of Maintenance

Structure Maintenance and Investigations

BRIDGE

INSPECTION

RECORDS

INFORMATION

SYSTEM

The requested documents have been generated by BIRIS.

These documents are the property of the California Department of Transportation and should be handled in accordance with Deputy Directive 55 and the State Administrative Manual.

Records for “Confidential” bridges may only be released outside the Department of Transportation upon execution of a confidentiality agreement.

DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 46C0196
Facility Carried: M375A MNRL KING RD
Location : 6.68 MI E OF SR 198
City :
Inspection Date : 07/02/2014

Bridge Inspection Report

Inspection Type

Routine	FC	Underwater	Special	Other
X				

STRUCTURE NAME: EAST FORK KAWEAH RIVER

CONSTRUCTION INFORMATION

Year Built : 1923
Year Widened: N/A
Length (m) : 32.9

Skew (degrees): 0
No. of Joints : 2
No. of Hinges : 0

Structure Description: RC "T" beam (5) at end spans, RC open spandrel arch center span w/ RC abutments all on spread footings.

Span Configuration : 5.9 m, 20.4 m, 5.9 m

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: UNKNOWN
Inventory Rating: RF=0.74 =>24.0 metric tons Calculation Method: LOAD FACTOR
Operating Rating: RF=1.24 =>40.2 metric tons Calculation Method: LOAD FACTOR
Permit Rating : PPPPP
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: 0.5 m rl-0.1 m cu- 5.8 m - 0.1 m cu- 0.5 m rl

Total Width: 7.0 m Net Width: 5.8 m No. of Lanes: 2 Speed: 25 mph

Min. Vertical Clearance: Unimpaired

Rail Code: 0000

Rail Type	Location	Length (ft)	Rail Modifications
Concrete Baluster	Right/Left	148	

DESCRIPTION UNDER STRUCTURE

Channel Description: Bedrock

INSPECTION COMMENTARY

SCOPE AND ACCESS

The water depth was approximately 3 feet and flowing through Span 2 at the time of this inspection. There were no submerged elements. All visible elements were inspected.

DECK AND ROADWAY

The open joints at Piers 2 and 3 are impacted with sand.

There are many less than 1/64 inch opening pattern cracks spaced 2 to 4 inches apart throughout the deck.

There is a minor spall in the right RC rail above the wingwall of Abutment 1. There are intermittent minor cracks throughout the rails.

There are scattered less than 1/64 inch opening cracks with efflorescence throughout the soffit.

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INSPECTION COMMENTARY

There are Type P object markers at all four bridge corners.

SUPERSTRUCTURE

There is a spall (20 inches x 10 inches) with exposed rebar in the corbel at the left exterior girder near Pier 3 in Span 3 (see Photos 1 and 2).

SUBSTRUCTURE

There are up to 1/4 inch opening horizontal cracks in the face of Abutment 1 (see Photo 14).

There are 1/64 inch to 1/16 inch opening cracks, some with efflorescence, in the arches and spandrel columns (see Photos 9, 10, 15, and 16).

There are 1/16 to 1/4 opening cracks in the Pier 2 footing on the Span 2 side (see Photo 13).

There are up to 3/8 inch opening horizontal cracks in the Pier 3 footing on the Span 2 side (see Photo 12).

There is erosion undermining occurring at Abutment 4 over a length of 8 feet. The undermining extends vertically to a maximum depth of 10 inches and horizontally inward 18 inches (see Photo 4). It appears that the footing is founded on solid bed rock and the extent of erosion has stabilized.

There are horizontal cracks measuring up to 1/16 in opening in the face of Abutment 4 (see Photo 3).

SAFE LOAD CAPACITY

A Load Rating Summary Sheet dated 04/24/2014 is on file for this structure. While this inspection does not include a check of the analysis on which the summary is based, it does verify that the structural conditions observed during this inspection are consistent with those assumed in that analysis. The current rating is based on VIRTIS and MIDAS computer output with hand calculations dated 04/01/2014.

ELEMENT INSPECTION RATINGS

Elem No.	Element Description	Env	Total Qty	Units	Qty in each Condition State St. 1	St. 2	St. 3	St. 4	St. 5
12	Concrete Deck - Bare	2	140	sq.m	140	0	0	0	0
110	Reinforced Conc Open Girder/Beam	2	24	m.	23	0	1	0	
144	Reinforced Conc Arch	2	40	m.	30	10	0	0	0
215	Reinforced Conc Abutment	2	14	m.	0	10	4	0	0
220	Reinforced Conc Submerged Pile Cap/Footing	2	2	ea.	2	0	0	0	
304	Open Expansion Joint	2	14	m.	14	0	0	0	0
339	Concrete Railing (aesthetic/masonry)	2	67	m.	67	0	0	0	0
358	Deck Cracking	2	1	ea.	0	0	0	1	
359	Soffit of Concrete Deck or Slab	2	1	ea.	0	1	0	0	0

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WORK RECOMMENDATIONS

RecDate: 07/02/2014	EstCost:		Treat the deck with methacrylate.
Action : Deck-Methacrylate	StrTarget:	2 YEARS	
Work By: LOCAL AGENCY	DistTarget:		
Status : PROPOSED	EA:		
RecDate: 07/02/2014	EstCost:		Repair the corbel at the left side of
Action : Super-Patch spalls	StrTarget:	2 YEARS	Pier 3.
Work By: LOCAL AGENCY	DistTarget:		
Status : PROPOSED	EA:		
RecDate: 06/02/2006	EstCost:		Clean out the impacted joints at Piers 2
Action : Joints-Repair/Clean	StrTarget:	2 YEARS	and 3 and place a suitable joint seal.
Work By: LOCAL AGENCY	DistTarget:		
Status : PROPOSED	EA:		

Team Leader : Erik J. Halsted

Report Author : Erik J. Halsted

Inspected By : EJ.Halsted/L.Guzman

7/11/2014

Erik J. Halsted (Registered Civil Engineer) (Date)



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STRUCTURE INVENTORY AND APPRAISAL REPORT

********** IDENTIFICATION **********

(1) STATE NAME- CALIFORNIA 069
(8) STRUCTURE NUMBER **46C0196**
(5) INVENTORY ROUTE(ON/UNDER)- ON 140000000
(2) HIGHWAY AGENCY DISTRICT 06
(3) COUNTY CODE 107 (4) PLACE CODE 00000
(6) FEATURE INTERSECTED- EAST FORK KAWEAH RIVER
(7) FACILITY CARRIED- M375A MNRL KING RD
(9) LOCATION- 6.68 MI E OF SR 198
(11) MILEPOINT/KILOMETERPOINT 0
(12) BASE HIGHWAY NETWORK- NOT ON NET 0
(13) LRS INVENTORY ROUTE & SUBROUTE
(16) LATITUDE 36 DEG 26 MIN 56 SEC
(17) LONGITUDE 118 DEG 47 MIN 34 SEC
(98) BORDER BRIDGE STATE CODE % SHARE %
(99) BORDER BRIDGE STRUCTURE NUMBER

******** STRUCTURE TYPE AND MATERIAL *********

(43) STRUCTURE TYPE MAIN:MATERIAL- CONCRETE
TYPE- ARCH - DECK CODE 111
(44) STRUCTURE TYPE APPR:MATERIAL- CONCRETE
TYPE- TEE BEAM CODE 104
(45) NUMBER OF SPANS IN MAIN UNIT 1
(46) NUMBER OF APPROACH SPANS 2
(107) DECK STRUCTURE TYPE- CIP CONCRETE CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE- NONE CODE 0
B) TYPE OF MEMBRANE- NONE CODE 0
C) TYPE OF DECK PROTECTION- NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1923
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON- HIGHWAY 1
UNDER- WATERWAY 5
(28) LANES:ON STRUCTURE 02 UNDER STRUCTURE 00
(29) AVERAGE DAILY TRAFFIC 25
(30) YEAR OF ADT 1978 (109) TRUCK ADT 0 %
(19) BYPASS, DETOUR LENGTH 199 KM

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 20.4 M
(49) STRUCTURE LENGTH 32.9 M
(50) CURB OR SIDEWALK: LEFT 0.1 M RIGHT 0.1 M
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 5.8 M
(52) DECK WIDTH OUT TO OUT 7.0 M
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 3.4 M
(33) BRIDGE MEDIAN- NO MEDIAN 0
(34) SKEW 0 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 5.8 M
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M
(54) MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M
(55) MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M
(56) MIN LAT UNDERCLEAR LT 0.0 M

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL- NO CONTROL CODE 0
(111) PIER PROTECTION- CODE
(39) NAVIGATION VERTICAL CLEARANCE 0.0 M
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR M
(40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M

****

SUFFICIENCY RATING = 78.8
STATUS STRUCTURALLY DEFICIENT
HEALTH INDEX 87.7
PAINT CONDITION INDEX = N/A

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH- YES Y
(104) HIGHWAY SYSTEM- NOT ON NHS 0
(26) FUNCTIONAL CLASS- LOCAL RURAL 09
(100) DEFENSE HIGHWAY- NOT STRAHNET 0
(101) PARALLEL STRUCTURE- NONE EXISTS N
(102) DIRECTION OF TRAFFIC- 2 WAY 2
(103) TEMPORARY STRUCTURE-
(105) FED.LANDS HWY- NOT APPLICABLE 0
(110) DESIGNATED NATIONAL NETWORK - NOT ON NET 0
(20) TOLL- ON FREE ROAD 3
(21) MAINTAIN- COUNTY HIGHWAY AGENCY 02
(22) OWNER- COUNTY HIGHWAY AGENCY 02
(37) HISTORICAL SIGNIFICANCE- ELIGIBLE 2

********** CONDITION ********** CODE

(58) DECK 4
(59) SUPERSTRUCTURE 6
(60) SUBSTRUCTURE 6
(61) CHANNEL & CHANNEL PROTECTION 7
(62) CULVERTS N

********* LOAD RATING AND POSTING ********* CODE

(31) DESIGN LOAD- UNKNOWN 0
(63) OPERATING RATING METHOD- LOAD FACTOR 1
(64) OPERATING RATING- 40.2
(65) INVENTORY RATING METHOD- LOAD FACTOR 1
(66) INVENTORY RATING- 24.0
(70) BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5
(41) STRUCTURE OPEN, POSTED OR CLOSED- A
DESCRIPTION- OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 6
(68) DECK GEOMETRY 4
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATER ADEQUACY 8
(72) APPROACH ROADWAY ALIGNMENT 6
(36) TRAFFIC SAFETY FEATURES 0000
(113) SCOUR CRITICAL BRIDGES 8

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK- CODE
(76) LENGTH OF STRUCTURE IMPROVEMENT M
(94) BRIDGE IMPROVEMENT COST
(95) ROADWAY IMPROVEMENT COST
(96) TOTAL PROJECT COST
(97) YEAR OF IMPROVEMENT COST ESTIMATE
(114) FUTURE ADT 54
(115) YEAR OF FUTURE ADT 2036

********** INSPECTIONS **********

(90) INSPECTION DATE 07/14 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL- NO MO A)
B) UNDERWATER INSP- NO MO B)
C) OTHER SPECIAL INSP- NO MO C)

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Photo No. 1
Spall in corbell of spandrel columnat left side of Pier 3.



Photo No. 2
Spall in corbell of spandrel columnat left side of Pier 3.



Photo No. 3
Cracks in the face of Abutment 4.



Photo No. 4
Erosion at the footing of Abutment 4.



Photo No. 5
Left side of structure looking from Abutment 4.



Photo No. 6
Right side of structure.



Photo No. 7
Right side of structure looking toward Abutment 1.



Photo No. 8
Elevation looking downstream.



Photo No. 9
Underside looking toward Abutment 1.



Photo No. 10
Underside looking up at Pier 3.



Photo No. 11
Cracks in the footing of Pier 3.



Photo No. 12
Cracks in the footing of Pier 3.



Photo No. 13
Cracks in the footing of Pier 2.



Photo No. 14
Cracks in the face of Abutment 1.



Photo No. 15
Looking toward Pier 3.



Photo No. 16



Photo No. 17
Underside looking up at spandrel Span 2.



Photo No. 18
Underside in Span 1.

Appendix C
Materials Testing Program Results

KLEINFELDER
Bright People. Right Solutions.

Compressive Strength of Cored Concrete Specimens
ASTM C42-03

Project Name:	Mineral King Bridge	**Sample Date:**	01/06/15
Project Number:	20154157	**Test Date:**	01/23/15
Sample / Lab # :	13425		
Source:	Existing Bridge		
Mix Design #/Description:	N/A		
Specified Compressive Strength:	N/A		

Specimen ID No.	1	2	3	
Location	SW Abutment	Deck E End	Deck W End	
As Received Diameter (0.01")	1.28	2.72	2.72	
As Received Length (0.25")	3.35	4.36	3.55	
Max Aggregate Size	3/4"	1 1/2"	1 1/2"	
Aged (days)	N/P	N/P	N/P	
Length Before Capping (0.1")	2.5	3.5	3.2	
Length After Capping (0.1")	2.69	3.73	3.44	
As Tested Diameter (0.01")	1.28	2.72	2.72	
L/D Ratio	2.10	1.37	1.26	
Correction Factor	1	0.94	0.93	
Area (0.01")	1.29	5.81	5.81	
Ultimate Load (lbs)	7070	37570	37950	
Compressive Strength (psi)	5490	6470	6530	
Corrected Strength	5490	6080	6070	
Fracture Type	4 (Shear)	3 (columnar)	3 (columnar)	
Load Orientation	Normal	Normal	Normal	
Moisture Condition	Dry	Dry	Dry	

Remarks: Load Rate: 35 psi +/- 7 psi (- lbs. per second)

Technician: A Brent **Lab Coordinator:** K Childers

LABORATORY CERTIFICATE

Anamet, inc

January 21, 2015

LABORATORY NUMBER: 5005.1195

CUSTOMER AUTHORIZATION: Transmittal COC No. 31284
Mineral King, Project No. 20154157

DATE SUBMITTED: January 9, 2015

REPORT TO: Kleinfelder
Attn: Neva Popenoe
5125 N. Gates Ave., Ste. 102
Fresno, CA 93722

SUBJECT

One rebar sample was submitted for mechanical testing. The sample was identified as 1" Square Rebar.

TENSILE TEST (ASTM A370-14)

Diameter of Specimen (in.)	0.505
Area (in^2)	0.200
Tensile Strength (psi)	61300
Yield Strength (psi)*	40300
Elongation in 2.0" Gage (%)	33

*Upper yield strength (formerly Y.P.)

This testing was completed on January 13, 2015 and was performed in accordance with the customer's authorization.

Submitted by:

Edward A. Foreman
Quality Manager

kc

26102 Eden Landing Road, Suite 3, Hayward, California 94545-3811 Phone: 510-887-8811 Fax: 510-887-8427 www.anametinc.com
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Appendix D
Petrographic Examination Reports

PETROGRAPHIC EXAMINATION OF CONCRETE CORE SPECIMENS

Project: Mineral King
Project No. 20154157

Report Prepared for:
Kleinfelder, Inc.
5125 N. Gates, Suite 102
Fresno, CA 93722

February 10, 2015

Micro-Chem Laboratories Job No. C-6102-15

MICRO-CHEM LABORATORIES

635 Bret Harte Drive • P.O. Box 485 • Murphys, CA • 95247 • (209) 728-8200 • FAX 209-728-8251 • www.micro-chem.com

February 10, 2015

Kleinfelder, Inc.
5125 N. Gates, Suite 102
Fresno, CA 93722

Job No. C-6102-15

Attn: Ms. Neva Popenoe

Re: Petrographic Examination of Concrete Core Specimens
Project: Mineral King
Project No. 20154157

In response to your request, two hardened concrete core specimens were received for petrographic examination. The specimens were reportedly obtained from a concrete bridge located at the above referenced project. The objectives of the examination were to evaluate the physical properties, mineralogical properties, and the overall quality of the concrete, and determine if the concrete exhibited evidence of alkali-silica reactivity (ASR) as represented by the supplied core specimens.

Test Method

Core Nos. 1 and 2 were examined according to ASTM C856-14, "Standard Practice for Petrographic Examination of Hardened Concrete." The cores were longitudinally saw cut, lapped, and examined with a stereomicroscope to evaluate the physical properties of the concrete. Air contents were estimated based on comparison to reference concretes. Thin sections were prepared from the exterior and interior areas of both cores and examined with a petrographic microscope to evaluate the mineralogy of the paste and aggregates, assess the degree of portland cement hydration, and detect the presence of any deleterious reactions or deposits. Depth of paste carbonation was determined by thin section analysis.

Sample Descriptions

The following concrete core specimens were received.

Micro-Chem Core No.	Diameter, in.	Length, in	Description	Reinforcing Steel
1	1.3	2.8	Northeast wing wall, 1/6/15	None
2	1.3	2.8	Northwest abutment, 1/6/15	None

Petrographic Examination

1. The concrete from Core Nos. 1 and 2 was composed of siliceous coarse and fine aggregates and portland cement. No fly ash or any other supplementary cementitious materials were detected in the concrete. The concrete from both cores was not air-entrained. The coarse and fine aggregate materials were composed primarily of metagranite, granite, mylonite, quartz, feldspars, mica, gabbro, schist, felsite, hornblende, and calcite. Maximum size aggregate was 1.0 in. in Core No. 1 and 0.75 in. in Core No. 2. The aggregate materials appeared to be properly shaped, uniformly distributed, and very hard to hard. The aggregates were well graded in Core No. 1 and poorly graded in Core No. 2. No excessive fines or "dirty" aggregate particles were detected in the concrete core specimens.

2. The physical descriptions, physical properties, mineralogical properties, and secondary deposits of the concrete from Core Nos. 1 and 2 are presented in Tables I and II.

Discussion and Conclusions

1. The concrete from Core Nos. 1 and 2 had satisfactory strength properties as indicated by the very hard to hard cement paste by petrographic examination. Paste-aggregate bond could not be determined due to the size of the supplied core specimens. The portland cement was well hydrated by thin section analysis. The size and optical properties of the unhydrated portland cement particles were indicative of concrete that was from a relatively "old" structure. Depth of carbonation from the exterior surface was moderate to moderately deep in Core No. 1 and moderately deep to deep in Core No. 2.

2. No significant cracks or microcracks were detected in Core No. 1. Core No. 2 contained a large longitudinal crack through the length of the concrete core specimen. Microcracks were detected adjacent to the large longitudinal crack.

3. Core No. 1 contained very few patches of alkali-silica gel on the interior surface, gel deposits lining voids at 35 mm from the exterior surface, and a few areas of gel-soaked paste by thin section analysis. Air-voids were lined with secondary ettringite (calcium sulfo-aluminate hydrate) deposits in Core No. 1.

4. Core No. 2 contained white gel and calcium carbonate ($CaCO_3$) deposits along the large longitudinal crack below the exterior 42 mm. A reaction rim and white gel along the perimeter of an aggregate particle was observed within this crack at 15 mm from the interior surface. Ettringite deposits were present in very low amounts within very few to few air-voids.

5. ASR was detected in the concrete from Core Nos. 1 and 2 by petrographic examination. It is recommended that additional 4 in. diameter cores by approximately 6 in. to 8 in. in length be drilled from the bridge and examined petrographically to assess the degree of reactivity and depth of damage from the ASR.

Should any questions arise concerning the findings of this report, please contact the undersigned.

Respectfully submitted,
MICRO-CHEM LABORATORIES



Robert C. O'Neill, P.G.
Senior Petrographer

RCON/jamc
C610215
Attachments

Sample Disposition: The samples will be stored for a period of one month and thereafter discarded. Charges for additional sample storage time and/or shipping of the samples will be billed to the client.

TABLE I

JOB NO. C-6102-15

CORE NO. 1

PETROGRAPHIC EXAMINATION OF CORE SPECIMEN
ASTM C856-14

Physical Description of Concrete

Exterior Surface	Interior Surface	Surface Deposits/Coatings	Cracks
Medium brown, very hard to hard, and intact. Rough formed face.	Light brown-gray to medium brown-gray and hard. Broken surface.	White deposits of $CaCO_3$, ettringite, and very few patches of alkali-silica gel on interior surface.	One small transverse crack at 1 mm from exterior surface

Physical Properties of Concrete

Paste Hardness	Paste Color	Paste Volume	Paste-Aggregate Bond	Air Content	Consolidation
Very hard	Patches of buff exterior 14 mm. Light gray below.	Moderate	Not determined	0.5-1.0	Good

Mineralogical Properties of Cementitious Paste

Location	Unhydrated Cement, %	Calcium Hydroxide, %	Fly Ash, %	Microcracks	Depth of Carbonation
Exterior 35 mm	<1-7	0-20	None	Very few random throughout section	7-15 mm
Interior 35 mm	<1-7	0-25	None	Very few random throughout section	0 mm

Secondary Deposits

Concrete Sections	Exterior Thin Section	Interior Thin Section
Air-voids lined with ettringite deposits throughout core	Air-voids lined with ettringite deposits below carbonated layer. Very few to few areas of gel-soaked paste. Gel in voids at 35 mm from exterior surface.	Air-voids lined with ettringite deposits throughout section

TABLE II

JOB NO. C-6102-15

CORE NO. 2

PETROGRAPHIC EXAMINATION OF CORE SPECIMEN
ASTM C856-14

Physical Description of Concrete

Exterior Surface	Interior Surface	Surface Deposits/Coatings	Cracks
Dark brown, hard, and intact. Rough formed face.	Light brown-gray to medium brown-gray and hard. Broken surface.	White deposits, $CaCO_3$ gel, and ettringite on interior surface	One large crack through core. Thin layer of medium brown soil debris from exterior to 42 mm deep. Patches of $CaCO_3$ and gel in crack below 42 mm.

Physical Properties of Concrete

Paste Hardness	Paste Color	Paste Volume	Paste-Aggregate Bond	Air Content	Consolidation
Very hard to hard	Patches of buff 17-20 mm from exterior and along longitudinal crack. Light gray below.	Moderate	Not determined	<0.5	Good

Mineralogical Properties of Cementitious Paste

Location	Unhydrated Cement, %	Calcium Hydroxide, %	Fly Ash, %	Microcracks	Depth of Carbonation
Exterior 35 mm	<1-5	0-7	None	Few to some adjacent to large longitudinal crack	13-23 mm and along large longitudinal crack
Interior 35 mm	<1-3	0-20	None	Few to some adjacent to large longitudinal crack	Along large longitudinal crack

Secondary Deposits

Concrete Sections	Exterior Thin Section	Interior Thin Section
Few air- voids lined with very low amount of ettringite deposits. An aggregate reaction rim with gel in large longitudinal crack at 15 mm from interior surface.	Very few air-voids lined with very low amount of ettringite deposits below carbonated layer	Very few air-voids lined with very low amount of ettringite deposits. Patches of gel along large longitudinal crack.

PHOTOGRAPHS OF AS-RECEIVED SAMPLE
CORE 1 (scale in cm)

PHOTO NO. 1 – Exterior surface of core

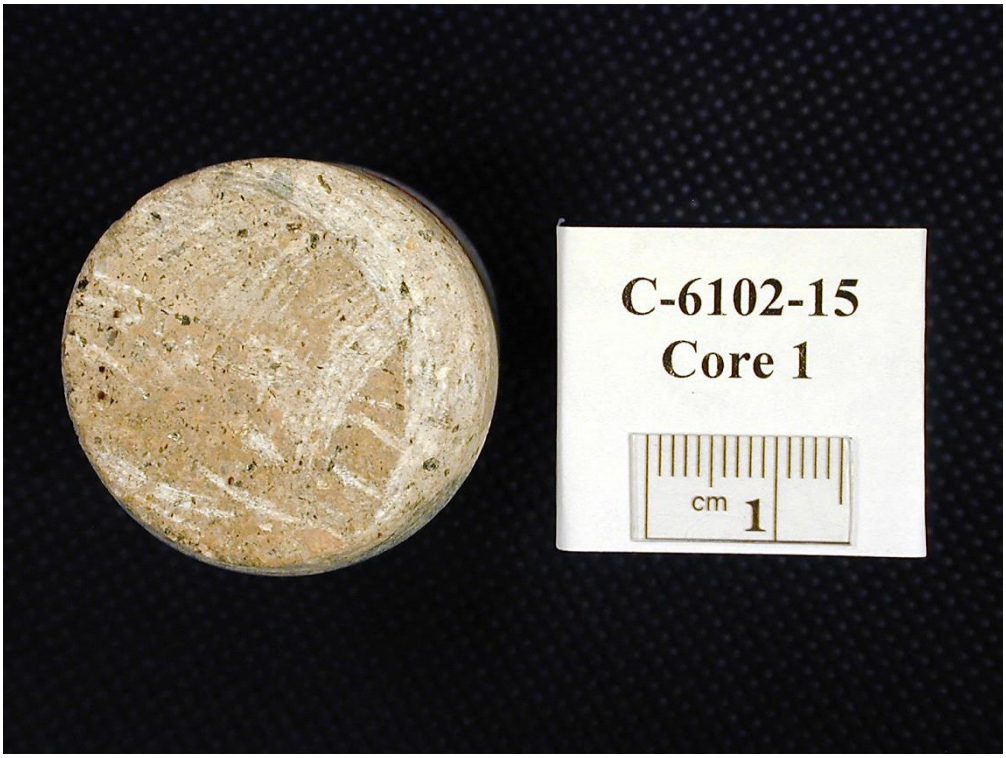
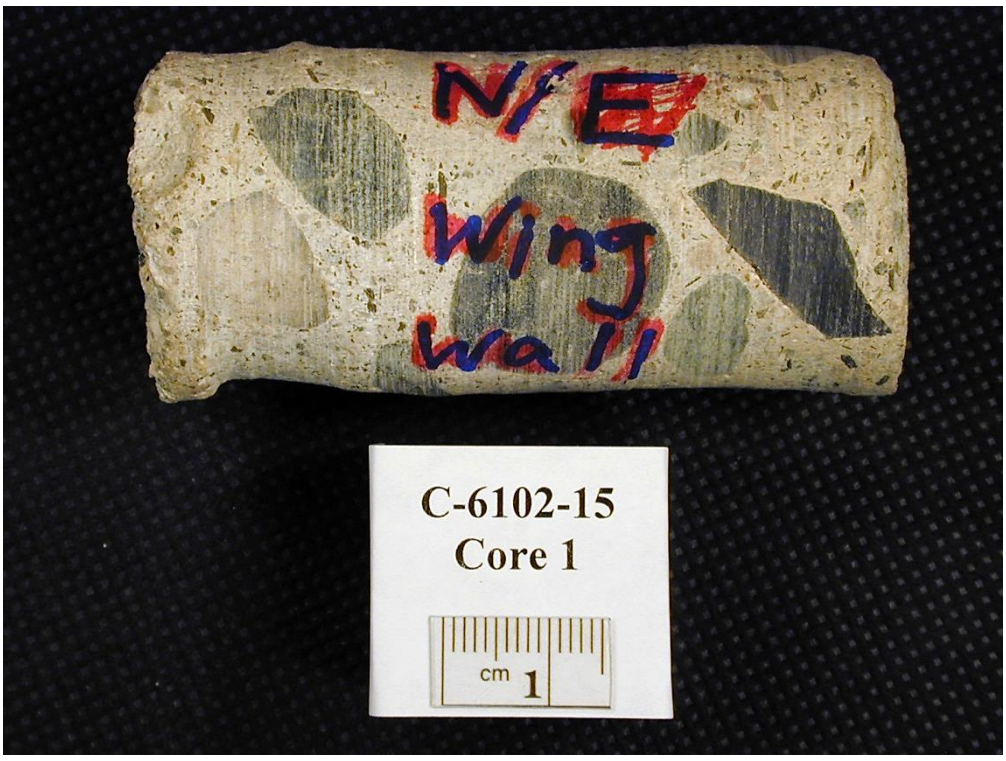


PHOTO NO. 2 – Side of core. Exterior surface at right of photo.



PHOTOGRAPH OF LAPPED SECTION
CORE 1 (scale in cm)

PHOTO NO. 3 – Exterior surface at left of photo



PHOTOGRAPHS OF AS-RECEIVED SAMPLE
CORE 2 (scale in cm)

PHOTO NO. 4 – Exterior surface of core



PHOTO NO. 5 – Side of core. Exterior surface at right of photo.



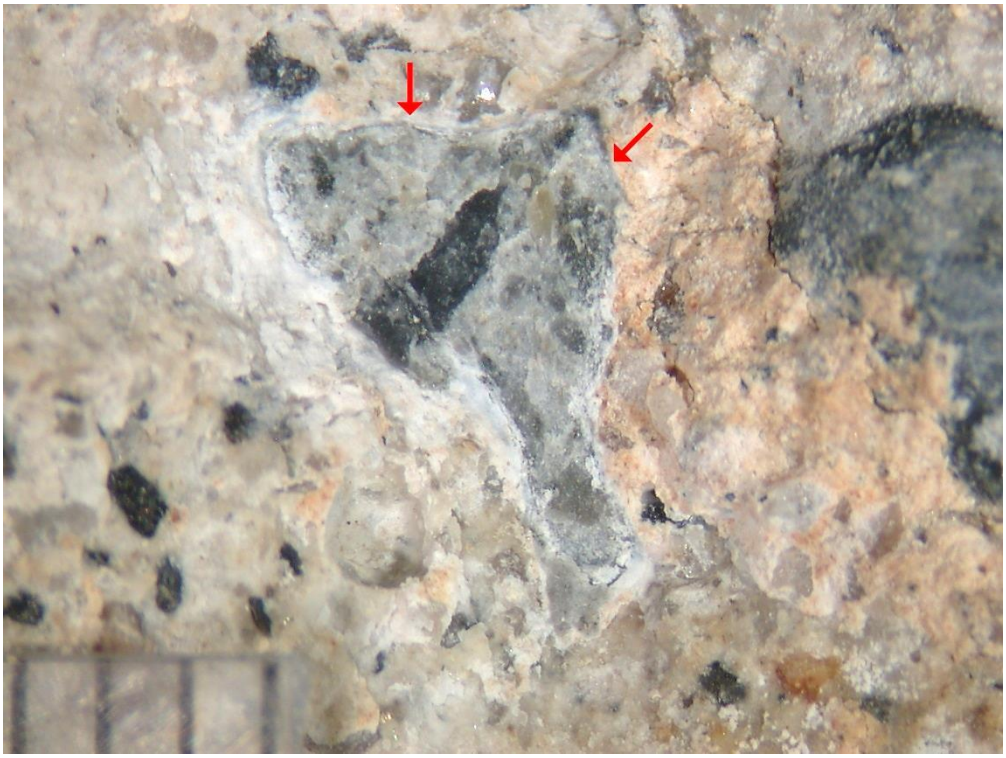
PHOTOGRAPH OF LAPPED SECTION
CORE 2 (scale in cm)

PHOTO NO. 6 – Exterior surface at right of photo



STEREOMICROGRAPH OF "AS-RECEIVED" CONCRETE
(scale in mm)

PHOTO A – Shows reacted aggregate particle (arrows) with white alkali-silica gel along perimeter of aggregate in large longitudinal crack at 15 mm from interior surface. Core No. 2.



PETROGRAPHIC EXAMINATION OF CONCRETE CORE SPECIMENS

Project: Mineral King
Project No. 20154157

Report Prepared for:
Kleinfelder, Inc.
5125 N. Gates, Suite 102
Fresno, CA 93722

March 2, 2015

Micro-Chem Laboratories Job No. C-6102A-15

MICRO-CHEM LABORATORIES

635 Bret Harte Drive • P.O. Box 485 • Murphys, CA • 95247 • (209) 728-8200 • FAX 209-728-8251 • www.micro-chem.com

March 2, 2015

Kleinfelder, Inc.
5125 N. Gates, Suite 102
Fresno, CA 93722

Job No. C-6102A-15

Attn: Ms. Neva Popenoe

Re: Petrographic Examination of Concrete Core Specimens
Project: Mineral King
Project No. 20154157

In response to your request, two hardened concrete core specimens were received for petrographic examination. The specimens were reportedly obtained from a concrete bridge deck located at the above referenced project. Samples from this project were previously examined by petrographic methods (see Micro-Chem Laboratories Job No. C-6102-15 dated 10 February 2015). The objectives of the examination were to evaluate the physical properties, mineralogical properties, and the overall quality of the concrete, and determine if the concrete exhibited evidence of alkali-silica reactivity (ASR) as represented by the supplied core specimens.

Test Method

Core Nos. 1 and 2 were examined according to ASTM C856-14, "Standard Practice for Petrographic Examination of Hardened Concrete." The cores were longitudinally saw cut, lapped, and examined with a stereomicroscope to evaluate the physical properties of the concrete. Air contents were estimated based on comparison to reference concretes. Thin sections were prepared from the exterior area of Core No. 1 and the interior area of Core No. 2 and examined with a petrographic microscope to evaluate the mineralogy of the paste and aggregates, assess the degree of portland cement hydration, and detect the presence of any deleterious reactions or deposits. Depth of paste carbonation was determined by thin section analysis.

Sample Descriptions

The following concrete core specimens were received.

Micro-Chem Core No.	Diameter, in.	Length, in	Description	Reinforcing Steel
1	2.7	3.6	Deck, East end, 4 in. down from surface, 1/6/15	None
2	2.7	2.9	Deck, West end, 4 in. down from surface, 1/6/15	None

Petrographic Examination

1. The concrete from Core Nos. 1 and 2 was composed of siliceous coarse and fine aggregates and portland cement. No fly ash or any other supplementary cementitious materials were detected in the concrete. The concrete from both cores was not air-entrained. The coarse and fine aggregate materials were composed primarily of metagranite, granite, mylonite, quartz, feldspars, mica, gabbro, schist, felsite, hornblende, and calcite. Maximum size aggregate was 1.5 in. in Core No. 1 and 1.0 in. in Core No. 2. The aggregate materials appeared to be well graded, properly shaped, uniformly distributed, and very hard to hard. No excessive fines or "dirty" aggregate particles were detected in the concrete core specimens.

2. The physical descriptions, physical properties, mineralogical properties, and secondary deposits of the concrete from Core Nos. 1 and 2 are presented in Tables I and II.

Discussion and Conclusions

1. The concrete from Core Nos. 1 and 2 had satisfactory strength properties as indicated by the very hard cement paste by petrographic examination. Paste-aggregate bond of Core Nos. 1 and 2 was weak and moderately weak, respectively. The portland cement was well hydrated by thin section analysis. The size and optical properties of the unhydrated portland cement particles were indicative of concrete that was from a relatively "old" structure. Paste carbonation along the exterior and interior surfaces was spotty.

2. No large cracks were present in Core Nos. 1 and 2. Both cores contained small transverse macrocracks (oriented parallel to exterior and interior surfaces) and expansion microcracks radiating from reacted felsite aggregate particles. Secondary deposits of ettringite (calcium sulfo-aluminate hydrate) and alkali-silica gel were present in both cores. Gel was observed in air-voids and within expansion microcracks in both cores. Aggregate reaction rims were also observed in the concrete core specimens.

3. ASR was present in the concrete from Core Nos. 1 and 2 by petrographic examination. The degree of ASR in the concrete from the bridge deck as represented by these two core specimens was somewhat more prominent than the concrete from the previously examined wall and abutment cores. However, the ASR in the bridge deck concrete as represented by Core Nos. 1 and 2 was not in an advanced stage of development that has produced widespread expansion cracking and microcracking of the concrete.

Should any questions arise concerning the findings of this report, please contact the undersigned.

Respectfully submitted,
MICRO-CHEM LABORATORIES



Robert C. O'Neill, P.G.
Senior Petrographer

RCON/jamc
C6102A15
Attachments

Sample Disposition: The samples will be stored for a period of one month and thereafter discarded. Charges for additional sample storage time and/or shipping of the samples will be billed to the client.

TABLE I

JOB NO. C-6102A-15

CORE NO. 1

PETROGRAPHIC EXAMINATION OF CORE SPECIMEN
ASTM C856-14

Physical Description of Concrete

Exterior Surface	Interior Surface	Surface Deposits/Coatings	Cracks
Medium brown and hard to very hard. Broken surface.	Medium gray and hard to very hard. Broken surface.	Several aggregate reaction rims with white alkali-silica gel on exterior surface. One aggregate socket with gel on interior surface.	Two small transverse cracks located at 5-25 mm and 33-70 mm from exterior surface

Physical Properties of Concrete

Paste Hardness	Paste Color	Paste Volume	Paste-Aggregate Bond	Air Content	Consolidation
Very hard	Medium gray	Moderately low	Weak	0.5-1.0	Good

Mineralogical Properties of Cementitious Paste

Location	Unhydrated Cement, %	Calcium Hydroxide, %	Fly Ash, %	Microcracks	Depth of Carbonation
Exterior 35 mm	<1-5	0-25	None	Expansion microcracks from reacted felsite coarse aggregate particle. Few random microcracks throughout section.	Spotty

Secondary Deposits

Concrete Sections	Exterior Thin Section
Air-voids lined with low amount of ettringite deposits throughout core. Some voids with alkali-silica gel. Very few aggregate reactions rims.	Air-voids and some cracks and microcracks lined/filled with gel. Expansion microcracks contain gel. Few areas of gel-soaked paste.

TABLE II

JOB NO. C-6102A-15

CORE NO. 2

PETROGRAPHIC EXAMINATION OF CORE SPECIMEN
ASTM C856-14

Physical Description of Concrete

Exterior Surface	Interior Surface	Surface Deposits/Coatings	Cracks
Medium gray and hard to very hard. Broken surface.	Medium gray and hard to very hard. Broken surface.	Few aggregate reaction rims with gel and aggregate sockets with gel on exterior surface	Some small cracks and microcracks in interior 30 mm. Expansion cracks from reacted felsite aggregate particle at 20 mm from interior surface.

Physical Properties of Concrete

Paste Hardness	Paste Color	Paste Volume	Paste-Aggregate Bond	Air Content	Consolidation
Very hard	Medium gray	Moderately low	Moderately weak	0.5-1.5	Good

Mineralogical Properties of Cementitious Paste

Location	Unhydrated Cement, %	Calcium Hydroxide, %	Fly Ash, %	Microcracks	Depth of Carbonation
Interior 35 mm	5-10	0-20	None	Some to many expansion microcracks from reacted felsite aggregate particle. Very few random microcracks throughout section.	Spotty

Secondary Deposits

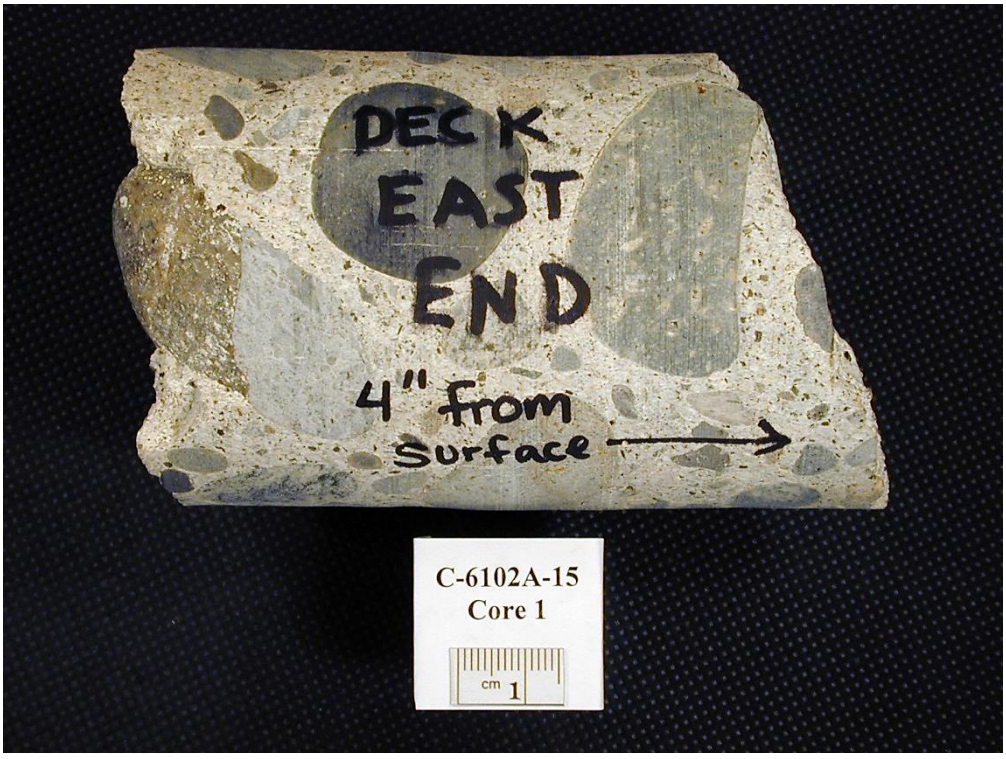
Concrete Sections	Interior Thin Section
Air- voids lined with low amount of ettringite deposits throughout core. Expansion cracks and gel from reacted felsite aggregate particle. Some voids filled with gel. Few aggregate reaction rims.	Some voids lined with ettringite deposits throughout section. Gel in expansion cracks and microcracks from reacted felsite aggregate particle. Some areas of gel-soaked paste.

PHOTOGRAPHS OF AS-RECEIVED SAMPLE
CORE 1 (scale in cm)

PHOTO NO. 1 – Exterior surface of core



PHOTO NO. 2 – Side of core. Exterior surface at right of photo.



PHOTOGRAPH OF AS-RECEIVED SAMPLE
CORE 1 (scale in cm)

PHOTO NO. 3 – Interior surface



PHOTOGRAPH OF LAPPED SECTION
CORE 1 (scale in cm)

PHOTO NO. 4 – Exterior surface at left of photo



PHOTOGRAPHS OF AS-RECEIVED SAMPLE
CORE 2 (scale in cm)

PHOTO NO. 5 – Exterior surface of core



PHOTO NO. 6 – Side of core. Exterior surface at left of photo.



PHOTOGRAPH OF AS-RECEIVED SAMPLE
CORE 2 (scale in cm)

PHOTO NO. 7 – Interior surface of core



PHOTOGRAPH OF LAPPED SECTION
CORE 2 (scale in cm)

PHOTO NO. 8 – Exterior surface at left of photo



STEREOMICROGRAPHS OF AS-RECEIVED CORES
(scale in mm)

PHOTO A – Shows aggregate reaction rims (arrows) and white alkali-silica gel deposits on exterior surface. Core No. 1.

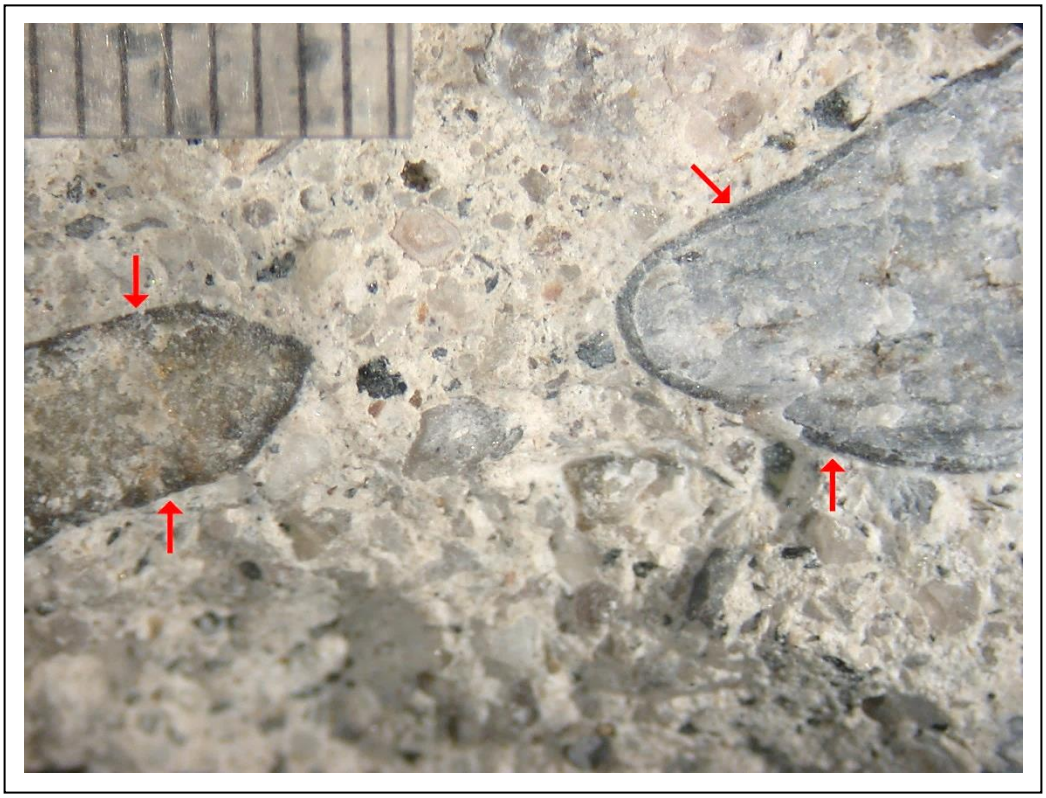
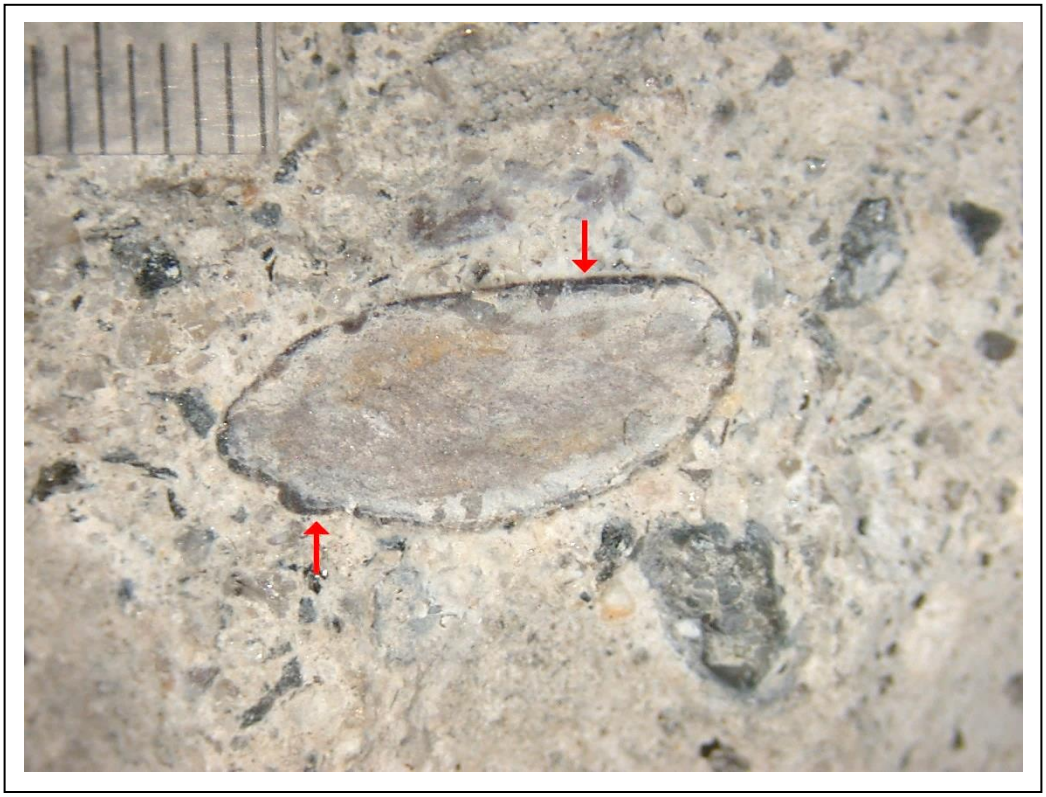


PHOTO B – Shows aggregate reaction rims (arrows) and white alkali-silica gel deposits on exterior surface. Core No. 2.



Appendix E
Vertical Analysis Calculations

M375A Mineral King Bridge over the East Fork of the Kaweah River
Vertical Analysis Approach Summary

Load Rating Analysis:

The as-built drawings for the M375A Mineral King Bridge over the East Fork of the Kaweah River do not indicate the live load that the existing structure was designed to support, nor do they indicate the applicable code or design philosophy implemented. Based on the current Caltrans BIR report dated July 2014, the existing bridge has an Inventory Rating of 26.5 tons (24 metric tons) and an Operating Rating of 44.3 tons (40.2 metric tons).

In order to verify the Inventory and Operating Ratings provided in the latest BIR, Cornerstone and Parsons performed a vertical load analysis to determine if the existing bridge has any vertical load deficiencies that would require rehabilitation. To perform the vertical analysis, the AASHTO Manual for Bridge Evaluation, First Edition (MBE) was used to calculate Rating Factors for the major bridge components. The Rating Factors were calculated using LFD principles and HS20-44 loading to correspond with the rating methodology indicated in Caltrans most recent BIR.

For the vertical analysis of the bridge, material properties obtained from the materials testing program were used. For concrete, the lowest compressive strength obtained from the concrete cores, 5,490 psi was used. For the existing reinforcing steel, yield strength of 40,000 psi was used.

Cornerstone's load rating analysis consisted of checking longitudinal moment in the continuous bridge deck over the main arch span, the existing transverse deck beams in both flexure and shear, the approach span longitudinal beams in flexure and shear, and the arch ribs and spandrel columns in flexure.

- **Longitudinal Moment in the Existing Bridge Deck over the Main Arch Span**
    - The existing bridge deck's longitudinal flexural reinforcing steel consists of truss bars that transition from the negative moment reinforcing region to the positive moment reinforcing region at both the $^1/_8$ span and ¼ span. SAP2000 was used to model a continuous beam subjected to HS20-44 loading in order to determine the maximum positive moment demand and the maximum negative moment demand at both the centerline of support as well as at the $^1/_8$ span. Negative flexure steel reinforcement is not currently provided past the ¼ point of the span.
    - The width of the slab in feet over which a wheel load is distributed was determined in accordance with Caltrans BDS section 3.24.3.2.

- **Flexure and Shear in the Existing Transverse Deck Beams**
    - The existing transverse deck beams were checked for both flexure and shear under two lanes of HS20-44 loading conservatively assuming the connection to the spandrel columns were pinned.

- **Approach Span Longitudinal Beams**

CSEG

- The existing approach span longitudinal beams were analyzed assuming simply supported under HS20-44 loading.

- **Arch Ribs and Spandrel Columns in Flexure**

  - SAP2000 was used to create a 2D model of the existing arch ribs and spandrel columns. A single arch rib and row of spandrel columns were included in the model.
  - Live load spandrel column reactions, assuming the bridge was loaded with two lanes of HS20-44 loading, were applied to the arch. It was assumed that one HS20-44 truck would be applied to each arch rib. The live load reactions were taken from the SAP2000 continuous deck slab model. A total of six (6) cases were analyzed in order to envelope the flexural demands on the arch and spandrel columns as the trucks move across the arch span.
  - Dead load spandrel column reactions calculated based on tributary area were applied to the arch ribs
  - Degradation of the existing members (i.e. corrosion of reinforcing steel, concrete delamination) was not accounted for in determining the capacities at this time.

Element	D/C Ratio Inventory Level	Inventory Rating	Operating Rating
Deck Slab over Main Arch Span – Flexure	2.28	0.39 (12.7 metric tons)	0.65 (21.2 metric tons)
Transverse Cap Beam in Main Arch Span – Positive Moment	0.87	1.18 (38.5 metric tons)	1.97 (64.3 metric tons)
Transverse Cap Beam in Main Arch Span – Shear	1.15	0.84 (27.4 metric tons)	1.41 (46.0 metric tons)
Approach Span Longitudinal Beams – Positive Flexure	0.48	2.35 (76.7 metric tons)	3.92 (128.0 metric tons)
Arch Ribs – Flexure	0.78	1.35 (44.1 metric tons)	2.26 (73.8 metric tons)
Pier Spandrel Column – Flexure	0.66	1.46 (47.6 metric tons)	2.44 (79.5 metric tons)
Spandrel Column – Flexure	1.87	0.46 (15.0 metric tons)	0.76 (24.8 metric tons)

Load Posting Analysis:

Cornerstone's posting analysis was performed in accordance with the guidelines provided in the MBE. Per the MBE, the live loads to be used in the general rating equation (MBE Eqn. 6B.5.1-1)for posting considerations may consist of the Type 3 Unit, Type 3S2 Unit, Type 3-3 Unit, SU4 Truck, SU5 Truck, SU6 Truck, SU7 Truck, or State legal loads. Generally, trucks weighing up to 80,000 pounds are permitted unrestricted operation and considered legal so long as they meet the guidelines of Federal Bridge Formula B. However, Cornerstone understands that Caltrans loading posting analyses typically only consider the Type 3 Unit, Type 3S2 Unit, and Type 3-3 Unit in completing their load posting analyses. Therefore, Cornerstone's load posting analysis shall be limited to these particular vehicles.

The posting analysis was limited to checking the existing reinforced concrete bridge deck over the main arch span since it was determined to be the critical element based on the calculated demand to capacity ratio, Inventory Rating, and Operating Rating under HS20-44 loading. It should be noted that Caltrans SM&I load rating and posting analysis did not include a check of the existing deck spanning between transverse cap beams in the main arch span. Based on our analysis, the governing posting load, considering moment in the bridge deck, was determined to be the Type 3 Unit and resulted in a rating factor of **0.77**. The same SAP2000 model used to determine the longitudinal moment demand in the existing bridge deck was used to complete the posting analysis.

KLEINFELDER
Bright People. Right Solutions.

Compressive Strength of Cored Concrete Specimens
ASTM C42-03

Project Name:	Mineral King Bridge	**Sample Date:**	01/06/15
Project Number:	20154157	**Test Date:**	01/23/15
Sample / Lab # :	13425		
Source:	Existing Bridge		
Mix Design #/Description:	N/A		
Specified Compressive Strength:	N/A		

Specimen ID No.	1	2	3	
Location	SW Abutment	Deck E End	Deck W End	
As Received Diameter (0.01")	1.28	2.72	2.72	
As Received Length (0.25")	3.35	4.36	3.55	
Max Aggregate Size	3/4"	1 1/2"	1 1/2"	
Aged (days)	N/P	N/P	N/P	
Length Before Capping (0.1")	2.5	3.5	3.2	
Length After Capping (0.1")	2.69	3.73	3.44	
As Tested Diameter (0.01")	1.28	2.72	2.72	
L/D Ratio	2.10	1.37	1.26	
Correction Factor	1	0.94	0.93	
Area (0.01")	1.29	5.81	5.81	
Ultimate Load (lbs)	7070	37570	37950	
Compressive Strength (psi)	5490	6470	6530	
Corrected Strength	5490	6080	6070	
Fracture Type	4 (Shear)	3 (columnar)	3 (columnar)	
Load Orientation	Normal	Normal	Normal	
Moisture Condition	Dry	Dry	Dry	

CONSERVATIVELY ASSUME f'_c = 5,490 PSI

Remarks: Load Rate: 35 psi +/- 7 psi (- lbs. per second)

Technician: A Brent **Lab Coordinator:** K Childers

LABORATORY CERTIFICATE

Anamet, inc

January 21, 2015

LABORATORY NUMBER:	5005.1195
CUSTOMER AUTHORIZATION:	Transmittal COC No. 31284 Mineral King, Project No. 20154157
DATE SUBMITTED:	January 9, 2015
REPORT TO:	Kleinfelder Attn: Neva Popenoe 5125 N. Gates Ave., Ste. 102 Fresno, CA 93722

SUBJECT

One rebar sample was submitted for mechanical testing. The sample was identified as 1" Square Rebar.

TENSILE TEST (ASTM A370-14)

F_y = 40 KSI

Diameter of Specimen (in.)	0.505
Area (in^2)	0.200
Tensile Strength (psi)	61300
Yield Strength (psi)*	40300
Elongation in 2.0" Gage (%)	33

*Upper yield strength (formerly Y.P.)

This testing was completed on January 13, 2015 and was performed in accordance with the customer's authorization.

Submitted by:

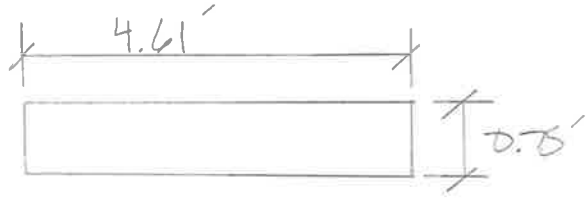
Edward A. Foreman
Quality Manager

kc

26102 Eden Landing Road, Suite 3, Hayward, California 94545-3811 Phone: 510-887-8811 Fax: 510-887-8427 www.anametinc.com
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'LIVE LOAD DEMADD TO ARCH'

FRAME GEOMETRY OF EXISTING DECK SLAB



'EXIST-DECK' SECTION

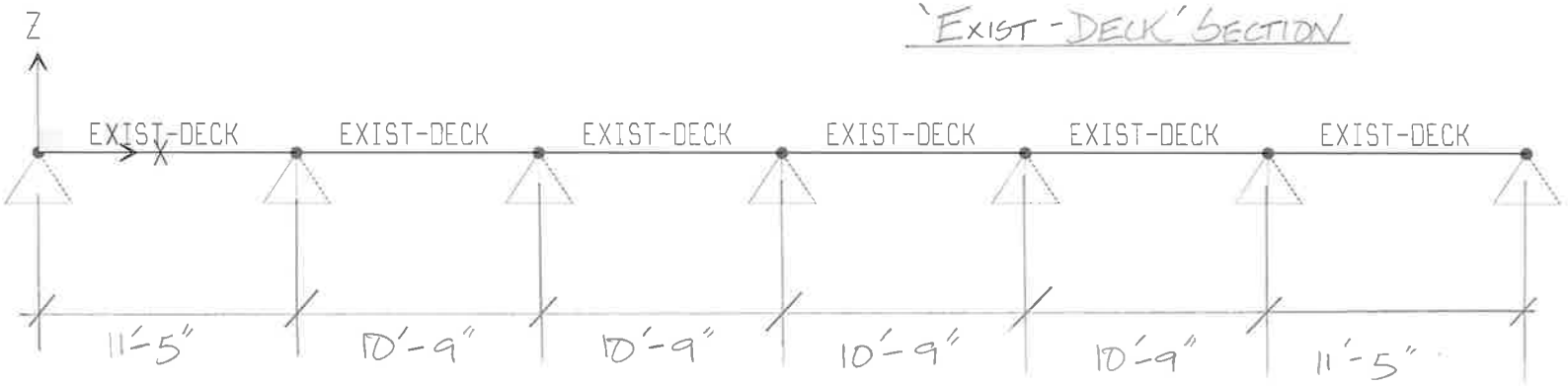


Table: Analysis Case Definitions

Case Text	Type Text	InitialCond Text	ModalCase Text
DEAD	LinStatic	Zero	
MODAL	LinModal	Zero	
HS20(C1)	LinStatic	Zero	
HS20(C2)	LinStatic	Zero	
HS20(C3)	LinStatic	Zero	
HS20(C4)	LinStatic	Zero	
HS20(C5)	LinStatic	Zero	
HS20(C6)	LinStatic	Zero	
SU6(C1)	LinStatic	Zero	
SU6(C2)	LinStatic	Zero	
SU7	LinStatic	Zero	
3	LinStatic	Zero	
3S2	LinStatic	Zero	
3-3	LinStatic	Zero	
SU4	LinStatic	Zero	
SU5	LinStatic	Zero	
HS20(-)	LinStatic	Zero	
HS20-SUP	LinStatic	Zero	
HS20(+)	LinStatic	Zero	

Table: Case - Static 1 - Load Assignments

Case Text	LoadType Text	LoadName Text	LoadSF Unitless
DEAD	Load case	DEAD	1.000000
HS20(C1)	Load case	HS20(C1)	1.000000
HS20(C2)	Load case	HS20(C2)	1.000000
HS20(C3)	Load case	HS20(C3)	1.000000
HS20(C4)	Load case	HS20(C4)	1.000000
HS20(C5)	Load case	HS20(C5)	1.000000
HS20(C6)	Load case	HS20(C6)	1.000000
SU6(C1)	Load case	SU6	1.000000
SU7	Load case	SU7	1.000000
3	Load case	3	1.000000
3S2	Load case	3S2	1.000000
3-3	Load case	3-3	1.000000
SU4	Load case	SU4	1.000000
SU5	Load case	SU5	1.000000
HS20(-)	Load case	HS20-1/8	1.000000
HS20-SUP	Load case	HS20-SUP	1.000000
HS20(+)	Load case	HS20(+)	1.000000

Table: Connectivity - Frame/Cable

Frame Text	JointI Text	JointJ Text	Length ft
1	1	7	11.4167
2	7	6	10.7500
3	6	5	10.7500
4	5	4	10.7500
5	4	3	10.7500

Frame Text	JointI Text	JointJ Text	Length ft
6	3	2	11.4167

Table: Coordinate Systems

Name Text	Type Text	X ft	Y ft	Z ft	AboutZ Degrees	AboutY Degrees	AboutX Degrees
GLOBAL	Cartesian	0.0000	0.0000	0.0000	0.000	0.000	0.000

Table: Frame Loads - Point, Part 1 of 2

Frame Text	LoadCase Text	CoordSys Text	Type Text	Dir Text	DistType Text	RelDist Unitless
1	HS20(C1)	GLOBAL	Force	Gravity	RelDist	0.0000
1	HS20(C3)	GLOBAL	Force	Gravity	RelDist	0.7153
1	SU6	GLOBAL	Force	Gravity	RelDist	0.1314
1	SU6	GLOBAL	Force	Gravity	RelDist	0.4818
1	SU6	GLOBAL	Force	Gravity	RelDist	0.8321
1	SU7	GLOBAL	Force	Gravity	RelDist	0.1314
1	SU7	GLOBAL	Force	Gravity	RelDist	0.4818
1	SU7	GLOBAL	Force	Gravity	RelDist	0.8321
1	3	GLOBAL	Force	Gravity	RelDist	0.3942
1	3	GLOBAL	Force	Gravity	RelDist	0.7445
1	3S2	GLOBAL	Force	Gravity	RelDist	0.3504
1	3S2	GLOBAL	Force	Gravity	RelDist	0.7007
1	3-3	GLOBAL	Force	Gravity	RelDist	0.4380
1	3-3	GLOBAL	Force	Gravity	RelDist	0.7883
1	SU4	GLOBAL	Force	Gravity	RelDist	0.1752
1	SU4	GLOBAL	Force	Gravity	RelDist	0.5255
1	SU4	GLOBAL	Force	Gravity	RelDist	0.8759
1	SU5	GLOBAL	Force	Gravity	RelDist	0.4380
1	SU5	GLOBAL	Force	Gravity	RelDist	0.7883
1	HS20-1/8	GLOBAL	Force	Gravity	RelDist	0.5001
1	HS20-SUP	GLOBAL	Force	Gravity	RelDist	0.4126
1	HS20(+)	GLOBAL	Force	Gravity	RelDist	0.4248
2	HS20(C1)	GLOBAL	Force	Gravity	RelDist	0.2403
2	HS20(C2)	GLOBAL	Force	Gravity	RelDist	0.0000
2	HS20(C4)	GLOBAL	Force	Gravity	RelDist	0.6977
2	SU6	GLOBAL	Force	Gravity	RelDist	0.1938
2	SU6	GLOBAL	Force	Gravity	RelDist	0.5659
2	SU7	GLOBAL	Force	Gravity	RelDist	0.1938
2	SU7	GLOBAL	Force	Gravity	RelDist	0.5659
2	3S2	GLOBAL	Force	Gravity	RelDist	0.7054
2	SU4	GLOBAL	Force	Gravity	RelDist	0.7984
2	SU5	GLOBAL	Force	Gravity	RelDist	0.1473
2	SU5	GLOBAL	Force	Gravity	RelDist	0.5194
2	HS20-1/8	GLOBAL	Force	Gravity	RelDist	0.8372
2	HS20-SUP	GLOBAL	Force	Gravity	RelDist	0.6784
3	HS20(C1)	GLOBAL	Force	Gravity	RelDist	0.5426
3	HS20(C2)	GLOBAL	Force	Gravity	RelDist	0.3023
3	HS20(C3)	GLOBAL	Force	Gravity	RelDist	0.0000
3	HS20(C5)	GLOBAL	Force	Gravity	RelDist	0.6977
3	3-3	GLOBAL	Force	Gravity	RelDist	0.2636
4	HS20(C2)	GLOBAL	Force	Gravity	RelDist	0.6047

Frame	LoadCase	AbsDist	Force
Text	Text	ft	Kip
3	HS20(C5)	7.5000	32.000
3	3-3	2.8333	8.000
4	HS20(C2)	6.5000	8.000
4	HS20(C3)	3.2500	8.000
4	HS20(C4)	0.0000	32.000
4	HS20(C6)	4.9167	32.000
4	3-3	7.0833	6.000
5	HS20(C4)	3.2500	8.000
5	HS20(C5)	0.0000	32.000
5	HS20(C6)	8.1667	32.000
5	3-3	0.3333	6.000
6	HS20(C5)	3.2500	8.000
6	HS20(C6)	11.4167	8.000
6	3-3	0.5833	6.000

Table: Frame Offset Along Length Assignments

Frame	Type	LengthI	LengthJ	RigidFactor
Text	Text	ft	ft	Unitless
1	User	0.00000	0.00000	0.000000
2	User	0.00000	0.00000	0.000000
3	User	0.00000	0.00000	0.000000
4	User	0.00000	0.00000	0.000000
5	User	0.00000	0.00000	0.000000
6	User	0.00000	0.00000	0.000000

Table: Frame Section Assignments

Frame	SectionType	AutoSelect	AnalSect	DesignSect	MatProp
Text	Text	Text	Text	Text	Text
1	Rectangular	N.A.	EXIST-DECK	EXIST-DECK	Default
2	Rectangular	N.A.	EXIST-DECK	EXIST-DECK	Default
3	Rectangular	N.A.	EXIST-DECK	EXIST-DECK	Default
4	Rectangular	N.A.	EXIST-DECK	EXIST-DECK	Default
5	Rectangular	N.A.	EXIST-DECK	EXIST-DECK	Default
6	Rectangular	N.A.	EXIST-DECK	EXIST-DECK	Default

Table: Frame Section Properties 1 - General, Part 1 of 6

SectionName	Material	Shape	t3	t2	tf	tw
Text	Text	Text	ft	ft	ft	ft
EXIST-DECK	CONC	Rectangular	0.75000	4.61000		
W10X112	STEEL	I/Wide Flange	0.95000	0.86667	0.10417	0.06292
W10X12	STEEL	I/Wide Flange	0.82250	0.33000	0.01750	0.01583
W10X49	STEEL	I/Wide Flange	0.83167	0.83333	0.04667	0.02833
W10X68	STEEL	I/Wide Flange	0.86667	0.84167	0.06417	0.03917
W10X88	STEEL	I/Wide Flange	0.90000	0.85833	0.08250	0.05042
W12X136	STEEL	I/Wide Flange	1.11667	1.03333	0.10417	0.06583
W12X14	STEEL	I/Wide Flange	0.99167	0.33083	0.01875	0.01667
W12X16	STEEL	I/Wide Flange	1.00000	0.33250	0.02208	0.01833
W12X19	STEEL	I/Wide Flange	1.01667	0.33417	0.02917	0.01958
W12X190	STEEL	I/Wide Flange	1.20000	1.05833	0.14500	0.08833

SectionName	Material	Shape	t3	t2	tf	tw
Text	Text	Text	ft	ft	ft	ft
W12X65	STEEL	I/Wide Flange	1.00833	1.00000	0.05042	0.03250
W12X96	STEEL	I/Wide Flange	1.05833	1.01667	0.07500	0.04583
W14X109	STEEL	I/Wide Flange	1.19167	1.21667	0.07167	0.04375
W14X132	STEEL	I/Wide Flange	1.22500	1.22500	0.08583	0.05375
W14X159	STEEL	I/Wide Flange	1.25000	1.30000	0.09917	0.06208
W14X211	STEEL	I/Wide Flange	1.30833	1.31667	0.13000	0.08167
W14X22	STEEL	I/Wide Flange	1.14167	0.41667	0.02792	0.01917
W14X257	STEEL	I/Wide Flange	1.36667	1.33333	0.15750	0.09833
W14X311	STEEL	I/Wide Flange	1.42500	1.35000	0.18833	0.11750
W14X370	STEEL	I/Wide Flange	1.49167	1.37500	0.22167	0.13833
W14X426	STEEL	I/Wide Flange	1.55833	1.39167	0.25333	0.15667
W14X90	STEEL	I/Wide Flange	1.16667	1.20833	0.05917	0.03667
W16X26	STEEL	I/Wide Flange	1.30833	0.45833	0.02875	0.02083
W16X31	STEEL	I/Wide Flange	1.32500	0.46083	0.03667	0.02292
W18X119	STEEL	I/Wide Flange	1.58333	0.94167	0.08833	0.05458
W18X35	STEEL	I/Wide Flange	1.47500	0.50000	0.03542	0.02500
W18X40	STEEL	I/Wide Flange	1.49167	0.50167	0.04375	0.02625
W18X55	STEEL	I/Wide Flange	1.50833	0.62750	0.05250	0.03250
W18X65	STEEL	I/Wide Flange	1.53333	0.63250	0.06250	0.03750
W18X76	STEEL	I/Wide Flange	1.51667	0.91667	0.05667	0.03542
W18X97	STEEL	I/Wide Flange	1.55000	0.92500	0.07250	0.04458
W21X44	STEEL	I/Wide Flange	1.72500	0.54167	0.03750	0.02917
W21X50	STEEL	I/Wide Flange	1.73333	0.54417	0.04458	0.03167
W24X103	STEEL	I/Wide Flange	2.04167	0.75000	0.08167	0.04583
W24X117	STEEL	I/Wide Flange	2.02500	1.06667	0.07083	0.04583
W24X131	STEEL	I/Wide Flange	2.04167	1.07500	0.08000	0.05042
W24X146	STEEL	I/Wide Flange	2.05833	1.07500	0.09083	0.05417
W24X162	STEEL	I/Wide Flange	2.08333	1.08333	0.10167	0.05875
W24X176	STEEL	I/Wide Flange	2.10000	1.07500	0.11167	0.06250
W24X207	STEEL	I/Wide Flange	2.14167	1.08333	0.13083	0.07250
W24X250	STEEL	I/Wide Flange	2.19167	1.10000	0.15750	0.08667
W24X335	STEEL	I/Wide Flange	2.29167	1.12500	0.20667	0.11500
W24X55	STEEL	I/Wide Flange	1.96667	0.58417	0.04208	0.03292
W24X62	STEEL	I/Wide Flange	1.97500	0.58667	0.04917	0.03583
W24X68	STEEL	I/Wide Flange	1.97500	0.74750	0.04875	0.03458
W24X76	STEEL	I/Wide Flange	1.99167	0.74917	0.05667	0.03667
W27X84	STEEL	I/Wide Flange	2.22500	0.83000	0.05333	0.03833
W27X94	STEEL	I/Wide Flange	2.24167	0.83250	0.06208	0.04083
W30X108	STEEL	I/Wide Flange	2.48333	0.87500	0.06333	0.04542
W30X116	STEEL	I/Wide Flange	2.50000	0.87500	0.07083	0.04708
W30X148	STEEL	I/Wide Flange	2.55833	0.87500	0.09833	0.05417
W30X173	STEEL	I/Wide Flange	2.53333	1.25000	0.08917	0.05458
W30X191	STEEL	I/Wide Flange	2.55833	1.25000	0.09917	0.05917
W30X99	STEEL	I/Wide Flange	2.47500	0.87500	0.05583	0.04333
W33X118	STEEL	I/Wide Flange	2.74167	0.95833	0.06167	0.04583
W33X130	STEEL	I/Wide Flange	2.75833	0.95833	0.07125	0.04833
W36X135	STEEL	I/Wide Flange	2.96667	1.00000	0.06583	0.05000
W36X150	STEEL	I/Wide Flange	2.99167	1.00000	0.07833	0.05208
W36X194	STEEL	I/Wide Flange	3.04167	1.00833	0.10500	0.06375
W36X210	STEEL	I/Wide Flange	3.05833	1.01667	0.11333	0.06917
W36X230	STEEL	I/Wide Flange	2.99167	1.37500	0.10500	0.06333
W36X260	STEEL	I/Wide Flange	3.02500	1.38333	0.12000	0.07000
W36X300	STEEL	I/Wide Flange	3.05833	1.39167	0.14000	0.07875
W8X10	STEEL	I/Wide Flange	0.65750	0.32833	0.01708	0.01417
W8X24	STEEL	I/Wide Flange	0.66083	0.54167	0.03333	0.02042

SectionName	Material	Shape	t3	t2	tf	tw
Text	Text	Text	ft	ft	ft	ft
W8X31	STEEL	I/Wide Flange	0.66667	0.66667	0.03625	0.02375
W8X40	STEEL	I/Wide Flange	0.68750	0.67250	0.04667	0.03000
W8X58	STEEL	I/Wide Flange	0.72917	0.68500	0.06750	0.04250
W8X67	STEEL	I/Wide Flange	0.75000	0.69000	0.07792	0.04750

Table: Frame Section Properties 1 - General, Part 2 of 6

SectionName	t2b	tfb	Area	TorsConst	I33	I22	AS2
Text	ft	ft	ft2	ft4	ft4	ft4	ft2
EXIST-DECK			3.4575	0.581840	0.162070	6.123261	2.8813
W10X112	0.86667	0.10417	0.2285	0.000728	0.034529	0.011381	0.0598
W10X12	0.33000	0.01750	0.0246	2.638E-06	0.002595	0.000105	0.0130
W10X49	0.83333	0.04667	0.1000	0.000067	0.013117	0.004504	0.0236
W10X68	0.84167	0.06417	0.1389	0.000172	0.019001	0.006462	0.0339
W10X88	0.85833	0.08250	0.1799	0.000363	0.025752	0.008632	0.0454
W12X136	1.03333	0.10417	0.2771	0.000892	0.059799	0.019194	0.0735
W12X14	0.33083	0.01875	0.0289	3.395E-06	0.004273	0.000114	0.0165
W12X16	0.33250	0.02208	0.0327	4.967E-06	0.004967	0.000136	0.0183
W12X19	0.33417	0.02917	0.0387	8.681E-06	0.006269	0.000181	0.0199
W12X190	1.05833	0.14500	0.3875	0.002353	0.091146	0.028405	0.1060
W12X65	1.00000	0.05042	0.1326	0.000105	0.025704	0.008391	0.0328
W12X96	1.01667	0.07500	0.1958	0.000330	0.040172	0.013021	0.0485
W14X109	1.21667	0.07167	0.2222	0.000343	0.059799	0.021557	0.0521
W14X132	1.22500	0.08583	0.2694	0.000593	0.073785	0.026427	0.0658
W14X159	1.30000	0.09917	0.3243	0.000950	0.091628	0.036073	0.0776
W14X211	1.31667	0.13000	0.4306	0.002151	0.128279	0.049672	0.1068
W14X22	0.41667	0.02792	0.0451	0.000010	0.009597	0.000338	0.0219
W14X257	1.33333	0.15750	0.5250	0.003815	0.163966	0.062211	0.1344
W14X311	1.35000	0.18833	0.6347	0.006559	0.208816	0.077643	0.1674
W14X370	1.37500	0.22167	0.7569	0.010706	0.262346	0.095968	0.2063
W14X426	1.39167	0.25333	0.8681	0.015963	0.318287	0.113812	0.2441
W14X90	1.20833	0.05917	0.1840	0.000196	0.048177	0.017458	0.0428
W16X26	0.45833	0.02875	0.0533	0.000013	0.014516	0.000462	0.0273
W16X31	0.46083	0.03667	0.0634	0.000022	0.018084	0.000598	0.0304
W18X119	0.94167	0.08833	0.2437	0.000511	0.105613	0.012201	0.0864
W18X35	0.50000	0.03542	0.0715	0.000024	0.024595	0.000738	0.0369
W18X40	0.50167	0.04375	0.0819	0.000039	0.029514	0.000921	0.0392
W18X55	0.62750	0.05250	0.1125	0.000080	0.042921	0.002165	0.0490
W18X65	0.63250	0.06250	0.1326	0.000132	0.051601	0.002643	0.0575
W18X76	0.91667	0.05667	0.1549	0.000136	0.064140	0.007330	0.0537
W18X97	0.92500	0.07250	0.1979	0.000283	0.084394	0.009693	0.0691
W21X44	0.54167	0.03750	0.0903	0.000037	0.040654	0.000998	0.0503
W21X50	0.54417	0.04458	0.1021	0.000055	0.047454	0.001201	0.0549
W24X103	0.75000	0.08167	0.2104	0.000341	0.144676	0.005739	0.0936
W24X117	1.06667	0.07083	0.2389	0.000324	0.170718	0.014323	0.0928
W24X131	1.07500	0.08000	0.2674	0.000458	0.193866	0.016397	0.1029
W24X146	1.07500	0.09083	0.2986	0.000646	0.220872	0.018856	0.1115
W24X162	1.08333	0.10167	0.3313	0.000892	0.249325	0.021364	0.1224
W24X176	1.07500	0.11167	0.3590	0.001153	0.273920	0.023100	0.1312
W24X207	1.08333	0.13083	0.4215	0.001847	0.328897	0.027874	0.1553
W24X250	1.10000	0.15750	0.5104	0.003212	0.409433	0.034915	0.1899
W24X335	1.12500	0.20667	0.6833	0.007330	0.573881	0.049672	0.2635
W24X55	0.58417	0.04208	0.1132	0.000060	0.065586	0.001403	0.0647
W24X62	0.58667	0.04917	0.1271	0.000085	0.075231	0.001664	0.0708

SectionName	t2b	tfb	Area	TorsConst	I33	I22	AS2
Text	ft	ft	ft2	ft4	ft4	ft4	ft2
W24X68	0.74750	0.04875	0.1396	0.000090	0.088252	0.003395	0.0683
W24X76	0.74917	0.05667	0.1556	0.000129	0.101273	0.003979	0.0730
W27X84	0.83000	0.05333	0.1722	0.000136	0.137442	0.005112	0.0853
W27X94	0.83250	0.06208	0.1924	0.000194	0.157697	0.005980	0.0915
W30X108	0.87500	0.06333	0.2201	0.000241	0.215567	0.007041	0.1128
W30X116	0.87500	0.07083	0.2375	0.000310	0.237751	0.007909	0.1177
W30X148	0.87500	0.09833	0.3021	0.000699	0.322145	0.010947	0.1386
W30X173	1.25000	0.08917	0.3542	0.000752	0.396894	0.028839	0.1383
W30X191	1.25000	0.09917	0.3910	0.001013	0.443673	0.032456	0.1514
W30X99	0.87500	0.05583	0.2021	0.000182	0.192419	0.006173	0.1073
W33X118	0.95833	0.06167	0.2410	0.000256	0.284529	0.009018	0.1257
W33X130	0.95833	0.07125	0.2660	0.000355	0.323592	0.010513	0.1333
W36X135	1.00000	0.06583	0.2757	0.000338	0.376157	0.010851	0.1483
W36X150	1.00000	0.07833	0.3069	0.000487	0.435957	0.013021	0.1558
W36X194	1.00833	0.10500	0.3958	0.001071	0.583526	0.018084	0.1939
W36X210	1.01667	0.11333	0.4292	0.001350	0.636574	0.019821	0.2115
W36X230	1.37500	0.10500	0.4694	0.001379	0.723380	0.045332	0.1895
W36X260	1.38333	0.12000	0.5313	0.002001	0.834298	0.052566	0.2118
W36X300	1.39167	0.14000	0.6132	0.003096	0.978974	0.062693	0.2408
W8X10	0.32833	0.01708	0.0206	2.054E-06	0.001485	0.000101	0.0093
W8X24	0.54167	0.03333	0.0492	0.000017	0.003988	0.000883	0.0135
W8X31	0.66667	0.03625	0.0633	0.000026	0.005305	0.001789	0.0158
W8X40	0.67250	0.04667	0.0812	0.000054	0.007041	0.002368	0.0206
W8X58	0.68500	0.06750	0.1188	0.000161	0.010995	0.003622	0.0310
W8X67	0.69000	0.07792	0.1368	0.000244	0.013117	0.004273	0.0356

Table: Frame Section Properties 1 - General, Part 3 of 6

SectionName	AS3	S33	S22	Z33	Z22	R33	R22
Text	ft2	ft3	ft3	ft3	ft3	ft	ft
EXIST-DECK	2.8813	0.432188	2.656513	0.648281	3.984769	0.21651	1.33079
W10X112	0.1505	0.072693	0.026264	0.085069	0.040046	0.38876	0.22319
W10X12	0.0096	0.006309	0.000637	0.007292	0.001007	0.32487	0.06540
W10X49	0.0648	0.031545	0.010810	0.034954	0.016377	0.36218	0.21223
W10X68	0.0900	0.043848	0.015356	0.049363	0.023206	0.36987	0.21570
W10X88	0.1180	0.057227	0.020114	0.065394	0.030729	0.37839	0.21908
W12X136	0.1794	0.107103	0.037149	0.123843	0.056713	0.46456	0.26319
W12X14	0.0103	0.008617	0.000688	0.010069	0.001100	0.38458	0.06277
W12X16	0.0122	0.009934	0.000818	0.011632	0.001308	0.38970	0.06448
W12X19	0.0162	0.012333	0.001085	0.014294	0.001725	0.40259	0.06847
W12X190	0.2558	0.151910	0.053678	0.179977	0.082755	0.48499	0.27074
W12X65	0.0840	0.050983	0.016782	0.056019	0.025521	0.44022	0.25152
W12X96	0.1271	0.075915	0.025615	0.085069	0.039063	0.45291	0.25786
W14X109	0.1453	0.100363	0.035436	0.111111	0.053646	0.51875	0.31146
W14X132	0.1752	0.120465	0.043147	0.135417	0.065394	0.52330	0.31318
W14X159	0.2149	0.146605	0.055496	0.166088	0.084491	0.53154	0.33351
W14X211	0.2853	0.196096	0.075451	0.225694	0.114583	0.54584	0.33966
W14X22	0.0194	0.016812	0.001620	0.019213	0.002541	0.46145	0.08655
W14X257	0.3500	0.239950	0.093316	0.281829	0.142361	0.55885	0.34423
W14X311	0.4238	0.293075	0.115026	0.348958	0.175926	0.57357	0.34975
W14X370	0.5080	0.351748	0.139590	0.425926	0.214120	0.58871	0.35607
W14X426	0.5876	0.408497	0.163562	0.502894	0.251157	0.60553	0.36209
W14X90	0.1192	0.082589	0.028895	0.090856	0.043750	0.51166	0.30800
W16X26	0.0220	0.022190	0.002018	0.025579	0.003171	0.52170	0.09312

SectionName	AS3	S33	S22	Z33	Z22	R33	R22
Text	ft2	ft3	ft3	ft3	ft3	ft	ft
W16X31	0.0282	0.027297	0.002595	0.031250	0.004068	0.53407	0.09712
W18X119	0.1386	0.133406	0.025914	0.151620	0.039988	0.65824	0.22373
W18X35	0.0295	0.033349	0.002951	0.038484	0.004664	0.58639	0.10157
W18X40	0.0366	0.039572	0.003672	0.045370	0.005758	0.60014	0.10602
W18X55	0.0549	0.056911	0.006901	0.064815	0.010706	0.61767	0.13873
W18X65	0.0659	0.067306	0.008357	0.076968	0.013021	0.62373	0.14115
W18X76	0.0866	0.084580	0.015993	0.094329	0.024421	0.64356	0.21756
W18X97	0.1118	0.108896	0.020958	0.122106	0.032002	0.65300	0.22131
W21X44	0.0339	0.047135	0.003686	0.055208	0.005903	0.67106	0.10516
W21X50	0.0404	0.054754	0.004413	0.063657	0.007060	0.68180	0.10846
W24X103	0.1021	0.141723	0.015303	0.162037	0.024016	0.82920	0.16515
W24X117	0.1259	0.168610	0.026855	0.189236	0.041319	0.84536	0.24486
W24X131	0.1433	0.189909	0.030505	0.214120	0.047164	0.85153	0.24764
W24X146	0.1627	0.214612	0.035081	0.241898	0.053935	0.86004	0.25129
W24X162	0.1836	0.239352	0.039441	0.270833	0.060764	0.86757	0.25396
W24X176	0.2001	0.260876	0.042977	0.295718	0.066551	0.87347	0.25365
W24X207	0.2362	0.307141	0.051460	0.350694	0.079282	0.88332	0.25715
W24X250	0.2888	0.373627	0.063482	0.430556	0.098958	0.89563	0.26154
W24X335	0.3875	0.500842	0.088306	0.590278	0.137731	0.91642	0.26961
W24X55	0.0410	0.066698	0.004805	0.078125	0.007755	0.76119	0.11135
W24X62	0.0481	0.076184	0.005672	0.089120	0.009144	0.76941	0.11442
W24X68	0.0607	0.089369	0.009084	0.102431	0.014178	0.79514	0.15596
W24X76	0.0708	0.101697	0.010621	0.115741	0.016551	0.80687	0.15993
W27X84	0.0738	0.123543	0.012318	0.141204	0.019213	0.89334	0.17228
W27X94	0.0861	0.140696	0.014366	0.160880	0.022454	0.90543	0.17632
W30X108	0.0924	0.173611	0.016093	0.200231	0.025405	0.98956	0.17884
W30X116	0.1033	0.190201	0.018078	0.218750	0.028472	1.00053	0.18249
W30X148	0.1434	0.251840	0.025022	0.289352	0.039352	1.03267	0.19036
W30X173	0.1858	0.313338	0.046142	0.351273	0.071181	1.05860	0.28535
W30X191	0.2066	0.346845	0.051929	0.390625	0.079861	1.06527	0.28812
W30X99	0.0814	0.155490	0.014109	0.180556	0.022338	0.97580	0.17477
W33X118	0.0985	0.207559	0.018820	0.240162	0.029687	1.08663	0.19345
W33X130	0.1138	0.234629	0.021940	0.270255	0.034433	1.10301	0.19881
W36X135	0.1097	0.253589	0.021701	0.294560	0.034549	1.16808	0.19839
W36X150	0.1306	0.291447	0.026042	0.336227	0.041030	1.19177	0.20596
W36X194	0.1765	0.383688	0.035870	0.443866	0.056539	1.21415	0.21375
W36X210	0.1920	0.416288	0.038991	0.482060	0.061921	1.21790	0.21490
W36X230	0.2406	0.483596	0.065937	0.545718	0.101852	1.24134	0.31075
W36X260	0.2767	0.551602	0.075998	0.625000	0.118056	1.25317	0.31456
W36X300	0.3247	0.640201	0.090098	0.729167	0.139468	1.26353	0.31975
W8X10	0.0093	0.004518	0.000614	0.005133	0.000961	0.26881	0.07002
W8X24	0.0301	0.012070	0.003259	0.013368	0.004959	0.28481	0.13398
W8X31	0.0403	0.015914	0.005367	0.017593	0.008160	0.28941	0.16808
W8X40	0.0523	0.020483	0.007042	0.023032	0.010706	0.29438	0.17071
W8X58	0.0771	0.030159	0.010574	0.034606	0.016146	0.30429	0.17464
W8X67	0.0896	0.034979	0.012385	0.040567	0.018924	0.30965	0.17673

Table: Frame Section Properties 1 - General, Part 4 of 6

SectionName	ConcCol	ConcBeam	Color	TotalWt	TotalMass	FromFile	AMod
Text	Yes/No	Yes/No	Text	Kip	Kip-s2/ft	Yes/No	Unitless
EXIST-DECK	Yes	No	Red	34.145	1.06	No	1.000000
W10X112	No	No	Red	0.000	0.00	Yes	1.000000
W10X12	No	No	Gray8Dark	0.000	0.00	Yes	1.000000

SectionName	ConcCol	ConcBeam	Color	TotalWt	TotalMass	FromFile	AMod
Text	Yes/No	Yes/No	Text	Kip	Kip-s2/ft	Yes/No	Unitless
W10X49	No	No	Blue	0.000	0.00	Yes	1.000000
W10X68	No	No	Green	0.000	0.00	Yes	1.000000
W10X88	No	No	Cyan	0.000	0.00	Yes	1.000000
W12X136	No	No	Green	0.000	0.00	Yes	1.000000
W12X14	No	No	Magenta	0.000	0.00	Yes	1.000000
W12X16	No	No	Yellow	0.000	0.00	Yes	1.000000
W12X19	No	No	White	0.000	0.00	Yes	1.000000
W12X190	No	No	Cyan	0.000	0.00	Yes	1.000000
W12X65	No	No	Gray8Dark	0.000	0.00	Yes	1.000000
W12X96	No	No	Blue	0.000	0.00	Yes	1.000000
W14X109	No	No	Yellow	0.000	0.00	Yes	1.000000
W14X132	No	No	White	0.000	0.00	Yes	1.000000
W14X159	No	No	Gray8Dark	0.000	0.00	Yes	1.000000
W14X211	No	No	Blue	0.000	0.00	Yes	1.000000
W14X22	No	No	Red	0.000	0.00	Yes	1.000000
W14X257	No	No	Green	0.000	0.00	Yes	1.000000
W14X311	No	No	Cyan	0.000	0.00	Yes	1.000000
W14X370	No	No	Red	0.000	0.00	Yes	1.000000
W14X426	No	No	Magenta	0.000	0.00	Yes	1.000000
W14X90	No	No	Magenta	0.000	0.00	Yes	1.000000
W16X26	No	No	Yellow	0.000	0.00	Yes	1.000000
W16X31	No	No	White	0.000	0.00	Yes	1.000000
W18X119	No	No	Blue	0.000	0.00	Yes	1.000000
W18X35	No	No	Cyan	0.000	0.00	Yes	1.000000
W18X40	No	No	Red	0.000	0.00	Yes	1.000000
W18X55	No	No	Magenta	0.000	0.00	Yes	1.000000
W18X65	No	No	Yellow	0.000	0.00	Yes	1.000000
W18X76	No	No	White	0.000	0.00	Yes	1.000000
W18X97	No	No	Gray8Dark	0.000	0.00	Yes	1.000000
W21X44	No	No	Green	0.000	0.00	Yes	1.000000
W21X50	No	No	Cyan	0.000	0.00	Yes	1.000000
W24X103	No	No	Gray8Dark	0.000	0.00	Yes	1.000000
W24X117	No	No	Blue	0.000	0.00	Yes	1.000000
W24X131	No	No	Green	0.000	0.00	Yes	1.000000
W24X146	No	No	Cyan	0.000	0.00	Yes	1.000000
W24X162	No	No	Red	0.000	0.00	Yes	1.000000
W24X176	No	No	Magenta	0.000	0.00	Yes	1.000000
W24X207	No	No	Yellow	0.000	0.00	Yes	1.000000
W24X250	No	No	White	0.000	0.00	Yes	1.000000
W24X335	No	No	Gray8Dark	0.000	0.00	Yes	1.000000
W24X55	No	No	Red	0.000	0.00	Yes	1.000000
W24X62	No	No	Magenta	0.000	0.00	Yes	1.000000
W24X68	No	No	Yellow	0.000	0.00	Yes	1.000000
W24X76	No	No	White	0.000	0.00	Yes	1.000000
W27X84	No	No	Blue	0.000	0.00	Yes	1.000000
W27X94	No	No	Green	0.000	0.00	Yes	1.000000
W30X108	No	No	Red	0.000	0.00	Yes	1.000000
W30X116	No	No	Magenta	0.000	0.00	Yes	1.000000
W30X148	No	No	Yellow	0.000	0.00	Yes	1.000000
W30X173	No	No	White	0.000	0.00	Yes	1.000000
W30X191	No	No	Gray8Dark	0.000	0.00	Yes	1.000000
W30X99	No	No	Cyan	0.000	0.00	Yes	1.000000
W33X118	No	No	Blue	0.000	0.00	Yes	1.000000
W33X130	No	No	Green	0.000	0.00	Yes	1.000000
W36X135	No	No	Cyan	0.000	0.00	Yes	1.000000

SectionName	ConcCol	ConcBeam	Color	TotalWt	TotalMass	FromFile	AMod
Text	Yes/No	Yes/No	Text	Kip	Kip-s2/ft	Yes/No	Unitless
W36X150	No	No	Red	0.000	0.00	Yes	1.000000
W36X194	No	No	Magenta	0.000	0.00	Yes	1.000000
W36X210	No	No	Yellow	0.000	0.00	Yes	1.000000
W36X230	No	No	White	0.000	0.00	Yes	1.000000
W36X260	No	No	Gray8Dark	0.000	0.00	Yes	1.000000
W36X300	No	No	Blue	0.000	0.00	Yes	1.000000
W8X10	No	No	Green	0.000	0.00	Yes	1.000000
W8X24	No	No	Cyan	0.000	0.00	Yes	1.000000
W8X31	No	No	Red	0.000	0.00	Yes	1.000000
W8X40	No	No	Magenta	0.000	0.00	Yes	1.000000
W8X58	No	No	Yellow	0.000	0.00	Yes	1.000000
W8X67	No	No	White	0.000	0.00	Yes	1.000000

Table: Frame Section Properties 1 - General, Part 5 of 6

SectionName	A2Mod	A3Mod	JMod	I2Mod	I3Mod	MMod	WMod
Text	Unitless	Unitless	Unitless	Unitless	Unitless	Unitless	Unitless
EXIST-DECK	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W10X112	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W10X12	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W10X49	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W10X68	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W10X88	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W12X136	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W12X14	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W12X16	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W12X19	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W12X190	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W12X65	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W12X96	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W14X109	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W14X132	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W14X159	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W14X211	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W14X22	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W14X257	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W14X311	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W14X370	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W14X426	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W14X90	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W16X26	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W16X31	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W18X119	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W18X35	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W18X40	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W18X55	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W18X65	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W18X76	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W18X97	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W21X44	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W21X50	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W24X103	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W24X117	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W24X131	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

SectionName	A2Mod	A3Mod	JMod	I2Mod	I3Mod	MMod	WMod
Text	Unitless	Unitless	Unitless	Unitless	Unitless	Unitless	Unitless
W24X146	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W24X162	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W24X176	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W24X207	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W24X250	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W24X335	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W24X55	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W24X62	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W24X68	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W24X76	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W27X84	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W27X94	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W30X108	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W30X116	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W30X148	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W30X173	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W30X191	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W30X99	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W33X118	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W33X130	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W36X135	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W36X150	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W36X194	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W36X210	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W36X230	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W36X260	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W36X300	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W8X10	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W8X24	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W8X31	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W8X40	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W8X58	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
W8X67	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

Table: Frame Section Properties 1 - General, Part 6 of 6

SectionName	SectInFile	FileName
Text	Text	Text
EXIST-DECK		
W10X112	W10X112	X:\SAP2000\Sections8.pro
W10X12	W10X12	X:\SAP2000\Sections8.pro
W10X49	W10X49	X:\SAP2000\Sections8.pro
W10X68	W10X68	X:\SAP2000\Sections8.pro
W10X88	W10X88	X:\SAP2000\Sections8.pro
W12X136	W12X136	X:\SAP2000\Sections8.pro
W12X14	W12X14	X:\SAP2000\Sections8.pro
W12X16	W12X16	X:\SAP2000\Sections8.pro
W12X19	W12X19	X:\SAP2000\Sections8.pro
W12X190	W12X190	X:\SAP2000\Sections8.pro
W12X65	W12X65	X:\SAP2000\Sections8.pro
W12X96	W12X96	X:\SAP2000\Sections8.pro
W14X109	W14X109	X:\SAP2000\Sections8.pro
W14X132	W14X132	X:\SAP2000\Sections8.pro
W14X159	W14X159	X:\SAP2000\Sections8.pro

SectionName Text	SectInFile Text	FileName Text
W14X211	W14X211	X:\SAP2000\Sections8.pro
W14X22	W14X22	X:\SAP2000\Sections8.pro
W14X257	W14X257	X:\SAP2000\Sections8.pro
W14X311	W14X311	X:\SAP2000\Sections8.pro
W14X370	W14X370	X:\SAP2000\Sections8.pro
W14X426	W14X426	X:\SAP2000\Sections8.pro
W14X90	W14X90	X:\SAP2000\Sections8.pro
W16X26	W16X26	X:\SAP2000\Sections8.pro
W16X31	W16X31	X:\SAP2000\Sections8.pro
W18X119	W18X119	X:\SAP2000\Sections8.pro
W18X35	W18X35	X:\SAP2000\Sections8.pro
W18X40	W18X40	X:\SAP2000\Sections8.pro
W18X55	W18X55	X:\SAP2000\Sections8.pro
W18X65	W18X65	X:\SAP2000\Sections8.pro
W18X76	W18X76	X:\SAP2000\Sections8.pro
W18X97	W18X97	X:\SAP2000\Sections8.pro
W21X44	W21X44	X:\SAP2000\Sections8.pro
W21X50	W21X50	X:\SAP2000\Sections8.pro
W24X103	W24X103	X:\SAP2000\Sections8.pro
W24X117	W24X117	X:\SAP2000\Sections8.pro
W24X131	W24X131	X:\SAP2000\Sections8.pro
W24X146	W24X146	X:\SAP2000\Sections8.pro
W24X162	W24X162	X:\SAP2000\Sections8.pro
W24X176	W24X176	X:\SAP2000\Sections8.pro
W24X207	W24X207	X:\SAP2000\Sections8.pro
W24X250	W24X250	X:\SAP2000\Sections8.pro
W24X335	W24X335	X:\SAP2000\Sections8.pro
W24X55	W24X55	X:\SAP2000\Sections8.pro
W24X62	W24X62	X:\SAP2000\Sections8.pro
W24X68	W24X68	X:\SAP2000\Sections8.pro
W24X76	W24X76	X:\SAP2000\Sections8.pro
W27X84	W27X84	X:\SAP2000\Sections8.pro
W27X94	W27X94	X:\SAP2000\Sections8.pro
W30X108	W30X108	X:\SAP2000\Sections8.pro
W30X116	W30X116	X:\SAP2000\Sections8.pro
W30X148	W30X148	X:\SAP2000\Sections8.pro
W30X173	W30X173	X:\SAP2000\Sections8.pro
W30X191	W30X191	X:\SAP2000\Sections8.pro
W30X99	W30X99	X:\SAP2000\Sections8.pro
W33X118	W33X118	X:\SAP2000\Sections8.pro
W33X130	W33X130	X:\SAP2000\Sections8.pro
W36X135	W36X135	X:\SAP2000\Sections8.pro
W36X150	W36X150	X:\SAP2000\Sections8.pro
W36X194	W36X194	X:\SAP2000\Sections8.pro
W36X210	W36X210	X:\SAP2000\Sections8.pro
W36X230	W36X230	X:\SAP2000\Sections8.pro
W36X260	W36X260	X:\SAP2000\Sections8.pro
W36X300	W36X300	X:\SAP2000\Sections8.pro
W8X10	W8X10	X:\SAP2000\Sections8.pro
W8X24	W8X24	X:\SAP2000\Sections8.pro
W8X31	W8X31	X:\SAP2000\Sections8.pro
W8X40	W8X40	X:\SAP2000\Sections8.pro
W8X58	W8X58	X:\SAP2000\Sections8.pro
W8X67	W8X67	X:\SAP2000\Sections8.pro

Table: Frame Section Properties 2 - Concrete Column

SectionName	ReinfConfig	LatReinf	Cover	NumBars3Dir	NumBars2Dir	BarSize	ReinfType
Text	Text	Text	ft	Unitless	Unitless	Text	Text
EXIST-DECK	Rectangular	Ties	0.15000	3	3	#9	Design

Table: Joint Coordinates, Part 1 of 2

Joint	CoordSys	CoordType	XorR	Y	Z	SpecialJt	GlobalX
Text	Text	Text	ft	ft	ft	Yes/No	ft
1	GLOBAL	Cartesian	0.0000	0.0000	0.0000	Yes	0.0000
2	GLOBAL	Cartesian	65.8334	0.0000	0.0000	No	65.8334
3	GLOBAL	Cartesian	54.4167	0.0000	0.0000	No	54.4167
4	GLOBAL	Cartesian	43.6667	0.0000	0.0000	No	43.6667
5	GLOBAL	Cartesian	32.9167	0.0000	0.0000	No	32.9167
6	GLOBAL	Cartesian	22.1667	0.0000	0.0000	No	22.1667
7	GLOBAL	Cartesian	11.4167	0.0000	0.0000	No	11.4167

Table: Joint Coordinates, Part 2 of 2

Joint	GlobalY	GlobalZ
Text	ft	ft
1	0.0000	0.0000
2	0.0000	0.0000
3	0.0000	0.0000
4	0.0000	0.0000
5	0.0000	0.0000
6	0.0000	0.0000
7	0.0000	0.0000

Table: Joint Restraint Assignments

Joint	U1	U2	U3	R1	R2	R3
Text	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
1	Yes	Yes	Yes	No	No	No
2	Yes	Yes	Yes	No	No	No
3	Yes	Yes	Yes	No	No	No
4	Yes	Yes	Yes	No	No	No
5	Yes	Yes	Yes	No	No	No
6	Yes	Yes	Yes	No	No	No
7	Yes	Yes	Yes	No	No	No

Table: Load Case Definitions

LoadCase	DesignType	SelfWtMult	AutoLoad
Text	Text	Unitless	Text
DEAD	DEAD	1.000000	
HS20(C1)	LIVE	0.000000	
HS20(C2)	LIVE	0.000000	
HS20(C3)	LIVE	0.000000	
HS20(C4)	LIVE	0.000000	

LoadCase Text	DesignType Text	SelfWtMult Unitless	AutoLoad Text
HS20(C5)	LIVE	0.000000	
HS20(C6)	LIVE	0.000000	
SU6	LIVE	0.000000	
SU7	LIVE	0.000000	
3	LIVE	0.000000	
3S2	LIVE	0.000000	
3-3	LIVE	0.000000	
SU4	LIVE	0.000000	
SU5	LIVE	0.000000	
HS20-1/8	LIVE	0.000000	
HS20-SUP	LIVE	0.000000	
HS20(+)	LIVE	0.000000	

Table: Material List 1 - By Object Type

ObjectType Text	Material Text	TotalWeight Kip	NumPieces Unitless
Frame	CONC	34.145	6

Table: Material List 2 - By Section Property

Section Text	ObjectType Text	NumPieces Unitless	TotalLength ft	TotalWeight Kip
EXIST-DECK	Frame	6	65.8334	34.145

Table: Material Properties 1 - General, Part 1 of 2

Material Text	Type Text	DesignType Text	UnitMass Kip-s2/ft4	UnitWeight Kip/ft3	E Kip/ft2	U Unitless	A 1/F
ALUM	Isotropic	Aluminum	5.2669E-03	1.6934E-01	1454400.00	0.330000	1.3100E-05
CLDFRM	Isotropic	ColdFormed	1.5230E-02	4.9000E-01	4248000.00	0.300000	6.5000E-06
CONC	Isotropic	Concrete	4.6615E-03	1.5001E-01	607680.00	0.200000	5.5000E-06
OTHER	Isotropic	None	4.6581E-03	1.4999E-01	518400.00	0.200000	5.5000E-06
STEEL	Isotropic	Steel	1.5230E-02	4.9000E-01	4176000.00	0.300000	6.5000E-06

Table: Material Properties 1 - General, Part 2 of 2

Material Text	MDampRatio Unitless	VDampMass 1/Sec	VDampStiff Sec	HDampMass 1/Sec2	HDampStiff Unitless	NumAdvance Unitless	Color Text
ALUM	0.0000	0.0000	0.0000	0.0000	0.000000	0	Gray8Dark
CLDFRM	0.0000	0.0000	0.0000	0.0000	0.000000	0	Blue
CONC	0.0000	0.0000	0.0000	0.0000	0.000000	0	White
OTHER	0.0000	0.0000	0.0000	0.0000	0.000000	0	Green
STEEL	0.0000	0.0000	0.0000	0.0000	0.000000	0	Yellow

Table: Material Properties 3 - Design Steel

Material	Fy	Fu
Text	Kip/ft2	Kip/ft2
STEEL	5184.00	8352.00

Table: Material Properties 4 - Design Concrete

Material	Fc	RebarFy	RebarFys	LtWtConc	LtWtFact
Text	Kip/ft2	Kip/ft2	Kip/ft2	Yes/No	Unitless
CONC	790.56	8640.00	5760.00	No	1.000000

Table: Material Properties 5 - Design Aluminum

Material	AlumType	Alloy	Ftu	Fty	Fcy	Fsu	Fsy
Text	Text	Text	Kip/ft2	Kip/ft2	Kip/ft2	Kip/ft2	Kip/ft2
ALUM	Wrought	6061-T6	5472.00	5040.00	5040.00	3456.00	2880.00

Table: Material Properties 6 - Design ColdFormed

Material	Fy	Fu
Text	Kip/ft2	Kip/ft2
CLDFRM	5184.00	8352.00

Table: Summary - Frame Assignments, Part 1 of 5

Frame	AnalSect	PropMods	Releases	LocalAxes	InsertPoint	EndOffsets	MinNumSta
Text	Text	Yes/No	Yes/No	Yes/No	Text	Yes/No	Unitless
1	EXIST-DECK	No	No	No	No	No	
2	EXIST-DECK	No	No	No	No	No	
3	EXIST-DECK	No	No	No	No	No	
4	EXIST-DECK	No	No	No	No	No	
5	EXIST-DECK	No	No	No	No	No	
6	EXIST-DECK	No	No	No	No	No	

Table: Summary - Frame Assignments, Part 2 of 5

Frame	MaxStaSpcg	PrestresPat	PrestresMul	PDeltaForce	CableParams	TCLimit	NLHinges
Text	ft	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
1	2.0000	No	No	No	No	No	No
2	2.0000	No	No	No	No	No	No
3	2.0000	No	No	No	No	No	No
4	2.0000	No	No	No	No	No	No
5	2.0000	No	No	No	No	No	No
6	2.0000	No	No	No	No	No	No

Table: Summary - Frame Assignments, Part 3 of 5

Frame Text	Springs Yes/No	MassPerLen Kip-s2/ft2	AutoDivide Yes/No	MatTemp F	GravLoads Yes/No	PointLoads Yes/No	DistLoads Yes/No
1	No	0.000	Yes	0.000	No	Yes	No
2	No	0.000	Yes	0.000	No	Yes	No
3	No	0.000	Yes	0.000	No	Yes	No
4	No	0.000	Yes	0.000	No	Yes	No
5	No	0.000	Yes	0.000	No	Yes	No
6	No	0.000	Yes	0.000	No	Yes	No

Table: Summary - Frame Assignments, Part 4 of 5

Frame Text	TempLoads Yes/No	RefTemp F	SteelOWrite Yes/No	ConcOWrite Yes/No	AlumOWrite Yes/No	ColdOWrite Yes/No	Length ft
1	No	0.000	No	Yes	No	No	11.41667
2	No	0.000	No	Yes	No	No	10.75003
3	No	0.000	No	Yes	No	No	10.75000
4	No	0.000	No	Yes	No	No	10.75000
5	No	0.000	No	Yes	No	No	10.75000
6	No	0.000	No	Yes	No	No	11.41670

Table: Summary - Frame Assignments, Part 5 of 5

Frame Text	CentroidX ft	CentroidY ft	CentroidZ ft
1	5.7083	0.0000	0.0000
2	16.7917	0.0000	0.0000
3	27.5417	0.0000	0.0000
4	38.2917	0.0000	0.0000
5	49.0417	0.0000	0.0000
6	60.1251	0.0000	0.0000

Table: Summary - Joint Assignments, Part 1 of 2

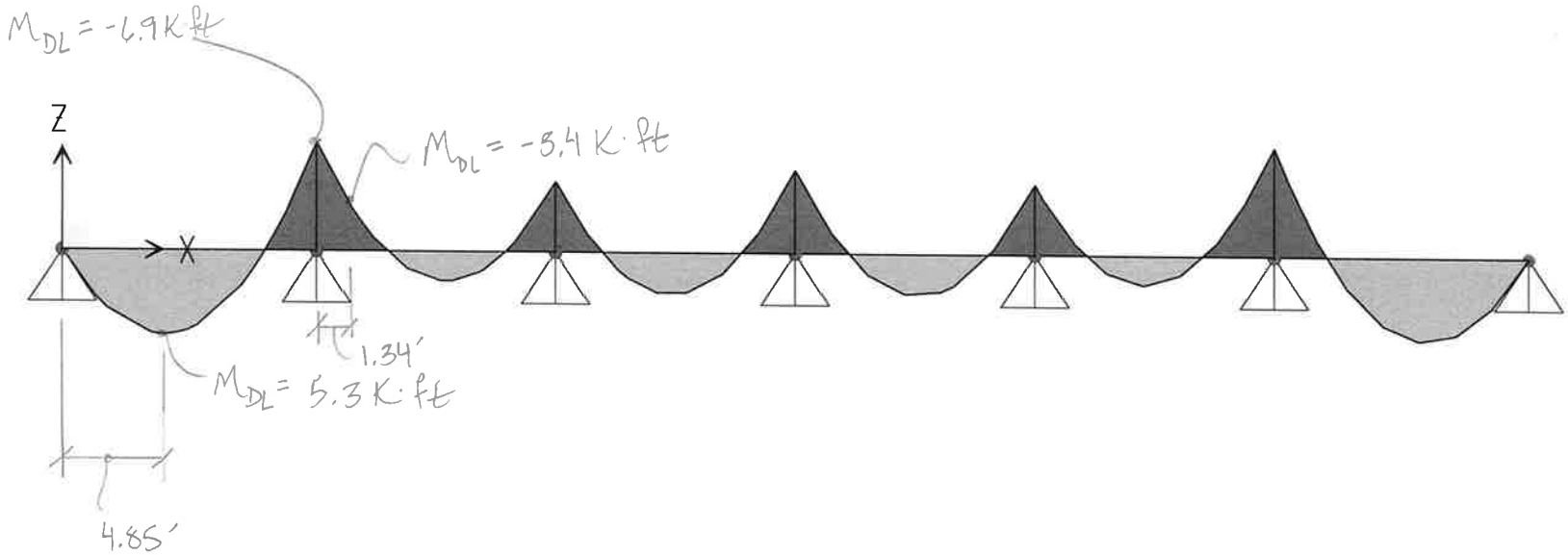
Joint Text	Constraints Yes/No	Restraints Yes/No	LocalAxes Yes/No	Springs Yes/No	AddedMass Yes/No	PanelZone Yes/No	JtPattern Yes/No	JointForce Yes/No
1	No	Yes	No	No	No	No	No	No
2	No	Yes	No	No	No	No	No	No
3	No	Yes	No	No	No	No	No	No
4	No	Yes	No	No	No	No	No	No
5	No	Yes	No	No	No	No	No	No
6	No	Yes	No	No	No	No	No	No
7	No	Yes	No	No	No	No	No	No

Table: Summary - Joint Assignments, Part 2 of 2

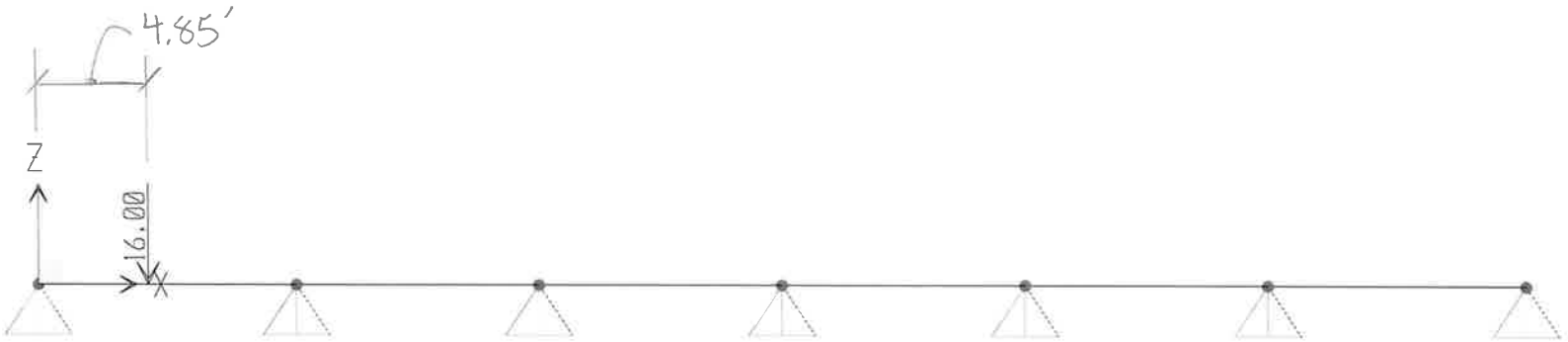
Joint Text	GroundDispl Yes/No
1	No
2	No
3	No

Joint Text	GroundDisp l Yes/No
4	No
5	No
6	No
7	No

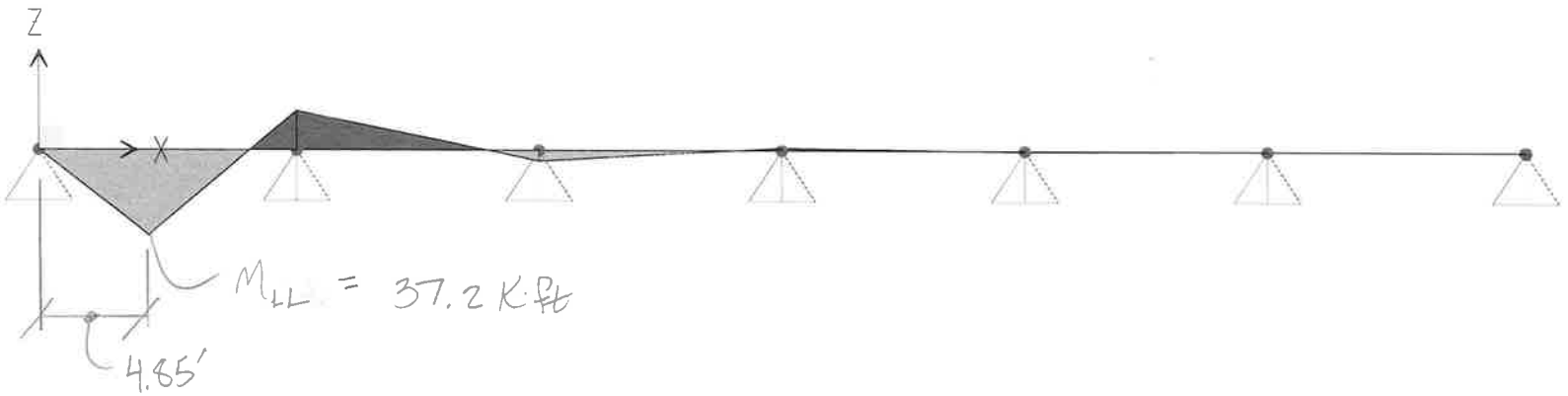
DEAD LOAD MOMENT DIAGRAM OF SLAB STRIP (4.61' x 0.75')



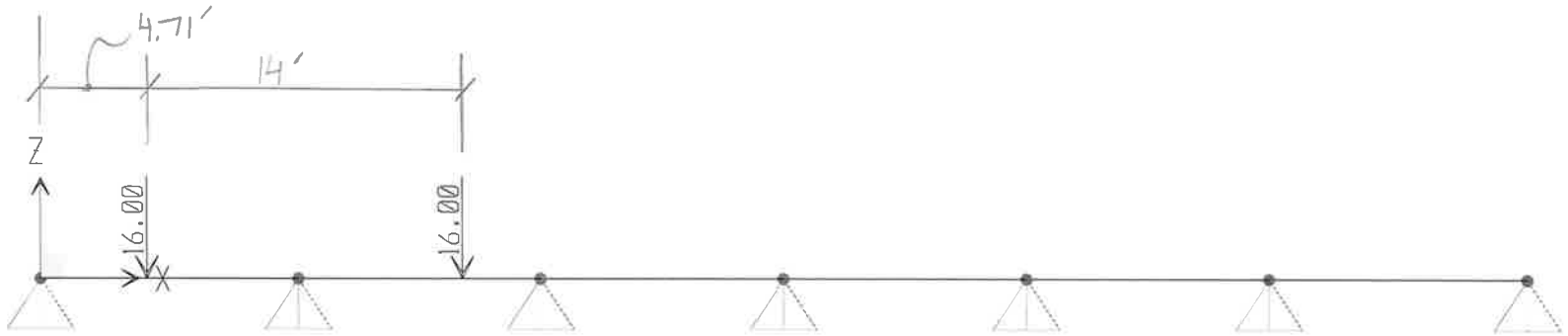
HS20-44 LOADING RESULTING IN MAXIMUM POSITIVE MOMENT



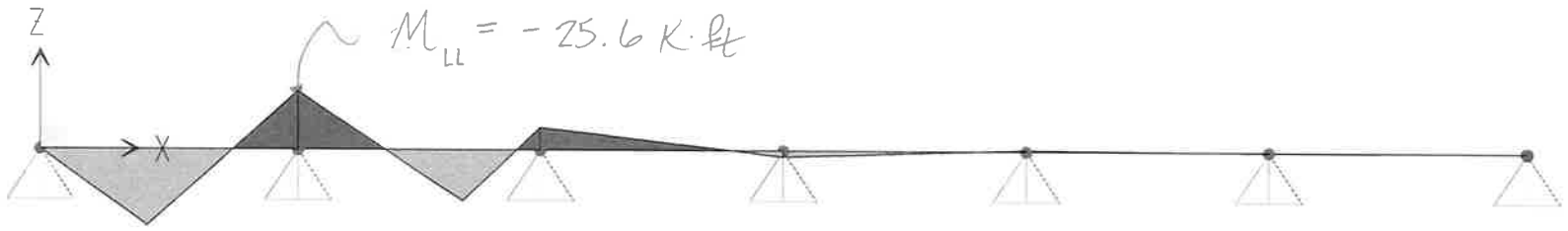
HS20-44 LOADING RESULTING IN MAX POSITIVE MOMENT



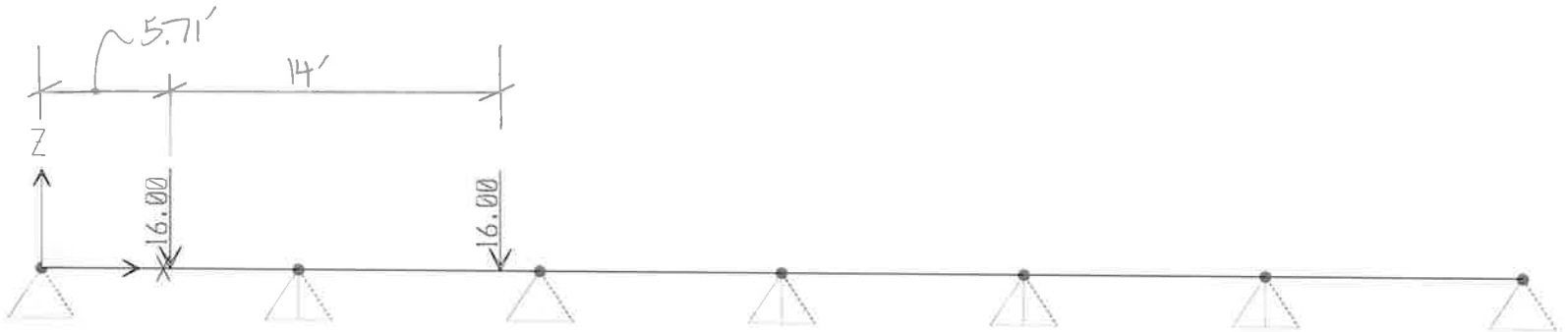
HS20-44 LOADING RESULTING IN MAX NEGATIVE MOMENT OVER SUPPORT



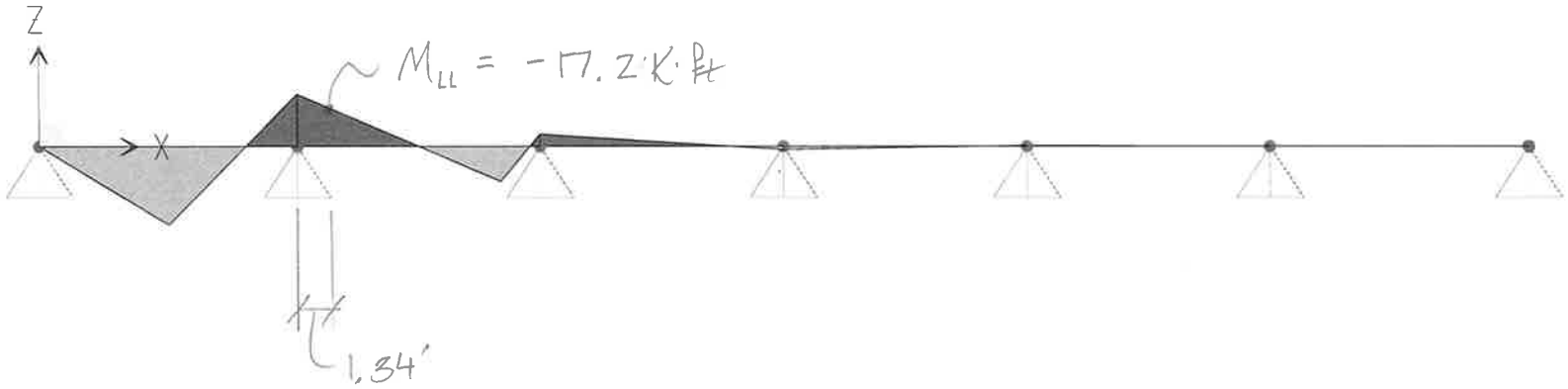
HS20-44 LOADING RESULTING IN MAX NEGATIVE MOMENT AT ℄ SUPPORT



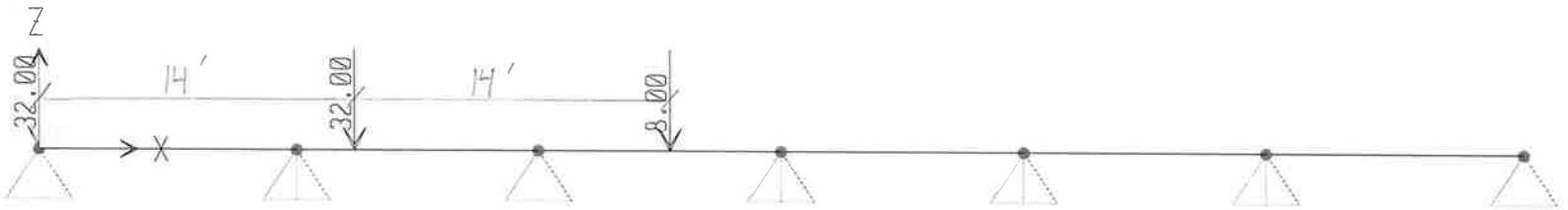
HS20-44 LOADING RESULTING IN MAX NEGATIVE MOMENT AT 1/16 SPAN



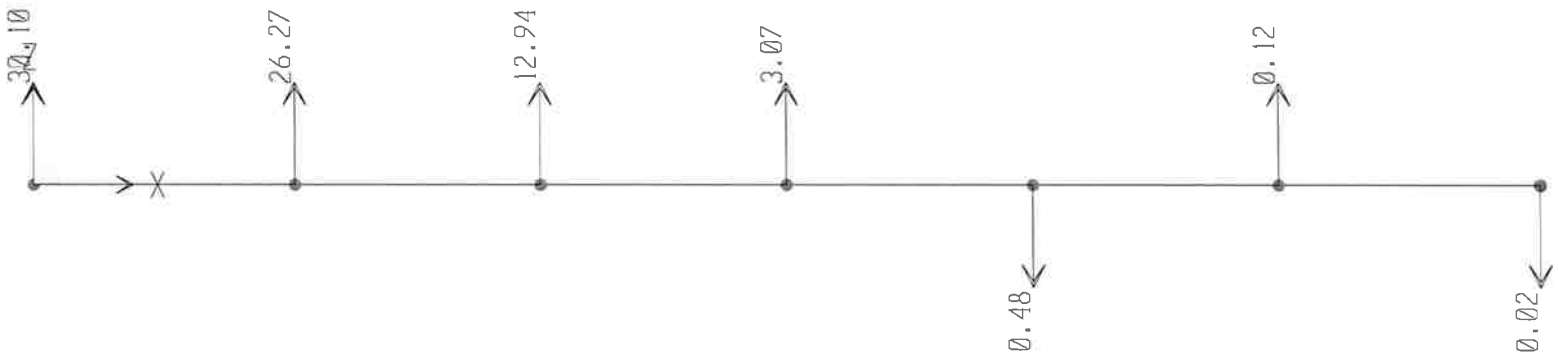
HS20-44 LOADING RESULTING IN MAX NEGATIVE MOMENT AT ¼ SPAN



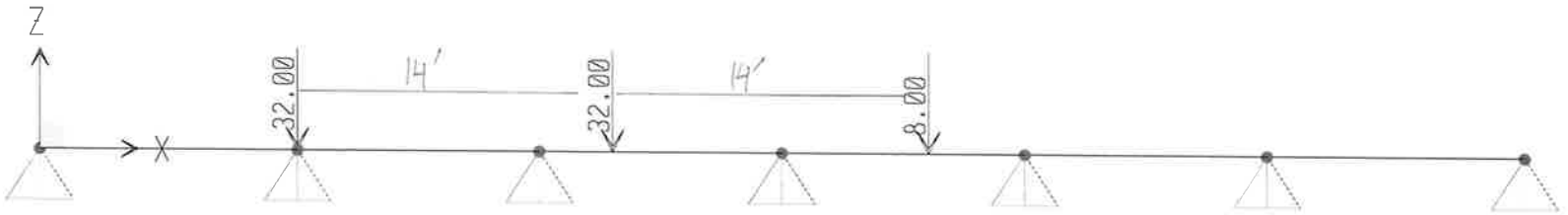
HS20(C1)



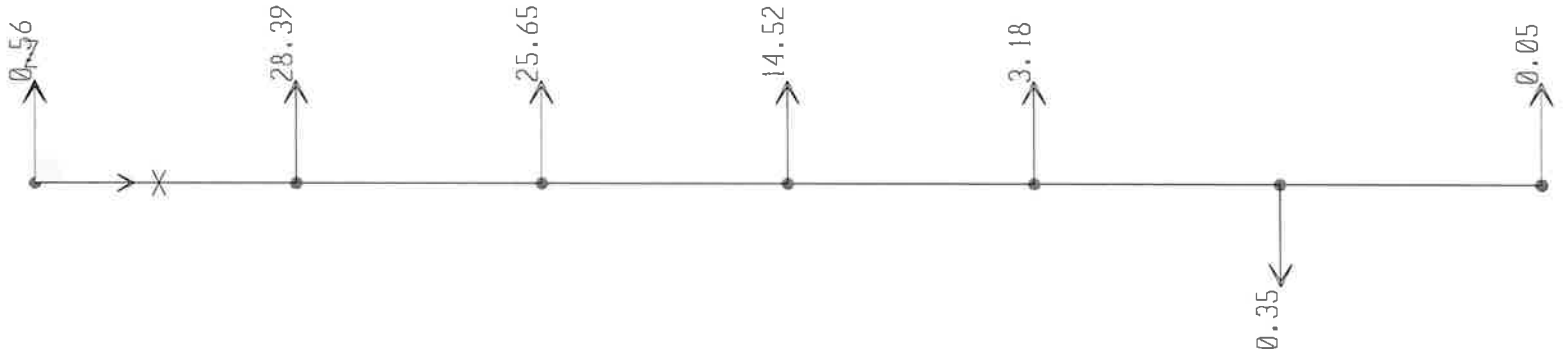
HS20 (C1) LIVE LOAD RXN.'S APPLIED TO ARCH MODEL



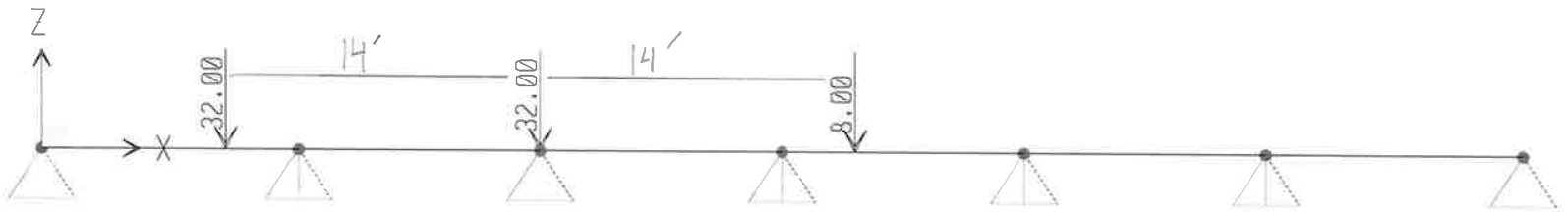
HS20(C2)



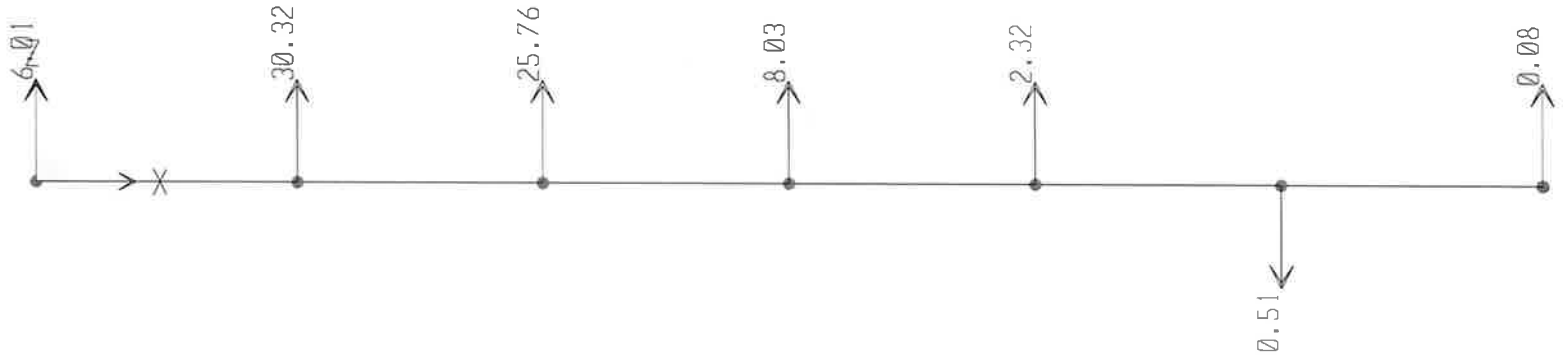
HS20(C2) LIVE LOAD RXN.'S APPLIED TO ARCH MODEL



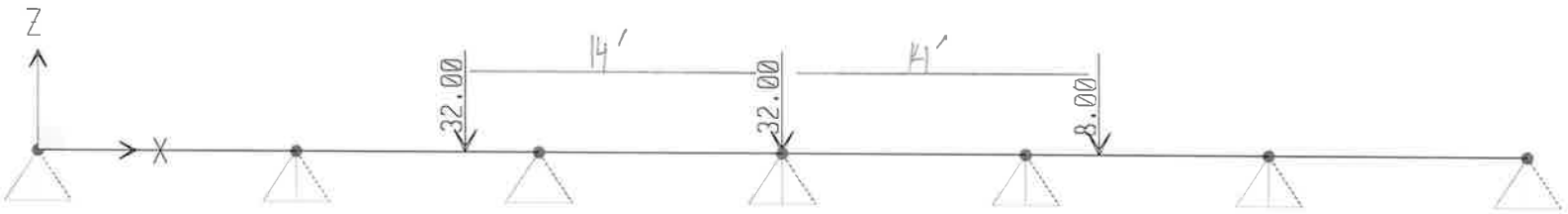
HS20 (C3)



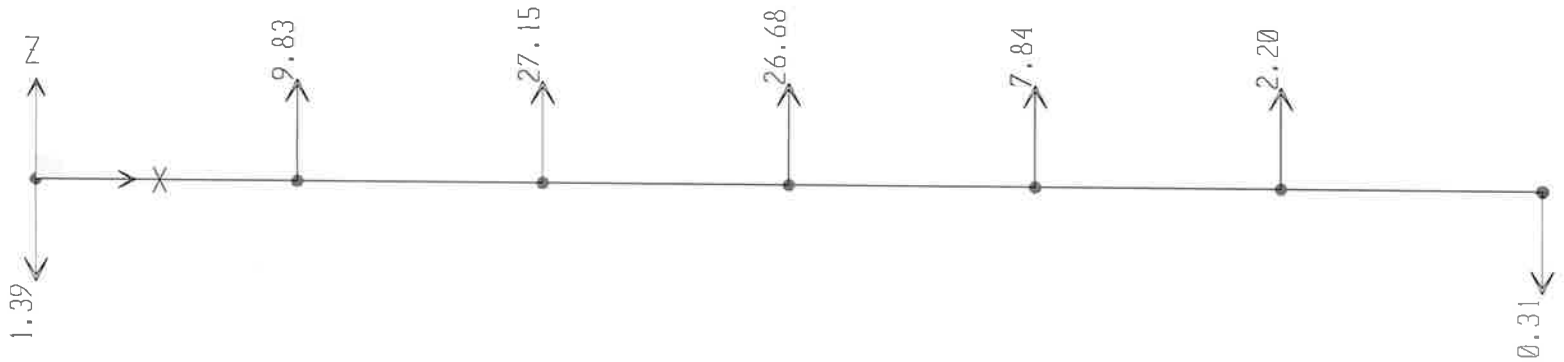
HS20 (C3) LIVE LOAD RXN.'S APPLIED TO ARCH MODEL



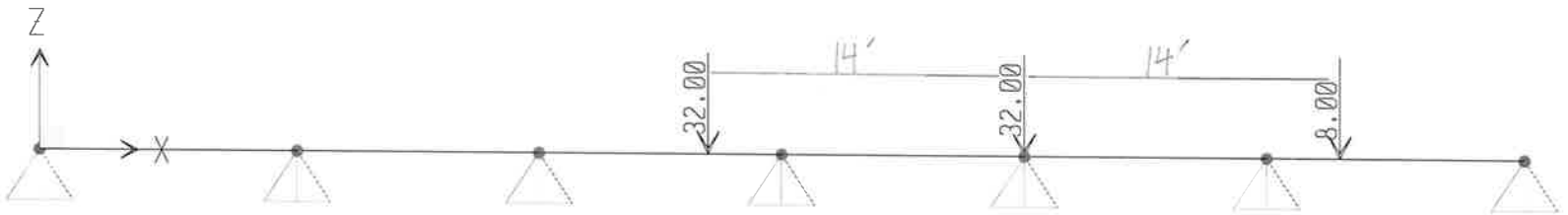
H620(C4)



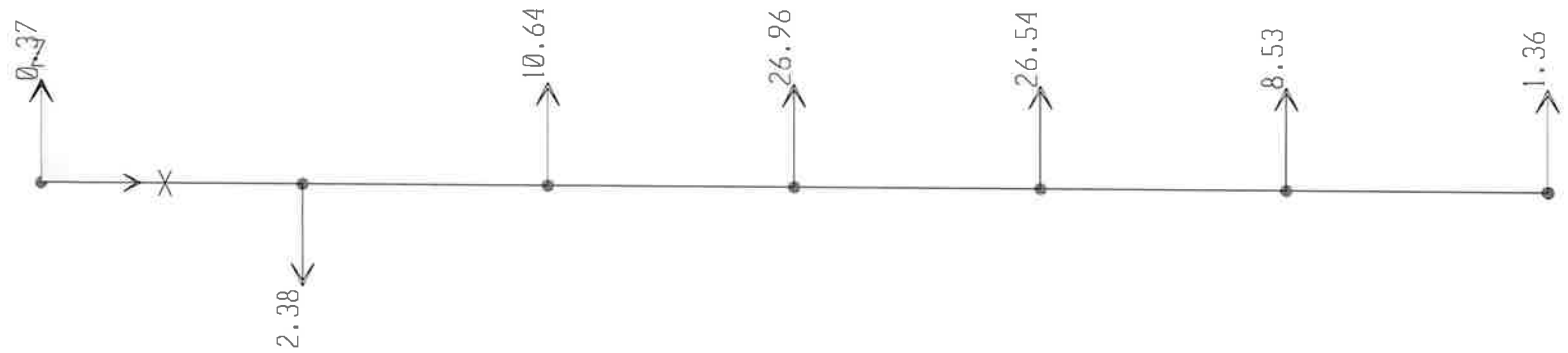
HS20 (C4) LIVE LOAD RXN.'S APPLIED TO ARCH MODEL



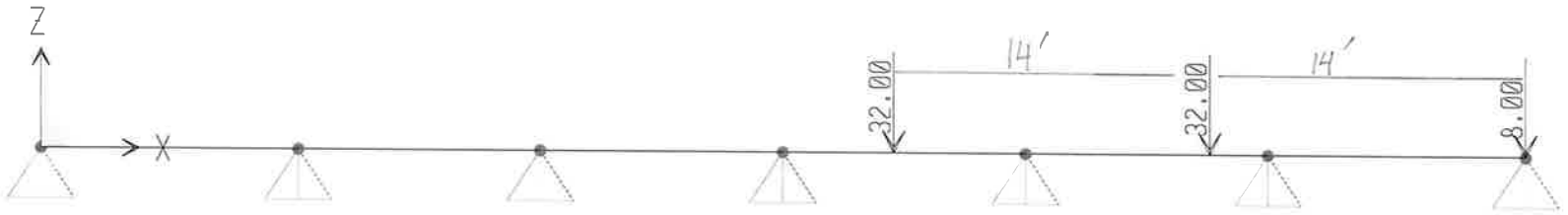
HS20 (C5)



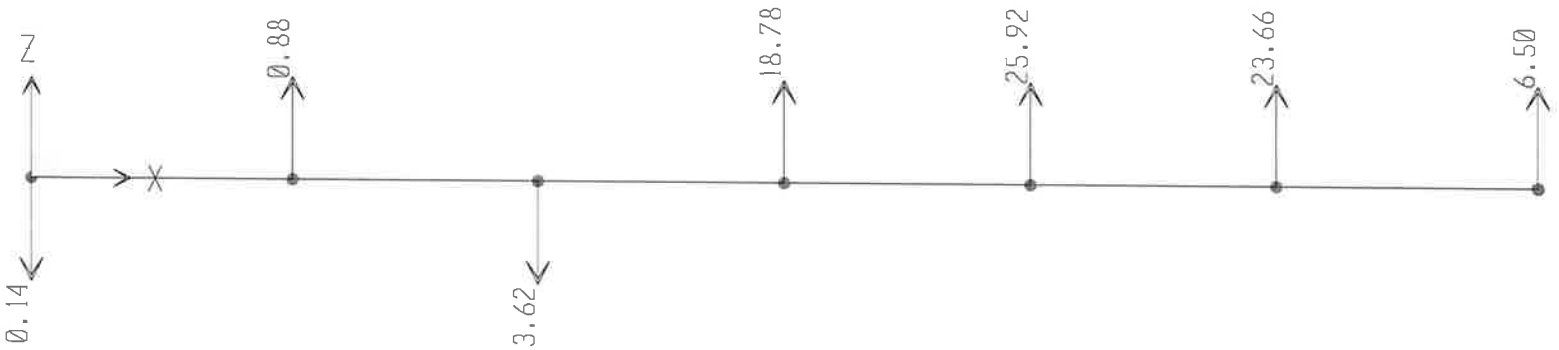
HS20(C5) LIVE LOAD RXN.'S APPLIED TO ARCH MODEL



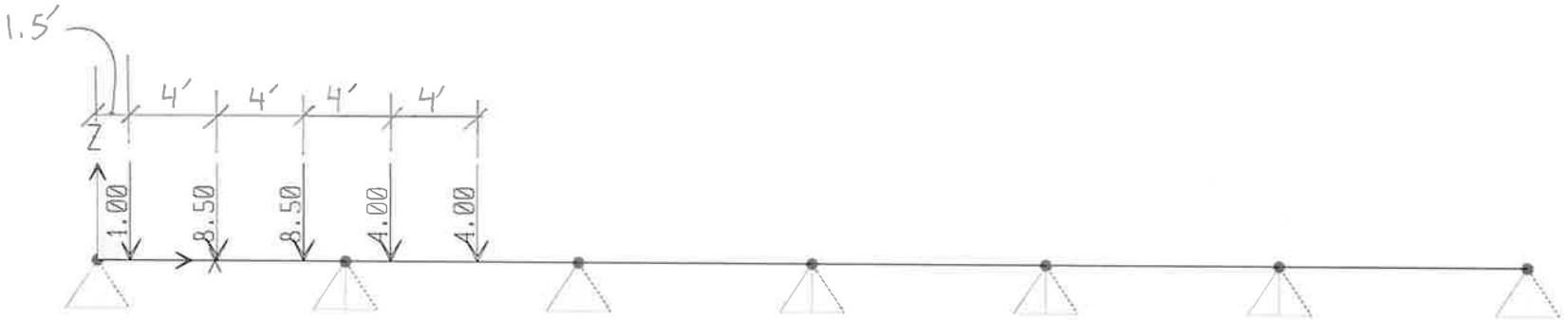
HS20 (C6)



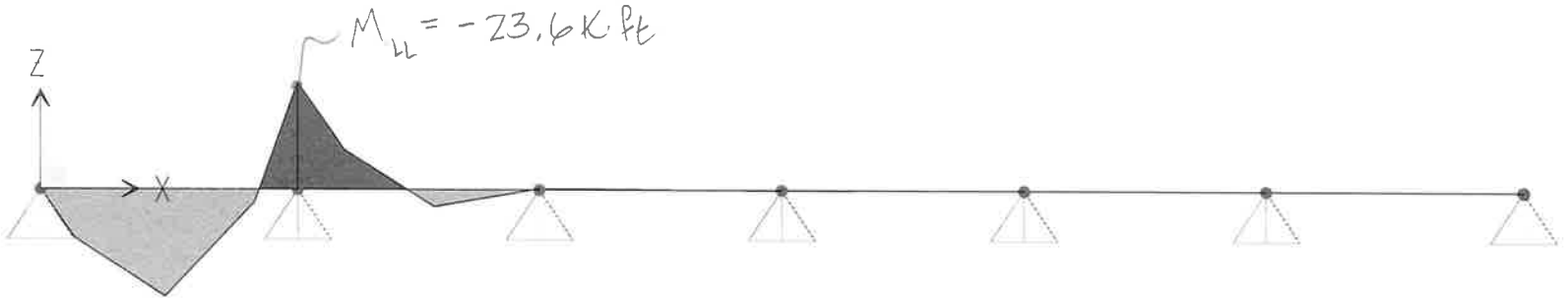
HS20(C6) LIVE LOAD R×D.'s APPLIED TO ALTH MODEL



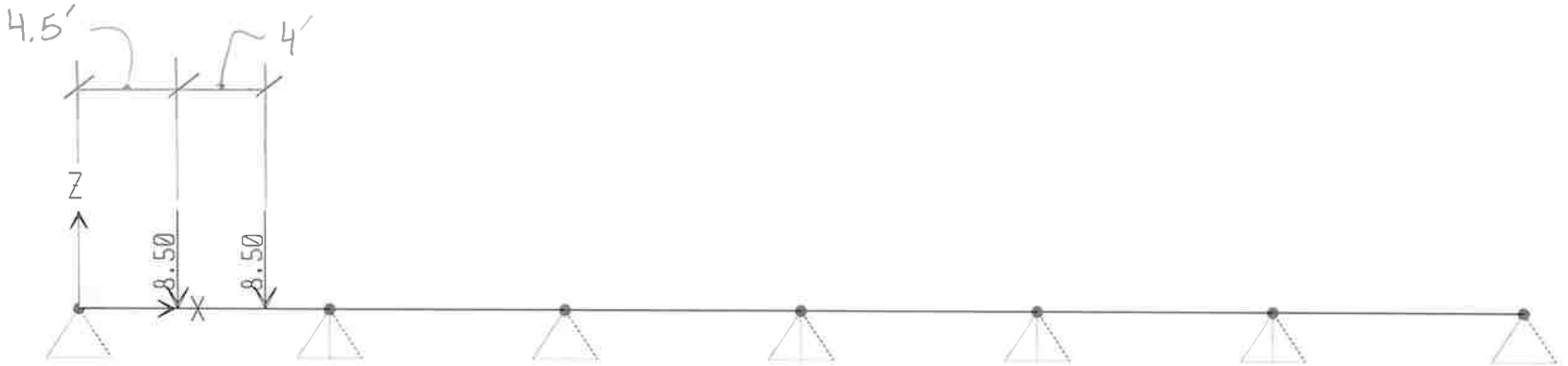
GOVERNING TYPE SU6



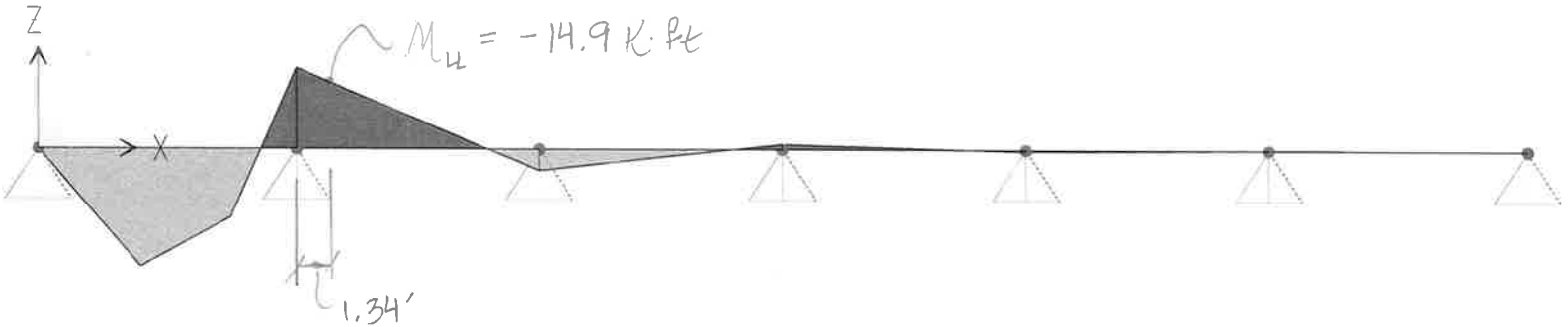
SU6/SU7 MAX NEGATIVE MOMENT AT ℄ SUPPORT



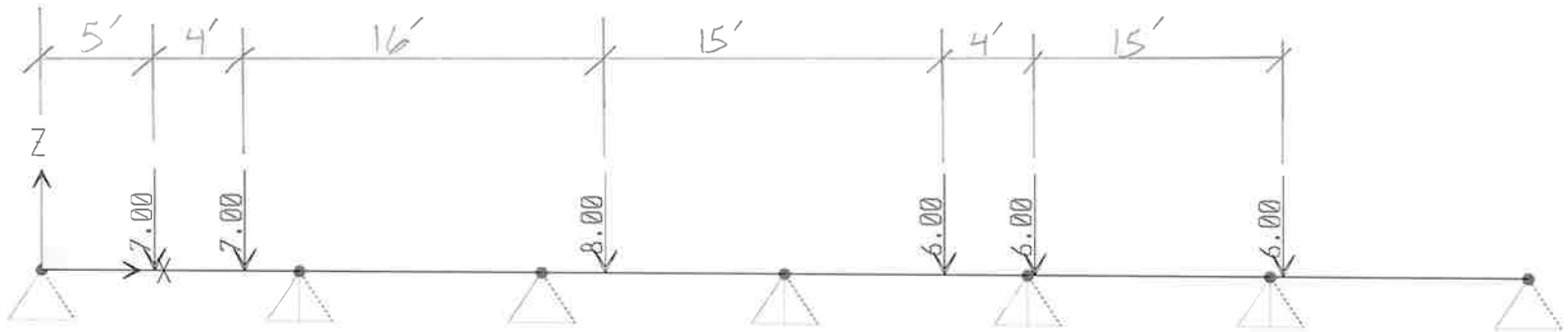
GOVERNING TYPE 3



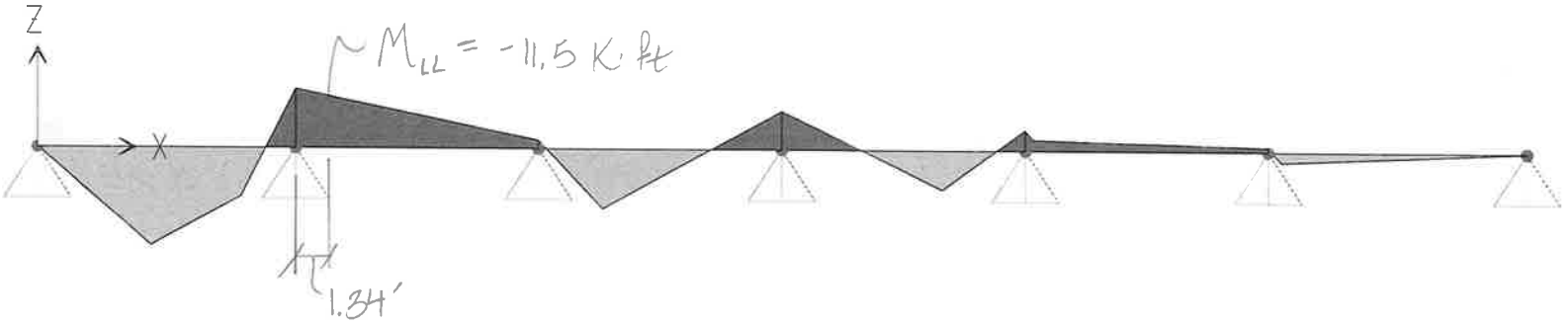
TYPE 3 MAX NEGATIVE MOMENT AT 1/4 SPAN



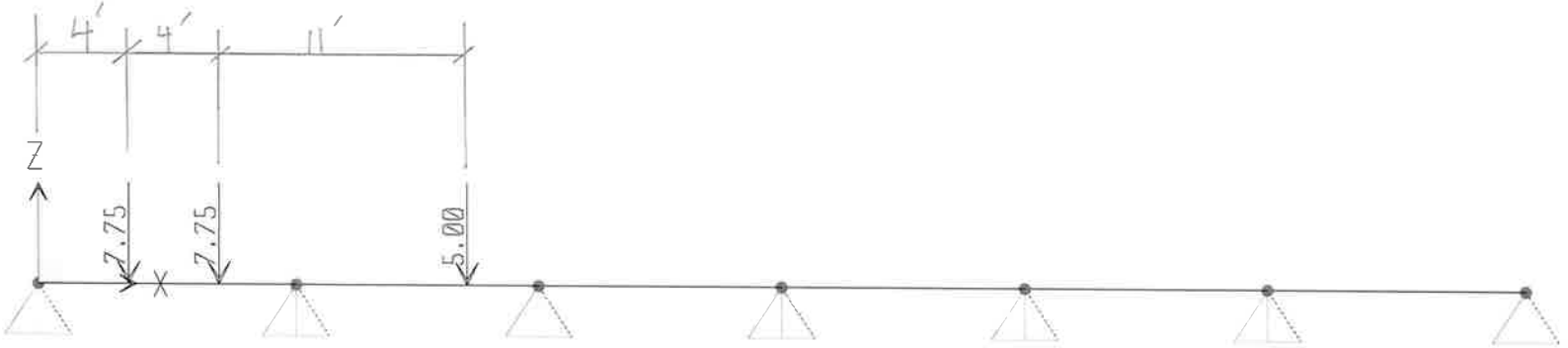
LOVERDING TYPE 3-3



TYPE 3-3 MAX NEGATIVE MOMENT AT 1/6 SPAN



GOVERNING TYPE 3S2



TYPE 3S2 MAX NEGATIVE MOMENT AT 1/6 SPAN



BY NRZ DATE 2/5/15 SUBJECT MINERAL KING BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. 2014046

INVENTORY & OPERATING RATING

EXISTING DECK SLAB USING LOAD FACTOR METHOD

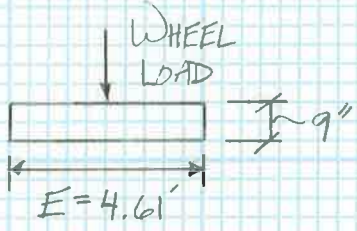
- THE FOLLOWING CALCULATION WILL DETERMINE THE INVENTORY & OPERATING RATINGS OF THE EXISTING BRIDGE'S DECK SLAB BETWEEN PIERS B & C. THE VALUES USED FOR f'_c AND f_y ARE BASED THE MATERIALS TESTING ON CONCRETE & REINFORCEMENT SAMPLES TAKEN FROM THE BRIDGE. A SAP2000 MODEL OF A 6-SPAN CONTINUOUS BEAM WAS USED TO DETERMINE DEMAND MOMENTS.

- DETERMINATION OF WIDTH OF SLAB IN FEET OVER WHICH A WHEEL LOAD IS DISTRIBUTED, E (PER BDS 3.24.3.2)
  - $E = (4 + 0.06S) \leq 7'$

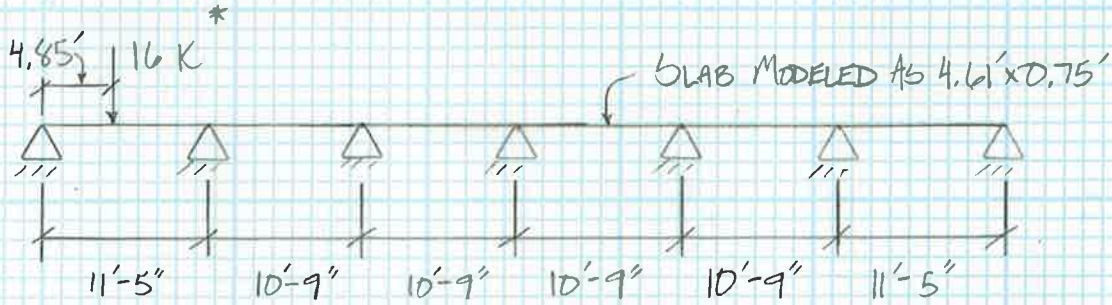
    WHERE: S = EFFECTIVE SPAN LENGTH
    = THE CLEAR SPAN FOR SLABS MONOLITHIC WITH BEAMS PER BDS 3.24.1.2
    = 10.17'

    $= (4 + 0.06 \times 10.17') \leq 7'$

    $= 4.61' \leq 7'$



- MOMENT DEMAND PER SAP2000
  - POSITIVE MOMENT DEMAND (MAX LIVE LOAD DEMAND)

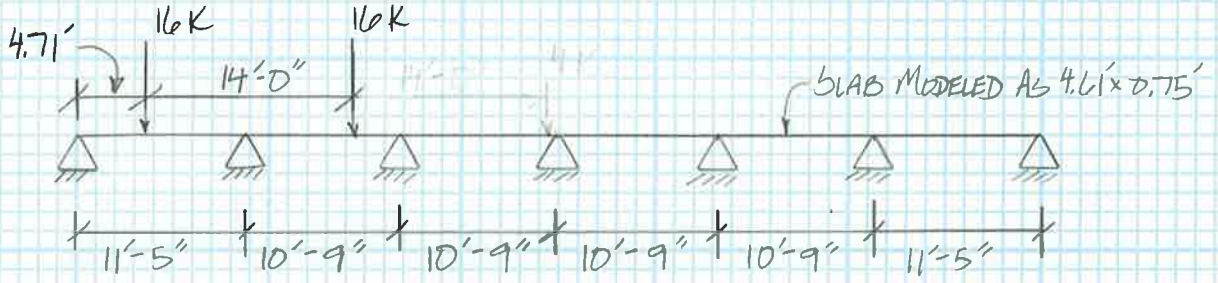


* PER SEC. 6B.7.2.2 - TRUCK LOADS OF MBE, THE LIVE LOAD TO BE APPLIED ON THE DECK FOR DETERMINING THE RATING SHOULD BE STD. AASHTO HS LOADING

INVENTORY & OPERATING RATING

EXISTING DECK SLAB U6106 LOAD FACTOR METHOD

- MOMENT DEMAND PER SAP2000 (CONT.)
  - POSITIVE MOMENT DEMAND (MAX LIVE LOAD DEMAND)
    - M_L = 36.93 K·ft } UNFACTORED & WITHOUT IMPACT
    - M_D = 5.38 K·ft } TAKEN FROM SAP2000
  - NEGATIVE MOMENT DEMAND (MAX LIVE LOAD DEMAND AT SUPPORTS)



    - M_L = -25.61 K·ft } UNFACTORED & WITHOUT IMPACT
    - M_D = -6.89 K·ft } TAKEN FROM SAP2000

- NOMINAL FLEXURAL CAPACITY OF EXISTING BRIDGE DECK
  - POSITIVE FLEXURAL CAPACITY
    - f'_c = 5,490 PSI } PER MATERIALS TESTING PROGRAM
    - f_y = 40,000 PSI
    - $\beta_1 = 0.85 - (0.05)(5490\ PSI - 4{,}000\ PSI)/(1{,}000\ PSI) = 0.78$
    - $h = 9''$
    - $b = 55.32''$
    - $A_S = (0.75'')^2(40\ BARS)\left(\frac{4.61'}{23'}\right)$
      $= 4.51\ IN^2$
    - $d = 9'' - 2''(CLR) - (\frac{1}{2})(0.75'')$
      $= 6.63''$
    - $a = \frac{A_S f_y}{0.85 f'_c b} = \frac{4.51\ IN^2(40\ KSI)}{0.85(5.49\ KSI)(55.32'')} = 0.70\ IN$

BY NRZ DATE 2/10/15 SUBJECT MINERAL KING BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. 2014D

INVENTORY & OPERATING RATING

EXISTING DECK SLAB USING LOAD FACTOR METHOD

- NOMINAL FLEXURAL CAPACITY OF EXISTING BRIDGE DECK (CONT.)
  - POSITIVE FLEXURAL CAPACITY

$$M_n = A_s f_y (d - a/2)$$
$$= 4.51 in^2 (40 ksi)(6.63" - 0.70"/2)(1'/12")$$
$$= \underline{94.41 \text{ K·ft}} \text{ (NOMINAL)}$$

  - NEGATIVE FLEXURAL CAPACITY
    - $f'_c = 5{,}490$ PSI
    - $f_y = 40{,}000$ PSI
    - $\beta_1 = 0.78$ (SEE PREVIOUS)
    - $h = 9"$
    - $b = 55.32"$
    - $A_s = (0.75")^2 (20 \text{ BARS}) \left(\frac{4.61'}{23}\right)$
      $= \underline{2.25 in^2}$
    - $d = 9" - 2" (CLR) - (1/2)(0.75")$
      $= \underline{6.63"}$
    - $a = \frac{A_s f_y}{0.85 f'_c b} = \frac{2.25 in^2 (40 ksi)}{(0.85)(6.41 ksi)(55.32")} = \underline{0.35 in}$

$$M_n = A_s f_y (d - a/2)$$
$$= 2.25 in^2 (40 ksi)(6.63" - 0.35"/2)(1'/12")$$
$$= \underline{48.41 \text{ K·ft}} \text{ (NOMINAL)}$$

CORNERSTONE STRUCTURAL ENGINEERING GROUP, INC.

BY NKZ DATE 2/10/15 SUBJECT MINERAL KING BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. 20140416

INVENTORY & OPERATING RATING

EXISTING DECK SLAB USING LOAD FACTOR METHOD

- RATING FACTOR EQUATION PER MBE 6B.5.1

$$RF = \frac{C - A_1 D}{A_2 L(1+I)} \quad \text{(MBE EQN. 6B.5.1-1)}$$

WHERE: C = CAPACITY OF MEMBER (MBE 6B.6)
D = DEAD LOAD EFFECT ON MEMBER (MBE 6B.7.1)
A_1 = FACTOR FOR DEAD LOADS (MBE 6B.5.2, 6B.5.3)
A_2 = FACTOR FOR LIVE LOAD (MBE 6B.5.2, 6B.5.3)
L = LIVE LOAD EFFECT (MBE 6B.7.2)
I = IMPACT FACTOR TO BE USED WITH LIVE LOAD (MBE 6B.7.4)

- INVENTORY RATING FACTOR
  - POSITIVE FLEXURE

$$= \frac{\phi C - A_1 D}{A_2 L(1+I)} = \frac{(0.9)(94.41\ K\cdot ft) - 1.3(5.33\ K\cdot ft)}{2.17(36.93\ K\cdot ft)(1+0.30)} = \underline{0.75}$$

  - NEGATIVE FLEXURE

$$= \frac{\phi C - A_1 D}{A_2 L(1+I)} = \frac{(0.9)(-48.41\ K\cdot ft) - 1.3(-6.89\ K\cdot ft)}{2.17(-25.61\ K\cdot ft)(1+0.30)} = \underline{0.48}$$

- OPERATING RATING FACTOR
  - POSITIVE FLEXURE

$$= \frac{\phi C - A_1 D}{A_2 L(1+I)} = \frac{(0.9)(94.41\ K\cdot ft) - 1.3(5.33\ K\cdot ft)}{1.30(36.93\ K\cdot ft)(1+0.30)} = \underline{1.25}$$

  - NEGATIVE FLEXURE

$$= \frac{\phi C - A_1 D}{A_2 L(1+I)} = \frac{(0.9)(-48.41\ K\cdot ft) - 1.3(-6.89\ K\cdot ft)}{1.30(-25.61\ K\cdot ft)(1+0.30)} = \underline{0.80}$$

BY NRZ DATE 2/10/15 SUBJECT MINERAL KING BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. 2014046

INVENTORY & OPERATING RATING

EXISTING DECK SLAB USING LOAD FACTOR METHOD

- BRIDGE MEMBER RATING

$RT = (RF)(W)$ (MBE EQN. 6B.5.1-2)

WHERE: RF = RATING FACTOR

W = WEIGHT OF NOMINAL TRUCK USED IN DETERMINING THE LIVE LOAD EFFECT, L (TONS)

- INVENTORY RATING

$= (0.48)(32K + 32K + 8K)(1\ TON/2K)(1\ METRIC\ TON/1.102\ TONS)$

$= \underline{15.7\ TONS}$

- OPERATING RATING

$= (0.80)(32K + 32K + 8K)(1\ TON/2K)(1\ METRIC\ TON/1.102\ TONS)$

$= \underline{26.1\ TONS}$

BY MIP DATE 3/18/15 SUBJECT MINERAL KING BRIDGE SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ JOB NO. 2014046

INVENTORY & OPERATING RATING

EXISTING DECK SLAB USING LOAD FACTOR METHOD

-THE FOLLOWING CALCULATION WILL DETERMINE THE INVENTORY & OPERATING RATINGS OF THE EXISTING BRIDGE'S DECK SLAB BETWEEN PIERS B & C AT 1/8 & 1/4 SPANS FOR NEGATIVE MOMENT.

MOMENT DEMAND PER SAP2000 'LIVE LOAD DEMAND TO ARCH'

NEGATIVE MOMENT DEMAND (MAX LIVE LOAD DEMAND AT 1/8 SPAN)

M_L = -17.69 K-FT } UNFACTORED & WITHOUT IMPACT
M_D = -3.39 K-FT } TAKEN FROM SAP2000

NEGATIVE MOMENT DEMAND (MAX LIVE LOAD DEMAND AT 1/4 SPAN)

M_L = -12.92 K-FT } UNFACTORED & WITHOUT IMPACT
M_D = -0.87 K-FT } TAKEN FROM SAP2000

NOMINAL FLEXURAL CAPACITY OF EXISTING BRIDGE DECK

NEGATIVE FLEXURAL CAPACITY AT 1/8 SPAN

f'_c = 5,490 PSI

f_y = 40,000 PSI

β_1 = 0.78

h = 9.5"

b = 55.32"

A_s = (0.75")^2 (10 BARS) $\left(\frac{4.61'}{23'}\right)$

= 1.13 IN^2

d = 9.5" - 2" CCLR) - (1/2)(0.75")

= 7.13"

$a = \frac{A_s f_y}{0.85 f'_c b} = \frac{(1.13 IN^2)(40 KSI)}{(0.85)(5.49 KSI)(55.32")}$ = 0.18 IN

$M_n = A_s f_y (d - a/2)$

= (1.13 IN^2)(40 KSI)(7.13" - 0.18"/2)

= 26.5 K-FT (NOMINAL)

BY MIP DATE 3/19/15 SUBJECT MINERAL KING BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. 2014046

INVENTORY & OPERATING RATING

EXISTING DECK SLAB USING LOAD FACTOR METHOD

NOMINAL FLEXURAL CAPACITY OF EXISTING BRIDGE DECK (CONT.)

NEGATIVE FLEXURAL CAPACITY AT 1/4 SPAN

$f'_c = 5{,}490$ PSI

$f_y = 40{,}000$ PSI

$\beta_1 = 0.78$

$h = 9.5''$

$b = 55.32''$

NO LONGITUDINAL NEGATIVE FLEXURAL REIDFORCEMENT AT 1/4 SPAN

$$I_g = \frac{bh^3}{12} = \frac{(55.32'')(9.5'')^3}{12} = 3952.5 \text{ IN}^4$$

$$f_r = 7.5\sqrt{f'_c} = 7.5\sqrt{5{,}490 \text{ PSI}} = 555.71 \text{ PSI}$$

$$M_{CR} = \frac{f_r I_g}{h/2} = \frac{(555.71 \text{ PSI})(3952.5 \text{ IN}^4)}{9.5''/2}$$

$$= 38.53 \text{ K-FT}$$

INVENTORY RATING FACTOR

NEGATIVE FLEXURE AT 1/8 SPAN

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{(0.9)(-26.5 \text{ K-FT}) - 1.3(-3.39 \text{ K-FT})}{2.17(-17.69 \text{ K-FT})(1+0.30)} = 0.39$$

NEGATIVE FLEXURE AT 1/4 SPAN

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{(0.9)(-38.53 \text{ K-FT}) - 1.3(-0.87 \text{ K-FT})}{2.17(-12.92 \text{ K-FT})(1+0.30)} = 0.92$$

OPERATING RATING FACTOR

NEGATIVE FLEXURE AT 1/8 SPAN

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{(0.9)(-26.5 \text{ K-FT}) - 1.3(-3.39 \text{ K-FT})}{1.30(-17.69 \text{ K-FT})(1+0.30)} = 0.65$$

NEGATIVE FLEXURE AT 1/4 SPAN

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{(0.9)(-38.53 \text{ K-FT}) - 1.3(-0.87 \text{ K-FT})}{1.30(-12.92 \text{ K-FT})(1+0.30)} = 1.54$$

BY MIP DATE 3/19/15 SUBJECT MINERAL KING BRIDGE SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ JOB NO. 2014046

INVENTORY & OPERATING RATING

EXISTING DECK SLAB USING LOAD FACTOR METHOD

BRIDGE MEMBER RATING

INVENTORY RATING AT Y8 SPAN

$(RF)(W) = (0.39)(32K + 32K + 8K)(1\ TON/2K)(1\ METRIC\ TON/1.102\ TONS)$

$= 12.7\ TONS$

~~INVENTORY RATING AT Y4 SPAN~~

~~$(RF)(W) = (0.92)(32K + 32K + 8K)(1\ TON/2K)(1\ METRIC\ TON/1.102\ TONS)$~~

~~$= 30.1\ TONS$~~

OPERATING RATING AT 1/8 SPAN

$(RF)(W) = (0.65)(32K + 32K + 8K)(1\ TON/2K)(1\ METRIC\ TON/1.102\ TONS)$

$= 21.2\ TONS$

~~OPERATING RATING AT Y4 SPAN~~

~~$(RF)(W) = (1.54)(32K + 32K + 8K)(1\ TON/2K)(1\ METRIC\ TON/1.102\ TONS)$~~

~~$= 50.3\ TONS$~~

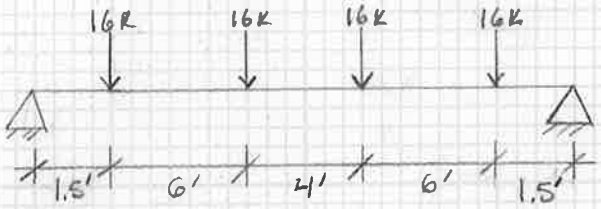
BY MIP DATE 3/19/15 SUBJECT MINERAL KING BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. 2014046

INVENTORY & OPERATING RATING

EXISTING TRANSVERSE BEAM USING LOAD FACTOR METHOD

THE FOLLOWING CALCULATION WILL DETERMINE THE INVENTORY & OPERATING RATINGS OF THE EXISTING BRIDGE'S TRANSVERSE BEAM CONSERVATIVELY IDEALIZED AS A PIN-TO-PIN CONDITION.



POSITIVE MOMENT DEMAND

$M_L = 32K(1.5') + 16K(6') = 144\ K\text{-FT}$

$W_D = (9/12')(11.375')(0.150\ KCF) + (22''/12)(14''/12)(0.150\ KCF)$

$= 1.60\ KLF$

$M_D = \frac{W_D L^2}{8} = \frac{(1.60\ KLF)(19')^2}{8} = 72\ K\text{-FT}$

POSITIVE FLEXURAL CAPACITY

$f'_c = 5,490\ PSI$

$f_y = 40,000\ PSI$

$\beta_1 = 0.78$

$h = 22''$

$b = 14''$

$A_s = (1'')^2(7\ BARS) = 7\ IN^2$

$d = 31'' - 2''(CLR) - 3/8''(STIRRUP) - 1'' - 0.5'' = 27.125\ IN$

$a = \frac{A_s f_y}{0.85 f'_c b} = \frac{(7\ IN^2)(40\ KSI)}{0.85(5.49\ KSI)(14'')} = 4.29\ IN$

$M_n = A_s f_y (d - a/2)$

$= (7\ IN^2)(40\ KSI)(27.125'' - 4.29''/2)$

$= 583\ K\text{-FT}$

BY MIP DATE 3/19/15 SUBJECT MINERAL KING BRIDGE SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ JOB NO. 2014046

INVENTORY & OPERATING RATING

EXISTING TRANSVERSE BEAM USING LOAD FACTOR METHOD

INVENTORY RATING FACTOR

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{(0.9)(83\ K\text{-}FT) - 1.3(72\ K\text{-}FT)}{2.17(144\ K\text{-}FT)(1+0.30)} = \underline{1.06}$$

OPERATING RATING FACTOR

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{(0.9)(83\ K\text{-}FT) - 1.3(72\ K\text{-}FT)}{1.30(144\ K\text{-}FT)(1.0+0.3)} = \underline{1.77}$$

BRIDGE MEMBER RATING

INVENTORY RATING

$= (1.06)(32K + 32K + 8K)(1\ TON/2K)(1\ METRIC\ TON/1.102\ TONS)$

$= \underline{34.6\ TONS}$

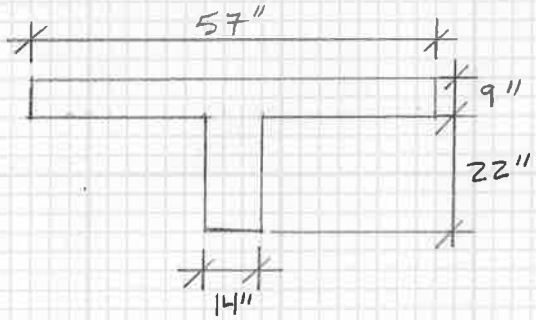
OPERATING RATING

$= (1.77)(32K + 32K + 8K)(1\ TON/2K)(1\ METRIC\ TON/1.102\ TONS)$

$= \underline{57.8\ TONS}$

EFFECTIVE WIDTH

$$= \text{MIN} \begin{cases} \frac{1}{4}\ SPAN = 1/4(19') = \underline{57''} \\ 6(9'')(2) + 14'' = 122'' \\ (115'')(\frac{1}{2})(2) + 14'' = 129'' \end{cases}$$



POSITIVE MOMENT DEMAND

$M_L = 32K(1.5') + 16K(6') = \underline{144\ K\text{-}FT}$

$M_D = 0.15\ KCF\left[132''(9'') + 22''(14'')\right](1\ SF/144\ IN^2)(1/8)(19')^2$ (132" ← TRIB. WIDTH)

$= \underline{70\ K\text{-}FT}$

CORNERSTONE STRUCTURAL ENGINEERING GROUP, INC.

BY MIP DATE 4/22/15 SUBJECT MINERAL KING BRIDGE SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ JOB NO. 2014046

INVENTORY & OPERATING RATING

EXISTING TRANVERSE BEAM USING LOAD FACTOR METHOD

POSITIVE FLEXURAL CAPACITY

$f'_c = 5{,}490$ PSI

$f_y = 40{,}000$ PSI

$h = 31''$

$b = 57''$

$A_s = (1.00\ IN^2)(7\ BARS) = 7.00\ IN^2$

$$d = \{4[31 - 2'' CLR - 3/8'' - 1''/2] + [31'' - 2'' CLR - 3/8'' - 1'' - 1''/2](3)\}$$

$$\div 7 = 27.7''$$

$$a = \frac{A_s f_y}{0.85 f'_c b} = \frac{(7\ IN^2)(40\ KSI)}{0.85(5.49\ KSI)(57'')} = 1.05'' < 9'' (SLAB\ THICKNESS)$$

$$M_n = A_s f_y (d - a/2)$$

$$= (7\ IN^2)(40\ KSI)(27.7'' - 1.05''/2)$$

$$= 634\ K\text{-}FT$$

INVENTORY RATING FACTOR

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{0.9(634\ K\text{-}FT) - 1.3(70\ K\text{-}FT)}{2.17(144\ K\text{-}FT)(1+0.30)} = \underline{1.18} \leftarrow CONTROLS$$

OPERATING RATING FACTOR

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{0.9(634\ K\text{-}FT) - 1.3(70\ K\text{-}FT)}{1.3(144\ K\text{-}FT)(1+0.30)} = \underline{1.97} \leftarrow CONTROLS$$

CORNERSTONE STRUCTURAL ENGINEERING GROUP, INC.

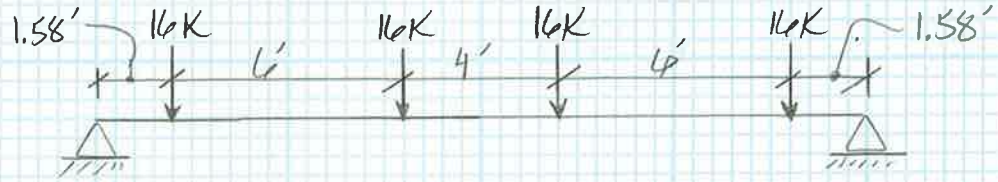
BY NRZ DATE 4/21/15 SUBJECT MIDERAL KING BRIDGE SHEET NO. _____ OF _____

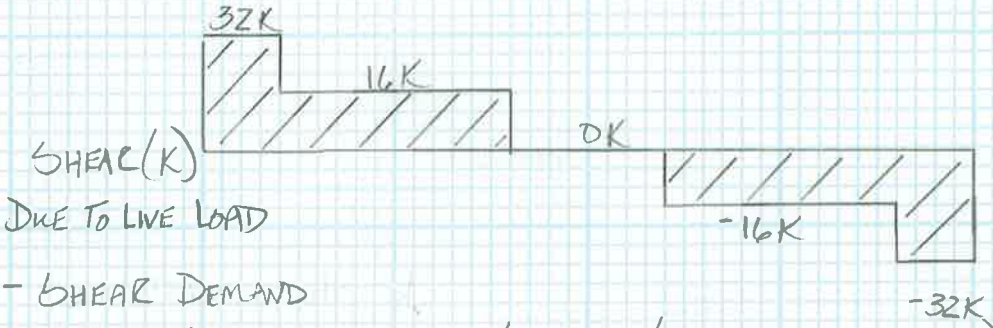
CHKD.BY _____ DATE _____ JOB NO. 2014D46

INVENTORY & OPERATING RATING

EXISTING TRANSVERSE DECK BEAM OVER MAIN ARCH SPAN

- SHEAR CHECK
  - ASSUME 2 LANES OF HS20-44 LOADING





- SHEAR DEMAND
  - AT d_v FROM FACE OF SUPPORT (PER AASHTO 5.8.3.2)
    - d_v = EFFECTIVE SHEAR DEPTH TAKEN AS THE DISTANCE, MEASURED PERPENDICULAR TO THE NEUTRAL AXIS, BETWEEN THE RESULTANTS OF THE COMPRESSIVE & TENSILE FORCES DUE TO FLEXURE; IT NEED NOT BE TAKEN TO BE LESS THAN THE GREATER OF $0.9 d_e$ OR $0.72 h$ (ID.)
  - $d_e = \left[(22" + 9.5" - 1" \text{ CLR} - \tfrac{3}{8}" - \tfrac{1}{2}")(4) + (22" + 9.5" - 1" \text{ CLR} - \tfrac{3}{8}" - 1\tfrac{1}{2}")(3)\right] \times (1/7)$
    $= 29.2"$
  - $\rightarrow$ = GREATER OF $\begin{cases} 0.9(29.2") = 26.3" \\ 0.72(22" + 9.5") = 22.7" \end{cases}$ $\therefore$ GOVERNS

V_{LL} (@ 26.3" FROM SUPPORT) = 16 KIPS

V_{DL} (@ 26.3" FROM SUPPORT) = $[(19.5"/12)(11.375') + (22"/12)(14"/12)](0.15 KCF) \times [(19.17'/2) - (26.3"/12)]$
$= 12.4$ KIPS

BY NRL DATE 4/21/15 SUBJECT MINERAL KIDS BRIDGE SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ JOB NO. _____

INVENTORY & OPERATING RATING

EXISTING TRANSVERSE DECK BEAM OVER MAIN ARCH SPAN

- SHEAR CHECK
  - ASSUME TWO LANES OF HS20-44 LOADING
    - SHEAR DEMAND (CONT.)
      - MAX SHEAR DEMAND IN SECTION WITHOUT SHEAR REF. (@ 5'-9" FROM ℄ SUPPORT)

$V_{LL} = 16K$

$V_{DL} = [(9.5"/12)(11.375') + (22"/12)(14"/12)](0.15 KCF) \times [(41.17'/2) - 5.75']$

$= 6.4 K$

- SHEAR CAPACITY
  - AT d_v (26.3") FROM FACE OF SUPPORT
    - ASSUME SHEAR STIRRUPS (3/8" Ø) SPACED AT 9" ℄, $\theta = 45°$
      - $V_s = A_v f_y d_v (\cot\theta + \cot\alpha) \sin\alpha / s$ [AASHTO 5.8.3.3-4]

$= (4)(3/8" \times 1/2")^2 (2)(40 KSI)(26.3")(\cot 45° + \cot 90°) \sin 90° / 9"$

$= 25.8 K$

      - $V_c = 0.0316 \beta (f'_c)^{1/2} b_v d_v$ [AASHTO 5.8.3.3-3]

$= 0.0316(2)\sqrt{5.49 KSI}(41")(26.3")$

$= 54.5 KIPS$

    - $V_n = V_s + V_c = 25.8K + 54.5K = 80.3K$
  - AT 5'-9" FROM ℄ SUPPORT
    - $V_s = 0K$
    - $V_c = 54.5K$
    - $V_n = 54.5K$

CORNERSTONE STRUCTURAL ENGINEERING GROUP, INC.

BY NRZ DATE 4/21/15 SUBJECT MINERAL KING BRIDGE SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ JOB NO. 2D14D46

INVENTORY & OPERATING RATING

EXISTING TRANSVERSE DECK BEAM OVER MAIN ARCH SPAN

- SHEAR CHECK (CONT.)
  - INVENTORY OPERATING FACTOR
    - AT d_v FROM FACE OF SUPPORT

$$= \frac{\phi C - A_1 D}{A_2 L(1+I)} = \frac{(0.85)80.3K - 1.3(12.4K)}{2.17(16K)(1.3)} = 1.16$$

    - AT 5'-9" FROM ℄ SUPPORT

$$= \frac{\phi C - A_1 D}{A_2 L(1+I)} = \frac{(0.85)54.5K - 1.3(6.4K)}{2.17(16K)(1.3)} = 1.84$$

  - OPERATING RATING FACTOR
    - AT d_v FROM FACE OF SUPPORT

$$= \frac{\phi C - A_1 D}{A_2 L(1+I)} = \frac{(0.85)80.3K - 1.3(12.4K)}{1.3(16K)(1.3)} = 1.93$$

    - AT 5'-9" FROM ℄ SUPPORT

$$= \frac{\phi C - A_1 D}{A_2 L(1+I)} = \frac{(0.85)54.5K - 1.3(6.4K)}{1.3(16K)(1.3)} = 1.41$$

BY NRZ DATE 2/10/15 SUBJECT MINERAL KING BRIDGE SHEET NO. ____ OF ____

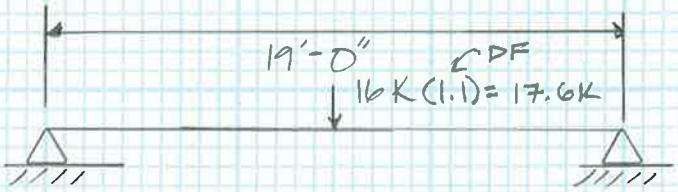
CHKD.BY ____ DATE ____ JOB NO. 20140H6

INVENTORY & OPERATING RATING

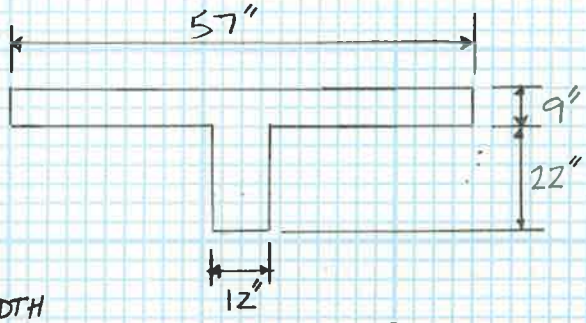
APPROACH SPAN LONGITUDINAL BEAMS

- THE FOLLOWING CALCULATION WILL DETERMINE THE INVENTORY & OPERATING RATINGS OF THE EXISTING BRIDGE'S APPROACH SPAN LONGITUDINAL BEAMS. THE VALUES USED FOR f'_c AND f_y ARE BASED ON THE RESULTS FROM THE COMPRESSION & TENSILE TESTS COMPLETED ON SPECIMENS TAKEN FROM THE BRIDGE.

- ASSUME BEAMS ARE SIMPLY SUPPORTED $DF = \frac{S}{6.0} = \frac{6.4'}{6.0} = 1.1$ (S = AVG. STRINGER SPACING)



- ASSUME 1 WHEEL LINE IS LOCATED ALONG BEAM
- COMPRESSION FLANGE WIDTH
  - PER CALTRANS BDS 8.10.1.1, THE TOTAL WIDTH SHALL NOT EXCEED 1/4 OF THE SPAN LENGTH OF THE GIRDER. THE EFFECTIVE FLANGE WIDTH OVERHANGING EACH SIDE OF THE WEB SHALL NOT EXCEED 6 TIMES THE THICKNESS OF THE SLAB OR 1/2 THE CLEAR DISTANCE TO THE NEXT WEB.
  - EFFECTIVE WIDTH
    $= \min \begin{cases} 1/4\ \text{SPAN} = 1/4(19') = 4.75' \\ 6(9")(2) + 12" = 110" \\ 66"(1/2)(2) + 12" = 77" \end{cases}$



- MOMENT DEMAND
  - $M_D = 0.15\,KCF\left[77"(9") + 22"(12")\right](15F/144\,IN^2)(1/8)(19')^2$ (TRIBUTARY WIDTH)
    $= 45.0\ K\cdot ft$
  - $M_L = 17.6K(19')(1/4)$
    $= 83.6\ K\cdot ft$ (UNFACTORED & WITHOUT IMPACT)

CORNERSTONE STRUCTURAL ENGINEERING GROUP, INC.

BY NRZ DATE 2/11/15 SUBJECT MINECAL KING BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. ZD14D46

INVENTORY & OPERATING RATING

APPROACH SPAN LONGITUDINAL BEAMS

- NOMINAL FLEXURAL CAPACITY
  - f'_c = 5,490 PSI } PER MATERIALS TESTING PROGRAM
  - f_y = 40,000 PSI }
  - h = 33"
  - b = 57"
  - $A_s = (1.00in)^2(7\ BARS) = 7.00in^2$
  - $d = \{4[33" - 2"(LLC) - 3/8" - 1"/2] + [33" - 2"(LLC) - 3/8" - 1" - 1/2"](3)\}\frac{1}{7}$
    $= 29.70"$
  - $a = \frac{A_s f_y}{0.85(f'_c)(b)} = \frac{(7.0in^2)(40\ KSI)}{0.85(5.49\ KSI)(57")} = 1.05" < 9"$ (SLAB THICKNESS)
  - $M_n = (7in^2)(40\ KSI)(29.70" - 1.05"/2)(1'/12")$
    $= 661\ K\cdot ft$

- INVENTORY RATING

$$= \frac{\phi C - A_1 D}{A_2 L(1+I)} = \frac{(0.9)661\ K\cdot ft - 1.3(45\ K\cdot ft)}{2.17(83.6\ K\cdot Ft)(1+0.3)} = 2.35$$

- OPERATING RATING

$$= \frac{C - A_1 D}{A_2 L(1+I)} = \frac{(0.9)661\ K\cdot ft - 1.3(45\ K\cdot ft)}{1.3(83.6\ K\cdot Ft)(1+0.3)} = 3.92$$

BY MIP DATE 4/23/15 SUBJECT MINERAL KING BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. 2014046

INVENTORY & OPERATING RATING

APPROACH SPAN LONGITUDINAL BEAMS

SHEAR DEMAND (ASSUME 1 WHEEL LINE IS ALONG BEAM)

AT d_v FROM FACE OF SUPPORT (PER AASHTO 5.8.3.2)

d_v = 26.3" (SAME AS EXISTING TRANSVERSE DECK BEAM)

V_{LL} (@ 26.3" FROM SUPPORT) = 8.8 K

V_{DL} (@ 26.3" FROM SUPPORT) =

$[(9.5"/12)(77"/12) + (22"/12)(12"/12)](0.15\ KCF)$

$\times [(19'/2) - (26.3"/12)] = 7.58\ K$

MAX SHEAR DEMAND IN SECTION W/O SHEAR RFT.
(@ 5'-9" FROM ℄ SUPPORT

V_{LL} = 8.8 K

$V_{DL} = [(9.5"/12)(77"/12) + (22"/12)(12"/12)](0.15\ KCF)$

$\times [(19'/2) - 5.75'] = 3.89\ K$

SHEAR CAPACITY

AT d_v (26.3") FROM FACE OF SUPPORT, ASSUME SHEAR STIRRUPS (3/8 ∅) SPACED AT 9" OC, $\theta = 45°$

$V_s = A_v f_y d_v (\cot\theta + \cot\alpha)\sin\alpha / s$ (AASHTO 5.8.3.3-4)

$= (2T)(3/8" \times 1/2)^2 (2)(40\ KSI)(26.3")(\cot 45° + \cot 90°)\sin 90°/1"$

$= 25.8\ K$

$V_c = 0.0316\ \beta\ (f'_c)^{1/2}\ b_v d_v$

$= 0.0316(2)\sqrt{5.49\ KSI}\ (12")(26.3")$

$= 46.7\ K$

$V_n = V_s + V_c = 25.8\ K + 46.7\ K = 72.5\ K$

AT 5'-9" FROM ℄ SUPPORT

V_s = 0 K

V_c = 46.7 K

V_n = 46.7 K

BY MJP DATE 4/24/15 SUBJECT MINERAL KING BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. 2014046

INVENTORY & OPERATING RATING

APPROACH SPAN LONGITUDINAL BEAMS

INVENTORY RATING (@ d_v FROM FACE OF SUPPORT)

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{0.85(72.5K) - 1.3(7.58K)}{2.17(8.8K)(1+0.3)} = \underline{2.08}$$

INVENTORY RATING (@ 5'-9" FROM ℄ OF SUPPORT)

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{0.85(46.7K) - 1.3(3.89K)}{2.17(8.8K)(1+0.3)} = \underline{1.39}$$

OPERATING RATING (@ d_v FROM FACE OF SUPPORT)

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{0.85(72.5K) - 1.3(7.58K)}{1.3(8.8K)(1+0.3)} = \underline{3.48}$$

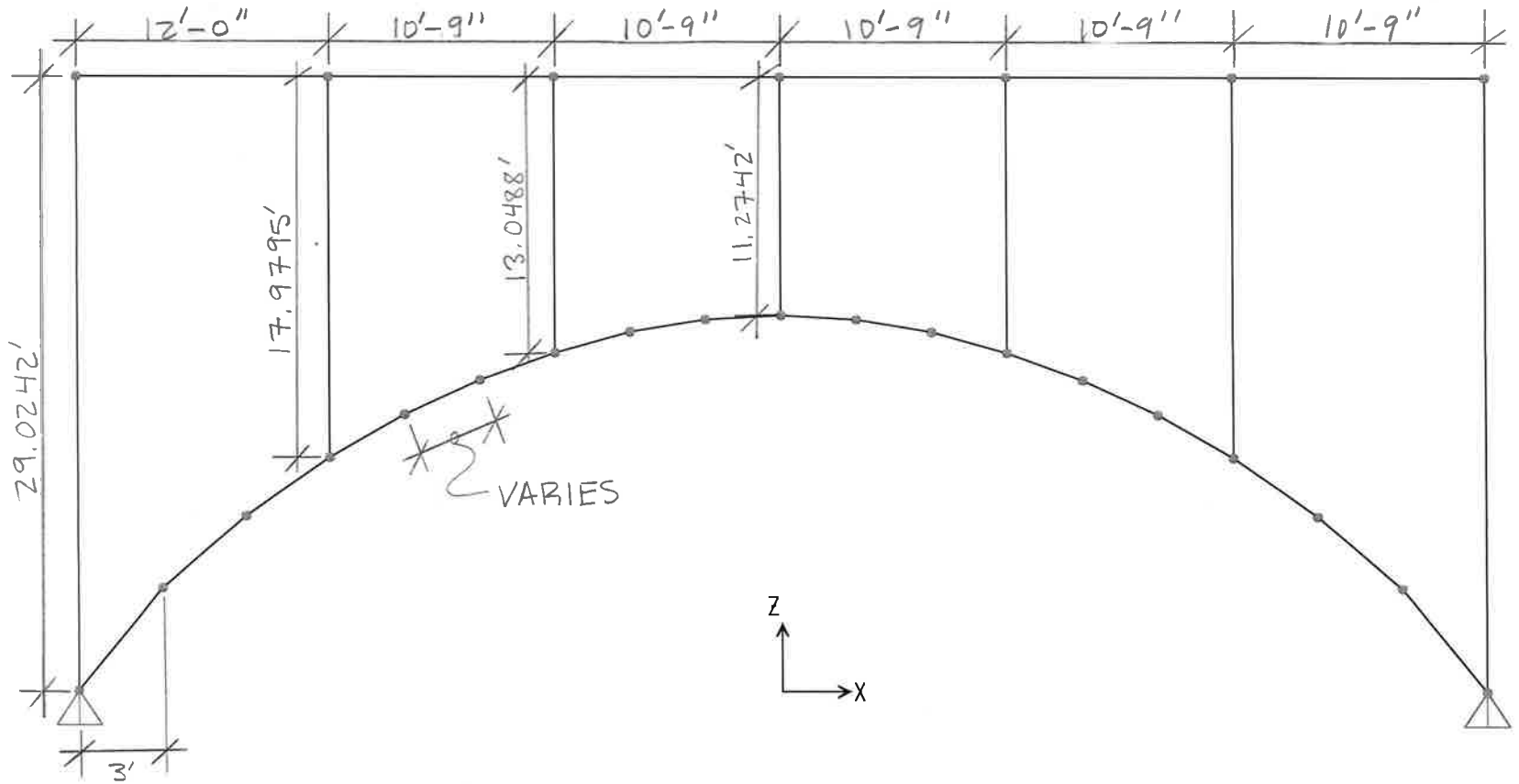
OPERATING RATING (@ 5'-9" FROM ℄ OF SUPPORT)

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{0.85(46.7K) - 1.3(3.89K)}{1.3(8.8K)(1+0.3)} = \underline{2.33}$$

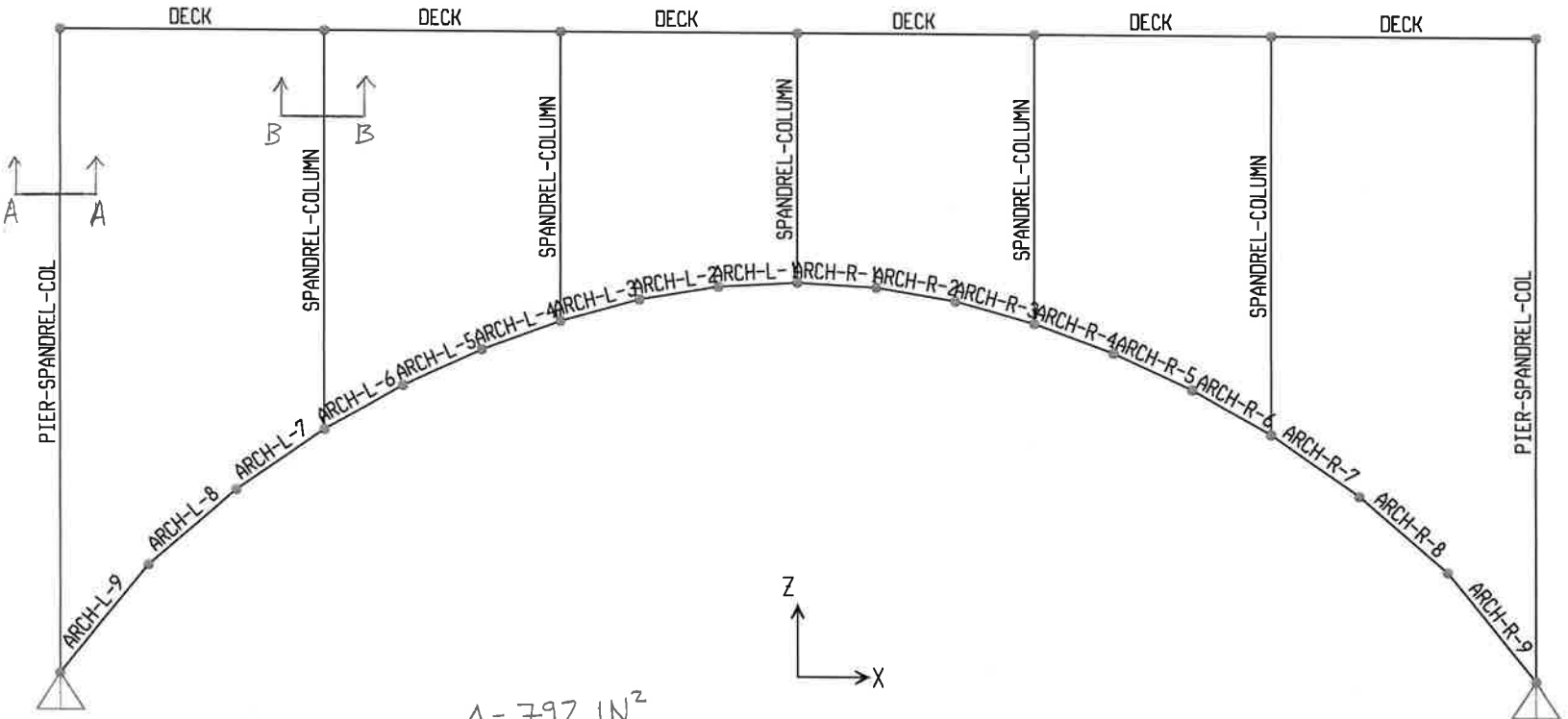
EXISTING ARCH MOMENT CAPACITY

IN THIS SECTION D/C RATIOS, INVENTORY RATINGS, AND OPERATING RATINGS ARE CALCULATED FOR THE ARCH, THE PIER SPANDREL COLUMNS, AND THE INTERMEDIATE SPANDREL COLUMNS. THE LIVE LOAD REACTIONS APPLIED TO THE SPANDREL COLUMNS ARE TAKEN FROM THE SAP MODEL 'LIVE LOAD DEMAND TO ARCH.' FOR THE ARCH, ARCH SECTION 3 IS THE MOST CRITICAL. THEREFORE A GRAPHIC OF THE MOMENT DIAGRAM PER SAP2000 IS SHOWN FOR THIS SECTION ONLY. FOR PIER SPANDREL COLUMNS, A GRAPHIC OF THE MOMENT DIAGRAM IS SHOWN FOR THE MOST CRITICAL SECTION. FOR ALL INTERMEDIATE SPANDREL COLUMNS, A GRAPHIC OF THE MOMENT DIAGRAM IS SHOWN.

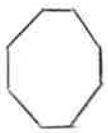
FRAME (ARCH)


12'-0"
10'-9"
10'-9"
10'-9"
10'-9"
10'-9"
29.0242'
17.9795'
13.0488'
11.2742'
VARIES
3'
Z
X

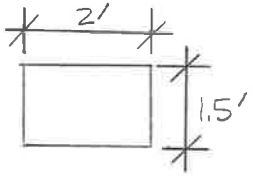
FRAME SECTIONS



$A = 792\ IN^2$
$I_x = 57888\ IN^4$
$I_y = 43848\ IN^4$

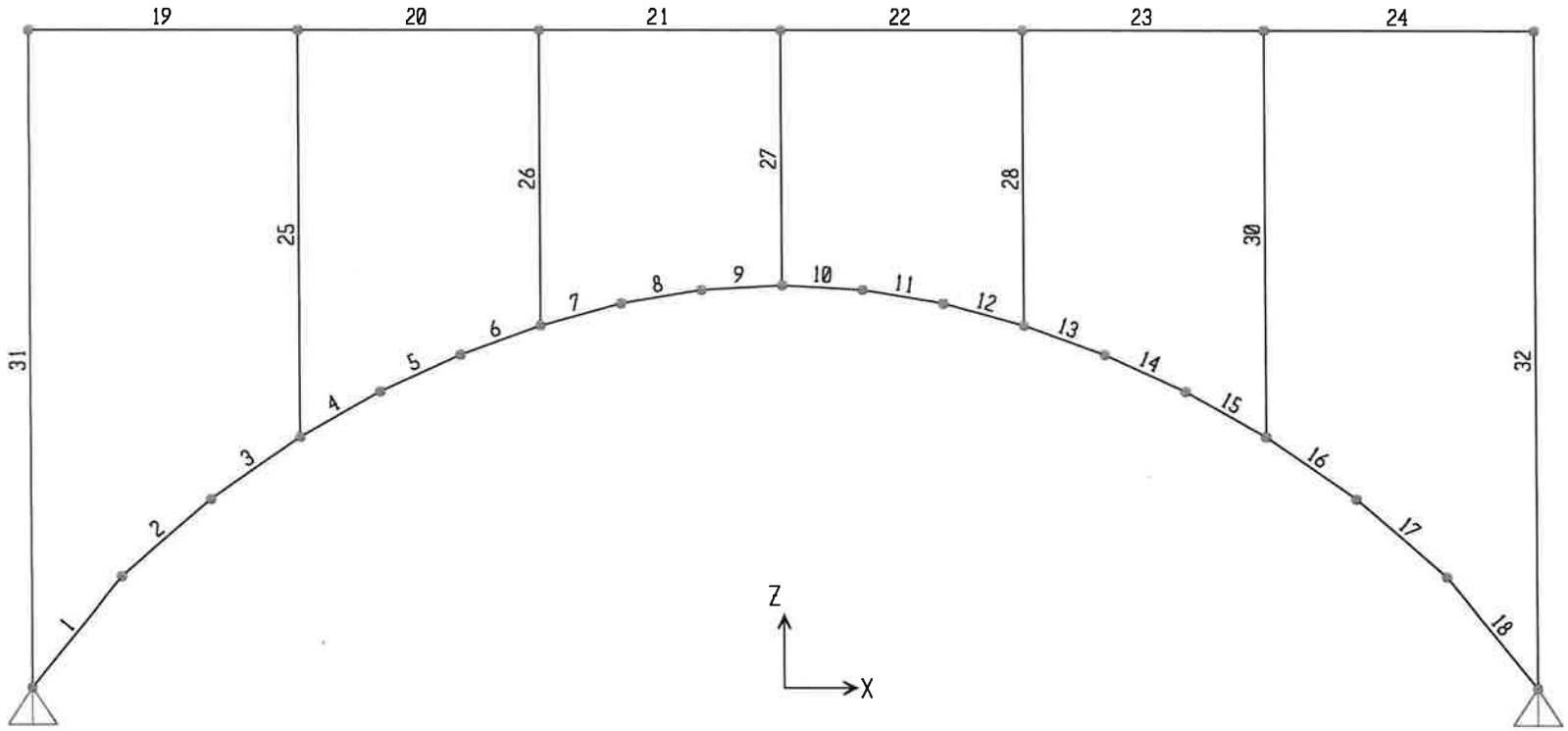


SECTION A-A

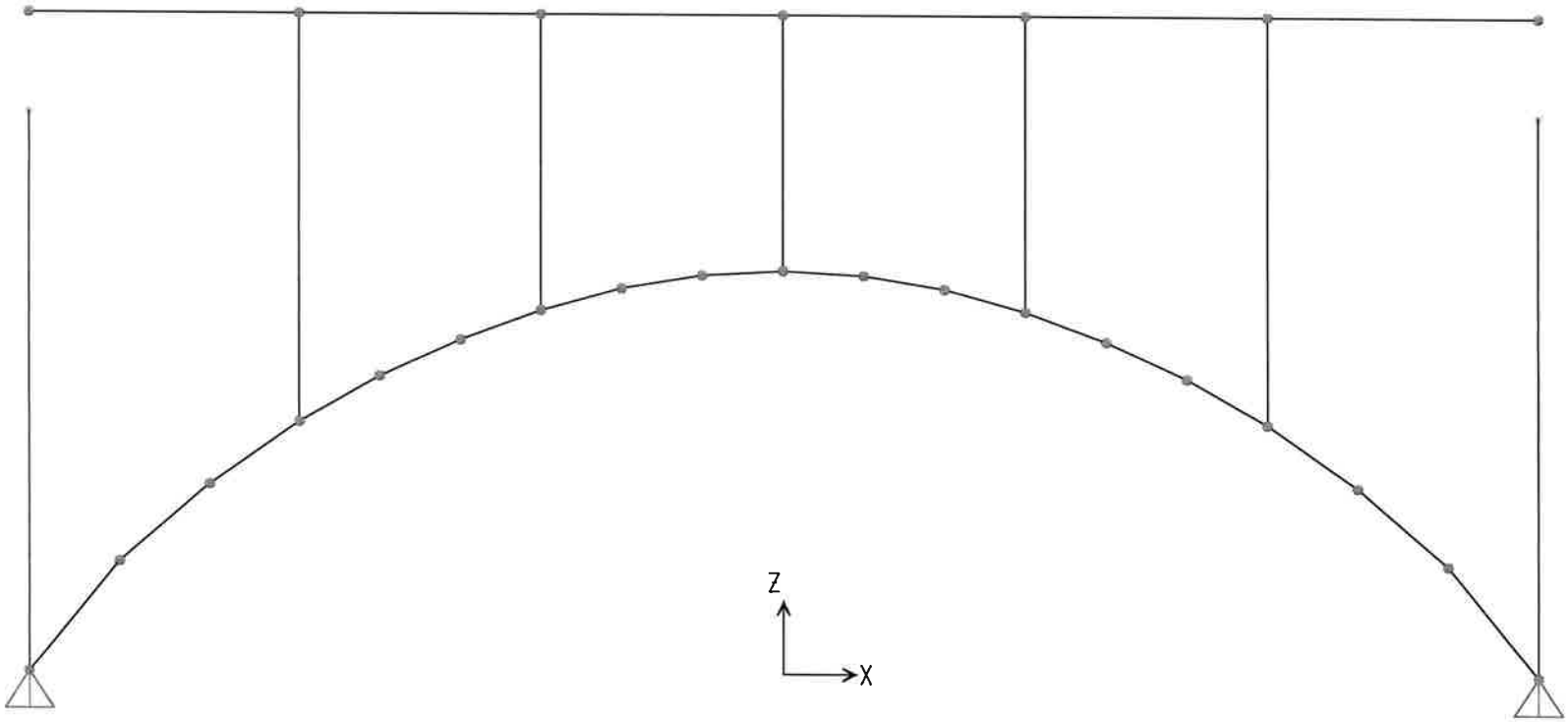


SECTION B-B

FRAME LABELS



FRAME RELEASES



JOINT LABELS

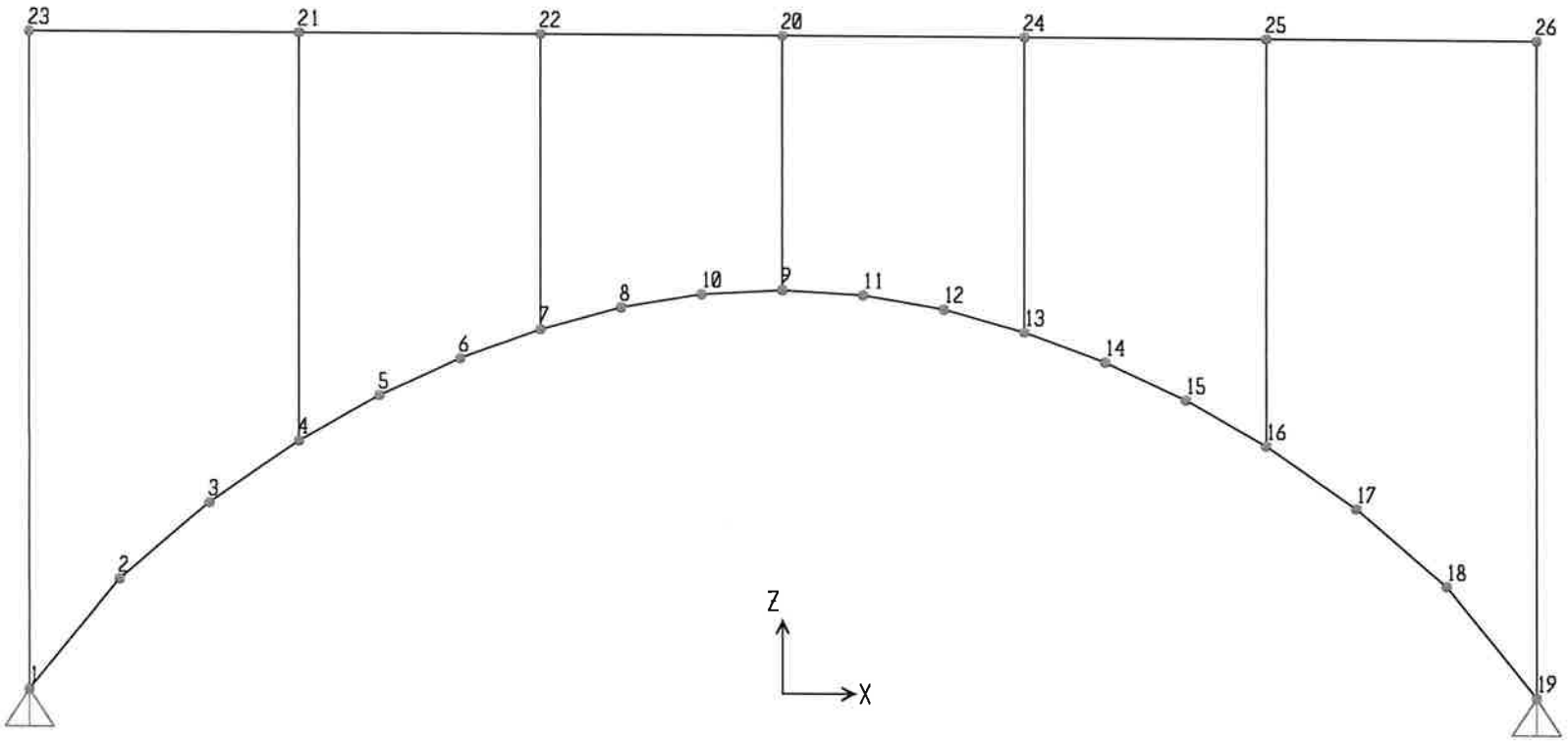


TABLE: Analysis Case Definitions			
Case	Type	InitialCond	ModalCase
Text	Text	Text	Text
DEAD	LinStatic	Zero	
MODAL	LinModal	Zero	
HS20(C1)	LinStatic	Zero	
HS20(C2)	LinStatic	Zero	
HS20(C3)	LinStatic	Zero	
HS20(C4)	LinStatic	Zero	
HS20(C5)	LinStatic	Zero	
HS20(C6)	LinStatic	Zero	

TABLE: Case - Static 1 - Load Assignments			
Case	LoadType	LoadName	LoadSF
Text	Text	Text	Unitless
DEAD	Load case	DEAD	1
HS20(C1)	Load case	HS20(C1)	1
HS20(C2)	Load case	HS20(C2)	1
HS20(C3)	Load case	HS20(C3)	1
HS20(C4)	Load case	HS20(C4)	1
HS20(C5)	Load case	HS20(C5)	1
HS20(C6)	Load case	HS20(C6)	1

TABLE: Combination Definitions								
ComboName	ComboType	CaseType	CaseName	ScaleFactor	SteelDesign	ConcDesign	AlumDesign	ColdDesign
Text	Text	Text	Text	Unitless	Yes/No	Yes/No	Yes/No	Yes/No
D+L(C1)	Linear Add	Linear Static	DEAD	1	No	No	No	No
D+L(C1)		Linear Static	HS20(C1)	1				
GrIH(C1)	Linear Add	Linear Static	DEAD	1.3	No	No	No	No
GrIH(C1)		Linear Static	HS20(C1)	2.82				
D+L(C2)	Linear Add	Linear Static	DEAD	1	No	No	No	No
D+L(C2)		Linear Static	HS20(C2)	1				
GrIH(C2)	Linear Add	Linear Static	DEAD	1.3	No	No	No	No
GrIH(C2)		Linear Static	HS20(C2)	2.82				
D+L(C3)	Linear Add	Linear Static	DEAD	1	No	No	No	No
D+L(C3)		Linear Static	HS20(C3)	1				
D+L(C4)	Linear Add	Linear Static	DEAD	1	No	No	No	No
D+L(C4)		Linear Static	HS20(C4)	1				
D+L(C5)	Linear Add	Linear Static	DEAD	1	No	No	No	No
D+L(C5)		Linear Static	HS20(C5)	1				
D+L(C6)	Linear Add	Linear Static	DEAD	1	No	No	No	No
D+L(C6)		Linear Static	HS20(C6)	1				
GrIH(C3)	Linear Add	Linear Static	DEAD	1.3	No	No	No	No
GrIH(C3)		Linear Static	HS20(C3)	2.82				
GrIH(C4)	Linear Add	Linear Static	DEAD	1.3	No	No	No	No
GrIH(C4)		Linear Static	HS20(C4)	2.82				
GrIH(C5)	Linear Add	Linear Static	DEAD	1.3	No	No	No	No
GrIH(C5)		Linear Static	HS20(C5)	2.82				
GrIH(C6)	Linear Add	Linear Static	DEAD	1.3	No	No	No	No
GrIH(C6)		Linear Static	HS20(C6)	2.82				

TABLE: Connectivity - Frame/Cable			
Frame	JointI	JointJ	Length
Text	Text	Text	ft
1	1	2	6.3074
2	2	3	5.2606
3	3	4	4.8548
4	4	5	4.1058
5	5	6	3.9368
6	6	7	3.8105
7	7	8	3.7157
8	8	10	3.6325
9	10	9	3.5887
10	9	11	3.5887
11	11	12	3.6325
12	12	13	3.7157
13	13	14	3.8105
14	14	15	3.9368
15	15	16	4.1058
16	16	17	4.8548
17	17	18	5.2606
18	18	19	6.3074
19	23	21	12
20	21	22	10.75
21	22	20	10.75
22	20	24	10.75
23	24	25	10.75
24	25	26	12
25	21	4	17.9795
26	22	7	13.0488
27	20	9	11.2742
28	24	13	13.0488
30	25	16	17.9795
31	23	1	29.0242
32	26	19	29.0242

TABLE: Coordinate Systems							
Name	Type	X	Y	Z	AboutZ	AboutY	AboutX
Text	Text	ft	ft	ft	Degrees	Degrees	Degrees
GLOBAL	Cartesian	0	0	0	0	0	0

TABLE: Frame Release Assignments 1 - General

Frame	PI	V2I	V3I	TI	M2I	M3I	PJ	V2J	V3J	TJ	M2J	M3J
Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
31	No	No	No	No	No	Yes	No	No	No	No	No	No
32	No	No	No	No	No	Yes	No	No	No	No	No	No

TABLE: Frame Release Assignments 1 - General

Frame	PartialFix
Yes/No	Yes/No
31	No
32	No

TABLE: Frame Section Assignments					
Frame	SectionType	AutoSelect	AnalSect	DesignSect	MatProp
Text	Text	Text	Text	Text	Text
1	Nonprismatic	N.A.	ARCH-L-9	N.A.	Default
2	Nonprismatic	N.A.	ARCH-L-8	N.A.	Default
3	Nonprismatic	N.A.	ARCH-L-7	N.A.	Default
4	Nonprismatic	N.A.	ARCH-L-6	N.A.	Default
5	Nonprismatic	N.A.	ARCH-L-5	N.A.	Default
6	Nonprismatic	N.A.	ARCH-L-4	N.A.	Default
7	Nonprismatic	N.A.	ARCH-L-3	N.A.	Default
8	Nonprismatic	N.A.	ARCH-L-2	N.A.	Default
9	Nonprismatic	N.A.	ARCH-L-1	N.A.	Default
10	Nonprismatic	N.A.	ARCH-R-1	N.A.	Default
11	Nonprismatic	N.A.	ARCH-R-2	N.A.	Default
12	Nonprismatic	N.A.	ARCH-R-3	N.A.	Default
13	Nonprismatic	N.A.	ARCH-R-4	N.A.	Default
14	Nonprismatic	N.A.	ARCH-R-5	N.A.	Default
15	Nonprismatic	N.A.	ARCH-R-6	N.A.	Default
16	Nonprismatic	N.A.	ARCH-R-7	N.A.	Default
17	Nonprismatic	N.A.	ARCH-R-8	N.A.	Default
18	Nonprismatic	N.A.	ARCH-R-9	N.A.	Default
19	Rectangular	N.A.	DECK	DECK	Default
20	Rectangular	N.A.	DECK	DECK	Default
21	Rectangular	N.A.	DECK	DECK	Default
22	Rectangular	N.A.	DECK	DECK	Default
23	Rectangular	N.A.	DECK	DECK	Default
24	Rectangular	N.A.	DECK	DECK	Default
25	Rectangular	N.A.	SPANDREL-COLUMN	SPANDREL-COLUMN	Default
26	Rectangular	N.A.	SPANDREL-COLUMN	SPANDREL-COLUMN	Default
27	Rectangular	N.A.	SPANDREL-COLUMN	SPANDREL-COLUMN	Default
28	Rectangular	N.A.	SPANDREL-COLUMN	SPANDREL-COLUMN	Default
30	Rectangular	N.A.	SPANDREL-COLUMN	SPANDREL-COLUMN	Default
31	General	N.A.	PIER-SPANDREL-COL	N.A.	Default
32	General	N.A.	PIER-SPANDREL-COL	N.A.	Default

TABLE: Frame Section Properties 1 - General										
SectionName	Material	Shape	t3	t2	tf	tw	t2b	tfb	Area	TorsConst
Text	Text	Text	ft	ft	ft	ft	ft	ft	ft2	ft4
ARCH-L-1		Nonprismatic								
ARCH-L-2		Nonprismatic								
ARCH-L-3		Nonprismatic								
ARCH-L-4		Nonprismatic								
ARCH-L-5		Nonprismatic								
ARCH-L-6		Nonprismatic								
ARCH-L-7		Nonprismatic								
ARCH-L-8		Nonprismatic								
ARCH-L-9		Nonprismatic								
ARCH-R-1		Nonprismatic								
ARCH-R-2		Nonprismatic								
ARCH-R-3		Nonprismatic								
ARCH-R-4		Nonprismatic								
ARCH-R-5		Nonprismatic								
ARCH-R-6		Nonprismatic								
ARCH-R-7		Nonprismatic								
ARCH-R-8		Nonprismatic								
ARCH-R-9		Nonprismatic								
ARCH-XS-0	CONC	General	2	3					5.9444	4.384002
ARCH-XS-1	CONC	General	2.00303	3					5.9535	4.390827
ARCH-XS-2	CONC	General	2.00303	3					5.9535	4.390827
ARCH-XS-3	CONC	General	2.01047	3					5.9758	4.407552
ARCH-XS-4	CONC	General	2.0553	3					6.1103	4.508418
ARCH-XS-5	CONC	General	2.1411	3					6.3677	4.701477
ARCH-XS-6	CONC	General	2.27298	3					6.7634	4.998196
ARCH-XS-7	CONC	General	2.48317	3					7.3939	5.471108
ARCH-XS-8	CONC	General	2.78268	3					8.2925	0.614571
ARCH-XS-9	CONC	General	3.85882	3					11.5209	14.169643
DECK	CONC	Rectangular	0.7917	11.5					9.1046	1.819709
PIER-SPANDREL-COL	CONC	General	2.5	3					5.5	2.791667
SPANDREL-COLUMN	CONC	Rectangular	1.5	2					3	1.214907

TABLE: Frame Section Properties 1 - General										
SectionName	I33	I22	AS2	AS3	S33	S22	Z33	Z22	R33	R22
Text	ft4	ft4	ft2	ft2	ft3	ft3	ft3	ft3	ft	ft
ARCH-L-1										
ARCH-L-2										
ARCH-L-3										
ARCH-L-4										
ARCH-L-5										
ARCH-L-6										
ARCH-L-7										
ARCH-L-8										
ARCH-L-9										
ARCH-R-1										
ARCH-R-2										
ARCH-R-3										
ARCH-R-4										
ARCH-R-5										
ARCH-R-6										
ARCH-R-7										
ARCH-R-8										
ARCH-R-9										
ARCH-XS-0	1.95036	4.384002	5.9444	5.9444	0.000579	0.000579	0.000579	0.000579	0.08333	0.08333
ARCH-XS-1	1.959315	4.390827	5.9535	5.9535	0.000579	0.000579	0.000579	0.000579	0.08333	0.08333
ARCH-XS-2	1.959315	4.390827	5.9535	5.9535	0.000579	0.000579	0.000579	0.000579	0.08333	0.08333
ARCH-XS-3	1.981374	4.407552	5.9758	5.9758	0.000579	0.000579	0.000579	0.000579	0.08333	0.08333
ARCH-XS-4	2.117933	4.508418	6.1103	6.1103	0.000579	0.000579	0.000579	0.000579	0.08333	0.08333
ARCH-XS-5	2.396546	4.701477	6.3677	6.3677	0.000579	0.000579	0.000579	0.000579	0.08333	0.08333
ARCH-XS-6	2.870786	4.998196	6.7634	6.7634	0.000579	0.000579	0.000579	0.000579	0.08333	0.08333
ARCH-XS-7	3.749602	5.471108	7.3939	7.3939	0.000579	0.000579	0.000579	0.000579	0.08333	0.08333
ARCH-XS-8	5.287615	6.145049	8.2925	8.2925	0.000579	0.000579	0.000579	0.000579	0.08333	0.08333
ARCH-XS-9	14.16964	8.566321	11.5209	11.5209	0.000579	0.000579	0.000579	0.000579	0.08333	0.08333
DECK	0.475553	100.339728	7.5871	7.5871	1.201345	17.45039	1.802018	26.17558	0.22854	3.31976
PIER-SPANDREL-COL	2.791667	2.114583	5.5	5.5	0.000579	0.000579	0.000579	0.000579	0.08333	0.08333
SPANDREL-COLUMN	0.5625	1	2.5	2.5	0.75	1	1.125	1.5	0.43301	0.57735

TABLE: Frame Section Properties 1 - General										
SectionName	ConcCol	ConcBeam	Color	TotalWt	TotalMass	FromFile	AMod	A2Mod	A3Mod	JMod
Text	Yes/No	Yes/No	Text	Kip	Kip-s2/ft	Yes/No	Unitless	Unitless	Unitless	Unitless
ARCH-L-1			Green							
ARCH-L-2			Blue							
ARCH-L-3			Gray8Dark							
ARCH-L-4			White							
ARCH-L-5			Yellow							
ARCH-L-6			Magenta							
ARCH-L-7			Red							
ARCH-L-8			Cyan							
ARCH-L-9			Green							
ARCH-R-1			Cyan							
ARCH-R-2			Red							
ARCH-R-3			Magenta							
ARCH-R-4			Yellow							
ARCH-R-5			White							
ARCH-R-6			Gray8Dark							
ARCH-R-7			Blue							
ARCH-R-8			Green							
ARCH-R-9			Cyan							
ARCH-XS-0	No	No	White	0	0	No	1	1	1	1
ARCH-XS-1	No	No	Blue	0	0	No	1	1	1	1
ARCH-XS-2	No	No	Magenta	0	0	No	1	1	1	1
ARCH-XS-3	No	No	White	0	0	No	1	1	1	1
ARCH-XS-4	No	No	Magenta	0	0	No	1	1	1	1
ARCH-XS-5	No	No	White	0	0	No	1	1	1	1
ARCH-XS-6	No	No	Blue	0	0	No	1	1	1	1
ARCH-XS-7	No	No	Cyan	0	0	No	1	1	1	1
ARCH-XS-8	No	No	Magenta	0	0	No	1	1	1	1
ARCH-XS-9	No	No	Blue	0	0	No	1	1	1	1
DECK	Yes	No	White	0	2.84	No	1	1	1	1
PIER-SPANDREL-COL	No	No	Magenta	0	1.49	No	1	1	1	1
SPANDREL-COLUMN	Yes	No	Blue	0	1.03	No	1	1	1	1

TABLE: Frame Section Properties 1 - General				
SectionName	I2Mod	I3Mod	MMod	WMod
Text	Unitless	Unitless	Unitless	Unitless
ARCH-L-1				
ARCH-L-2				
ARCH-L-3				
ARCH-L-4				
ARCH-L-5				
ARCH-L-6				
ARCH-L-7				
ARCH-L-8				
ARCH-L-9				
ARCH-R-1				
ARCH-R-2				
ARCH-R-3				
ARCH-R-4				
ARCH-R-5				
ARCH-R-6				
ARCH-R-7				
ARCH-R-8				
ARCH-R-9				
ARCH-XS-0	1	1	1	1
ARCH-XS-1	1	1	1	1
ARCH-XS-2	1	1	1	1
ARCH-XS-3	1	1	1	1
ARCH-XS-4	1	1	1	1
ARCH-XS-5	1	1	1	1
ARCH-XS-6	1	1	1	1
ARCH-XS-7	1	1	1	1
ARCH-XS-8	1	1	1	1
ARCH-XS-9	1	1	1	1
DECK	0.5	0.5	1	0
PIER-SPANDREL-COL	1	1	1	0
SPANDREL-COLUMN	1	1	1	0

TABLE: Frame Section Properties 2 - Concrete Column							
SectionName	ReinfConfig	LatReinf	Cover	NumBars3Dir	NumBars2Dir	BarSize	ReinfType
Text	Text	Text	ft	Unitless	Unitless	Text	Text
DECK	Rectangular	Ties	0.15	3	3	#9	Design
SPANDREL-COLUMN	Rectangular	Ties	0.15	3	3	#9	Design

TABLE: Frame Section Properties 5 - Nonprismatic									
SectionName	NumSegments	SegmentNum	StartSect	EndSect	LengthType	AbsLength	VarLength	EI33Var	EI22Var
Text	Unitless	Unitless	Text	Text	Text	ft	Unitless	Text	Text
ARCH-L-1	1	1	ARCH-XS-1	ARCH-XS-0	Variable		1	Linear	Linear
ARCH-L-2	1	1	ARCH-XS-2	ARCH-XS-1	Variable		1	Linear	Linear
ARCH-L-3	1	1	ARCH-XS-3	ARCH-XS-2	Variable		1	Linear	Linear
ARCH-L-4	1	1	ARCH-XS-4	ARCH-XS-3	Variable		1	Linear	Linear
ARCH-L-5	1	1	ARCH-XS-5	ARCH-XS-4	Variable		1	Linear	Linear
ARCH-L-6	1	1	ARCH-XS-6	ARCH-XS-5	Variable		1	Linear	Linear
ARCH-L-7	1	1	ARCH-XS-7	ARCH-XS-6	Variable		1	Linear	Linear
ARCH-L-8	1	1	ARCH-XS-8	ARCH-XS-7	Variable		1	Linear	Linear
ARCH-L-9	1	1	ARCH-XS-9	ARCH-XS-8	Variable		1	Linear	Linear
ARCH-R-1	1	1	ARCH-XS-0	ARCH-XS-1	Variable		1	Linear	Linear
ARCH-R-2	1	1	ARCH-XS-1	ARCH-XS-2	Variable		1	Linear	Linear
ARCH-R-3	1	1	ARCH-XS-2	ARCH-XS-3	Variable		1	Linear	Linear
ARCH-R-4	1	1	ARCH-XS-3	ARCH-XS-4	Variable		1	Linear	Linear
ARCH-R-5	1	1	ARCH-XS-4	ARCH-XS-5	Variable		1	Linear	Linear
ARCH-R-6	1	1	ARCH-XS-5	ARCH-XS-6	Variable		1	Linear	Linear
ARCH-R-7	1	1	ARCH-XS-6	ARCH-XS-7	Variable		1	Linear	Linear
ARCH-R-8	1	1	ARCH-XS-7	ARCH-XS-8	Variable		1	Linear	Linear
ARCH-R-9	1	1	ARCH-XS-8	ARCH-XS-9	Variable		1	Linear	Linear

TABLE: Joint Coordinates									
Joint	CoordSys	CoordType	XorR	Y	Z	SpecialJt	GlobalX	GlobalY	GlobalZ
Text	Text	Text	ft	ft	ft	Yes/No	ft	ft	ft
1	GLOBAL	Cartesian	-33.5	0	0	Yes	-33.5	0	0
2	GLOBAL	Cartesian	-29.5	0	4.8768	Yes	-29.5	0	4.8768
3	GLOBAL	Cartesian	-25.5	0	8.2935	Yes	-25.5	0	8.2935
4	GLOBAL	Cartesian	-21.5	0	11.0447	Yes	-21.5	0	11.0447
5	GLOBAL	Cartesian	-17.9167	0	13.0491	Yes	-17.9167	0	13.0491
6	GLOBAL	Cartesian	-14.3333	0	14.6794	Yes	-14.3333	0	14.6794
7	GLOBAL	Cartesian	-10.75	0	15.9754	Yes	-10.75	0	15.9754
8	GLOBAL	Cartesian	-7.1667	0	16.9583	Yes	-7.1667	0	16.9583
9	GLOBAL	Cartesian	0	0	17.75	Yes	0	0	17.75
10	GLOBAL	Cartesian	-3.5833	0	17.5539	Yes	-3.5833	0	17.5539
11	GLOBAL	Cartesian	3.5833	0	17.5539	Yes	3.5833	0	17.5539
12	GLOBAL	Cartesian	7.1667	0	16.9583	Yes	7.1667	0	16.9583
13	GLOBAL	Cartesian	10.75	0	15.9754	Yes	10.75	0	15.9754
14	GLOBAL	Cartesian	14.3333	0	14.6794	Yes	14.3333	0	14.6794
15	GLOBAL	Cartesian	17.9167	0	13.0491	Yes	17.9167	0	13.0491
16	GLOBAL	Cartesian	21.5	0	11.0447	Yes	21.5	0	11.0447
17	GLOBAL	Cartesian	25.5	0	8.2935	Yes	25.5	0	8.2935
18	GLOBAL	Cartesian	29.5	0	4.8768	Yes	29.5	0	4.8768
19	GLOBAL	Cartesian	33.5	0	0	Yes	33.5	0	0
20	GLOBAL	Cartesian	0	0	29.0242	Yes	0	0	29.0242
21	GLOBAL	Cartesian	-21.5	0	29.0242	Yes	-21.5	0	29.0242
22	GLOBAL	Cartesian	-10.75	0	29.0242	Yes	-10.75	0	29.0242
23	GLOBAL	Cartesian	-33.5	0	29.0242	Yes	-33.5	0	29.0242
24	GLOBAL	Cartesian	10.75	0	29.0242	Yes	10.75	0	29.0242
25	GLOBAL	Cartesian	21.5	0	29.0242	Yes	21.5	0	29.0242
26	GLOBAL	Cartesian	33.5	0	29.0242	Yes	33.5	0	29.0242

TABLE: Joint Loads - Force								
Joint	LoadCase	CoordSys	F1	F2	F3	M1	M2	M3
Text	Text	Text	Kip	Kip	Kip	Kip-ft	Kip-ft	Kip-ft
1	HS20(C1)	GLOBAL	0	0	-30.13	0	0	0
1	HS20(C2)	GLOBAL	0	0	-0.47	0	0	0
1	HS20(C3)	GLOBAL	0	0	-6.18	0	0	0
1	HS20(C4)	GLOBAL	0	0	1.41	0	0	0
1	HS20(C5)	GLOBAL	0	0	-0.32	0	0	0
1	HS20(C6)	GLOBAL	0	0	0.1	0	0	0
4	DEAD	GLOBAL	0	0	-39.31	0	0	0
4	HS20(C1)	GLOBAL	0	0	-26.24	0	0	0
4	HS20(C2)	GLOBAL	0	0	-28.64	0	0	0
4	HS20(C3)	GLOBAL	0	0	-29.78	0	0	0
4	HS20(C4)	GLOBAL	0	0	-10.01	0	0	0
4	HS20(C5)	GLOBAL	0	0	2.29	0	0	0
4	HS20(C6)	GLOBAL	0	0	-0.72	0	0	0
7	DEAD	GLOBAL	0	0	-32.73	0	0	0
7	HS20(C1)	GLOBAL	0	0	-12.88	0	0	0
7	HS20(C2)	GLOBAL	0	0	-25.43	0	0	0
7	HS20(C3)	GLOBAL	0	0	-26.4	0	0	0
7	HS20(C4)	GLOBAL	0	0	-26.7	0	0	0
7	HS20(C5)	GLOBAL	0	0	-10.71	0	0	0
7	HS20(C6)	GLOBAL	0	0	3.38	0	0	0
9	DEAD	GLOBAL	0	0	-31.96	0	0	0
9	HS20(C1)	GLOBAL	0	0	-3.16	0	0	0
9	HS20(C2)	GLOBAL	0	0	-14.51	0	0	0
9	HS20(C3)	GLOBAL	0	0	-7.64	0	0	0
9	HS20(C4)	GLOBAL	0	0	-27.2	0	0	0
9	HS20(C5)	GLOBAL	0	0	-26.56	0	0	0
9	HS20(C6)	GLOBAL	0	0	-18.71	0	0	0
13	DEAD	GLOBAL	0	0	-32.73	0	0	0
13	HS20(C1)	GLOBAL	0	0	0.5	0	0	0
13	HS20(C2)	GLOBAL	0	0	-3.28	0	0	0
13	HS20(C3)	GLOBAL	0	0	-2.45	0	0	0

TABLE: Joint Loads - Force								
Joint	LoadCase	CoordSys	F1	F2	F3	M1	M2	M3
Text	Text	Text	Kip	Kip	Kip	Kip-ft	Kip-ft	Kip-ft
13	HS20(C4)	GLOBAL	0	0	-7.5	0	0	0
13	HS20(C5)	GLOBAL	0	0	-27.06	0	0	0
13	HS20(C6)	GLOBAL	0	0	-25.79	0	0	0
16	DEAD	GLOBAL	0	0	-39.31	0	0	0
16	HS20(C1)	GLOBAL	0	0	-0.11	0	0	0
16	HS20(C2)	GLOBAL	0	0	0.39	0	0	0
16	HS20(C3)	GLOBAL	0	0	0.52	0	0	0
16	HS20(C4)	GLOBAL	0	0	-2.33	0	0	0
16	HS20(C5)	GLOBAL	0	0	-8.2	0	0	0
16	HS20(C6)	GLOBAL	0	0	-23.79	0	0	0
19	HS20(C1)	GLOBAL	0	0	0.02	0	0	0
19	HS20(C2)	GLOBAL	0	0	-0.06	0	0	0
19	HS20(C3)	GLOBAL	0	0	-0.07	0	0	0
19	HS20(C4)	GLOBAL	0	0	0.33	0	0	0
19	HS20(C5)	GLOBAL	0	0	-1.44	0	0	0
19	HS20(C6)	GLOBAL	0	0	-6.48	0	0	0

TABLE: Load Case Definitions			
LoadCase	DesignType	SelfWtMult	AutoLoad
Text	Text	Unitless	Text
DEAD	DEAD	1	
HS20(C1)	LIVE	0	
HS20(C2)	LIVE	0	
HS20(C3)	LIVE	0	
HS20(C4)	LIVE	0	
HS20(C5)	LIVE	0	
HS20(C6)	LIVE	0	

TABLE: Material List 2 - By Section Property				
Section	ObjectType	NumPieces	TotalLength	TotalWeight
Text	Text	Unitless	ft	Kip
ARCH-L-9	Frame	1	6.3074	9.373
ARCH-L-8	Frame	1	5.2606	6.189
ARCH-L-7	Frame	1	4.8548	5.155
ARCH-L-6	Frame	1	4.1058	4.044
ARCH-L-5	Frame	1	3.9368	3.684
ARCH-L-4	Frame	1	3.8105	3.454
ARCH-L-3	Frame	1	3.7157	3.325
ARCH-L-2	Frame	1	3.6325	3.244
ARCH-L-1	Frame	1	3.5887	3.203
ARCH-R-1	Frame	1	3.5887	3.203
ARCH-R-2	Frame	1	3.6325	3.244
ARCH-R-3	Frame	1	3.7157	3.325
ARCH-R-4	Frame	1	3.8105	3.454
ARCH-R-5	Frame	1	3.9368	3.684
ARCH-R-6	Frame	1	4.1058	4.044
ARCH-R-7	Frame	1	4.8548	5.155
ARCH-R-8	Frame	1	5.2606	6.189
ARCH-R-9	Frame	1	6.3074	9.373
DECK	Frame	6	67	0
SPANDREL-COLUMN	Frame	5	73.3306	0
PIER-SPANDREL-COL	Frame	2	58.0483	0

TABLE: Material Properties 1 - General										
Material	Type	DesignType	UnitMass	UnitWeight	E	U	A	MDampRatio	VDampMass	VDampStiff
Text	Text	Text	Kip-s2/ft4	Kip/ft3	Kip/ft2	Unitless	1/F	Unitless	1/Sec	Sec
ALUM	Isotropic	Aluminum	0.0052669	0.16934	1454400	0.33	0.0000131	0	0	0
CLDFRM	Isotropic	ColdFormed	0.01523	0.49	4248000	0.3	0.0000065	0	0	0
CONC	Isotropic	Concrete	0.0046615	0.15001	608112	0.2	0.0000055	0	0	0
OTHER	Isotropic	None	0.0046581	0.14999	518400	0.2	0.0000055	0	0	0
STEEL	Isotropic	Steel	0.01523	0.49	4176000	0.3	0.0000065	0	0	0

TABLE: Material Properties 1 - General				
Material	HDampMass	HDampStiff	NumAdvance	Color
Text	1/Sec2	Unitless	Unitless	Text
ALUM	0	0	0	Magenta
CLDFRM	0	0	0	Yellow
CONC	0	0	0	Red
OTHER	0	0	0	White
STEEL	0	0	0	Cyan

TABLE: Material Properties 4 - Design Concrete					
Material	Fc	RebarFy	RebarFys	LtWtConc	LtWtFact
Text	Kip/ft2	Kip/ft2	Kip/ft2	Yes/No	Unitless
CONC	790.56	5760	5760	No	1

TABLE: Summary - Frame Assignments									
Frame	AnalSect	PropMods	Releases	LocalAxes	InsertPoint	EndOffsets	MinNumSta	MaxStaSpcg	PrestresPat
Text	Text	Yes/No	Yes/No	Yes/No	Text	Yes/No	Unitless	ft	Yes/No
1	ARCH-L-9	No	No	No	No	No	3		No
2	ARCH-L-8	No	No	No	No	No	3		No
3	ARCH-L-7	No	No	No	No	No	3		No
4	ARCH-L-6	No	No	No	No	No	3		No
5	ARCH-L-5	No	No	No	No	No	3		No
6	ARCH-L-4	No	No	No	No	No	3		No
7	ARCH-L-3	No	No	No	No	No	3		No
8	ARCH-L-2	No	No	No	No	No	3		No
9	ARCH-L-1	No	No	No	No	No	3		No
10	ARCH-R-1	No	No	No	No	No	3		No
11	ARCH-R-2	No	No	No	No	No	3		No
12	ARCH-R-3	No	No	No	No	No	3		No
13	ARCH-R-4	No	No	No	No	No	3		No
14	ARCH-R-5	No	No	No	No	No	3		No
15	ARCH-R-6	No	No	No	No	No	3		No
16	ARCH-R-7	No	No	No	No	No	3		No
17	ARCH-R-8	No	No	No	No	No	3		No
18	ARCH-R-9	No	No	No	No	No	3		No
19	DECK	No	No	No	No	No		2	No
20	DECK	No	No	No	No	No		2	No
21	DECK	No	No	No	No	No		2	No
22	DECK	No	No	No	No	No		2	No
23	DECK	No	No	No	No	No		2	No
24	DECK	No	No	No	No	No		2	No
25	SPANDREL-COLUMN	No	No	No	No	No	3		No
26	SPANDREL-COLUMN	No	No	No	No	No	3		No
27	SPANDREL-COLUMN	No	No	No	No	No	3		No
28	SPANDREL-COLUMN	No	No	No	No	No	3		No
30	SPANDREL-COLUMN	No	No	No	No	No	3		No
31	PIER-SPANDREL-COL	No	Yes	No	No	No	3		No
32	PIER-SPANDREL-COL	No	Yes	No	No	No	3		No

TABLE: Summary - Frame Assignments									
Frame	PrestresMul	PDeltaForce	ableParam	TCLimit	NLHinges	Springs	MassPerLen	AutoDivide	MatTemp
Text	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Kip-s2/ft2	Yes/No	F
1	No	No	No	No	No	No	0	Yes	0
2	No	No	No	No	No	No	0	Yes	0
3	No	No	No	No	No	No	0	Yes	0
4	No	No	No	No	No	No	0	Yes	0
5	No	No	No	No	No	No	0	Yes	0
6	No	No	No	No	No	No	0	Yes	0
7	No	No	No	No	No	No	0	Yes	0
8	No	No	No	No	No	No	0	Yes	0
9	No	No	No	No	No	No	0	Yes	0
10	No	No	No	No	No	No	0	Yes	0
11	No	No	No	No	No	No	0	Yes	0
12	No	No	No	No	No	No	0	Yes	0
13	No	No	No	No	No	No	0	Yes	0
14	No	No	No	No	No	No	0	Yes	0
15	No	No	No	No	No	No	0	Yes	0
16	No	No	No	No	No	No	0	Yes	0
17	No	No	No	No	No	No	0	Yes	0
18	No	No	No	No	No	No	0	Yes	0
19	No	No	No	No	No	No	0	Yes	0
20	No	No	No	No	No	No	0	Yes	0
21	No	No	No	No	No	No	0	Yes	0
22	No	No	No	No	No	No	0	Yes	0
23	No	No	No	No	No	No	0	Yes	0
24	No	No	No	No	No	No	0	Yes	0
25	No	No	No	No	No	No	0	Yes	0
26	No	No	No	No	No	No	0	Yes	0
27	No	No	No	No	No	No	0	Yes	0
28	No	No	No	No	No	No	0	Yes	0
30	No	No	No	No	No	No	0	Yes	0
31	No	No	No	No	No	No	0	Yes	0
32	No	No	No	No	No	No	0	Yes	0

TABLE: Summary - Frame Assignments									
Frame	GravLoads	PointLoads	DistLoads	TempLoads	RefTemp	SteelOWrite	ConcOWrite	AlumOWrite	ColdOWrite
Text	Yes/No	Yes/No	Yes/No	Yes/No	F	Yes/No	Yes/No	Yes/No	Yes/No
1	No	No	No	No	0	No	No	No	No
2	No	No	No	No	0	No	No	No	No
3	No	No	No	No	0	No	No	No	No
4	No	No	No	No	0	No	No	No	No
5	No	No	No	No	0	No	No	No	No
6	No	No	No	No	0	No	No	No	No
7	No	No	No	No	0	No	No	No	No
8	No	No	No	No	0	No	No	No	No
9	No	No	No	No	0	No	No	No	No
10	No	No	No	No	0	No	No	No	No
11	No	No	No	No	0	No	No	No	No
12	No	No	No	No	0	No	No	No	No
13	No	No	No	No	0	No	No	No	No
14	No	No	No	No	0	No	No	No	No
15	No	No	No	No	0	No	No	No	No
16	No	No	No	No	0	No	No	No	No
17	No	No	No	No	0	No	No	No	No
18	No	No	No	No	0	No	No	No	No
19	No	No	No	No	0	No	Yes	No	No
20	No	No	No	No	0	No	Yes	No	No
21	No	No	No	No	0	No	Yes	No	No
22	No	No	No	No	0	No	Yes	No	No
23	No	No	No	No	0	No	Yes	No	No
24	No	No	No	No	0	No	Yes	No	No
25	No	No	No	No	0	No	Yes	No	No
26	No	No	No	No	0	No	Yes	No	No
27	No	No	No	No	0	No	Yes	No	No
28	No	No	No	No	0	No	Yes	No	No
30	No	No	No	No	0	No	Yes	No	No
31	No	No	No	No	0	No	No	No	No
32	No	No	No	No	0	No	No	No	No

TABLE: Summary - Frame Assignments				
Frame	Length	CentroidX	CentroidY	CentroidZ
Text	ft	ft	ft	ft
1	6.3074	-31.5	0	2.4384
2	5.26058	-27.5	0	6.5852
3	4.8548	-23.5	0	9.6691
4	4.10582	-19.7083	0	12.0469
5	3.93679	-16.125	0	13.8643
6	3.81049	-12.5417	0	15.3274
7	3.71569	-8.9583	0	16.4669
8	3.63249	-5.375	0	17.2561
9	3.5887	-1.7917	0	17.6519
10	3.5887	1.7917	0	17.6519
11	3.63249	5.375	0	17.2561
12	3.71569	8.9583	0	16.4669
13	3.81049	12.5417	0	15.3274
14	3.93679	16.125	0	13.8643
15	4.10582	19.7083	0	12.0469
16	4.8548	23.5	0	9.6691
17	5.26058	27.5	0	6.5852
18	6.3074	31.5	0	2.4384
19	12	-27.5	0	29.0242
20	10.75	-16.125	0	29.0242
21	10.75	-5.375	0	29.0242
22	10.75	5.375	0	29.0242
23	10.75	16.125	0	29.0242
24	12	27.5	0	29.0242
25	17.97947	-21.5	0	20.0344
26	13.04875	-10.75	0	22.4998
27	11.27417	0	0	23.3871
28	13.04875	10.75	0	22.4998
30	17.97947	21.5	0	20.0344
31	29.02417	-33.5	0	14.5121
32	29.02417	33.5	0	14.5121

TABLE: Summary - Joint Assignments									
Joint	Constraints	Restraints	LocalAxes	Springs	AddedMass	PanelZone	JtPattern	JointForce	GroundDispl
Text	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
1	No	Yes	No	No	No	No	No	Yes	No
2	No	No	No	No	No	No	No	No	No
3	No	No	No	No	No	No	No	No	No
4	No	No	No	No	No	No	No	Yes	No
5	No	No	No	No	No	No	No	No	No
6	No	No	No	No	No	No	No	No	No
7	No	No	No	No	No	No	No	Yes	No
8	No	No	No	No	No	No	No	No	No
9	No	No	No	No	No	No	No	Yes	No
10	No	No	No	No	No	No	No	No	No
11	No	No	No	No	No	No	No	No	No
12	No	No	No	No	No	No	No	No	No
13	No	No	No	No	No	No	No	Yes	No
14	No	No	No	No	No	No	No	No	No
15	No	No	No	No	No	No	No	No	No
16	No	No	No	No	No	No	No	Yes	No
17	No	No	No	No	No	No	No	No	No
18	No	No	No	No	No	No	No	No	No
19	No	Yes	No	No	No	No	No	Yes	No
20	No	No	No	No	No	No	No	No	No
21	No	No	No	No	No	No	No	No	No
22	No	No	No	No	No	No	No	No	No
23	No	No	No	No	No	No	No	No	No
24	No	No	No	No	No	No	No	No	No
25	No	No	No	No	No	No	No	No	No
26	No	No	No	No	No	No	No	No	No

EXISTING ARCH MOMENT CAPACITY

LIVE LOAD CASES

NOTE: Spandrel column live load rxns (HS20 loading) are taken from the SAP2000 'Live Load Demand to Arch' model.
The live loads applied to the deck slab transfer through the spandrel columns into the arch beneath.
Load cases are defined in the table below.

Case	SP Col 1	SP Col 2	SP Col 3	SP Col 4	SP Col 5	SP Col 6	SP Col 7
Case 1	30.13	26.2	12.9	3.2	-0.5	0.1	0.0
Case 2	0.47	28.6	25.4	14.5	3.3	-0.4	0.1
Case 3	6.18	29.8	26.4	7.6	2.5	-0.5	0.1
Case 4	-1.41	10.0	26.7	27.2	7.5	2.3	-0.3
Case 5	0.32	-2.3	10.7	26.6	27.1	8.2	1.4
Case 6	-0.10	0.7	-3.4	18.7	25.8	23.8	6.5

Case 1	Rear 32 kip axle placed at leftmost spandrel column (truck traveling left to right)
Case 2	Rear 32 kip axle placed at first interior spandrel column from left (truck traveling left to right)
Case 3	Center 32 kip axle placed at second interior spandrel column from left (truck traveling left to right)
Case 4	Center 32 kip axle placed at center spandrel column (truck traveling left to right)
Case 5	Center 32 kip axle placed at second interior spandrel column from right (truck traveling left to right)
Case 6	8 kip axle placed at rightmost spandrel column (truck traveling left to right)

DEAD LOAD REACTIONS

NOTE: Dead load reactions are obtained by hand calculations based on tributary widths.
Dead load reactions from the deck slab are not applied to the pier spandrel columns due to a pin connection.

Case	SP Col 1	SP Col 2	SP Col 3	SP Col 4	SP Col 5	SP Col 6	SP Col 7
All	N/A	39.31	32.73	31.96	32.73	39.31	N/A

BY NLZ DATE 2/12/15 SUBJECT MINERAL KING BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. 2D14046

INVENTORY & OPERATING RATINGS

EXISTING ARCH USING LOAD FACTOR METHOD

- THE FOLLOWING CALCULATION WILL DETERMINE THE INVENTORY & OPERATING RATINGS OF THE EXISTING BRIDGE'S ARCH. THE VALUES USED FOR f'_c & f_y ARE BASED ON MATERIALS TESTING ON CONCRETE & REINFORCEMENT SAMPLES TAKEN FROM THE BRIDGE. SAP2000 WILL BE USED TO MODEL THE ARCH AND DETERMINE DEAD & LIVE LOAD DEMANDS.

- DEAD LOAD WEIGHT UP
  - CONCRETE DECK (9" THICK AT CURB 10" AT ℄ CROWN, SEC. K-K)

$$= \tfrac{1}{2}(9''/12 + 10''/12)(19'/2)(2)(0.15\,KCF) + (2')(9''/12)(2)(0.15\,KCF)$$

$$= \underline{2.71\ KLF}$$

  - CONCRETE BRIDGE BARRIER / CURB (DISTRIBUTED LOAD, FIGS. 5 & 6)

$$= [2'(0.5')(0.15\,KCF)]_{CURB} + [\tfrac{1}{2}(1')(1.5''/12)(0.15\,KCF) + (4.5''/12)(1')(0.15\,KCF) + (9''/12)(1.5''/12)(0.15\,KCF) + (2)(1.5''/12)^2(\tfrac{1}{2})(0.15\,KCF)]_{TOP\ RAIL}$$

$$+ [0.5'(2.5')(6'' + 7.125'')(1'/12'') - (7.125''/12)(6''/12)(2.08')](0.15\,KCF)(1/1.09')_{RAIL\ POSTS}$$

$$= (0.15\,KLF)_{CURB} + (0.08\,KLF)_{TOP\ RAIL} + (0.10\,KLF)_{RAIL\ POSTS}$$

$$= (0.33\ KLF/SIDE)(2\ SIDES)$$

$$= \underline{0.66\ KLF}$$

  - CONCRETE BRIDGE BARRIER POINT LOADS AT SPANDREL COLUMNS
    - PIERS B & C

$$= (1.5')(3.0')(3.75')(0.15\,KCF) + (\tfrac{1}{2})(0.5')[(3')(1.5') + (1.33')(1.33')](0.15\,KCF) + (1.33')(1.33')(0.25')(0.15\,KCF) + (1.5''/12)(\tfrac{1}{2})[(1.33')^2 + (1.083')^2](0.15\,KCF) + [(13''/12)^2 + (10''/12)^2](\tfrac{1}{2})(0.15\,KCF)(4.5' - 0.5' - 0.75') + (13''/12)^2(0.25')(0.15\,KCF) + (\tfrac{1}{2})(1.5''/12)[(13''/12)^2 + (10''/12)^2](0.15\,KCF) + (\tfrac{4}{3})(\pi)(6.5''/12)^3(0.15\,KCF)$$

$$= \underline{3.48\ KIPS/ORNAMENTAL\ POST}$$

CORNERSTONE STRUCTURAL ENGINEERING GROUP, INC.

BY NLZ DATE 2/13/15 SUBJECT MINERAL KIDS BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. 2014046

INVENTORY & OPERATING RATING

EXISTING ARCH USING LOAD FACTOR METHOD

- CONCRETE BRIDGE BARRIER POINT LOADS AT SPANDREL COLUMNS
  - RAIL POST AT CENTER SPANDREL COLUMN
    = (3.5')(1.5')(1.5')(0.15 KCF)
    = 1.18 KIPS/POST
  - RAIL POST AT FIRST TWO INTERIOR SPANDREL COLUMNS
    = (2.5')(9"/12)(1.5')(0.15 KCF)
    = 0.42 KIPS/POST

- TRANSVERSE DECK BEAMS (SEC. L-L)
  = (14"/12)(22"/12)(17.17')(0.15 KCF)
  = 6.51 KIPS/BEAM

- LONGITUDINAL EXTERIOR BEAMS (SEC. Z-Z)
  = (1')(22"/12)(0.15 KCF)
  = 0.275 KLF/BEAM

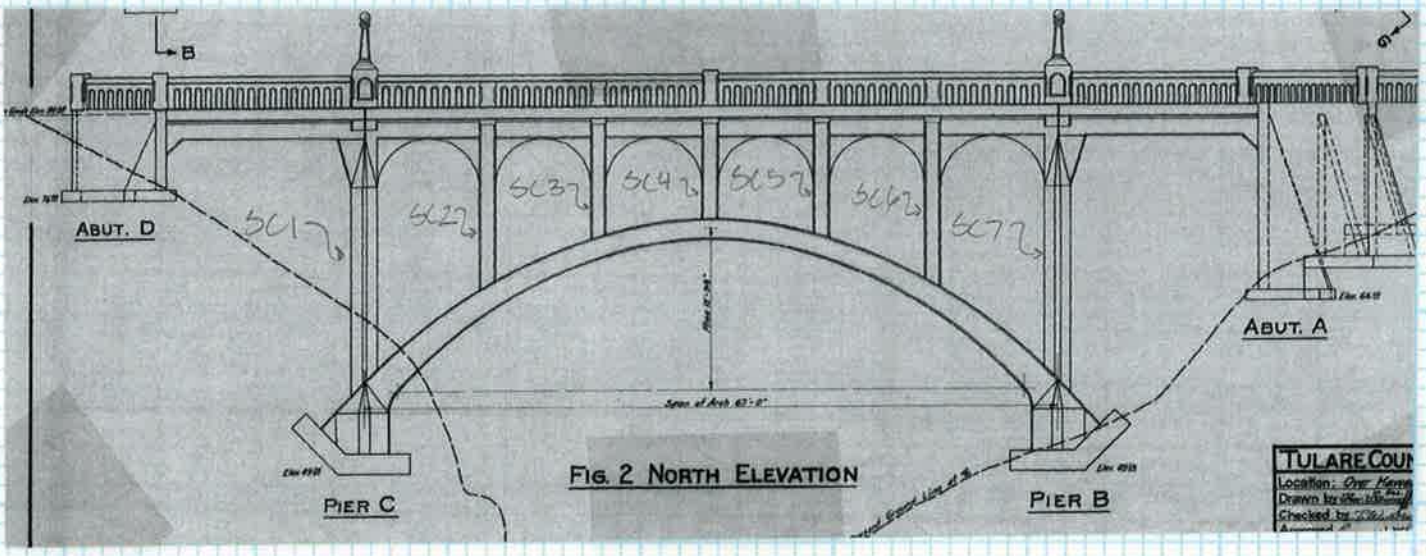
- EXTERIOR CURTAIN WALLS (SEC. A-A, SEC. X-X)
  - 4 INTERIOR ARCH SPANDS
    = [(9.25')(4.625')(8"/12) - (π)(4.625')^2(½)(8"/12))](0.15 KCF)
    = 0.92 KIPS
  - 2 EXTERIOR ARCH SPANDS
    = [(10')(5')(8"/12) - (π)(5')^2(½)(8"/12)](0.15 KCF)
    = 1.07 KIPS

CORNERSTONE STRUCTURAL ENGINEERING GROUP, INC.

INVENTORY & OPERATING RATING

EXISTING ARCH USING LOAD FACTOR METHOD

- DEAD LOAD WEIGHT-UP (CONT.)
  - SPANDREL COLUMNS/BEAMS



- SPANDREL COLUMNS 1 & 7 (SC1 & SC7)
  - COLUMN
    = $[(3')(2.5') - (\frac{1}{2})(1')(1')(4)](\cancel{2.75'} + 19' + 5' + 22''/12)(0.15\ KCF)$
    ← DISTANCE FROM BOTTOM OF DECK TO TOP OF ARCH @ COLUMN ℄
    = 21.3 KIPS
  - TRANSVERSE SPANDREL BEAM
    = $(2')(1.5')(17.17')(0.15\ KCF)$
    = 7.73 KIPS/BEAM

- SPANDREL COLUMNS 2 & 6 (SC2 & SC6)
  - COLUMN
    = $[1.5'(2')](6.75' + 1.5' + 6.75' + 22''/12)(0.15\ KCF)$
    = 7.58 K
  - TRANSVERSE SPANDREL BEAMS
    = $[(1.5')(1.5')(16.17') + (1.5')(1.5')(17.17')](0.15\ KCF)$
    (LOWER, UPPER)
    = 11.25 KIPS/2 BEAMS

INVENTORY & OPERATING RATING

EXISTING ARCH USING LOAD FACTOR METHOD.

- DEAD LOAD WEIGHT-UP (CONT.)
  - SPANDREL COLUMNS 3 & 5 (SC3 & SC5)
    - COLUMN
      = [1.5'(2')](8' + 22"/12 + 20.66"/12)(0.15 KCF) ← PER CAD
      = 5.20 KIPS
    - TRANSVERSE BEAM
      = (1.5')(1.5')(16.17')(0.15 KCF)
      = 5.46 KIPS/BEAM
  - SPANDREL COLUMN 4 (SC4)
    - COLUMN
      = (1.5')(2')(8' + 22"/12)(0.15 KCF)
      = 4.43 KIPS
    - TRANSVERSE BEAM
      = (1.5')(1.5')(16.17')(0.15 KCF)
      = 5.46 KIPS/BEAM

BY NRZ DATE 2/13/15 SUBJECT MINERAL KING BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. 2014046

INVENTORY & OPERATING RATING

EXISTING ARCH USING LOAD FACTOR METHOD

- SAP2000 MODEL OF EXISTING ARCH
  - DEAD LOADS APPLIED TO ARCH BASED ON TRIBUTARY AREA
    - SC1 & SC7
      - NO DEAD LOAD APPLIED TO ARCH SINCE LOAD WILL NOT AFFECT SHEAR OR MOMENT DEMAND
    - SC2 & SC6
      - POINT LOAD APPLIED TO ARCH

$$= (2.71\,\text{KLF}_{\text{DECK}} + 0.66\,\text{KLF}_{\text{CURB/BARRIER}})(\tfrac{1}{2})(12' + 10.75')(\tfrac{1}{2})$$
$$+ (0.42\,\text{K})_{\text{RAIL POST}} + (5.51\,\text{K})(\tfrac{1}{2})_{\text{TRANS. DECK BEAM}}$$
$$+ (0.275\,\text{KLF})_{\text{EXT. LONG. BEAM}}(\tfrac{1}{2})(12' + 10.75') + (1\,\text{K})_{\text{CURTAIN WALLS}}$$
$$+ (7.58\,\text{K})_{\text{COL}} + (11.25\,\text{K})_{\text{SPANDREL BEAMS}}(\tfrac{1}{2})$$
$$= \underline{39.31\ \text{KIPS}}$$

    - SC3 & SC5
      - POINT LOAD APPLIED TO ARCH

$$= (2.71\,\text{KLF}_{\text{DECK}} + 0.66\,\text{KLF}_{\text{CURB \& BARRIER}})(\tfrac{1}{2})(10.75') + (0.42\,\text{K})_{\text{RAIL POST}}$$
$$+ (5.51\,\text{K})(\tfrac{1}{2})_{\text{TRANS DECK BEAM}} + (0.92\,\text{K})_{\text{CURTAIN WALLS}}$$
$$+ (0.275\,\text{KLF})_{\text{EXT. LONG. BEAM}}(\tfrac{1}{2})(10.75' + 10.75')$$
$$+ (5.20\,\text{K})_{\text{COL}} + (5.46\,\text{K})(\tfrac{1}{2})_{\text{PIER BEAM}}$$
$$= \underline{32.73\ \text{KIPS}}$$

CORNERSTONE STRUCTURAL ENGINEERING GROUP, INC.

BY NKZ DATE 4/23/15 SUBJECT MINERAL KING BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. 2014046

INVENTORY & OPERATING RATING

EXISTING ARCH USING LOAD FACTOR METHOD

- SAP 2000 MODEL OF EXISTING ARCH
  - DEAD LOADS APPLIED TO ARCH BASED ON TRIBUTARY AREA
    - SC4
      - POINT LOAD APPLIED TO ARCH

$= (2.71\ \text{KLF}_{\text{DECK}} + 0.66\ \text{KLF}_{\text{CURBS \& BARRIER}})(\tfrac{1}{2})(10.75')$

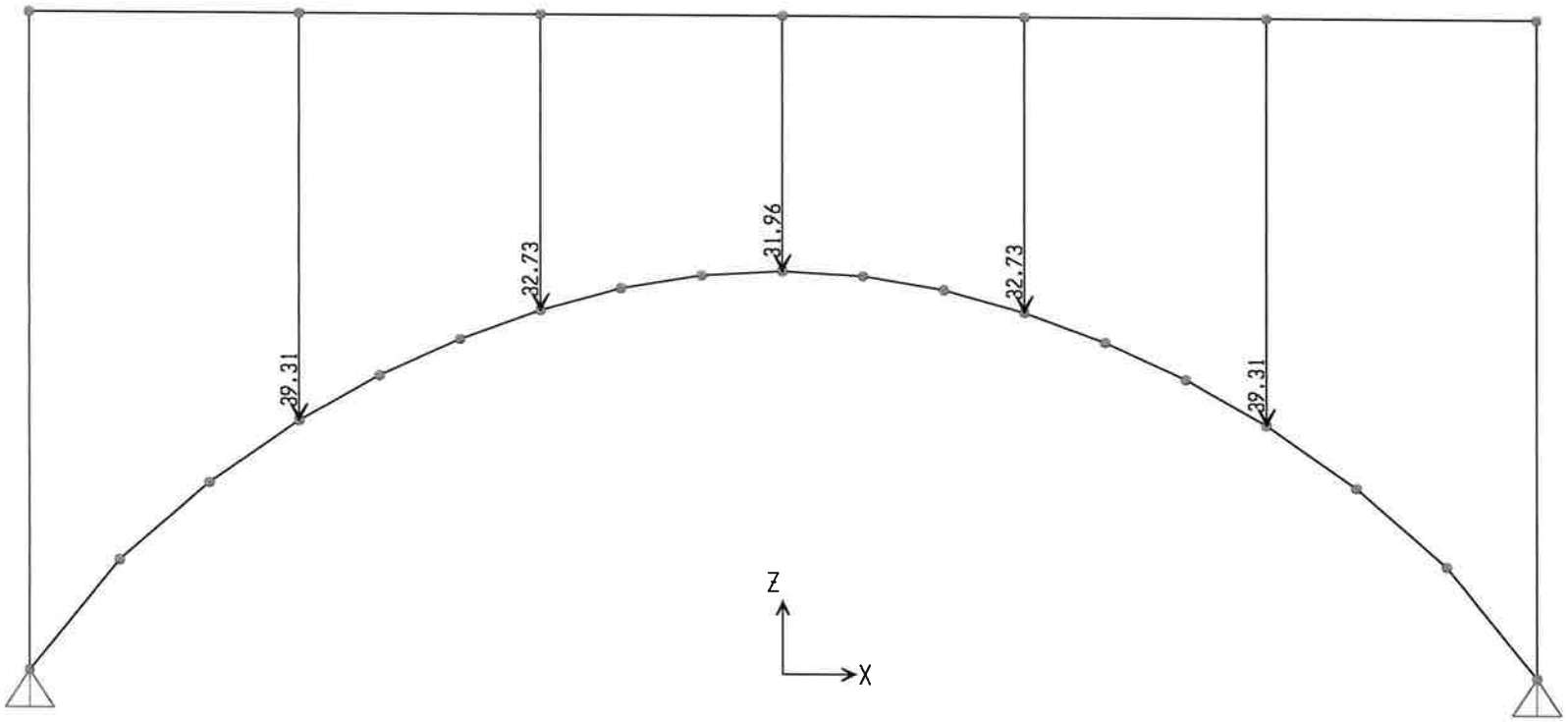
$+ (1.16\ \text{K})_{\text{POST}} + (5.51\ \text{K})(\tfrac{1}{2})_{\text{TRANS. BEAM}}$

$+ (0.275\ \text{KLF})_{\text{EXT. LOAD, BEAM}} (10.75')$

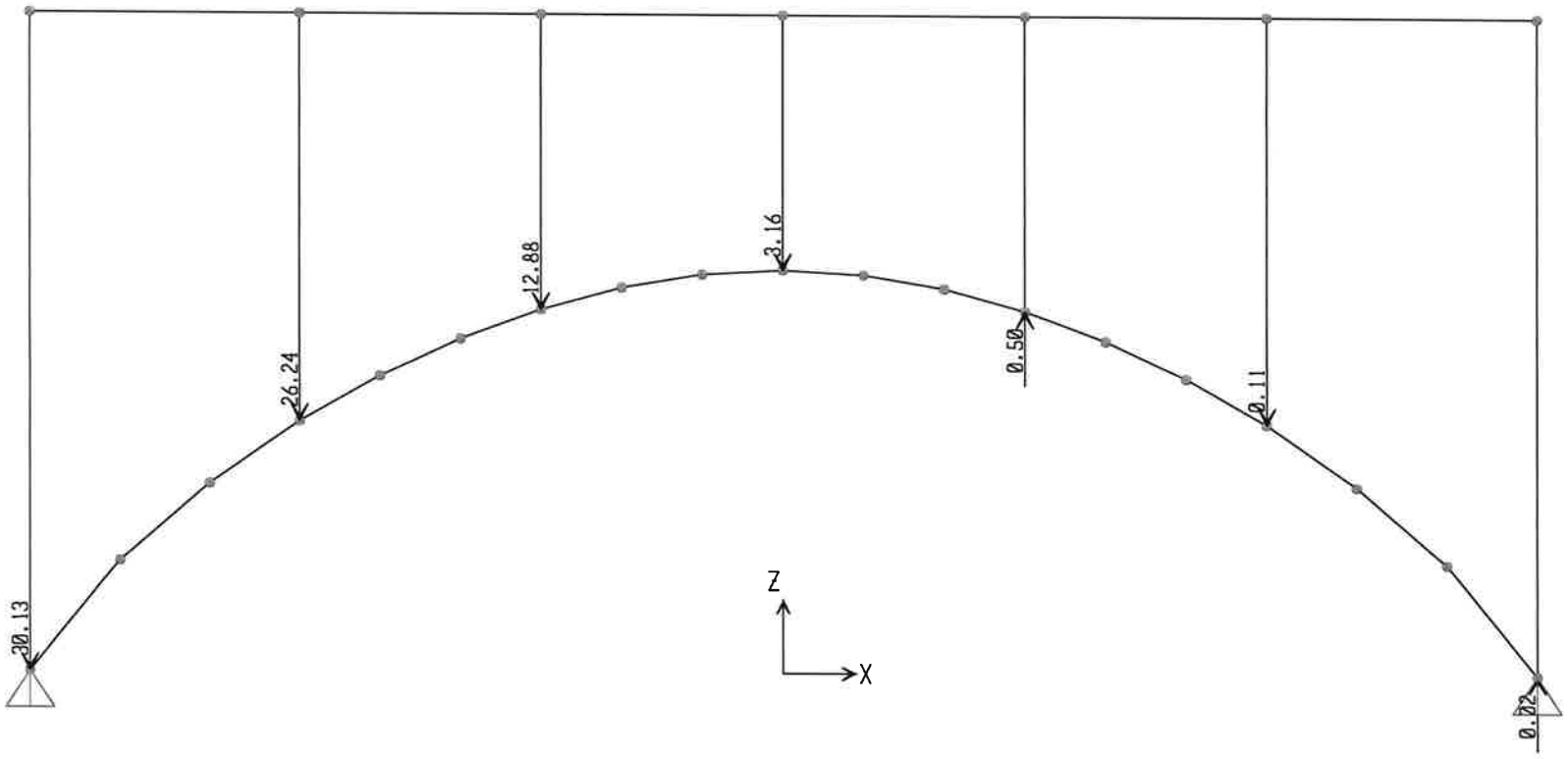
$+ (4.43\ \text{K})_{\text{COL}} + (5.46\ \text{K})(\tfrac{1}{2})_{\text{RIB BEAM}}$

$= \underline{31.96\ \text{K}}$

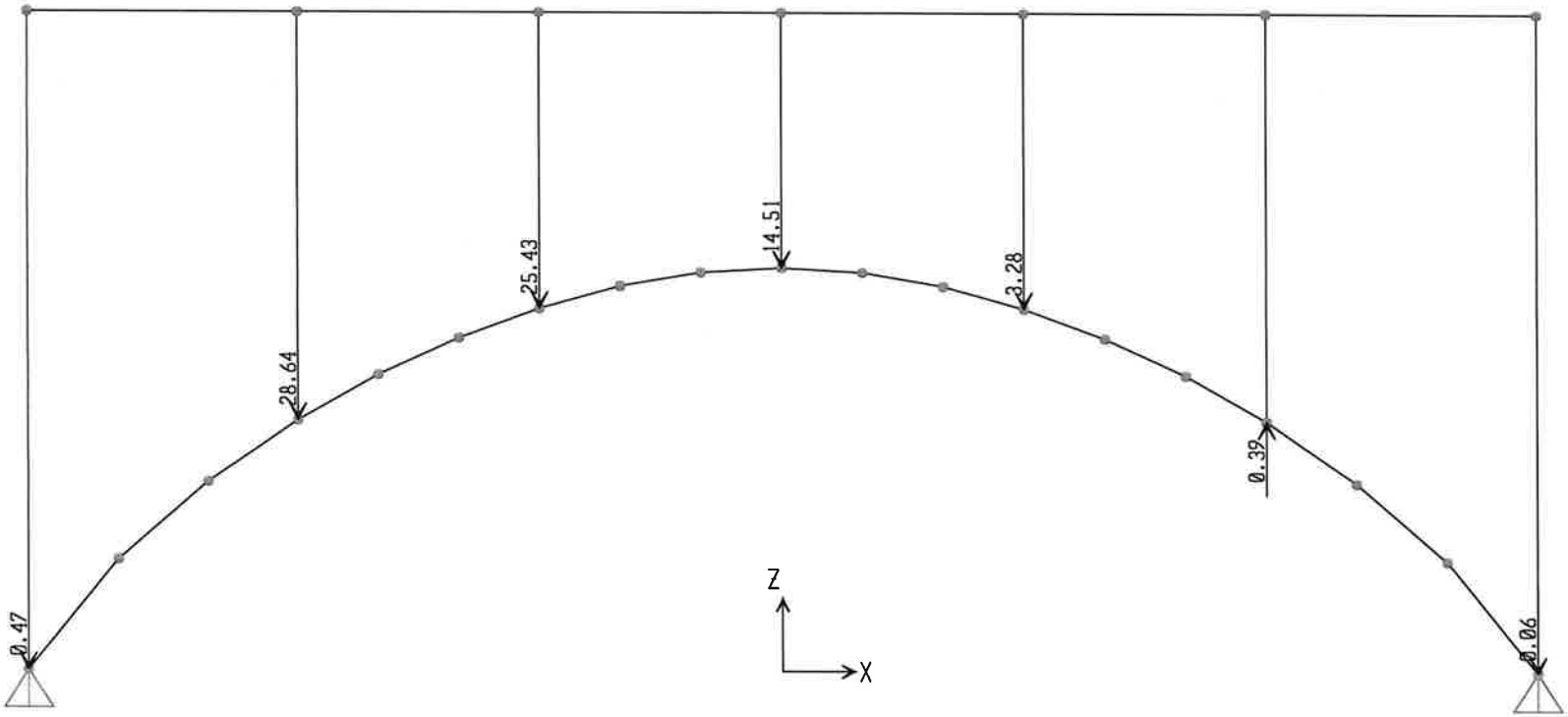
DEAD LOAD RXNS



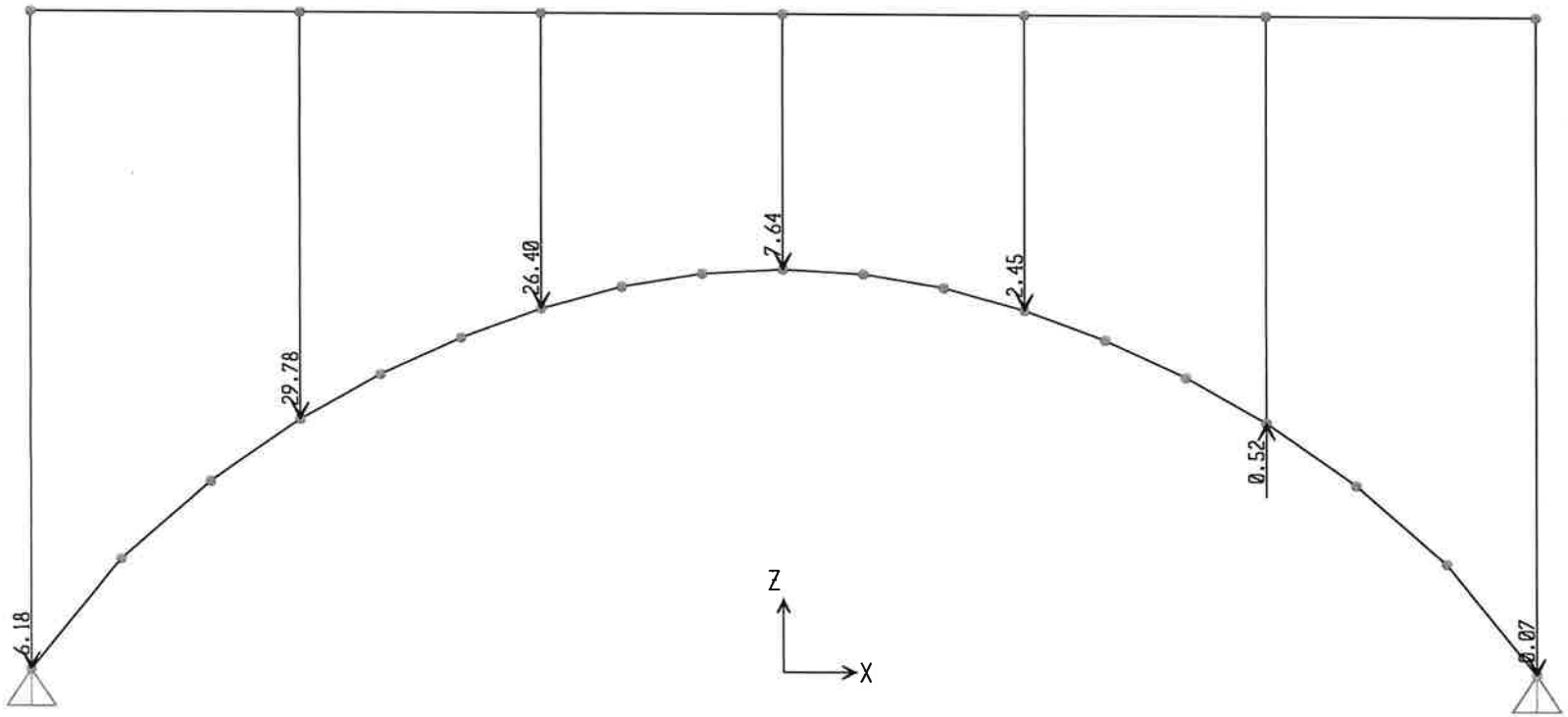
LIVE LOAD RXNS (CASE 1)



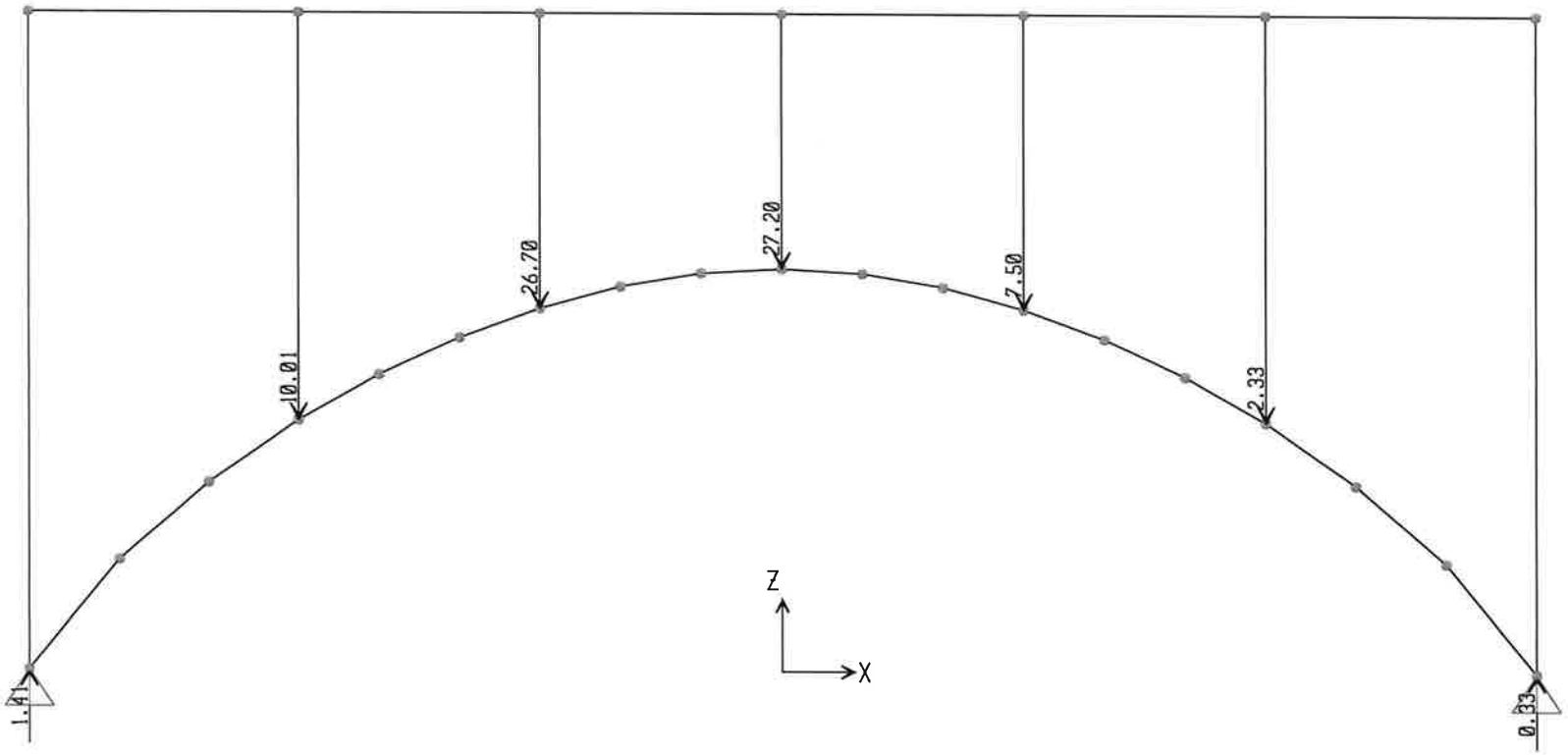
LIVE LOAD RXNS (CASE 2)



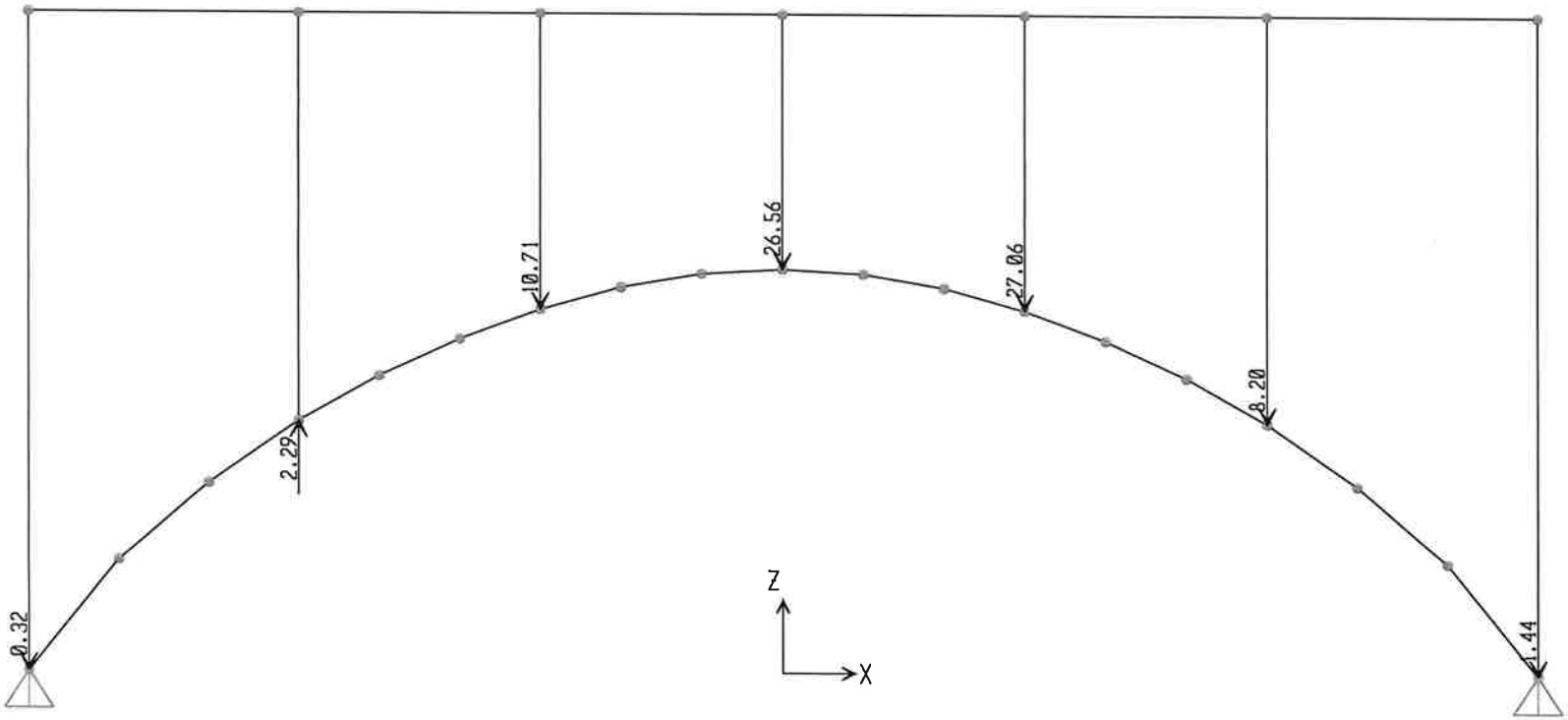
LIVE LOAD RXNS (CASE 3)



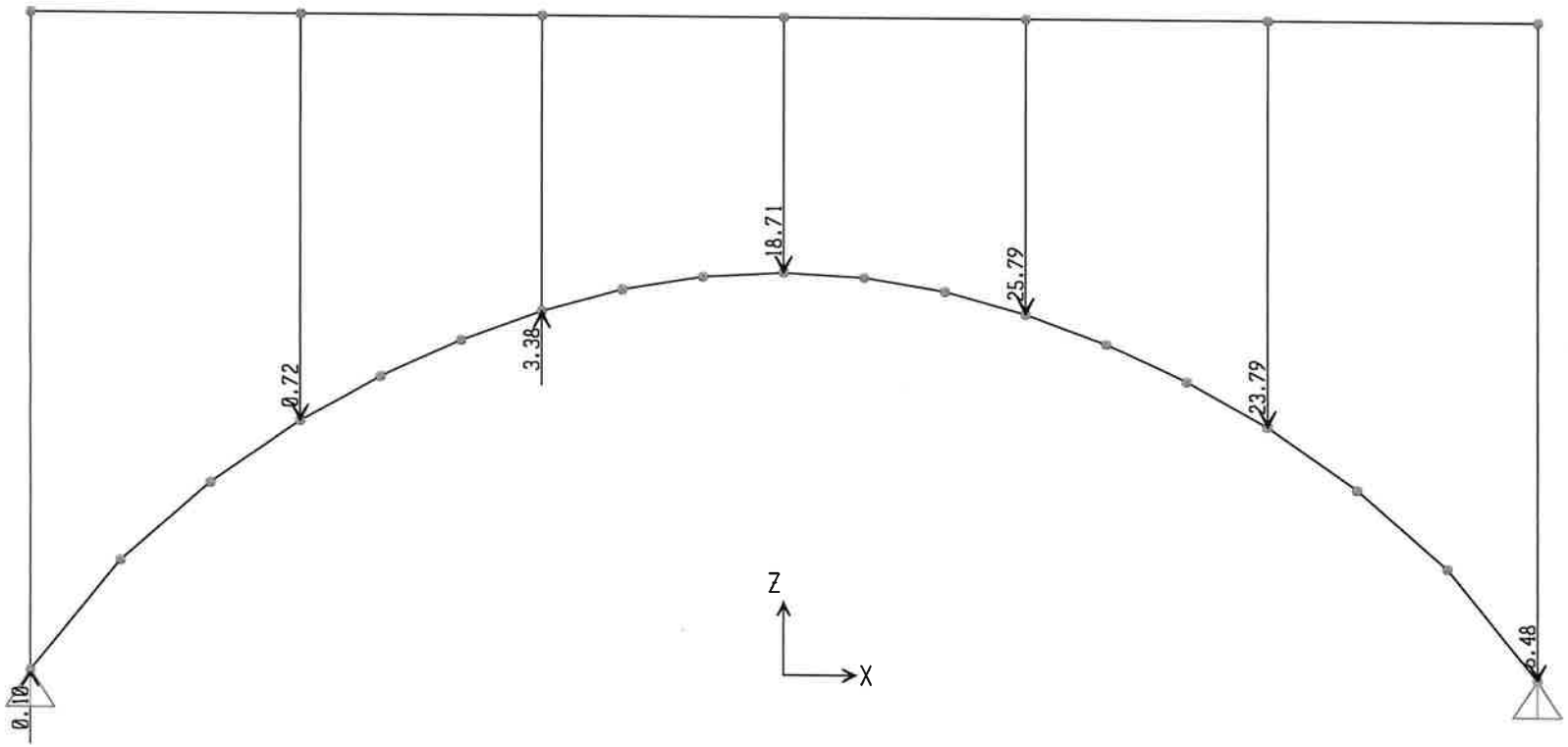
LIVE LOAD RXNS (CASE 4)



LIVE LOAD RXNS CCASE 5)



LIVE LOAD RXNS (CASE 6)



EXISTING ARCH MOMENT CAPACITY

ARCH SECTION 0 (CENTER)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's arch. The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 367.4 k-ft

$A_s =$	6.0 in^2	Area of Steel Reinforcement
$f_y =$	40.0 ksi	Yield Stress of Steel Reinforcement
$f'_c =$	5.5 ksi	Compressive Strength of Concrete
b =	36.0 in	Width of Section
a =	$\frac{A_s f_y}{0.85 f_c' b} =$ 1.4 in	Depth of Stress Block
h =	24.00 in	Height of Section
d =	21.1 in	Distance from Compression Block to Steel Reinforcement

Inventory Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$ 1.70

Operating Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$ 2.83

$\varphi =$	0.9	Capacity Reduction Factor
C =	408.2 kip-ft	Nominal Flexural Capacity
$A_1 =$	1.3	Rating Factor
D =	33.70 kip-ft	Unfactored Dead Load Demand
$A_2 =$	2.17	Inventory Rating Factor
$A_2 =$	1.30	Operating Rating Factor
L =	67.60 kip-ft	Unfactored Live Load Demand
IM =	0.30	Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	62.80	0.17	33.70	6.70	17.12	28.58
Case 2	146.20	0.40	33.70	36.30	3.16	5.28
Case 3	100.10	0.27	33.70	19.98	5.74	9.58
Case 4	234.00	0.64	33.70	67.50	1.70	2.84
Case 5	234.40	0.64	33.70	67.60	1.70	2.83
Case 6	187.30	0.51	33.70	50.90	2.25	3.76

EXISTING ARCH MOMENT CAPACITY

ARCH SECTION 1 (ARCH-L-1 & ARCH-R-1)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's arch. The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 367.4 k-ft

A_s =	6.0 in^2	Area of Steel Reinforcement
f_y =	40.0 ksi	Yield Stress of Steel Reinforcement
f'_c =	5.5 ksi	Compressive Strength of Concrete
b =	36.0 in	Width of Section
a =	$\frac{A_s f_y}{0.85 f_c' b}$ = 1.4 in	Depth of Stress Block
h =	24.00 in	Height of Section
d =	21.1 in	Distance from Compression Block to Steel Reinforcement

Inventory Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 4.04

Operating Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 6.75

φ =	0.9	Capacity Reduction Factor
C =	408.2 kip-ft	Nominal Flexural Capacity
A_1 =	1.3	Rating Factor
D =	-3.76 kip-ft	Unfactored Dead Load Demand
A_2 =	2.17	Inventory Rating Factor
A_2 =	1.30	Operating Rating Factor
L =	31.79 kip-ft	Unfactored Live Load Demand
IM =	0.30	Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	-45.20	0.12	-3.76	-14.30	8.99	15.01
Case 2	25.20	0.07	-3.76	-5.58	23.03	38.44
Case 3	-46.60	0.13	-3.76	-14.82	8.67	14.48
Case 4	81.40	0.22	-3.76	30.61	4.20	7.01
Case 5	84.80	0.23	-3.76	31.79	4.04	6.75
Case 6	50.30	0.14	-3.76	19.58	6.56	10.96

EXISTING ARCH MOMENT CAPACITY

ARCH SECTION 2 (ARCH-L-2 & ARCH-R-2)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's arch. The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 368.1 k-ft

$A_s =$	6.0 in^2	Area of Steel Reinforcement
$f_y =$	40.0 ksi	Yield Stress of Steel Reinforcement
$f'_c =$	5.5 ksi	Compressive Strength of Concrete
b =	36.0 in	Width of Section
a =	$\frac{A_s f_y}{0.85 f_c' b} =$ 1.4 in	Depth of Stress Block
h =	24.04 in	Height of Section
d =	21.17 in	Distance from Compression Block to Steel Reinforcement

Inventory Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$ 3.55

Operating Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$ 5.92

$\varphi =$	0.9	Capacity Reduction Factor
C =	409.0 kip-ft	Nominal Flexural Capacity
$A_1 =$	1.3	Rating Factor
D =	-3.54 kip-ft	Unfactored Dead Load Demand
$A_2 =$	2.17	Inventory Rating Factor
$A_2 =$	1.30	Operating Rating Factor
L =	36.33 kip-ft	Unfactored Live Load Demand
IM =	0.30	Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	-79.10	0.21	-3.54	26.41	4.88	8.15
Case 2	-92.70	0.25	-3.54	31.23	4.13	6.89
Case 3	-102.60	0.28	-3.54	34.73	3.71	6.19
Case 4	82.00	0.22	-3.54	-30.71	4.20	7.00
Case 5	83.90	0.23	-3.54	-31.40	4.10	6.85
Case 6	-107.10	0.29	-3.54	36.33	3.55	5.92

EXISTING ARCH MOMENT CAPACITY

ARCH SECTION 3 (ARCH-L-3 & ARCH-R-3)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's arch. The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 369.7 k-ft

A_s =	6.0 in^2	Area of Steel Reinforcement
f_y =	40.0 ksi	Yield Stress of Steel Reinforcement
f'_c =	5.5 ksi	Compressive Strength of Concrete
b =	36.0 in	Width of Section
a =	$\frac{A_s f_y}{0.85 f_c' b}$ = 1.4 in	Depth of Stress Block
h =	24.126 in	Height of Section
d =	21.25 in	Distance from Compression Block to Steel Reinforcement

Inventory Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 1.35

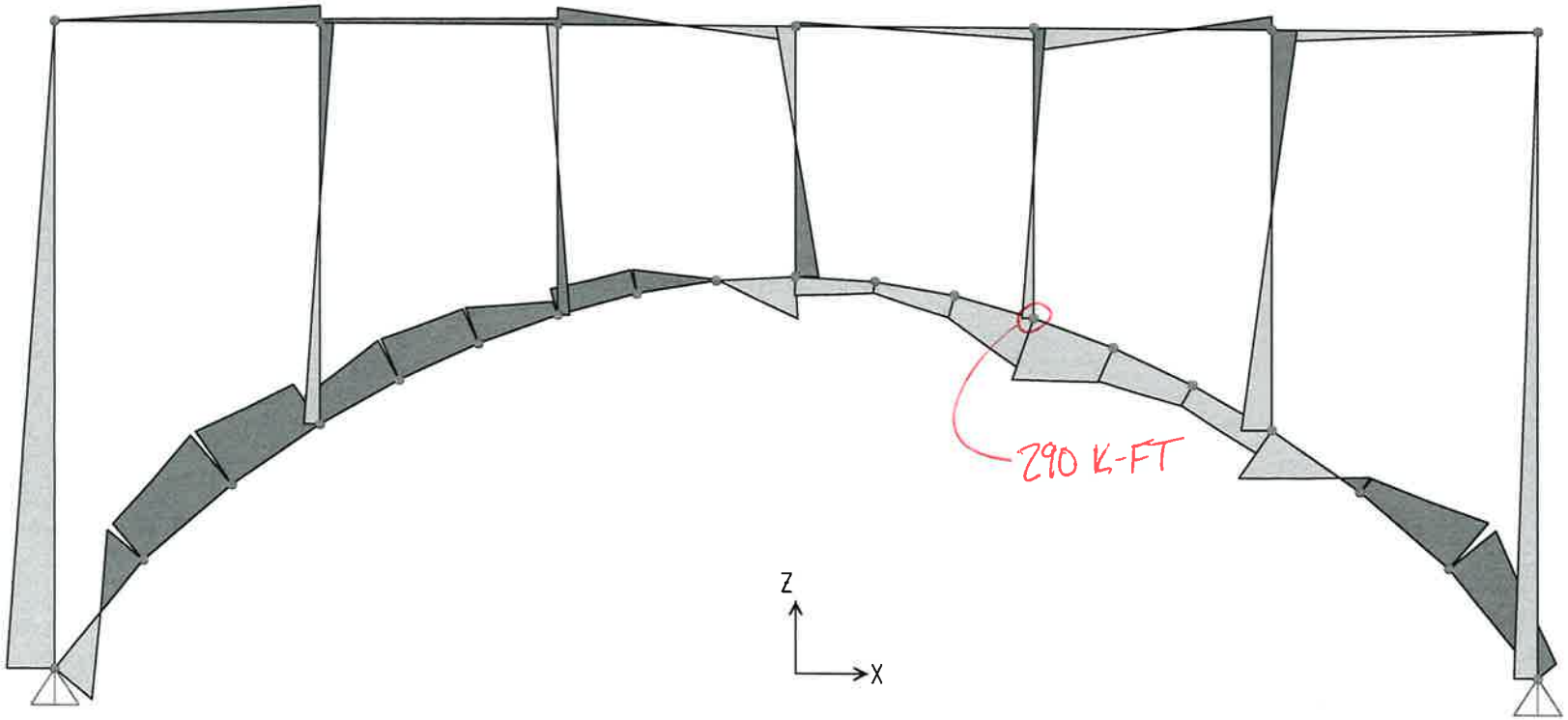
Operating Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 2.25

φ =	0.9	Capacity Reduction Factor
C =	410.8 kip-ft	Nominal Flexural Capacity
A_1 =	1.3	Rating Factor
D =	48.57 kip-ft	Unfactored Dead Load Demand
A_2 =	2.17	Inventory Rating Factor
A_2 =	1.30	Operating Rating Factor
L =	80.44 kip-ft	Unfactored Live Load Demand
IM =	0.30	Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	178.0	0.48	48.6	40.74	2.67	4.45
Case 2	275.3	0.74	48.6	75.22	1.44	2.41
Case 3	283.0	0.77	48.6	77.94	1.39	2.33
Case 4	267.1	0.72	48.6	72.32	1.50	2.51
Case 5	271.8	0.74	48.6	73.97	1.47	2.45
Case 6	290.0	0.78	48.6	80.44	1.35	2.25

GOVERNING CASE @ ARCH SECTION 3 FOR MOMENT

GROUP 1H CASE 6



EXISTING ARCH MOMENT CAPACITY

ARCH SECTION 4 (ARCH-L-4 & ARCH-R-4)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's arch. The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 379.4 k-ft

A_s =	6.0	in^2	Area of Steel Reinforcement
f_y =	40.0	ksi	Yield Stress of Steel Reinforcement
f'_c =	5.5	ksi	Compressive Strength of Concrete
b =	36.0	in	Width of Section
a = $\frac{A_s f_y}{0.85 f_c' b}$ =	1.4	in	Depth of Stress Block
h =	24.664	in	Height of Section
d =	21.79	in	Distance from Compression Block to Steel Reinforcement

Inventory Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 2.12

Operating Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 3.53

φ =	0.9		Capacity Reduction Factor
C =	421.5	kip-ft	Nominal Flexural Capacity
A_1 =	1.3		Rating Factor
D =	-5.26	kip-ft	Unfactored Dead Load Demand
A_2 =	2.17		Inventory Rating Factor
A_2 =	1.30		Operating Rating Factor
L =	-62.44	kip-ft	Unfactored Live Load Demand
IM =	0.30		Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	130.00	0.34	-5.26	-43.65	3.03	5.05
Case 2	162.40	0.43	-5.26	-55.15	2.39	4.00
Case 3	182.90	0.48	-5.26	-62.44	2.12	3.53
Case 4	-101.20	0.27	-5.26	-57.18	2.31	3.86
Case 5	-96.10	0.25	-5.26	36.48	3.62	6.04
Case 6	-168.80	0.44	-5.26	-55.01	2.40	4.01

EXISTING ARCH MOMENT CAPACITY

ARCH SECTION 5 (ARCH-L-5 & ARCH-R-5)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's arch. The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 397.9 k-ft

A_s =	6.0	in^2	Area of Steel Reinforcement
f_y =	40.0	ksi	Yield Stress of Steel Reinforcement
f'_c =	5.5	ksi	Compressive Strength of Concrete
b =	36.0	in	Width of Section
a = $\frac{A_s f_y}{0.85 f_c' b}$ =	1.4	in	Depth of Stress Block
h =	25.693	in	Height of Section
d =	22.82	in	Distance from Compression Block to Steel Reinforcement

Inventory Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 2.08

Operating Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 3.47

φ =	0.9		Capacity Reduction Factor
C =	442.1	kip-ft	Nominal Flexural Capacity
A_1 =	1.3		Rating Factor
D =	8.85	kip-ft	Unfactored Dead Load Demand
A_2 =	2.17		Inventory Rating Factor
A_2 =	1.30		Operating Rating Factor
L =	65.98	kip-ft	Unfactored Live Load Demand
IM =	0.30		Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	136.60	0.34	8.85	38.00	3.60	6.02
Case 2	-193.80	0.49	8.85	64.65	2.12	3.54
Case 3	-182.30	0.46	8.85	60.60	2.26	3.77
Case 4	-172.70	0.43	8.85	57.18	2.40	4.00
Case 5	-189.30	0.48	8.85	63.06	2.17	3.63
Case 6	-197.60	0.50	8.85	65.98	2.08	3.47

EXISTING ARCH MOMENT CAPACITY

ARCH SECTION 6 (ARCH-L-6 & ARCH-R-6)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's arch. The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 494.9 k-ft

A_s =	7.0 in^2	Area of Steel Reinforcement
f_y =	40.0 ksi	Yield Stress of Steel Reinforcement
f'_c =	5.5 ksi	Compressive Strength of Concrete
b =	36.0 in	Width of Section
a =	$\frac{A_s f_y}{0.85 f_c' b} =$ 1.7 in	Depth of Stress Block
h =	27.3 in	Height of Section
d =	24.40 in	Distance from Compression Block to Steel Reinforcement

Inventory Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$ 1.51

Operating Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$ 2.52

φ =	0.9	Capacity Reduction Factor
C =	549.9 kip-ft	Nominal Flexural Capacity
A_1 =	1.3	Rating Factor
D =	-26.12 kip-ft	Unfactored Dead Load Demand
A_2 =	2.17	Inventory Rating Factor
A_2 =	1.30	Operating Rating Factor
L =	108.09 kip-ft	Unfactored Live Load Demand
IM =	0.30	Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	312.70	0.63	-26.12	98.83	1.65	2.76
Case 2	300.00	0.61	-26.12	94.32	1.73	2.89
Case 3	338.80		-26.12	108.09	1.51	2.52
Case 4	-171.90	0.35	-26.12	-73.01	2.24	3.74
Case 5	-210.20	0.42	-26.12	-86.58	1.89	3.15
Case 6	262.80	0.53	-26.12	81.13	2.01	3.36

EXISTING ARCH MOMENT CAPACITY

ARCH SECTION 7 (ARCH-L-7 & ARCH-R-7)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's arch. The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 547.9 k-ft

A_s =	7.0	in^2	Area of Steel Reinforcement
f_y =	40.0	ksi	Yield Stress of Steel Reinforcement
f'_c =	5.5	ksi	Compressive Strength of Concrete
b =	36.0	in	Width of Section
a = $\frac{A_s f_y}{0.85 f_c' b}$ =	1.7	in	Depth of Stress Block
h =	29.8	in	Height of Section
d =	26.92	in	Distance from Compression Block to Steel Reinforcement

Inventory Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 2.00

Operating Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 3.33

φ =	0.9		Capacity Reduction Factor
C =	608.8	kip-ft	Nominal Flexural Capacity
A_1 =	1.3		Rating Factor
D =	70.42	kip-ft	Unfactored Dead Load Demand
A_2 =	2.17		Inventory Rating Factor
A_2 =	1.30		Operating Rating Factor
L =	81.08	kip-ft	Unfactored Live Load Demand
IM =	0.30		Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	-202.70	0.37	70.42	39.42	4.10	6.85
Case 2	-298.10	0.54	70.42	73.23	2.21	3.69
Case 3	-279.70	0.51	70.42	66.70	2.43	4.05
Case 4	-300.00	0.55	70.42	73.88	2.19	3.66
Case 5	-320.20	0.58	70.42	81.08	2.00	3.33
Case 6	-287.80	0.53	70.42	69.61	2.32	3.88

EXISTING ARCH MOMENT CAPACITY

ARCH SECTION 8 (ARCH-L-8 & ARCH-R-8)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's arch. The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 795.1 k-ft

A_s =	9.0	in^2	Area of Steel Reinforcement
f_y =	40.0	ksi	Yield Stress of Steel Reinforcement
f'_c =	5.5	ksi	Compressive Strength of Concrete
b =	36.0	in	Width of Section
a = $\frac{A_s f_y}{0.85 f_c' b}$ =	2.1	in	Depth of Stress Block
h =	33.4	in	Height of Section
d =	30.52	in	Distance from Compression Block to Steel Reinforcement

Inventory Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 4.08

Operating Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 6.81

φ =	0.9		Capacity Reduction Factor
C =	883.4	kip-ft	Nominal Flexural Capacity
A_1 =	1.3		Rating Factor
D =	104.95	kip-ft	Unfactored Dead Load Demand
A_2 =	2.17		Inventory Rating Factor
A_2 =	1.30		Operating Rating Factor
L =	57.26	kip-ft	Unfactored Live Load Demand
IM =	0.30		Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	-205.60	0.26	104.95	24.53	9.52	15.89
Case 2	-275.50	0.35	104.95	49.39	4.73	7.89
Case 3	-262.60	0.33	104.95	44.80	5.21	8.70
Case 4	-297.90	0.37	104.95	57.26	4.08	6.81
Case 5	-297.80	0.37	104.95	57.23	4.08	6.81
Case 6	-274.20	0.34	104.95	48.86	4.78	7.98

EXISTING ARCH MOMENT CAPACITY

ARCH SECTION 9 (ARCH-L-9 & ARCH-R-9)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's arch. The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 1143.8 k-ft

A_s =	9.0 in^2		Area of Steel Reinforcement
f_y =	40.0 ksi		Yield Stress of Steel Reinforcement
f'_c =	5.5 ksi		Compressive Strength of Concrete
b =	36.0 in		Width of Section
a =	$\frac{A_s f_y}{0.85 f_c' b} =$	2.1 in	Depth of Stress Block
h =	46.3 in		Height of Section
d =	43.43 in		Distance from Compression Block to Steel Reinforcement
Inventory Rating =	$\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$	5.63	
Operating Rating =	$\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$	9.39	
φ =	0.9		Capacity Reduction Factor
C =	1270.8 kip-ft		Nominal Flexural Capacity
A_1 =	1.3		Rating Factor
D =	33.70 kip-ft		Unfactored Dead Load Demand
A_2 =	2.17		Inventory Rating Factor
A_2 =	1.30		Operating Rating Factor
L =	-69.31 kip-ft		Unfactored Live Load Demand
IM =	0.30		Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	146.80	0.13	15.68	-44.77	8.90	14.85
Case 2	214.10	0.19	33.70	-68.85	5.66	9.45
Case 3	210.80	0.18	33.70	-67.45	5.78	9.65
Case 4	170.00	0.15	33.70	-52.96	7.36	12.29
Case 5	180.70	0.16	33.70	-56.77	6.87	11.47
Case 6	216.10	0.19	33.70	-69.31	5.63	9.39

EXISTING SPANDREL COLUMN CAPACITY

LIVE LOAD CASES

NOTE: Spandrel column live load rxns (HS20 loading) are taken from the SAP2000 'Live Load Demand to Arch' model.
The live loads applied to the deck slab transfer through the spandrel columns into the arch beneath.
Load cases are defined in the table below.

Case	SP Col 1	SP Col 2	SP Col 3	SP Col 4	SP Col 5	SP Col 6	SP Col 7
Case 1	30.13	26.24	12.88	3.16	-0.50	0.11	-0.02
Case 2	0.47	28.64	25.43	14.51	3.28	-0.39	0.06
Case 3	6.18	29.78	26.40	7.64	2.45	-0.52	0.07
Case 4	-1.41	10.01	26.70	27.20	7.50	2.33	-0.33
Case 5	0.32	-2.29	10.71	26.56	27.06	8.20	1.44
Case 6	-0.10	0.72	-3.38	18.71	25.79	23.79	6.48

Case 1	Rear 32 kip axle placed at leftmost spandrel column (truck traveling left to right)
Case 2	Rear 32 kip axle placed at first interior spandrel column from left (truck traveling left to right)
Case 3	Center 32 kip axle placed at second interior spandrel column from left (truck traveling left to right)
Case 4	Center 32 kip axle placed at center spandrel column (truck traveling left to right)
Case 5	Center 32 kip axle placed at second interior spandrel column from right (truck traveling left to right)
Case 6	8 kip axle placed at rightmost spandrel column (truck traveling left to right)

DEAD LOAD REACTIONS

NOTE: Dead load reactions are obtained by hand calculations based on tributary widths.
Dead load reactions from the deck slab are not applied to the pier spandrel columns due to a pin connection.

Case	SP Col 1	SP Col 2	SP Col 3	SP Col 4	SP Col 5	SP Col 6	SP Col 7
All	N/A	39.31	32.73	31.96	32.73	39.31	N/A

EXISTING SPANDREL COLUMN CAPACITY

PIER SPANDREL COLUMN 1 (PIER-SPANDREL-COL)

PIER SPANDREL COLUMN ANALYSIS SUPERCEDED BY PARSONS VERTICAL ANALYSIS UTILIZING SAP2000 & WINLEGL

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's spandrel columns.The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 160.7 k-ft

A_s =	2.0 in^2		Area of Steel Reinforcement
f_y =	40.0 ksi		Yield Stress of Steel Reinforcement
f'_c =	5.5 ksi		Compressive Strength of Concrete
b =	12.0 in		Width of Section
a =	$\frac{A_s f_y}{0.85 f_c' b} =$	1.4 in	Depth of Stress Block
h =	36.0 in		Height of Section
d =	27.5 in		Distance from Compression Block to Steel Reinforcement
Inventory Rating =	$\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$	0.72	
Operating Rating =	$\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$	1.20	
φ =	0.9		Capacity Reduction Factor
C =	178.6 kip-ft		Nominal Flexural Capacity
A_1 =	1.3		Rating Factor
D =	15.84 kip-ft		Unfactored Dead Load Demand
A_2 =	2.17		Inventory Rating Factor
A_2 =	1.30		Operating Rating Factor
L =	69.31 kip-ft		Unfactored Live Load Demand
IM =	0.30		Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	-117.20	0.73	15.84	-48.85	1.02	1.70
Case 2	-116.60	0.73	15.84	-48.64	1.02	1.70
Case 3	-139.30	0.87	15.84	-56.71	0.88	1.46
Case 4	12.70	0.08	15.84	-2.81	17.68	29.52
Case 5	180.70	1.12	15.84	56.77	0.88	1.46
Case 6	216.10	1.34	15.84	69.31	0.72	1.20

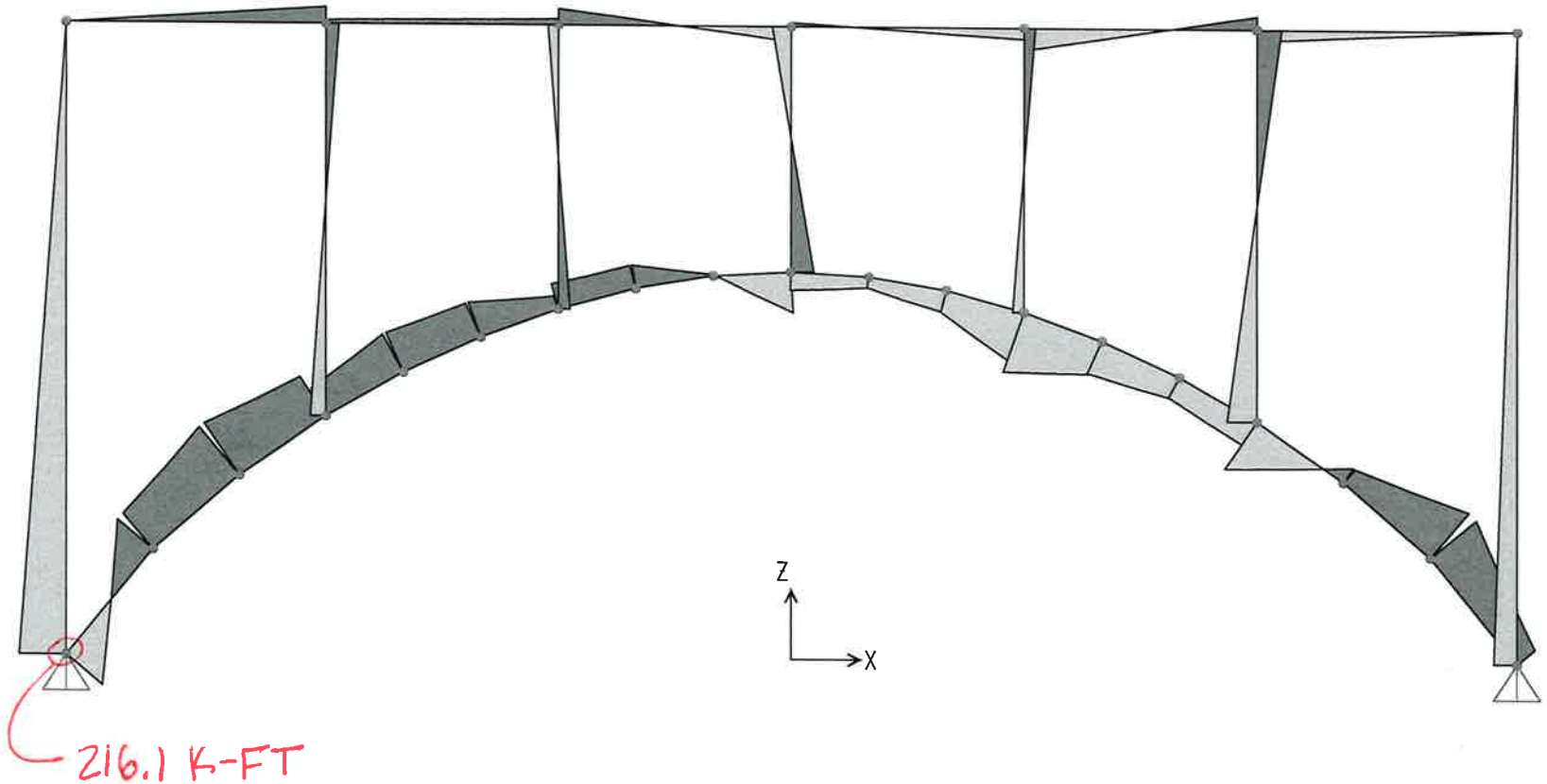
PARSONS D/C = 0.66 ∴ OK

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GOVERNING CASE @ PIER SPANDREL COLUMN 1 FOR MOMENT

GROUP 1H CASE 6



SAP2000 v8.3.0 - File:2015 03-17 Vertical - Existing Arch Analysis with Spandrel Columns & Deck_SMC Edits 3-22-15 - Moment 3-3 Diagram (GrlH(C6)) - Kip,

EXISTING SPANDREL COLUMN CAPACITY

INTERMEDIATE SPANDREL COLUMN 2 (SPANDREL-COLUMN)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's spandrel columns.The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 76.9 k-ft

A_s =	1.7 in^2	Area of Steel Reinforcement
f_y =	40.0 ksi	Yield Stress of Steel Reinforcement
f'_c =	5.5 ksi	Compressive Strength of Concrete
b =	24.0 in	Width of Section
a = $\frac{A_s f_y}{0.85 f_c' b}$ =	0.6 in	Depth of Stress Block
h =	18.0 in	Height of Section
d =	15.5 in	Distance from Compression Block to Steel Reinforcement

Inventory Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 0.46

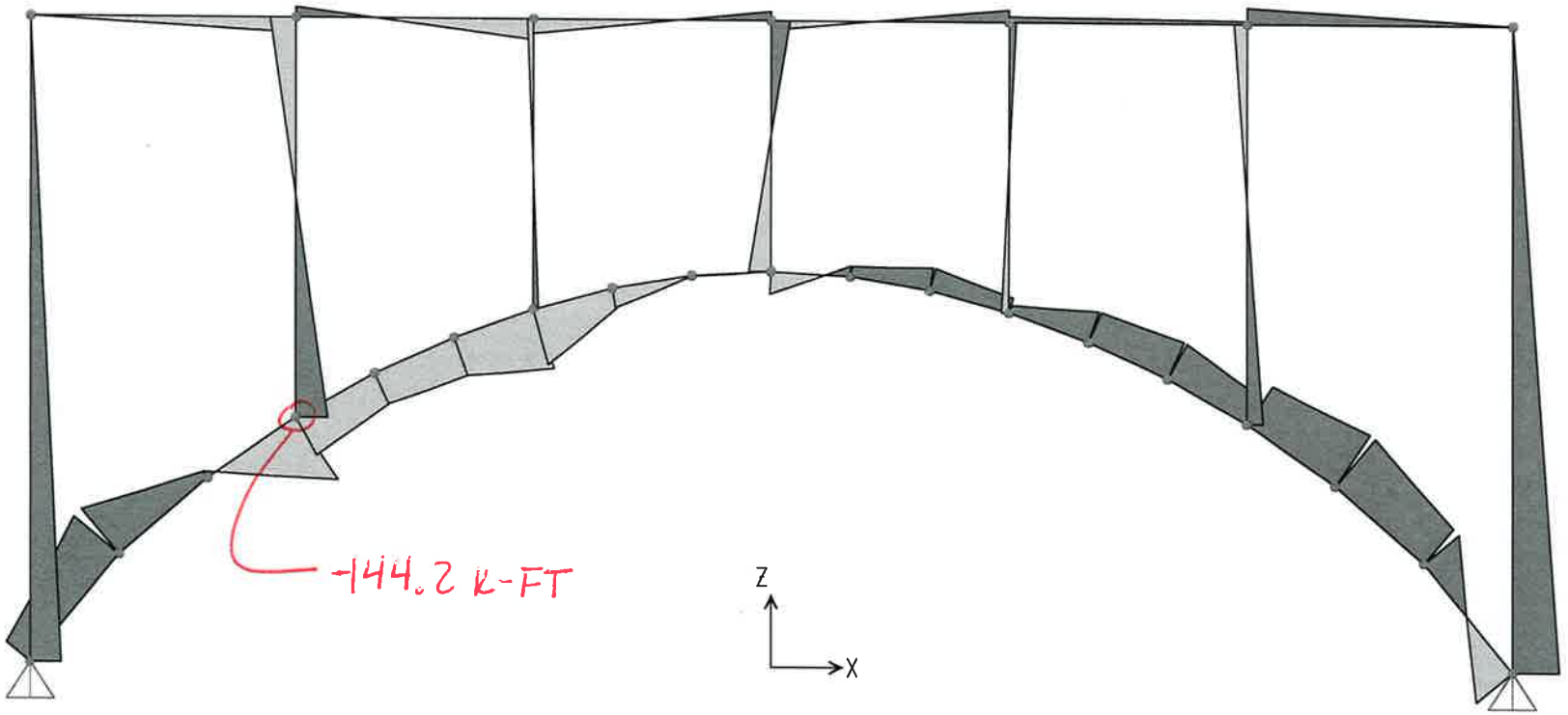
Operating Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 0.76

φ =	0.9	Capacity Reduction Factor
C =	85.5 kip-ft	Nominal Flexural Capacity
A_1 =	1.3	Rating Factor
D =	-15.94 kip-ft	Unfactored Dead Load Demand
A_2 =	2.17	Inventory Rating Factor
A_2 =	1.30	Operating Rating Factor
L =	-43.79 kip-ft	Unfactored Live Load Demand
IM =	0.30	Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	-107.70	1.40	-15.94	-30.84	0.65	1.08
Case 2	-137.60	1.79	-15.94	-41.44	0.48	0.80
Case 3	-144.20		-15.94	-43.79		
Case 4	-89.50	1.16	-15.94	-24.39	0.82	1.36
Case 5	20.00	0.26	12.96	-10.77	1.98	3.30
Case 6	73.10	0.95	-15.94	33.27	0.60	1.00

GOVERNING CASE @ INTER. SPANDREL COLUMN 2 FOR MOMENT

GROUP IH CASE 3



EXISTING SPANDREL COLUMN CAPACITY

INTERMEDIATE SPANDREL COLUMN 3 (SPANDREL-COLUMN)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's spandrel columns.The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

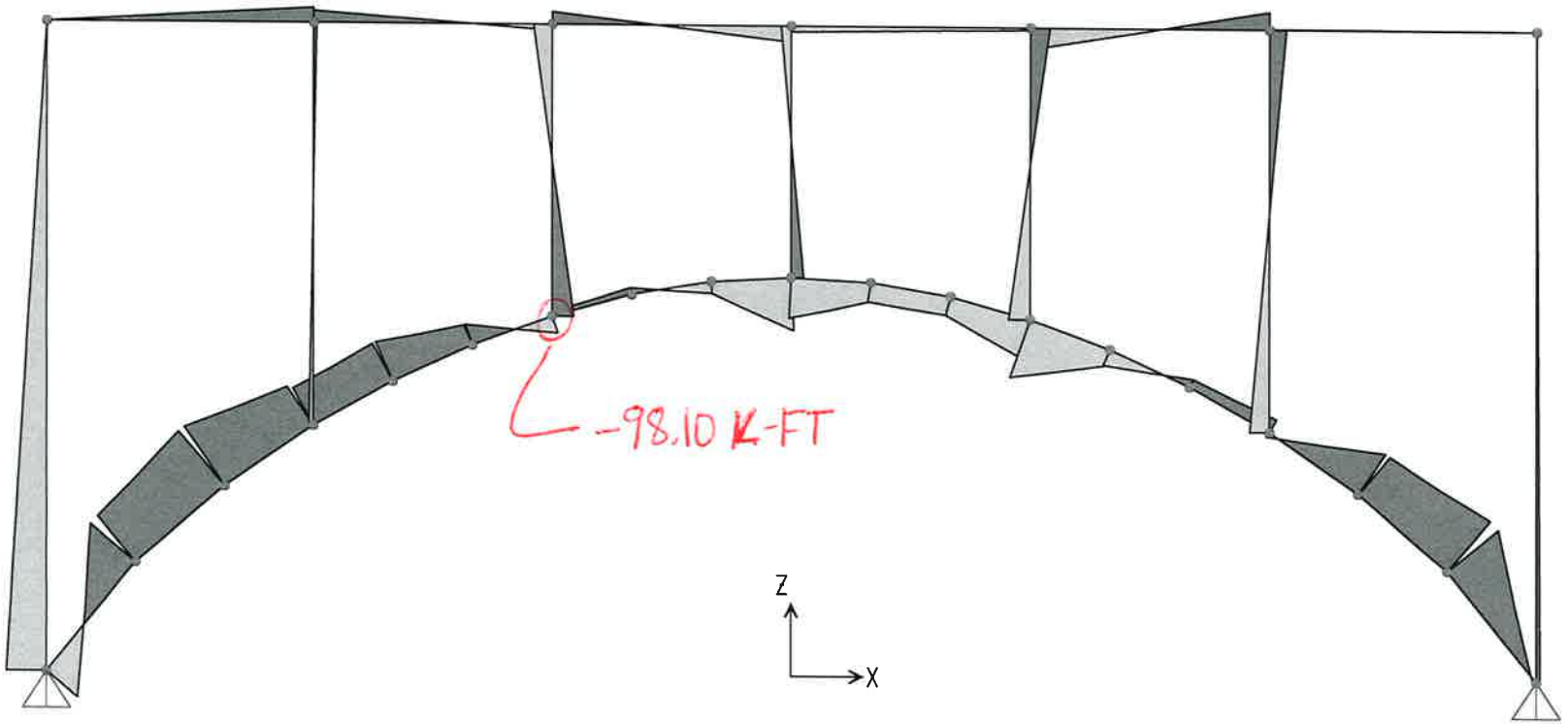
$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 76.9 k-ft

A_s =	1.7 in^2		Area of Steel Reinforcement
f_y =	40.0 ksi		Yield Stress of Steel Reinforcement
f'_c =	5.5 ksi		Compressive Strength of Concrete
b =	24.0 in		Width of Section
a =	$\frac{A_s f_y}{0.85 f_c' b} =$	0.6 in	Depth of Stress Block
h =	18.0 in		Height of Section
d =	15.5 in		Distance from Compression Block to Steel Reinforcement
Inventory Rating =	$\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$	0.73	
Operating Rating =	$\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$	1.21	
φ =	0.9		Capacity Reduction Factor
C =	85.5 kip-ft		Nominal Flexural Capacity
A_1 =	1.3		Rating Factor
D =	-15.96 kip-ft		Unfactored Dead Load Demand
A_2 =	2.17		Inventory Rating Factor
A_2 =	1.30		Operating Rating Factor
L =	-27.43 kip-ft		Unfactored Live Load Demand
IM =	0.30		Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	10.80	0.14	15.28	-3.23	6.26	10.45
Case 2	-40.80	0.53	-15.96	-7.11	2.80	4.68
Case 3	27.40	0.36	15.28	2.67	7.57	12.63
Case 4	-93.40	1.21	-15.96	-25.76	0.77	1.29
Case 5	-98.10	1.27	-15.96	-27.43	0.73	1.21
Case 6	-55.40	0.72	-15.96	-12.30	1.62	2.70

GOVERNING CASE @ INTER. SPANDREL COLUMN 3 FOR MOMENT

GROUP IH CASE 5



EXISTING SPANDREL COLUMN CAPACITY

INTERMEDIATE SPANDREL COLUMN 4 (SPANDREL-COLUMN)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's spandrel columns.The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 76.9 k-ft

A_s =	1.7 in^2	Area of Steel Reinforcement
f_y =	40.0 ksi	Yield Stress of Steel Reinforcement
f'_c =	5.5 ksi	Compressive Strength of Concrete
b =	24.0 in	Width of Section
a =	$\frac{A_s f_y}{0.85 f_c' b} =$ 0.6 in	Depth of Stress Block
h =	18.0 in	Height of Section
d =	15.5 in	Distance from Compression Block to Steel Reinforcement

Inventory Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$ 0.74

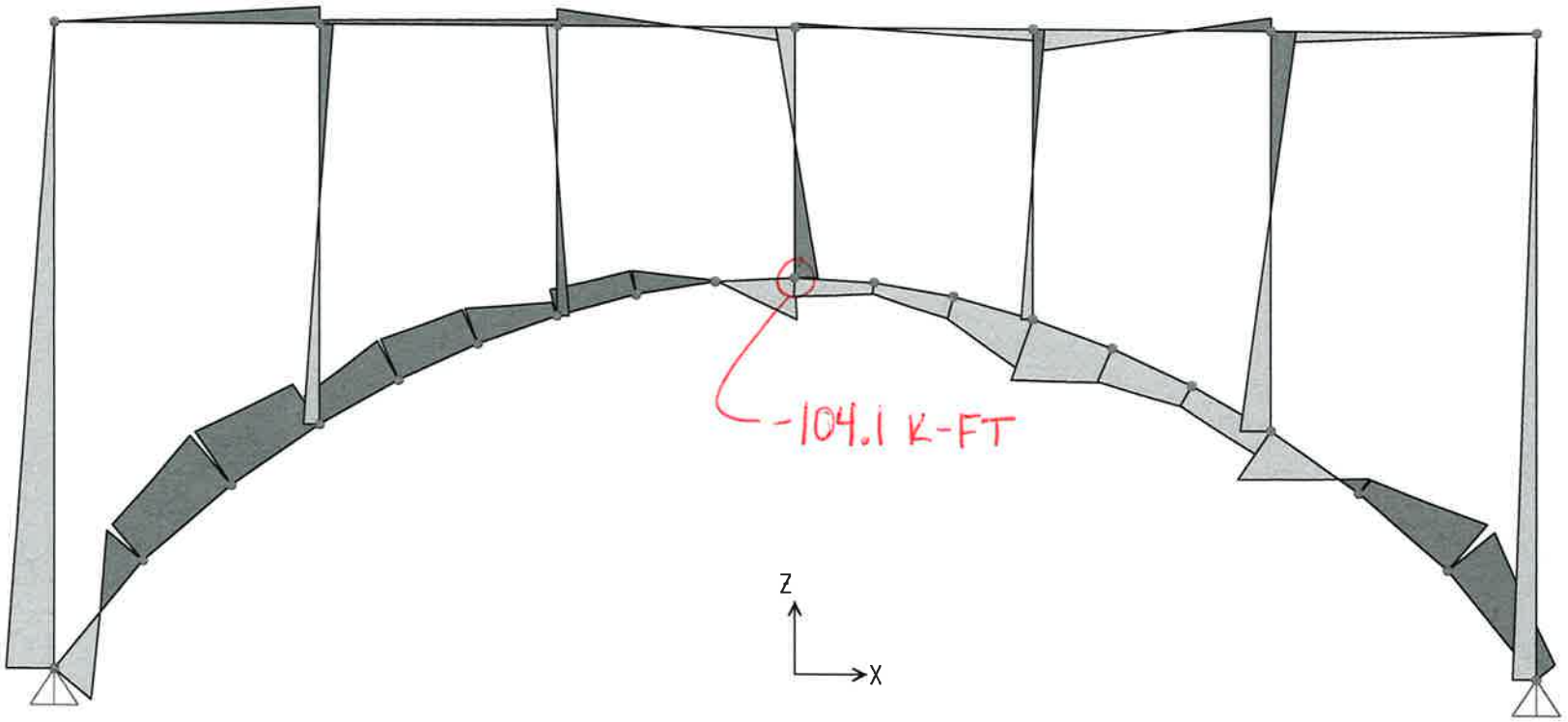
Operating Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$ 1.23

φ =	0.9	Capacity Reduction Factor
C =	85.5 kip-ft	Nominal Flexural Capacity
A_1 =	1.3	Rating Factor
D =	0.00 kip-ft	Unfactored Dead Load Demand
A_2 =	2.17	Inventory Rating Factor
A_2 =	1.30	Operating Rating Factor
L =	-36.91 kip-ft	Unfactored Live Load Demand
IM =	0.30	Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	68.70	0.89	0.00	24.35	1.12	1.87
Case 2	94.50	1.23	0.00	33.52	0.81	1.36
Case 3	100.70	1.31	0.00	35.73	0.76	1.27
Case 4	58.40	0.76	0.00	20.71	1.32	2.20
Case 5	-55.10	0.72	0.00	-19.52	1.40	2.33
Case 6	-104.10	1.35	0.00	-36.91	0.74	1.23

GOVERNING CASE @ INTER SPANDREL COLUMN 4 FOR MOMENT

GROUP 1H CASE 6



EXISTING SPANDREL COLUMN CAPACITY

INTERMEDIATE SPANDREL COLUMN 5 (SPANDREL-COLUMN)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's spandrel columns.The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 76.9 k-ft

$A_s =$	1.7 in^2	Area of Steel Reinforcement
$f_y =$	40.0 ksi	Yield Stress of Steel Reinforcement
$f'_c =$	5.5 ksi	Compressive Strength of Concrete
b =	24.0 in	Width of Section
$a = \frac{A_s f_y}{0.85 f_c' b} =$	0.6 in	Depth of Stress Block
h =	18.0 in	Height of Section
d =	15.5 in	Distance from Compression Block to Steel Reinforcement

Inventory Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$ 0.72

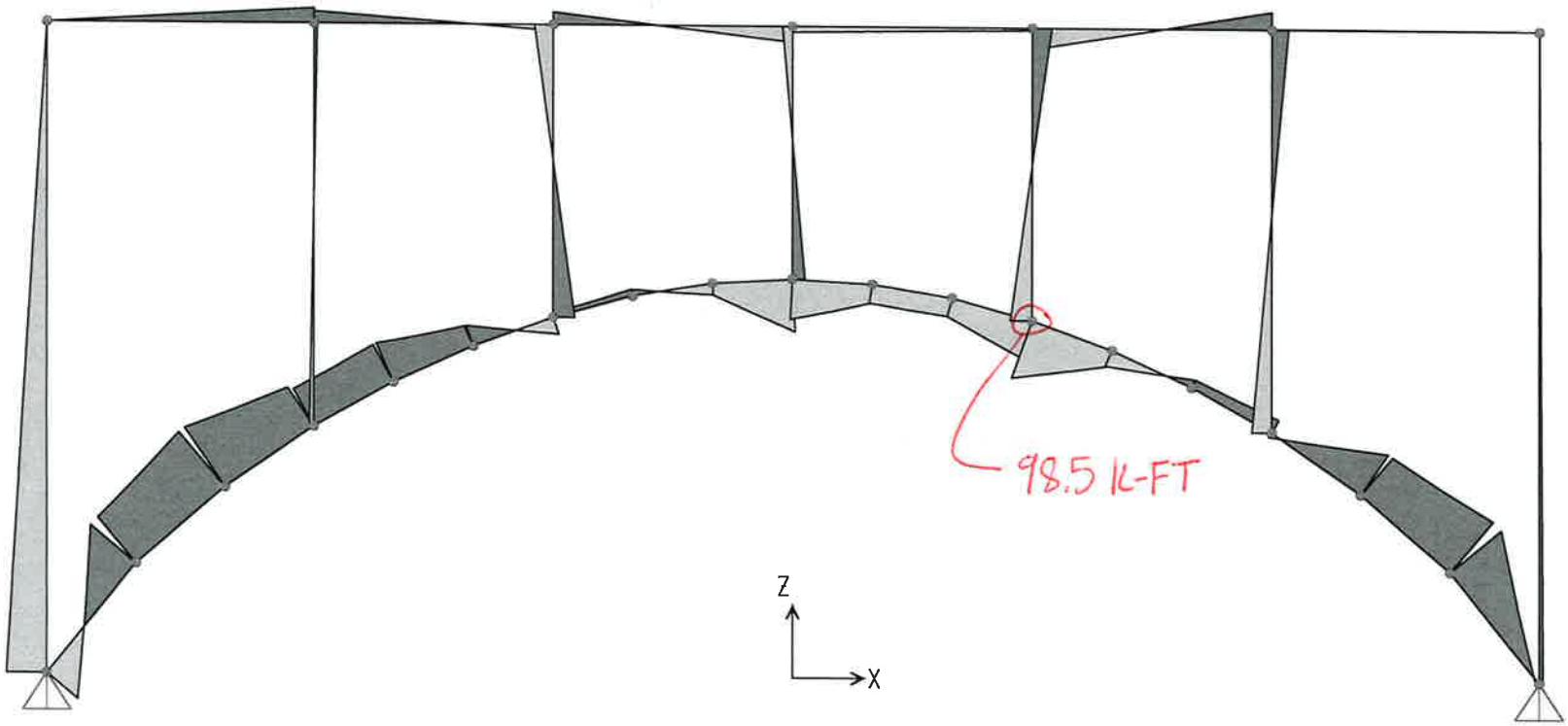
Operating Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$ 1.21

$\varphi =$	0.9	Capacity Reduction Factor
C =	85.5 kip-ft	Nominal Flexural Capacity
$A_1 =$	1.3	Rating Factor
D =	15.96 kip-ft	Unfactored Dead Load Demand
$A_2 =$	2.17	Inventory Rating Factor
$A_2 =$	1.30	Operating Rating Factor
L =	27.56 kip-ft	Unfactored Live Load Demand
IM =	0.30	Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	17.60	0.23	15.96	-1.12	17.72	29.57
Case 2	50.40	0.66	15.96	10.51	1.90	3.16
Case 3	34.40	0.45	15.96	4.82	4.13	6.89
Case 4	89.80	1.17	15.96	24.50	0.81	1.36
Case 5	98.50	1.28	15.96	27.56	0.72	1.21
Case 6	53.10	0.69	15.96	11.47	1.74	2.90

GOVERNING CASE @ INTER. SPANDREL COLUMN 5 FOR MOMENT

GROUP IH CASE 5



EXISTING SPANDREL COLUMN CAPACITY

INTERMEDIATE SPANDREL COLUMN 6 (SPANDREL-COLUMN)

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's spandrel columns.The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 76.9 k-ft

$A_s =$	1.7 in^2	Area of Steel Reinforcement
$f_y =$	40.0 ksi	Yield Stress of Steel Reinforcement
$f'_c =$	5.5 ksi	Compressive Strength of Concrete
b =	24.0 in	Width of Section
a =	$\frac{A_s f_y}{0.85 f_c' b} =$ 0.6 in	Depth of Stress Block
h =	18.0 in	Height of Section
d =	15.5 in	Distance from Compression Block to Steel Reinforcement

Inventory Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$ 0.48

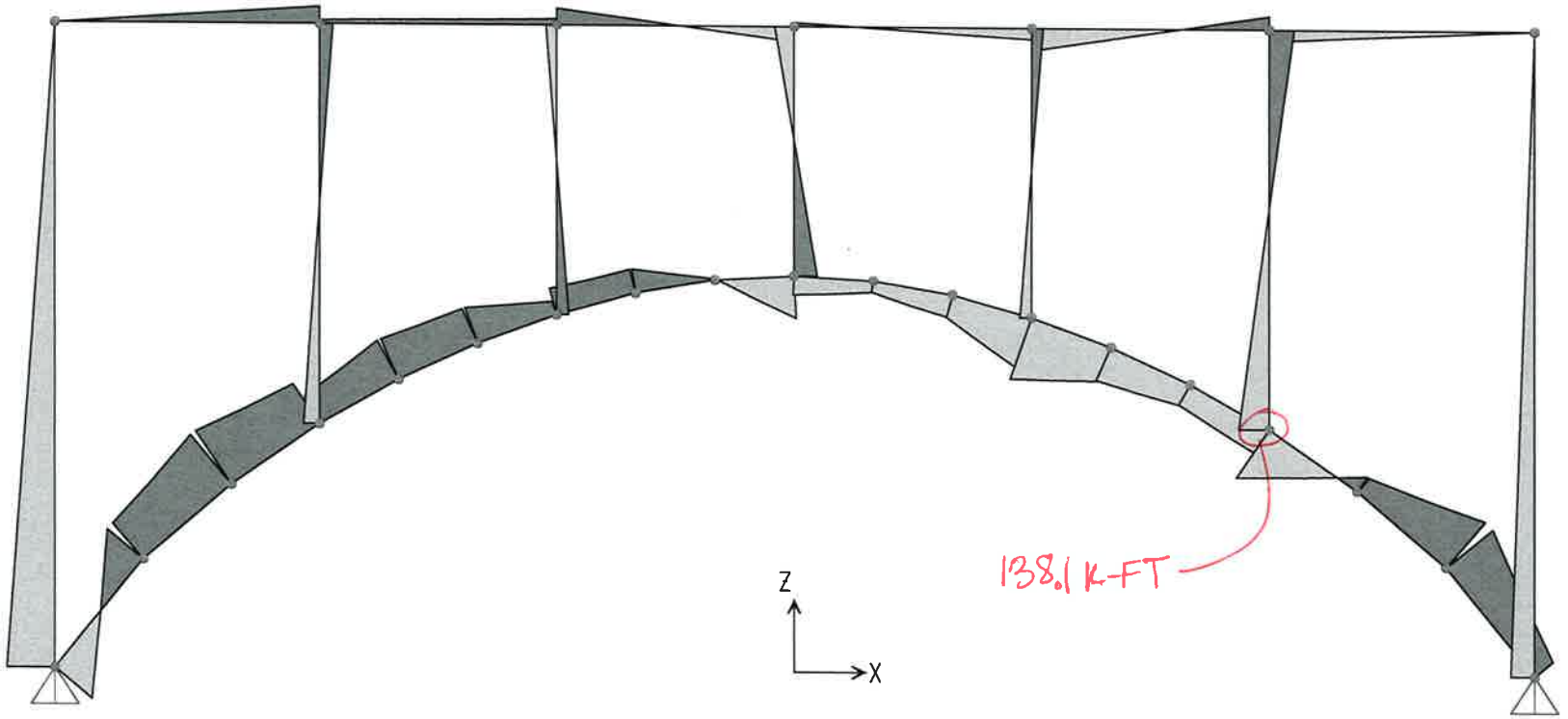
Operating Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)} =$ 0.80

$\varphi =$	0.9	Capacity Reduction Factor
C =	85.5 kip-ft	Nominal Flexural Capacity
$A_1 =$	1.3	Rating Factor
D =	15.94 kip-ft	Unfactored Dead Load Demand
$A_2 =$	2.17	Inventory Rating Factor
$A_2 =$	1.30	Operating Rating Factor
L =	41.61 kip-ft	Unfactored Live Load Demand
IM =	0.30	Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	-48.40	0.63	15.94	-24.50	0.81	1.36
Case 2	-66.60	0.87	15.94	-30.96	0.64	1.07
Case 3	-72.40	0.94	15.94	-33.02	0.60	1.01
Case 4	-20.90	0.27	-12.96	11.29	1.89	3.15
Case 5	89.00	1.16	15.94	24.22	0.82	1.37
Case 6	138.10	1.79	15.94	41.61	0.48	0.80

GOVERNING CASE @ INTER. SPANDREL COLUMN 6 FOR MOMENT

GROUP 1H CASE 6



EXISTING SPANDREL COLUMN CAPACITY

PIER SPANDREL COLUMN 7 (PIER-SPANDREL-COL)

PIER SPANDREL COLUMN ANALYSIS, SUPERCEDED BY PARSON'S ANALYSIS UTILIZING SAP2000 & WIDRECOL

NOTE: The following calculation will determine the moment D/C ratios in the existing bridge's spandrel columns.The values used for f_c' and f_y are based on material testing done on concrete and reinforcement samples taken from the bridge. A SAP2000 model of the arch was used to determine demand moments.

$\phi M_n = \varphi\left(A_s f_y\left(d - \frac{a}{2}\right)\right) =$ 160.7 k-ft

A_s =	2.0 in^2	Area of Steel Reinforcement
f_y =	40.0 ksi	Yield Stress of Steel Reinforcement
f'_c =	5.5 ksi	Compressive Strength of Concrete
b =	12.0 in	Width of Section
a =	$\frac{A_s f_y}{0.85 f_c' b}$ = 1.4 in	Depth of Stress Block
h =	36.0 in	Height of Section
d =	27.5 in	Distance from Compression Block to Steel Reinforcement

Inventory Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 0.72

Operating Rating = $\frac{\varphi C - A_1 D}{A_2 L(1+IM)}$ = 1.20

φ =	0.9	Capacity Reduction Factor
C =	178.6 kip-ft	Nominal Flexural Capacity
A_1 =	1.3	Rating Factor
D =	-15.84 kip-ft	Unfactored Dead Load Demand
A_2 =	2.17	Inventory Rating Factor
A_2 =	1.30	Operating Rating Factor
L =	-68.84 kip-ft	Unfactored Live Load Demand
IM =	0.30	Dynamic Load Allowance

HS20 Case	Group IH Moment Demand (kip-ft)	D/C	Dead Load Demand (kip-ft)	Live Load Demand (kip-ft)	Inventory Rating	Operating Rating
Case 1	-146.80	0.91	-15.84	-44.77	1.11	1.85
Case 2	-214.70	1.34	-15.84	-68.84	0.72	
Case 3	-210.80	1.31	-15.84	-67.45	0.74	1.23
Case 4	-170.00	1.06	-15.84	-52.96	0.94	1.57
Case 5	-17.40	0.11	-15.84	1.13	43.90	73.27
Case 6	107.60	0.67	-15.84	45.46	1.09	1.82

PARSONS D/C = 0.66 ∴ OK

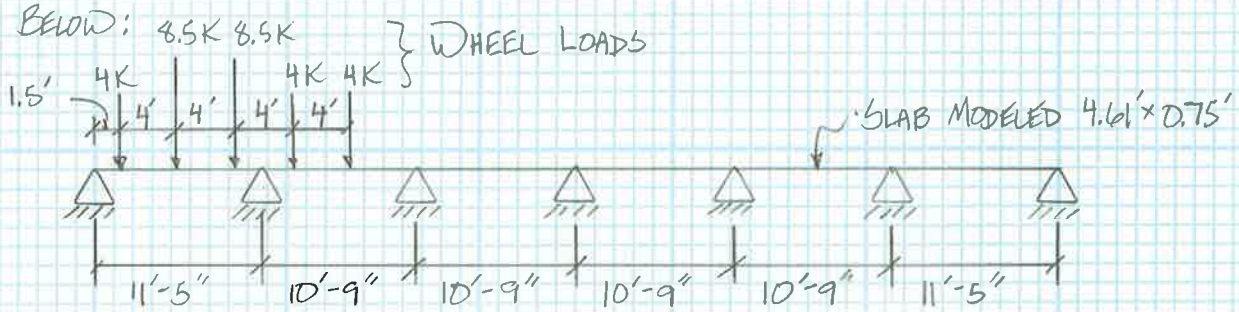
BY NRZ DATE 2/12/15 SUBJECT MINERAL KING BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. 20140416

LOAD POSTING ANALYSIS

EXISTING DECK SLAB USING LOAD FACTOR METHOD

- THE FOLLOWING CALCULATION AIMS TO DETERMINE WHETHER THE EXISTING BRIDGE SHOULD BE LOAD POSTED BASED ON NEGATIVE FLEXURE IN THE CONTINUOUS BRIDGE DECK BETWEEN PIERS B & C. THE VALUES USED FOR f'_c & f_y ARE BASED ON THE TESTING RESULTS FROM CONCRETE & REINFORCEMENT SAMPLES TAKEN FROM THE BRIDGE. SAP2000 WAS USED TO EVALUATE THE NEGATIVE MOMENT DEMAND IN THE CONTINUOUS SLAB. THE CONTROLLING LIVE LOAD CASE BASED ON THE POSTING LOADS GIVEN IN MBE 6B.9.2 IS SHOWN BELOW:



SU6/SU7/NRL LOADING*

*NON-CONTRIBUTING AXLES NEGLECTED

- MOMENT DEMAND PER SAP2000 'LIVE DEMAND TO ARCH'
  - M_L = -23.62 K·ft
  - M_D = -6.89 K·ft

  } UNFACTORED & WITHOUT IMPACT
- NOMINAL FLEXURAL CAPACITY OF EXISTING BRIDGE DECK
  - M_n = -48.41 K·ft (PER INVENTORY & OPERATING CALC.)
- INVENTORY RATING FACTOR

$$= \frac{\phi C - A_1 D}{A_2 L(1+I)} \qquad = \frac{0.9(48.41\ K\cdot ft) - 1.3(-6.89\ K\cdot ft)}{2.17(-23.62\ K\cdot ft)(1+0.3)} = 0.52$$

BY NRZ DATE 2/12/15 SUBJECT MINERAL KING BRIDGE SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ JOB NO. 2D14046

LOAD POSTING ANALYSIS

EXISTING DECK SLAB USING LOAD FACTOR METHOD

- OPERATING RATING FACTOR

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{(0.9)(48.41\ K\cdot ft) - 1.3(-6.89\ K\cdot ft)}{1.3(-23.62\ K\cdot ft)(1+0.3)} = 0.87$$

CORNERSTONE STRUCTURAL ENGINEERING GROUP, INC.

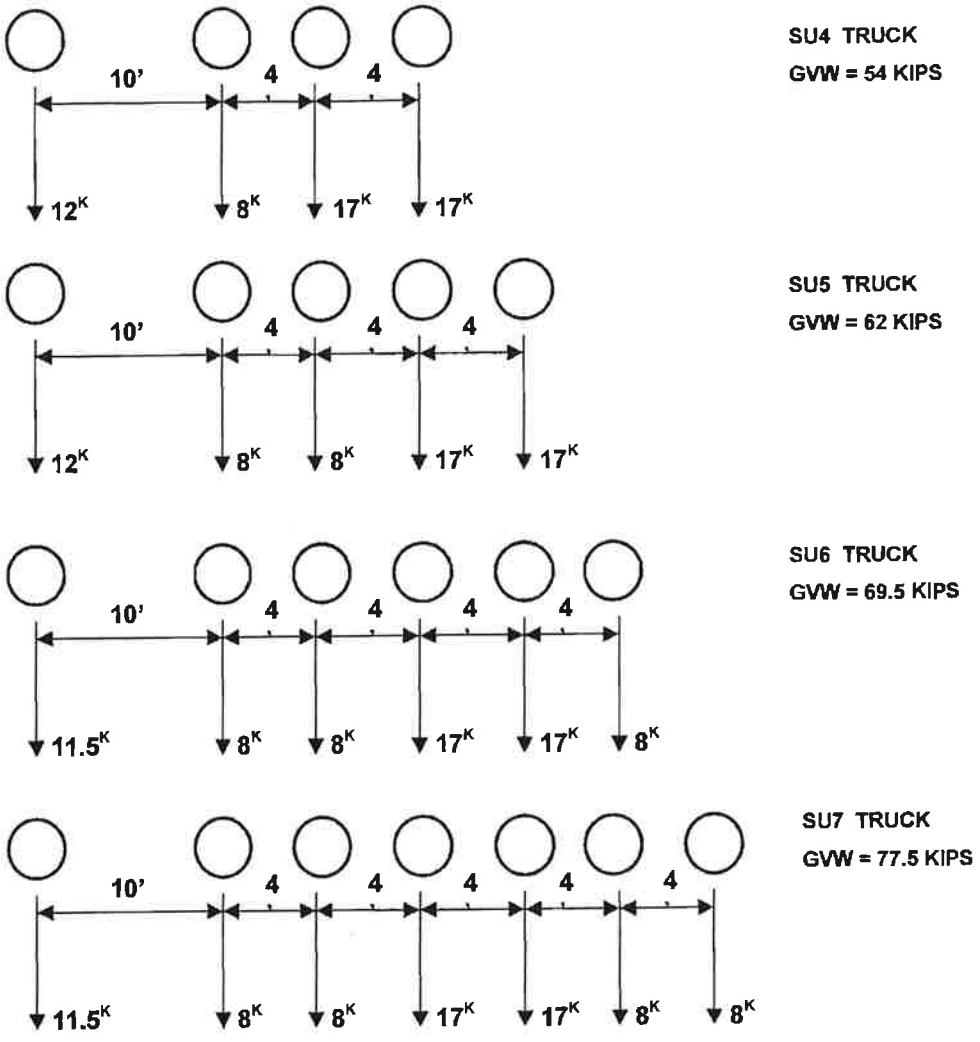


Figure 6B.9.2-2—Bridge Posting Loads for Single Unit Trucks that Meet Formula B

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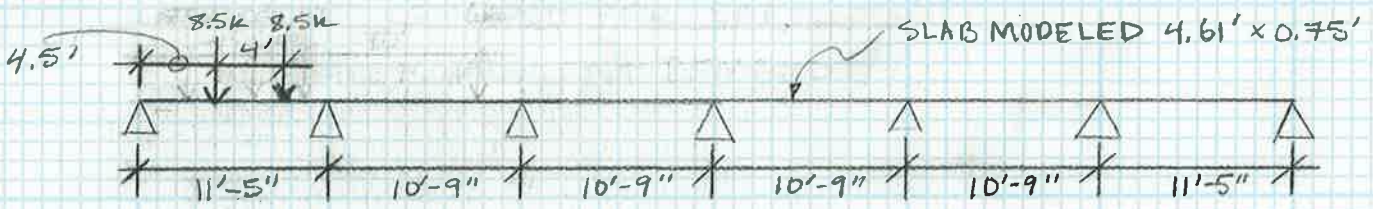
BY MJP DATE 4/24/15 SUBJECT MINERAL KING BRIDGE SHEET NO. ____ OF ____

CHKD.BY ____ DATE ____ JOB NO. 2014046

LOAD POSTING ANALYSIS

EXISTING DECK SLAB USING LOAD FACTOR METHOD

-THE FOLLOWING CALCULATION WILL DETERMINE THE INVENTORY & OPERATING RATINGS OF THE EXISTING BRIDGE'S DECK SLAB BETWEEN PIERS B & C AT 1/8 SPAN FOR NEGATIVE MOMENT.



TYPE 3 LOADING

MOMENT DEMAND PER SAP2000 'LIVE LOAD DEMAND TO ARCH'

$M_L = -14.9$ K-FT } UNFACTORED & WITHOUT IMPACT

$M_D = -3.39$ K-FT }

NOMINAL FLEXURAL CAPACITY OF EXISTING BRIDGE DECK

$M_n = 26.5$ K-FT (PER INVENTORY & OPERATING CALC.)

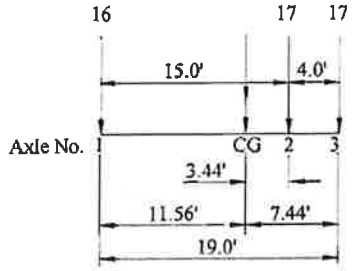
INVENTORY RATING FACTOR

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{0.9(-26.5\ \text{K-FT}) - 1.3(-3.39\ \text{K-FT})}{2.17(-14.9\ \text{K-FT})(1+0.3)} = \underline{0.46}$$

OPERATING RATING FACTOR

$$= \frac{\phi C - A_1 D}{A_2 L (1+I)} = \frac{0.9(-26.5\ \text{K-FT}) - 1.3(-3.39\ \text{K-FT})}{1.3(-14.9\ \text{K-FT})(1+0.3)} = \underline{0.77}$$

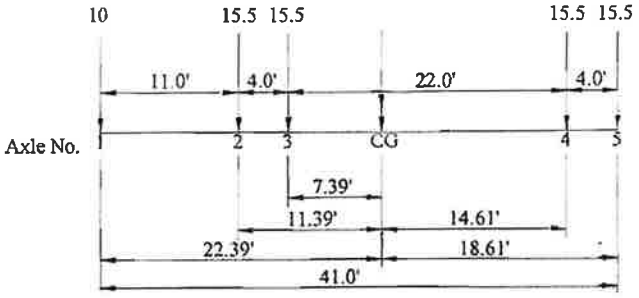
CORNERSTONE STRUCTURAL ENGINEERING GROUP, INC.



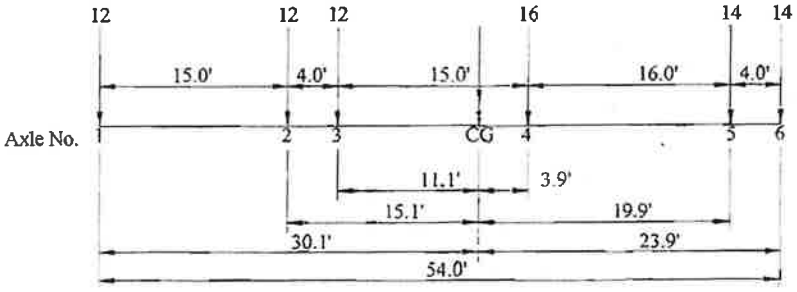
INDICATED CONCENTRATIONS ARE AXLE LOADS IN KIPS

CG=CENTER OF GRAVITY

TYPE 3 UNIT WEIGHT = 50 KIPS (25 TONS)



TYPE 3S2 UNIT WEIGHT = 72 KIPS (36 TONS)



TYPE 3-3 UNIT WEIGHT = 80 KIPS (40 TONS)

Figure 6B.9.2-1—Typical Legal Loads Used for Posting

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Appendix F
Seismic & Strength Evaluation

Mineral King Road Bridge Project
TULARE COUNTY, CALIFORNIA

SEISMIC & STRENGTH EVALAUTION STUDY

Mineral King Road over East Fork of Kaweah River
Bridge No. 46C-0196

Prepared for:
Client
CORNERSTONE STRUCTURAL ENGINEERING GROUP

Prepared by:
PARSONS
2495 Natomas Park Drive, Suite 600
Sacramento, California 95833

Contact: Kuldeep Charan, SE
Tel: (916) 576-2762

April, 2015

EXISTING BRIDGE SEISMIC EVAULATION APPROACH

To identify structural vulnerabilities under the design earthquake, the seismic evaluation of the existing bridge was performed in accordance with the following design and retrofit guidelines;

1) Caltrans Memo to Designers 20-4, *Seismic Retrofit Guidelines for Bridges in California*, dated June 2010
2) Caltrans Seismic Design Criteria (SDC) Version 1.7, dated April 2013
3) Caltrans Bridge Design Aids 14-4, *Joint Shear Modeling Guidelines for Existing Structures*, dated August 2008

In addition, the information from the following documents was reviewed and utilized as applicable during the existing bridge seismic modeling and capacity evaluation;

1) Existing bridge as-built plans dated 1923
2) Bridge Inspection Report dated 05/19/2012
3) Digital Photographs of the existing bridge/site
4) Material Testing report prepared by Kleinfelder Inc. dated 01/2012
5) Concrete Arch Bridge Retrofit Guidelines (Draft), dated October 1995

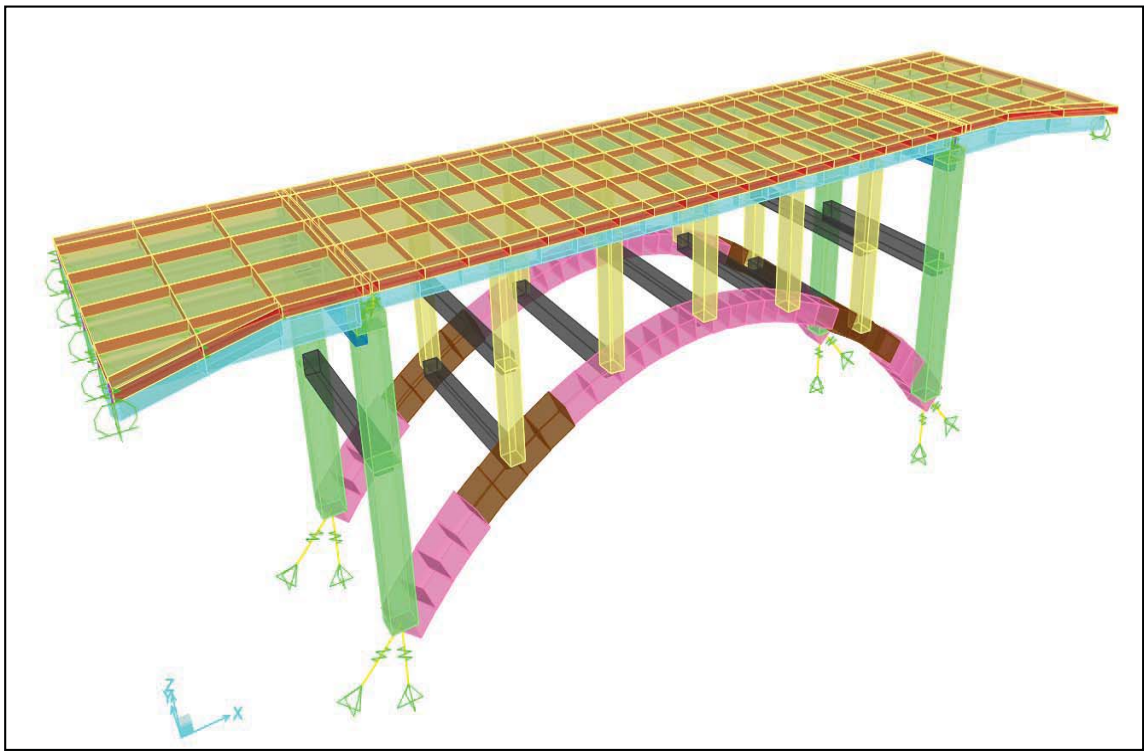


Figure 1: SAP2000 3D-Model Extruded View

The existing Mineral King Road Bridge was evaluated using the above referenced guidelines for a "no-collapse" scenario which allows the bridge to sustain significant damage during an earthquake without causing collapse. This is in conformance with industry standards and design methodology for bridge seismic design in California in order to limit the risk to public safety during a major seismic event.

The seismic analysis for the Mineral King Road Bridge requires a more detailed analysis than a typical bridge structure due to the existing non-standard concrete arch substructure element. The arch rib is the primary load carrying member, designed to transfer the superstructure loads to the foundations in combination with spandrels, rib strut and crossbeams. The structural components of the main and approach spans will be referenced as shown in Figure 2 below to maintain consistency in this report.

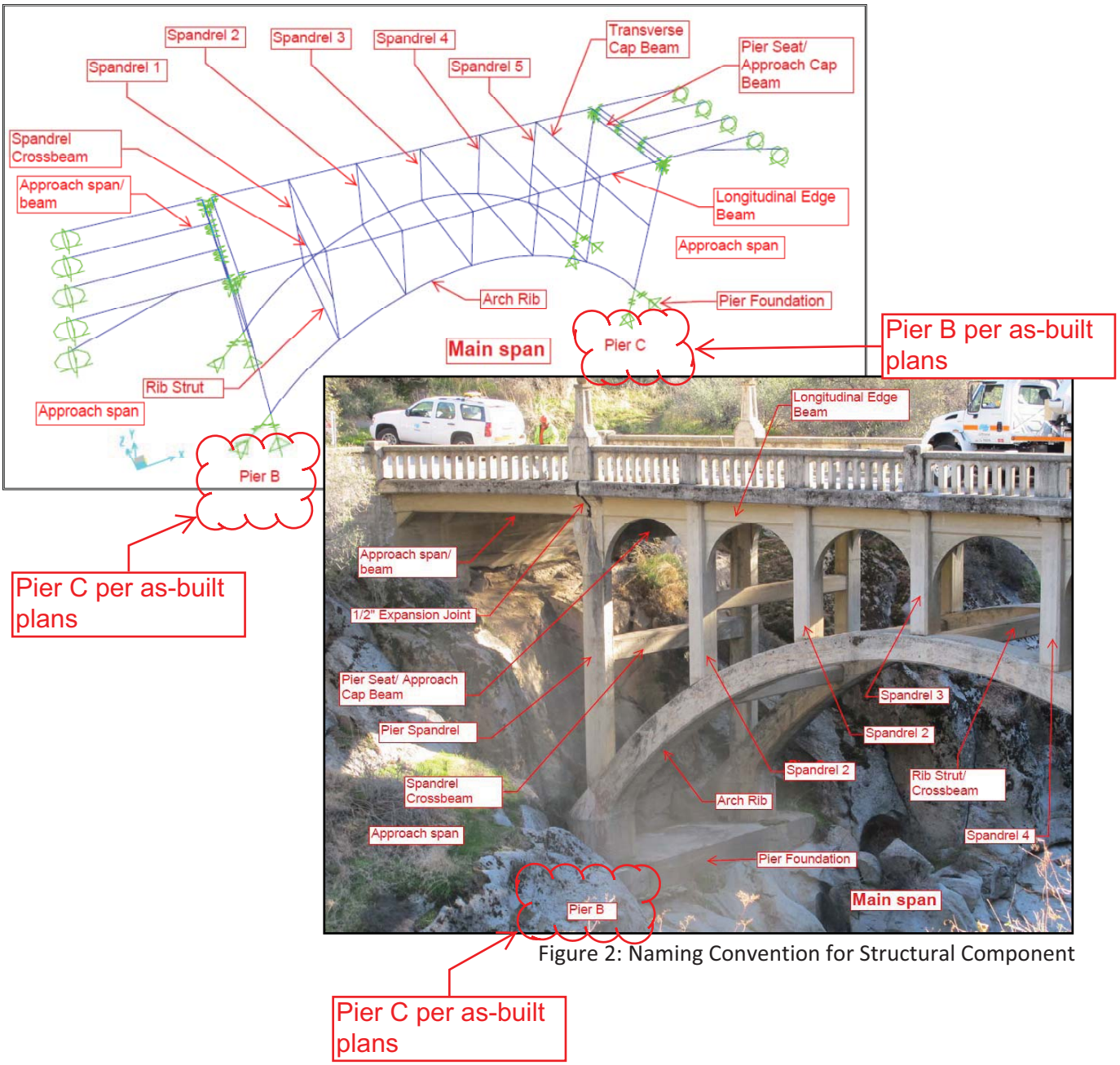


Figure 2: Naming Convention for Structural Component

The following sections describe the modeling approach and assumptions in regards to boundary conditions and member's end connectivity.

Seismic Demand and Capacity Models

Three dimensional finite-element models were created for both demand and the capacity diagnostic analysis using the SAP2000 computer analysis program.

The demand model was created using the dimensions shown on the as-built plans and the existing material properties provided by Kleinfelder, Inc. To account for the flexural cracking of concrete section, the existing member stiffness was reduced to an effective stiffness as it depicted by the associated moment-curvature analysis. A multimodal linear elastic dynamic analysis was performed on the compiled model using a site specific Acceleration Response Spectrum (ARS) curve with a 5% damping ratio. The results from the longitudinal and transverse direction were combined with 100% and 30% directional combination rule.

The capacity model was created using similar approach as for the demand model except the unreduced flexural stiffness was used in the model as SAP2000 automatically adjusts element's degraded stiffness during the non-linear static pushover analysis. In addition, bridge deck over the main span was not modeled in capacity model. The frame members were modeled with the end offsets option available in SAP2000 to simulate the joint rigidity in the model. Strong or weak axis flexural hinge was assigned at the end of each frame member except for the arch rib which includes both major and weak axis flexural hinges to account for biaxial bending demand, Figure 3 shows typical flexural hinge definition for a frame element. A displacement control non-linear static push-over analysis was separately performed in each orthogonal direction. Figure 4 below shows a deformed model in a typical longitudinal pushover stage.

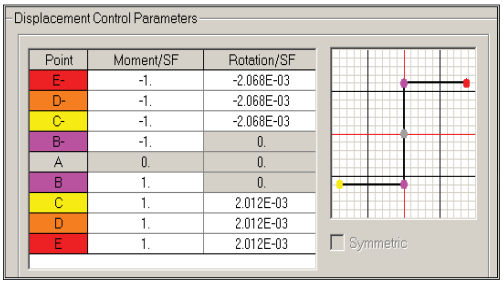


Figure 3: Flexural Hinge input in SAP2000

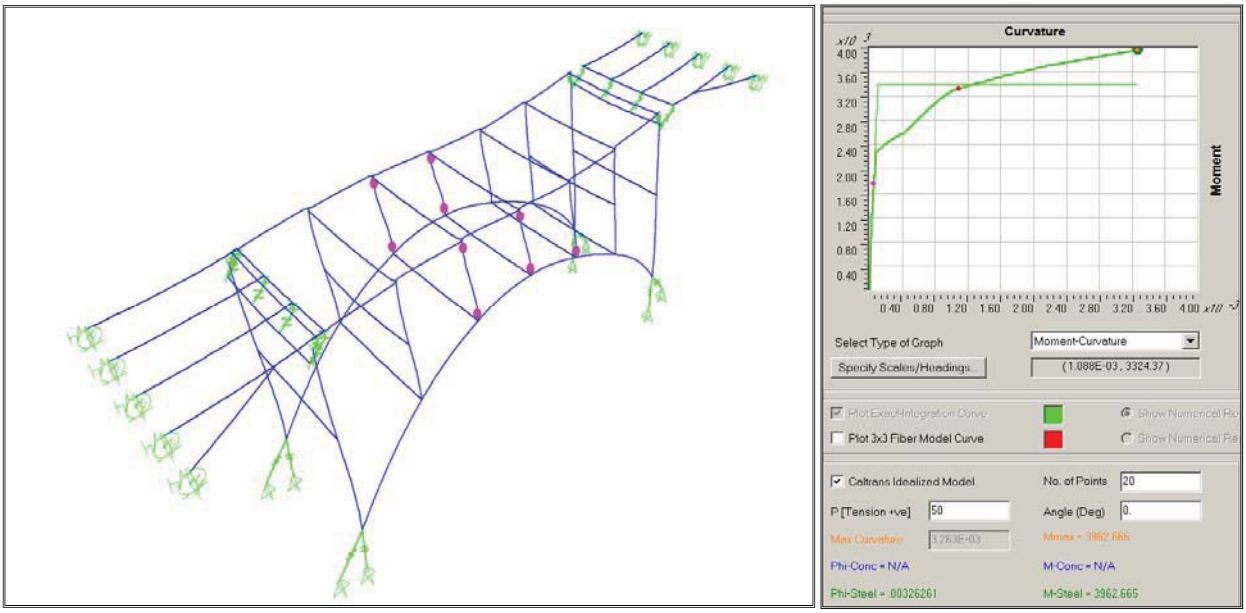


Figure 4: (Left) Spandrel hinge formation shown in a typical longitudinal pushover stage
(Right) Caltrans Idealized model for M-ϕ analysis in SAP2000

The existing spandrel to cap or edge beam joints lacked proper joint shear reinforcement within the joint region. In addition, the existing 8-in wide longitudinal edge beam and 14-in wide cap beam may not be able to provide adequate confinement to comparatively wider spandrels and could possibly degrade to a moment released (pinned) condition under the design seismic event, refer to Figure 5 for as-built joint details. To envelope the rigid and flexible behavior of existing spandrel-beam joint, both demand and capacity models were analyzed for two cases, first with moment resisting joint (fixed rotation) while the other with moment released joint (free rotation/pinned condition). Figure 6a & 6b shows the major axis bending moment in substructure for fixed end and pinned end spandrel cases respectively.

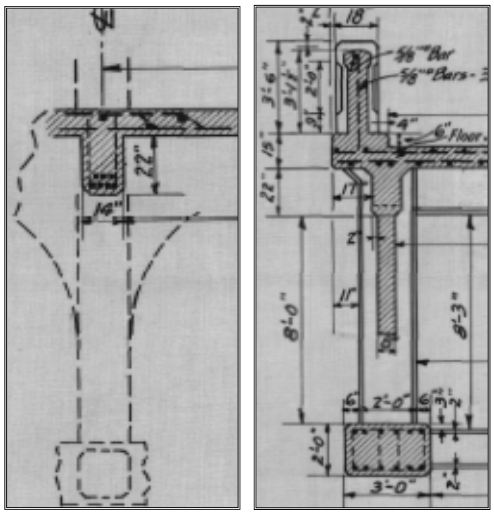


Figure 5: Cap beam & longitudinal edge beam framing into existing spandrel

The existing spandrel to arch and rib strut joint were classified as weak joint and modeling guidelines of Section 14-4 of BDA were followed for calculating the modified effective stiffness and plastic displacement capacity of the existing spandrels.

At completion of all analyses, the displacement demand on the frame members was compared to the member's yield displacement capacity in pushover model at initial hinge formation to identify plastic action in that member under the design earthquake.

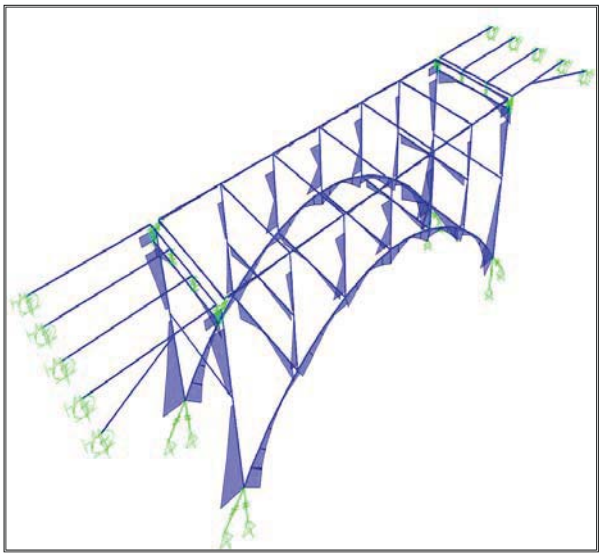


Figure 6a; Major Bending Moment in top fixed end Spandrel model

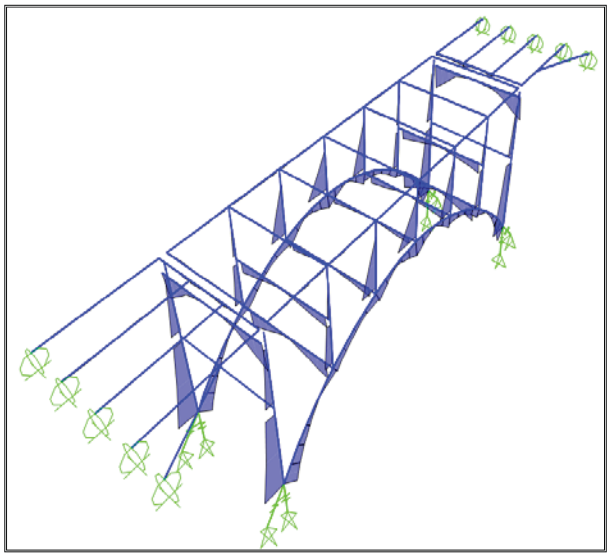


Figure 6b; Major Bending Moment in top pinned end Spandrel model

Materials

The material properties used in the models were based on the testing performed by Kleinfelder Inc. on the material samples taken from the existing structure. The concrete testing on two deck samples was performed following ASTM C42-03 standards. The concrete test results indicate the existing concrete average compressive strength is 6.075ksi. The reinforcing steel bar testing was performed using ASTM A370-14 standards on a 1-in square rebar and the result indicates the existing reinforcing steel has a yield strength of 40.3ksi with a tensile strength of 61.3ksi. The reduced strain limits recommended in *Concrete Arch Bridge Seismic Retrofit Guidelines (Draft)* were also considered in the diagnostic analysis but showed to have minimal effect on the overall results. The seismic assessment in this study is based on the following material models;

Concrete:

$f'c = 6.0$ ksi

$\varepsilon_{sp} = 0.002$

$\varepsilon_u = 0.005$

Reinforcing Steel:

$fy = 40.30$ ksi

$fu = 61.3$ ksi

$\varepsilon_{sh} = 0.015$

$\varepsilon^R_{su} = 0.09$

Boundary Conditions & Pier Foundation Simulation

The existing approach cap beam over each pier spandrel provides 12-inch wide seat support to approach span on either side. This pier seat connection separates the approach spans from the bridge main span thru a 1½" expansion joint. In addition, the existing seat connection detail also does not provide any transverse restraint between the adjacent spans, see Figure 7. Based on the existing seat condition, it was concluded that only tension model is required to assess seismic demand on this structure as the joint may not be able to close in order to engage approach span and the associated abutment. Therefore, a separate analysis for the compression model is not warranted. The displacement demand from the tension model later confirmed this assumption.

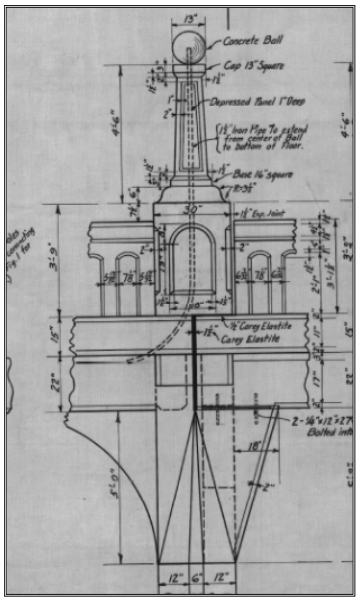


Figure 7: Pier Seat

Although modeling the abutment stiffness in this particular tension model is irrelevant but for completeness, the boundary conditions at the abutments were modeled with vertical restraints and equivalent elastic springs. The elastic springs represents the abutment soil passive resistance in the longitudinal and fictitious 50% of the adjacent pier stiffness in the transverse direction.

The pier footing region was modeled with two rigid links, each represents the continuation of either pier spandrel or arch rib within footing joint region to simulate existing footing joint layout and reinforcing details, see Figure 8 for further details. As the existing footing lacked top reinforcement in both orthogonal directions, a pinned connection joint was used in the model to simulate moment released condition.

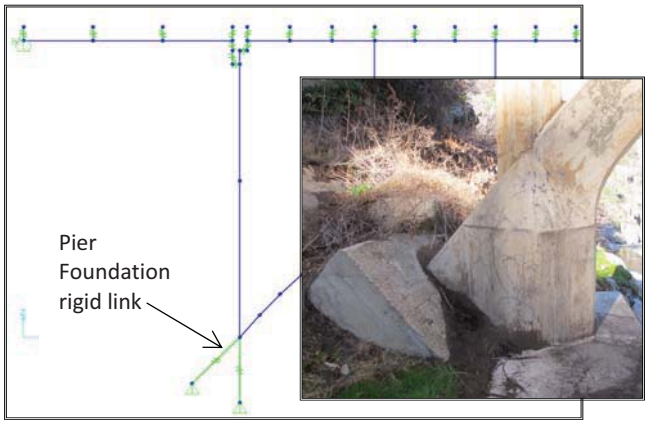


Figure 8: Pier Foundation Rigid Links

Superstructure

The main span superstructure consists of the cast-in-place concrete deck supported on transverse cap beam along the span and longitudinal edge beam along the either edge. The deck was modeled as thick shell element using average slab thickness in the demand model. Both longitudinal edge and transverse cap beam were modeled as rectangular beam in the demand model and were connected to concrete deck using rigid links to ensure composite action. Both beams were modeled as concrete tee-beam in the capacity model as the concrete deck over the main span was not explicitly modeled in the capacity models. In the demand model, the dead load of the barriers was applied to the deck shell element as surface load. The dead load from the aesthetic arch between spandrels was applied as distributed load to the longitudinal edge beam while the ornamental posts dead load was applied as joint load at pier spandrels. In the capacity model, the concrete deck weight was applied to the edge and cap beam based on the tributary width while the barrier load was applied to edge beam. The available development length for the top and bottom cap reinforcement is inadequate to develop its full flexural strength. To account for this deficiency, the flexural capacity of the cap beam was reduced by modeling reduced equivalent area of reinforcing steel.

The bridge approach spans consists of cast-in-place concrete tee-beam superstructure and were modeled using similar approach as the main span for consistency. The flared superstructure at each of the bridge was modeled with equivalent trapezoidal shell element including supporting edge beam to account for the contributing seismic dead load and mass to pier spandrel. The seat support at each pier spandrel was modeled with the rigid link which is only capable of transferring vertical reaction to the supporting pier spandrels.

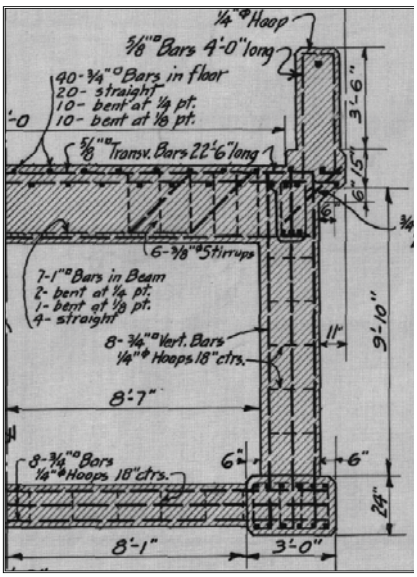


Figure 9: Spandrel Reinforcing Details

Spandrels

As mentioned above, the spandrels were modeled in two separate models, one with moment released (pinned connection) while the other with moment resisting (fixed)

joint connection at the top end. The spandrel bottom end connection with arch rib or rib beam was modeled as fixed end or moment restrained connections. The 18"x24" typical spandrel consists of very nominal transverse confinement reinforcement i.e. #4 ties spaced at either 12" or 18" depending upon the spandrel location, see Figure 9. To account for poor confinement, the spandrel section was modeled with all unconfined concrete in non-linear section analysis. The pier spandrel has an octagonal cross-section with an overall section dimension of 30"x36".

Rib Struts or Crossbeams

The 18"x18" typical transverse rib strut or crossbeam include members that provides lateral stability to arch ribs or tall spandrels. The end connection for all rib struts and crossbeams except pier spandrel crossbeam was modeled as moment resisting joint as the main flexural reinforcement in these members has sufficient embedment to develop its full flexure strength at the joint face. The crossbeams at the pier spandrels were modeled with pinned end connections as the end joints are incapable of sustaining column rotation and the resulting joint shear demand due to existing weak beam-strong column condition.

Arch Rib

The arch section varies from 24"x36" at rise to approximately 39"x36" section at the spring line. The model includes three prismatic frame element sections to account for the varying depth of the Arch Rib and the varying amount of reinforcement in the arch member. The maximum depth section was used at the foundations level i.e. at spring line while the reduced depth sections were used at the rebar cut-off locations "B" and "C" as shown in Figure 10. The average section depth was used to model each representative length of the arch rib in order to simulate the actual section properties and dead weight of the member. The arch rib connection to pier spandrel was modeled as moment resisting joint as the main reinforcement in both rib & pier spandrel has adequate embedment into the pier footing to develop its full flexure capacity. Like spandrel, the arch rib also consists of very nominal transverse confinement reinforcement i.e. 3/8" diameter hoops spaced at 12" so the arch section was modeled with all unconfined concrete in non-linear section analysis to account for poor confinement.

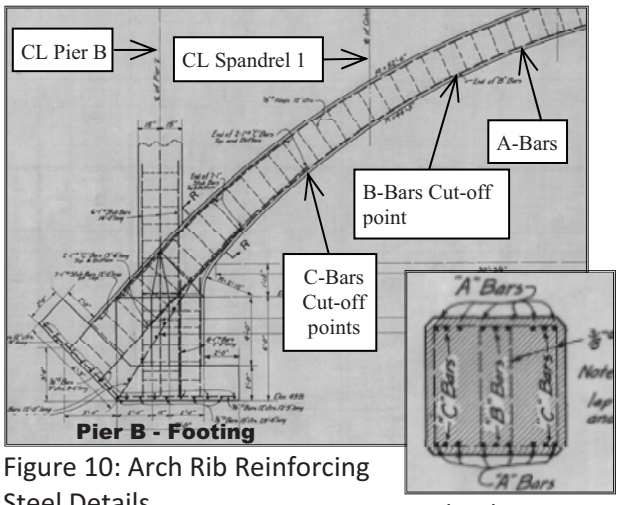


Figure 10: Arch Rib Reinforcing Steel Details

Arch Rib Section

EXISTING BRIDGE SEISMIC ANALYSIS SUMMARY

The seismic demand model results confirm that the transverse mode dominates the seismic response due to the inherent flexibility of existing arch substructure for both fixed and pinned end spandrel cases. The relatively stiff torsional and longitudinal modes followed as second and

third modal responses respectively. The results from the capacity models show the similar hinge formation pattern for both fixed and pinned spandrel cases. The summary of findings is provided below followed by the displacement and force D/C tables for each fixed and pinned spandrel cases. Figure 11 at the end of this section shows the displaced model for the fundamental mode.

- Plastic hinge forms in Spandrels 2, 3 & 4 under the design earthquake event in longitudinal direction for both fixed and pinned spandrel models. All other members including Pier Spandrels, Spandrel 1 & 5, Arch Rib and longitudinal edge beam would remain elastic under the similar event.
- Plastic hinging only occurs in Approach Cap Beam and Rib Strut 1 & 5 while the other members including Pier Spandrels, Spandrel 2 to 4, Arch Rib and Transverse Cap Beam remains elastic under transverse design earthquake.
- All ductile members meet the SDC prescribed displacement ductility demand and local member displacement ductility requirements in both fixed and pinned models.
- Due to short height configuration, Spandrel 3 & 4 does not have sufficient shear capacity to meet plastic shear demand under longitudinal seismic event.
- Although 12-in wide Pier seat does not meet current design standard but based on minimal longitudinal seismic and other service movement demands, the existing seat width would be adequate for this particular bridge.

Spandrels 2, 3, & 4?

Are all hinged members considered ductile?

Fixed End Spandrel Case:

Table 1: Longitudinal Seismic Demand vs. Yield Displacement Capacity

	Step 1	Step 2	Step 3	
Location	Spandrel 3	Spandrel 2, 4	Spandrel 1, 5	Pier Spandrel
Δ_y Element (in)	0.122	0.197	0.515	0.652
Δ_D Element (in)	0.371	0.370	0.367	0.356
Δ_D / Δ_y	3.041	1.878	0.713	0.546

Table 2: Transverse Seismic Demand vs. Yield Displacement Capacity

	Step 1	Step 2	Step 3	
Location	Approach Cap Beam	Rib Strut 1, 5	Pier Spandrel (Top)	Spandrel 1, 5 Crossbeam
Δ_y Element (in)	0.421	1.477	1.766	2.008
Δ_D Element (in)	1.504	1.178	1.410	1.441
Δ_D / Δ_y	3.572	0.798	0.798	0.718

Table 3: Spandrel Displacement Ductility Checks

	Longitudinal			Transverse		
Member	Δ_D / Δ_C	μ_D	μ_C	Δ_D / Δ_C	μ_D	μ_C
Pier Spandrel	0.087	0.55	6.2	Remains Elastic		
Spandrel 1, 5	0.129	0.74	4.0			
Spandrel 2, 4	0.231	2.10	3.4			
Spandrel 3	0.364	3.47	3.4			

Table 4: Spandrel Shear Demand vs. Capacity

Member	$V_0 / \varphi V_n$
Pier Spandrel	0.62
Spandrel 1, 5	0.42
Spandrel 2, 4	1.04
Spandrel 3	7.55

Pinned End Spandrel Case:

Table 5: Longitudinal Seismic Demand vs. Yield Displacement Capacity

	Step 1	Step 2	Step 3	
Location	Spandrel 3	Spandrel 2, 4	Spandrel 1, 5	Pier Spandrel
Δ_y Element (in)	0.169	0.256	0.589	0.808
Δ_D Element (in)	0.490	0.490	0.490	0.488
Δ_D / Δ_y	2.897	1.913	0.831	0.604

Table 6: Transverse Seismic Demand vs. Yield Displacement Capacity

	Step 1	Step 2	
Location	Rib Strut 1, 5	Rib Strut 2, 4	Rib Strut 3
Δ_y Element (in)	1.108	1.343	1.537
Δ_D Element (in)	1.191	1.440	1.467
Δ_D / Δ_y	1.075	1.072	0.955

Table 7: Spandrel Displacement Ductility (Pinned Spandrel)

	Longitudinal			Transverse		
Member	Δ_D / Δ_C	μ_D	μ_C	Δ_D / Δ_C	μ_D	μ_C
Pier Spandrel	0.132	0.60	4.9	Remains Elastic		
Spandrel 1, 5	0.198	0.82	3.4			
Spandrel 2, 4	0.323	1.90	3.1			
Spandrel 3	0.491	2.95	3.2			

Table 8: Spandrel Shear Demand vs. Capacity

Member	$V_0 / \varphi V_n$
Pier Spandrel	0.31
Spandrel 1, 5	0.21
Spandrel 2, 4	0.45
Spandrel 3	1.24

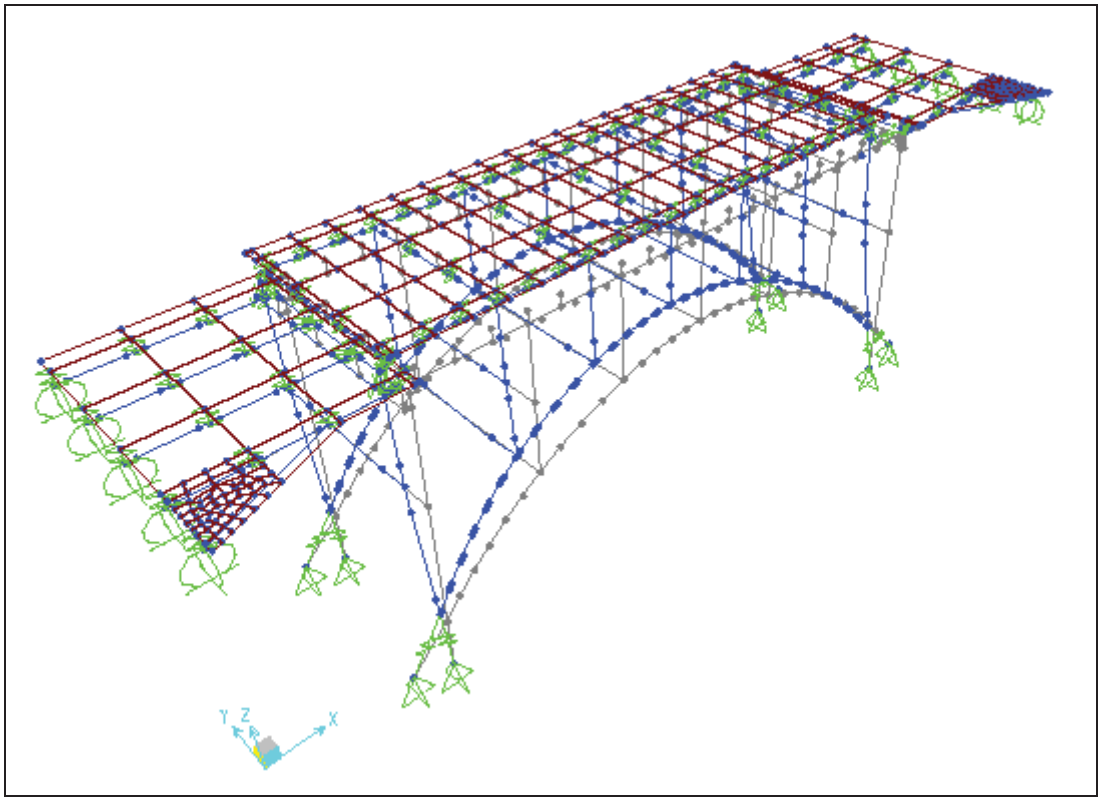


Figure 11: Mode 1 - Transverse Mode (Fixed T = 1.72 sec., Pinned T = 1.78 sec.)

EXISTING BRIDGE STRENGTH EVALUATION

The existing bridge evaluation for the Strength limit state is performed in accordance with *AASHTO LRFD Bridge Design Specifications*, 6th Edition, including Caltrans Amendments (dated November 2011). Additional Caltrans references include but are not limited to Bridge Design Aids and Memos to Designers.

A SAP2000 3D-model for vertical load analysis similar to the seismic demand model was created except the model includes gross section properties for all members. Only fixed spandrel case was considered for this evaluation. The vehicular live load is applied as a moving load over the deck shell element in two 9'-6" wide lanes along the entire bridge length. HL-93 loading per AASHTO LRFD guidelines was used as the design vehicle.

The force demands from the dead load and live load analyses were combined using AASHTO LRFD Strength-1 limit state combination. The existing arch rib and spandrels section capacities were evaluated in WinRECOL section analysis software using the member dimensions and reinforcement pattern shown on as-built plans. The section capacities were based on nominal material properties and applicable capacity reduction factors. The spandrels capacities were evaluated at the critical section while the arch rib was evaluated at three critical sections depending upon the bar cut-off location and the associated section depth.

Based on the analysis results, it was concluded that the arch rib and pier spandrels have the adequate capacity to meet Strength-1 load demand while the intermediate spandrels do not have sufficient capacity to resist Strength-1 loading. Consideration should be given to the vehicle type used in this analysis as the bridge remote location and the approach roadway may restrict access to certain type of vehicles. Alternatively, a load rating analysis using Load Factor Rating (LFR) or Load Resistance Factor Rating (LRFR) methodology as outlined in AASHTO guidelines "The Manual for Bridge Evaluation" (MBE) may be performed to identify existing bridge rating, Table 8 below summarized the D/C ratios for the arch rib and spandrels at the controlling location.

Table 4: Strength-1 D/C Ratios

Member	Minimum Str-I Ratio, M_r/M_u
Arch Bot	2.92
Arch Mid	2.21
Arch Top	2.66
Pier Spandrel	1.51
Spandrel 3	0.55
Spandrel 2, 4	0.62
Spandrel 1, 5	0.81

Appendix G
Roadway Design Memorandum

MARK THOMAS & COMPANY, INC.
Providing Engineering, Surveying and Planning Services

Memorandum

To: Mr. Shawn Cullers, SE File: FN-14112

From: Kevin Smith, PE

Date: May 1st, 2015

RE: M375A Mineral King Bridge Project – Roadway Design Memorandum

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Introduction

Tulare County Resource Management Agency has proposed to replace or retrofit the existing Mineral King Bridge (Bridge No. 46C-0196) through the use of Highway Bridge Program funding. As part of the preliminary engineering for the project, multiple bridge locations and roadway alignments are to be considered. The following memorandum describes the bridge replacement and retrofitting alternatives considered for this project. A short discussion on the project background and the roadway design criteria is also provided. The memorandum concludes by listing estimated roadway construction costs for each alternative considered feasible.

Project Background and Roadway Design Criteria

The existing Mineral King Bridge is located in rural Tulare County east of the community of Three Rivers along Mineral King Road. The existing structure, constructed in 1923, is a reinforced concrete open spandrel arch bridge with a total travel way width (clear width) of 19 feet. The existing Mineral King Road is a rural, mountainous roadway with varying roadway paved width. The existing roadway provides the only ingress and egress to the residences, ranger station, and camping sites within the Mineral King Valley. Because of this, it will be necessary to maintain vehicular access at all times through the project site. The natural terrain in the project area has dense, established vegetation on steep slopes which are greater than 1H:1V in many locations. The existing roadway has 60 feet of right of way, however there is an existing Southern California Edison (SCE) flume located along the southern edge of the project that lies within the roadway right of way.

Based on traffic studies conducted by the county of Tulare, it was shown that the traffic volumes present on Mineral King Roadway are less than 200 vehicles per day with a maximum 20-year projected traffic index of 5.5. Because of the low traffic volumes, AASHTO's *Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤ 400)* was utilized in addition to AASHTO's *A Policy on Geometric Design of Highways and Streets (6th edition)* for geometric design.

Truck turning analysis was performed for each alternative to verify that larger vehicles could physically maneuver the proposed geometrics. Based on truck turning analysis (and verified by a route survey performed by Reeve Trucking) the largest standard design vehicle that could navigate the existing roadway up to the structure is a WB-50 tractor/trailer truck (AASHTO's *A Policy on Geometric Design of*

7571 North Remington Ave., Suite 102 Fresno, CA 93711
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Highways and Streets (5th edition). Based on conversations and information received from the California Department of Forestry and Fire Protection (Cal Fire), Cornerstone Engineering concluded that the WB-50 truck could be utilized as an equivalent design vehicle for a Cal Fire standard bulldozer transport.

A summary of the various geometric design constraints and variables are summarized in Table 1.

Figure 1 - Roadway Design Criteria Matrix

	Design Speed				
Component	5 mph	10 mph	15 mph	20 mph	25 mph
Horizontal Curves (Radius)*	12 feet	50 feet	100 feet	180 feet	290 feet
Crest Vertical Curves (K Value – L/%)	-	-	3	7	12
Sag Vertical Curves (K Value – L/%)	-	-	10	17	26
Roadway Width	18 feet minimum				
Pavement Section**	3”AC / 7”AB or match existing section				

* No superelevation assumed for roadway design (e=-2%)

** R value of 30 assumed for determination of preliminary pavement section. If desired, the existing pavement section may be matched in lieu of the traditional section shown.

Alternatives Considered

Alternative 1–Rehabilitation of Existing Bridge (with Temporary Structure)

Alternative 1 consists of rehabilitating the existing Mineral King Bridge and constructing a temporary structure approximately 22 feet downstream of the existing structure to maintain vehicular access during construction. The existing structure would be rehabilitated by repairing damaged structural elements and reconstructing the bridge deck. The temporary structure would be approximately 140 feet in length and would have a clear width of 24 feet which was controlled by truck turning and the availability of sizes of temporary structures. A retaining wall will be required at the approach to the structure to make up the 3’ grade difference between the end of structure and existing roadway.

Two of the limitations of the temporary structure are that it must be in tangent and on grade. Because of these design constraints, the horizontal curves at the ends of the temporary structure are designed for a design speed of 5 mph. Advance signing will be provided during construction to alert traffic to slow speed.

Due to limited roadway width constrained by the flume on the uphill side of the roadway and a steep drop off on the downhill side of the roadway, the largest design vehicle that can be accommodated with the temporary structure is a 40’ school bus (S-BUS-40). The 40’ school bus is smaller than the desired permanent design vehicle (WB-50) and would require additional coordination with stakeholders to consider the use of this vehicle during construction. Potential stakeholders include CalFire, Bureau of Land Management, Southern California Edison, Tulare County, and the U.S. Forest Service.

Based on the small impact to the project area, this alternative was deemed feasible and is shown in the 30% Roadway Geometric Approval Drawing shown in Appendix A of this report.

Alternative 2A / 2B – Replacement with New Bridge on New Alignment Immediately Upstream of Existing Bridge

Alternative 2 consists of a new permanent structure located 10 feet upstream of the existing structure. The alignment associated with this new structure would require the removal of the concrete barriers that currently extend out of the existing structure. The proposed structure would be 120 feet in total length, and would have 10 mph curves at the ends of the structure. The clear width of the permanent structure was set to equal the clear width of the existing structure of 19'. The existing structure may be demolished after construction of the new structure, depending on the outcome of State Historic Preservation Office (SHPO) review. Permanent retaining walls would need to be constructed at both ends of the structure. On the southern side of the structure the retaining wall would encroach into an easement controlled by SCE, but would not impact the flume. In lieu of constructing some of the retaining walls, cutting through the granite rock to make natural retaining walls may provide the required stability. Pending the outcome of the geotechnical studies being performed in the Final Design phase, areas may be identified where retaining walls (and costs) can be significantly reduced.

Based on the small impact to the project area and the ability of the existing structure to remain operational to traffic during construction, this alternative was deemed feasible and is shown in the 30% Roadway Geometric Approval Drawing shown in Appendix A of this report.

Alternative 3 – Hybrid Rehabilitation / Retrofit & Replacement of Existing Bridge

Alternative 3 consists of replacing the existing bridge deck with a new box girder deck. Because the roadway improvement associated with this alternative are identical to the improvements described in Alternative 1 above, this alternative was deeded feasible.

Alternative 4A / 4B – Replacement with new Bridge on New Alignment Downstream of Existing Bridge

Alternative 4 consists of building a new permanent structure approximately 400 feet downstream of the existing structure. The proposed structure would be 160 feet in length and would have 10 mph horizontal curves at the ends of the structure. A retaining wall would be required near the existing SCE flume to accommodate the design truck turning vehicle. The proposed structure would connect with Mineral King Road near an existing private driveway.

This alternative has been considered but rejected because construction would prohibit vehicular access to the existing crossing. The proximity of the SCE flume does not allow enough room to construct a roadway around the construction site to connect to the existing structure. An exhibit showing this alternative is presented in Appendix B of this report.

Alternative 5 – Replacement with new Bridge located along New East Alignment

Alternative 5 consists of a new 100 foot permanent structure located 650 feet upstream of the existing structure, which would require 800 feet of roadway on the southern edge of the project limits. The new structure would be located near an existing smaller structure, which is owned by private owners along an existing access road. The existing access road is too narrow to support two-way traffic and would need to be widened until it's reconnected with Mineral King Road.

This alternative would require a significant earthwork, retaining walls, and right of way acquisition. Based on these reasons, this alternative has been considered but rejected. An exhibit showing this alternative is presented in Appendix B of this report.

Alternative 6 – Replacement with new Bridge located along West Alignment

Alternative 6 consists of a new 240 foot permanent structure located 1,250 feet downstream of the existing structure which would require 800 feet of roadway along the northern edge of the project limits. Due to the steep grades of the mountain side on the north, a retaining wall along the northern side of the roadway would be required.. The 800 feet of new roadway with this Alternative would require a significant amount of right of way acquisition. This alignment would result in approximately 9,000 cubic yards of cut and would have a fairly significant impact on the existing terrain.

Due to the excessive impacts associated with this alternative, this alternative has been considered but rejected. An exhibit showing this alternative is presented in Appendix B of this report.

Alternative 7 – Do Nothing

Alternative 7 is the no action alternative for the project. This alternative is considered but rejected due to the current structural deficiencies of the existing structure.

Cost Estimates of Feasible Alternatives

As stated in the alternative section above, Alternatives 1, 2, and 3 were the only alternatives considered feasible for this project. The cost estimate (roadway) for each of the feasible options is provided below in Figure 2.

Figure 2 - ROADWAY COST ESTIMATE

Pay Item[1]	**Units**	**Unit Cost** [2]	**Alternative 1 / Alternative 3** *Rehabilitation of Existing Structure (with Temporary Structure)*		**Alternatives 2A / 2B** *Replacement Upstream Structure*	
			Quantity	Cost	Quantity	Cost
Clearing and Grubbing	AC	$3600	0.6	$2,160	0.6	$2,160
Roadway Excavation	CY	$20	30	$600	300	$6,000
Rock Excavation[3]	CY	$360	0	$0	70	$25,200
Asphalt Concrete	TON	$110	30	$3,300	65	$7,150
Aggregate Base	CY	$42	30	$1,260	70	$2,940
Traffic Control	LS	-	1	$1,500	1	$2,000
Signage	EA	$250	3	$750	3	$750
Remove Concrete Railing	LS	-	0	$0	1	$1,000
Retaining Wall	SF	$130	30	$3,900	1,435	$186,550
Minor items (20%)	LS	-	$2,700		$46,750	
Construction Subtotal:			$16,170		$280,500	
Contingency (30%):			$4,850		$84,150	
Mobilization (10%):			$1,620		$28,050	
Total Roadway Cost:			**$22,640**		**$392,700**	

(1) Structure Pay Items not included in Roadway Memorandum
(2) Due to the remote location of the site and constrained trucking requirements up to the site, unit costs have been increased by 20% from typical values.
(3) Rock excavation assumed at 20% of total Excavation quantity.

Appendix A – Feasible Alternatives Considered (30% Roadway Geometric Approval Drawings)

TULARE COUNTY - MINERAL KING BRIDGE
ROADWAY 30% GEOMETRIC APPROVAL DRAWING
ALTERNATIVES 1 & 3: RETROFIT / REHABILITATION OF EXISTING BRIDGE

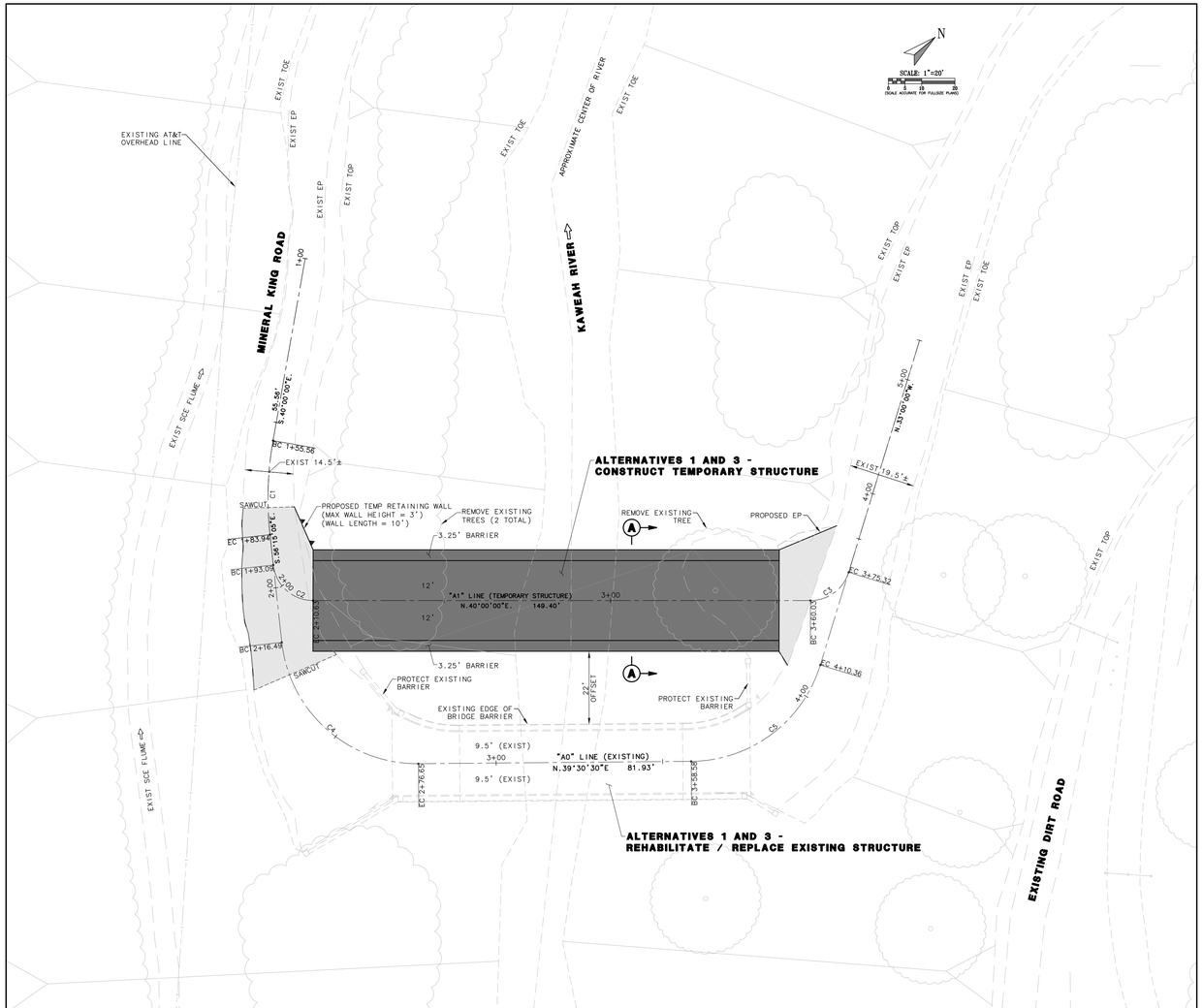
30% SUBMITTAL | DRAFT

MARK THOMAS & COMPANY, INC.
Providing Engineering, Surveying and Planning Services
7571 N Remington Ave, Suite 102
Fresno, California 93711

REVISIONS

NO	DESCRIPTION	DATE

COUNTY OF TULARE
RESOURCE MANAGEMENT AGENCY
5961 SOUTH MOONEY BLVD.
559/624-7000
www.TulareCountyRMA.com



MINERAL KING BRIDGE PLAN VIEW
SCALE 1"=20'

LEGEND

- REPLACEMENT OR TEMPORARY ROADWAY PAVEMENT
- PROPOSED STRUCTURE
- SAWCUT
- PROPOSED RETAINING WALL

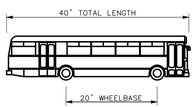
ALTERNATIVE DESCRIPTIONS

- ALTERNATIVE 1 – RETROFIT / REHABILITATION OF EXISTING BRIDGE (WITH TEMPORARY STRUCTURE)
- ALTERNATIVE 3 – HYBRID REHABILITATION / RETROFIT & REPLACEMENT OF EXISTING BRIDGE (WITH TEMPORARY STRUCTURE)

CURVE TABLE

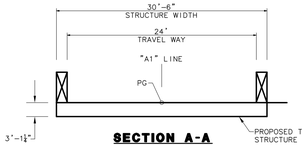
CURVE	ALIGNMENT	RADIUS	Δ	LENGTH	TANGENT	DESIGN SPEED
C1	"A0" & "A1" LINE	100.00'	16°15'34"	28.38'	14.29'	10 MPH
C2	"A1" LINE	12.00'	83°44'26	17.54'	10.76'	5 MPH
C3	"A1" LINE	12.00'	73°00'00"	15.29'	8.88'	5 MPH
C4	"A0" LINE	40.92'	83°13'56"	60.16'	36.99'	4 MPH
C5	"A0" LINE	40.92'	73°30'30"	51.78'	30.01'	4 MPH

TRUCK TURNING TEMPLATE

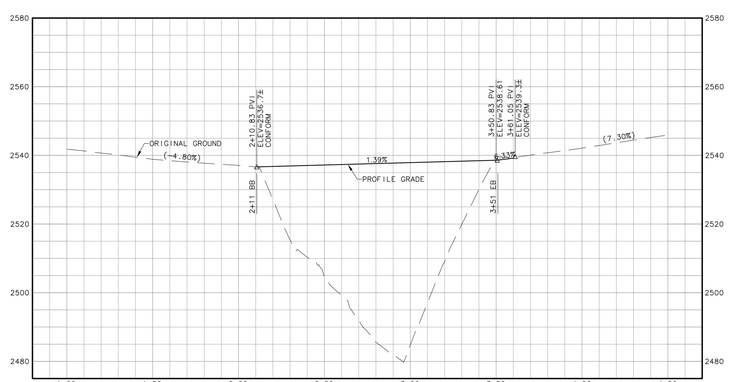


NTS

S-BUS-40 SCHOOL BUS
VEHICLE WIDTH = 8'
MINIMUM TURNING RADIUS = 39.1'
ASSUMED STEERING ANGLE = 34.4°
SOURCE: AASHTO A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS (2011)



SECTION A-A



"A1" LINE PROFILE (TEMPORARY STRUCTURE)
SCALE H:1"=40'
V:1"=20'

M375A MINERAL KING BRIDGE OVER THE EAST FORK OF THE KAWEAH RIVER
TULARE COUNTY

SCALE	VAR
DIVISION	DIVISION
JOB NO.	14001
DESIGNED	KPS
DRAWN	JAE
CHECKED	DAH
FILE	14001-SU01.DWG
DATE	05/01/2015
SHEET No.	1

TULARE COUNTY - MINERAL KING BRIDGE
ROADWAY 30% GEOMETRIC APPROVAL DRAWING
ALTERNATIVES 2A & 2B: REPLACEMENT OF EXISTING BRIDGE

30% SUBMITTAL | DRAFT

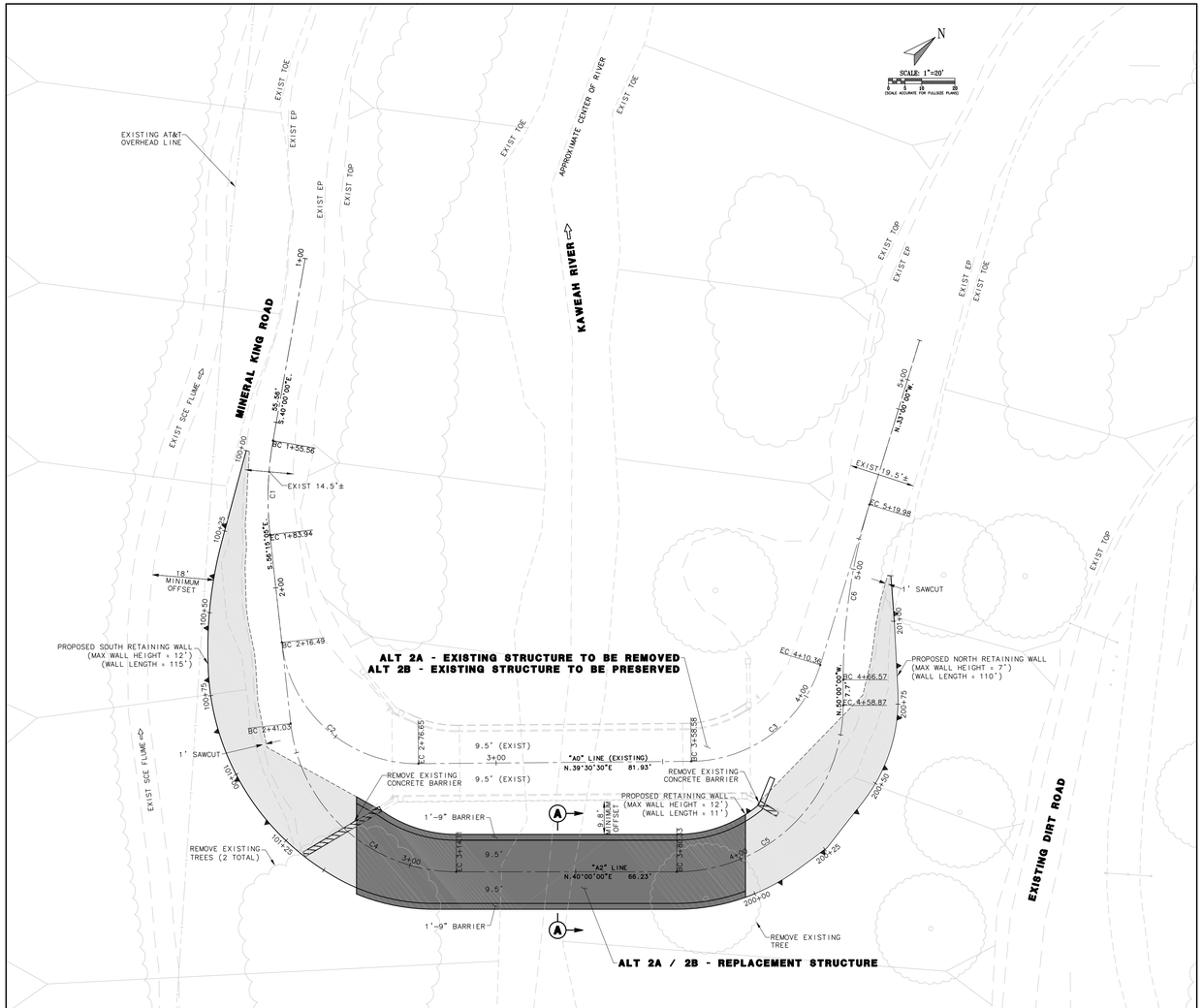
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Fresno, California 93711

REVISIONS

NO	DESCRIPTION	DATE

COUNTY OF TULARE
RESOURCE MANAGEMENT AGENCY
5961 SOUTH MOONEY BLVD.
VISALIA, CA 93277
559/624-7000
www.TCAGOVERNMENT.COM/RMA

M375A MINERAL KING BRIDGE OVER THE EAST FORK OF THE KAWEAH RIVER
TULARE COUNTY



MINERAL KING BRIDGE PLAN VIEW
SCALE 1"=20'

LEGEND

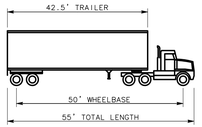
- REPLACEMENT OR NEW ROADWAY PAVEMENT
- PROPOSED STRUCTURE
- APPROXIMATE CUT REQUIRING RETAINING WALL
- PROPOSED RETAINING WALL
- SAWCUT

ALTERNATIVE DESCRIPTIONS

- ALTERNATIVE 2A – REPLACEMENT WITH NEW REINFORCED CONCRETE ARCH BRIDGE ON NEW ALIGNMENT IMMEDIATELY UPSTREAM OF EXISTING BRIDGE (REMOVE EXISTING BRIDGE)
- ALTERNATIVE 2B – REPLACEMENT WITH NEW CAST-IN-PLACE POST TENSIONED BOX GIRDER ON NEW ALIGNMENT IMMEDIATELY UPSTREAM OF EXISTING BRIDGE (PRESERVE EXISTING BRIDGE)

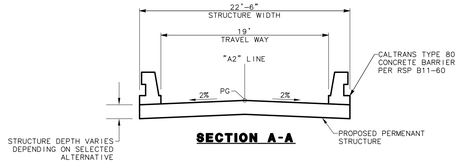
CURVE TABLE						
CURVE	ALIGNMENT	RADIUS	Δ	LENGTH	TANGENT	DESIGN SPEED
C1	"A0" & "A2" LINE	100.00'	16°15'34"	28.38'	14.29'	10 MPH
C2	"A0" LINE	40.92'	83°13'56"	60.16'	36.99'	4 MPH
C3	"A0" LINE	40.92'	73°30'30"	51.78'	30.01'	4 MPH
C4	"A2" LINE	50.00'	83°44'26"	73.08'	44.82'	5 MPH
C5	"A2" LINE	50.00'	90°00'00"	78.54'	50.00'	5 MPH
C6	"A2" LINE	180.00'	17°00'00"	53.41'	26.90'	20 MPH

TRUCK TURNING TEMPLATE

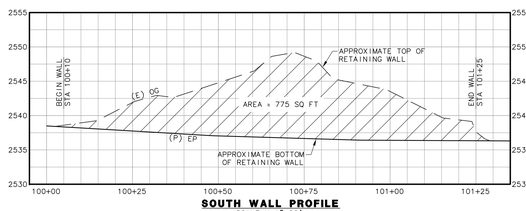


NTS

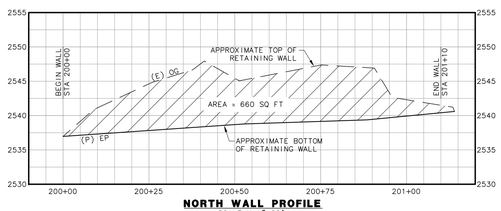
WB-50 TRACTOR/TRAILER TRUCK
VEHICLE WIDTH = 8.5'
MINIMUM TURNING RADIUS = 45'
ASSUMED STEERING ANGLE = 17.9°
ASSUMED TRACTOR/TRAILER ANGLE = 56°
SOURCE: AASHTO A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS (2004)



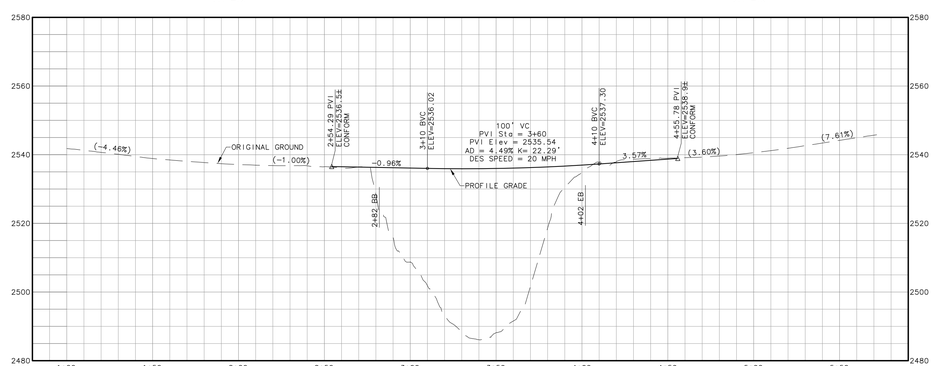
SECTION A-A



SOUTH WALL PROFILE
SCALE H:1"=20'
V:1"=10'



NORTH WALL PROFILE
SCALE H:1"=20'
V:1"=10'



"A2" LINE PROFILE (PERMANENT STRUCTURE)
SCALE H:1"=40'
V:1"=20'

SCALE	VAR
DIVISION	DIVISION
JOB NO.	14001
DESIGNED	APS
DRAWN	JML
CHECKED	DAH
FILE	14001-SU02.DWG
DATE	05/01/2015
SHEET No.	2 of 2

Appendix B – Considered but Rejected Alternatives

CURVE TABLE				
CURVE	BC	EC	RADIUS	DESIGN SPEED
C1	1+24.07	1+43.03	180.00'	20 MPH
C2	1+59.24	2+37.27	50.00'	10 MPH
C3	3+80.78	4+18.83	50.00'	10 MPH

LEGEND

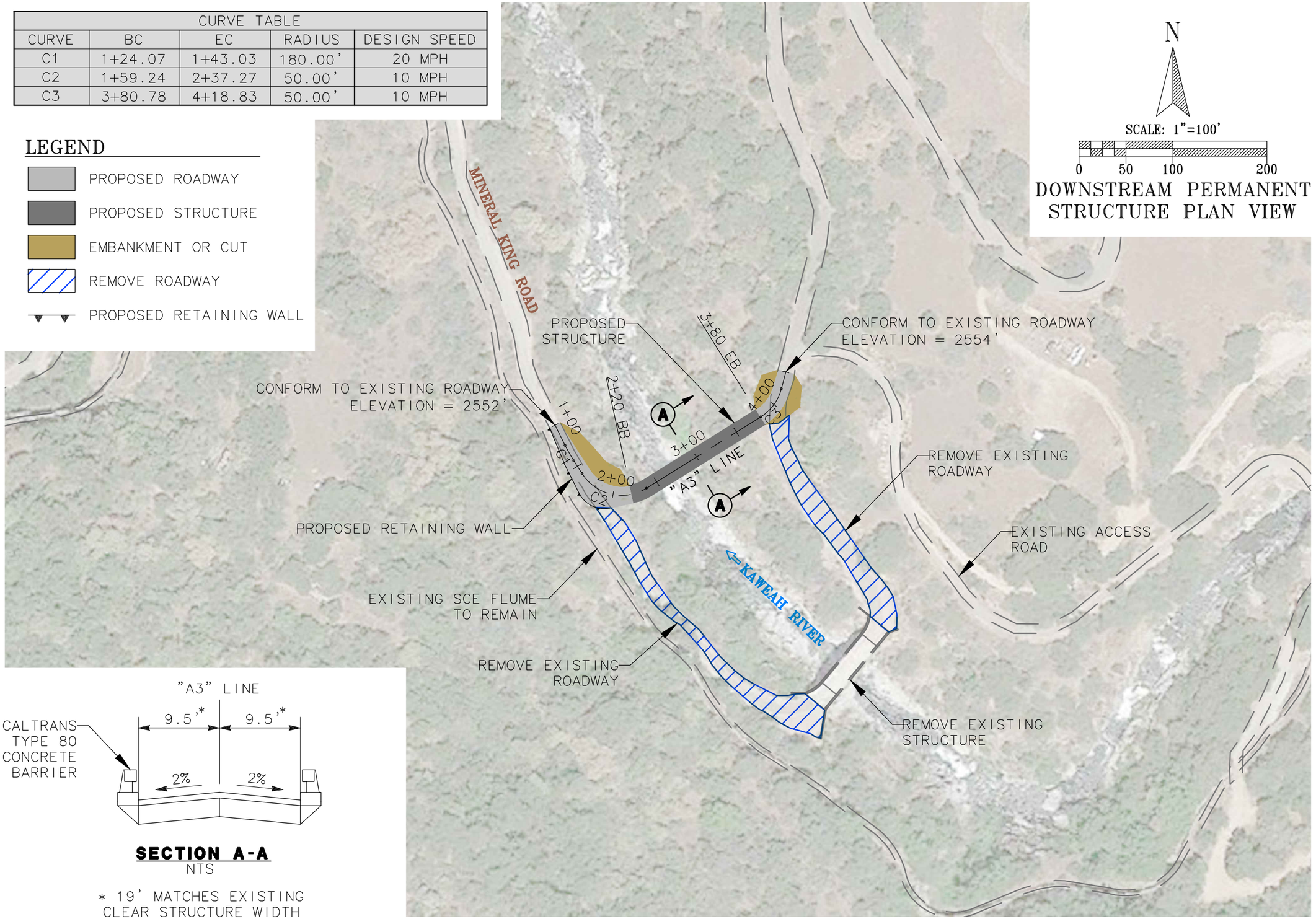
- PROPOSED ROADWAY
- PROPOSED STRUCTURE
- EMBANKMENT OR CUT
- REMOVE ROADWAY
- PROPOSED RETAINING WALL

N

SCALE: 1"=100'

0 50 100 200

DOWNSTREAM PERMANENT STRUCTURE PLAN VIEW



SECTION A-A
NTS

* 19' MATCHES EXISTING CLEAR STRUCTURE WIDTH

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DOWNSTREAM ALTERNATIVE

M375A MINERAL KING BRIDGE OVER THE EAST FORK OF THE KAWEAH RIVER
TULARE COUNTY

SHEET No.
B-1

CURVE TABLE				
CURVE	BC	EC	RADIUS	DESIGN SPEED
C1	1+86.24	2+27.08	180.00'	20 MPH
C2	4+19.00	5+67.37	180.00'	20 MPH
C3	6+43.48	7+34.24	100.00'	15 MPH
C4	7+79.32	8+05.50	100.00'	15 MPH
C5	8+49.34	8+90.65	100.00'	15 MPH
C6	9+85.96	10+37.22	50.00'	10 MPH
C7	10+87.28	11+66.83	50.00'	10 MPH

LEGEND

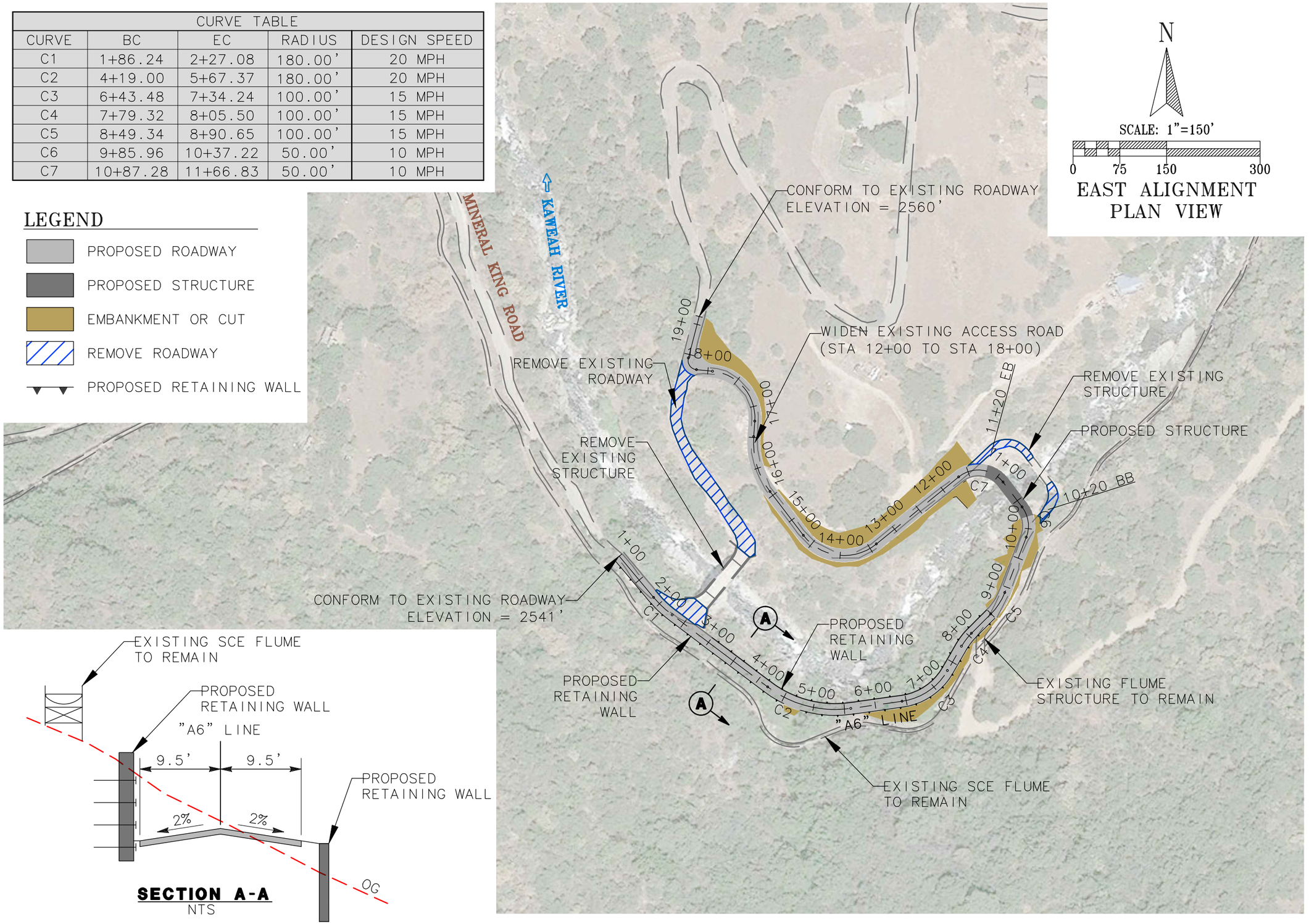
- PROPOSED ROADWAY
- PROPOSED STRUCTURE
- EMBANKMENT OR CUT
- REMOVE ROADWAY
- PROPOSED RETAINING WALL

N

SCALE: 1"=150'

0 75 150 300

EAST ALIGNMENT PLAN VIEW



SECTION A-A
NTS

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EAST ALIGNMENT

M375A MINERAL KING BRIDGE OVER THE EAST FORK OF THE KAWEAH RIVER
TULARE COUNTY

SHEET No.
B-2

CURVE TABLE				
CURVE	BC	EC	RADIUS	DESIGN SPEED
C1	1+91.14	2+61.61	100.00'	15 MPH
C2	2+61.61	3+75.94	100.00'	15 MPH
C3	5+50.94	6+38.79	50.00'	10 MPH
C4	7+50.79	8+53.94	180.00'	20 MPH
C5	12+74.46	14+22.28	180.00'	20 MPH

LEGEND

- PROPOSED ROADWAY
- PROPOSED STRUCTURE
- EMBANKMENT OR CUT
- REMOVE ROADWAY
- PROPOSED RETAINING WALL

N

SCALE: 1"=150'

0 75 150 300

WEST ALIGNMENT PLAN VIEW

PROPOSED RETAINING WALL ALONG NORTH SIDE

5+60 EB

PROPOSED STRUCTURE

3+20 BB

1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00

C1 C2 C3 C4 C5

"A5" LINE

A A

CONFORM TO EXISTING ROADWAY ELEVATION = 2607'

REMOVE EXISTING ROADWAY

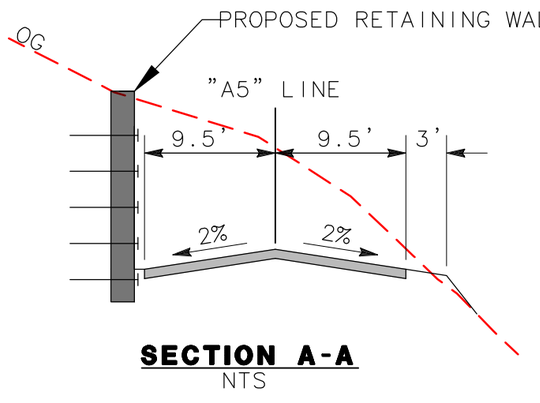
CONFORM TO EXISTING ROADWAY ELEVATION = 2536'

MINERAL KING ROAD

⇦ KAWEAH RIVER

REMOVE EXISTING ROADWAY

REMOVE EXISTING STRUCTURE



SECTION A-A
NTS

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WEST ALTERNATIVE

M375A MINERAL KING BRIDGE OVER THE EAST FORK OF THE KAWEAH RIVER
TULARE COUNTY

SHEET No.
B-3

Appendix H
Preliminary Foundation Report

File: 20154157.001A
Date: May 1, 2015

Mr. Shawn M. Cullers
Cornerstone Structural Engineering Group
986 West Alluvial Avenue, Suite 201
Fresno, California 93711

Subject: Geotechnical Design Memorandum
Mineral King Bridge
Kaweah River
Bridge No. 46C-0196

Dear Mr. Cullers

This letter provides Kleinfelder's preliminary information on the site geologic and foundation conditions and recommendations to aid in developing rehabilitation and retrofit strategy for the Mineral King Bridge over the Kaweah River. The scope of services was completed in accordance with Kleinfelder's scope of work, presented in the "Scope of Work – Basic Services" by Cornerstone dated April 25, 2014.

Kleinfelder's present evaluation is based on the following:

- A site reconnaissance by a geotechnical engineer;
- The Memorandum to GPA Consulting, Inc. prepared by Cornerstone Structural Engineering Group dated March 6, 2015;
- Visual Comparison of the site granitic rock to that exposed at the Road M319 project

Project Description

The existing Mineral King Bridge, consisting of a reinforced concrete open spandrel arch, was constructed in 1923 and located east of the community of Three Rivers and southeast of the entrance to Sequoia National Park (Figure 1) on Mineral King Road. The existing bridge is approximately 110 feet long. The bridge qualifies for replacement funding through the Highway Bridge Program (HBP) since it received a sufficiency rating of 43.5 and was flagged as structurally deficient (SD) at the time the bridge was programmed in the Federal Transportation Improvement Program (FTIP). Kleinfelder understands, at this time, Cornerstone is evaluating whether a retrofit/rehabilitation, a complete bridge replacement, or a combined retrofit/replacement will be the preferred alternative. In developing project strategy, Cornerstone is considering three alternatives:

- Retrofit/Rehabilitation Alternative. This alternative requires accessing the existing arch ribs, spandrel columns, spandrel beams, etc., to make necessary repairs. A temporary scaffolding system within the channel will be required. Temporary catchments and shrouding of the arch will be required to prevent debris from falling into the existing river

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channel during all rehabilitation and retrofit operations. In order to complete the retrofit and rehabilitation while maintaining traffic, a temporary bridge will be required downstream of the existing arch bridge.

- Replacement Alternative. A replacement bridge will likely consist of 110 feet long single span bridge over the canyon. At this time, three replacement structures are considered: steel girder bridge, precast concrete bridge, and cast-in-place box girder. The most direct way to maintain traffic is to construct the replacement bridge completely to the east or west of the existing bridge with traffic being maintained on the existing bridge until the new bridge is constructed.
- Combined Retrofit and Replacement Alternative. This alternative maintains the original arches of the existing bridge while reconstructing a new girder type bridge to replace the existing bridge deck. Because of the width of the existing bridge and the need to completely remove the existing deck, an on-site detour via a temporary bridge will be required.

Site Geology

At the bridge site, the East Fork of the Kaweah River flows to the northwest within a small gorge with steep sides comprised of granitic bedrock. A thin veneer of granular soil overlies the bedrock surface outside of the active gorge.

The preliminary geologic review of the available data indicated relatively massive granite exposures with a pattern of infrequent low angle exfoliation jointing and steep near vertical jointing. No field mapping has been performed.

Roadway/Temporary Bridge Abutment Cuts

It is expected the new roadway and temporary bridge abutments will require a cut into the granitic bedrock. Based on the geology anticipated, it is recommended required cuts into the bedrock be made at an average gradient no steeper than 0.5H:1V. Excavations for abutments will also require cuts into residual soil and roadway sliver fills. Unsupported cuts within these soil units should not be planned at gradients steeper than about 1.5H:1V.

Seismic Design

Aerial-photograph review and site reconnaissance did not reveal geomorphic features indicating fault activity on or projecting toward the project site. According to Hart and Bryant (1997), the site is not located within an Alquist-Priolo Earthquake Fault Zone and no mapped active or potentially active fault traces are known to transverse the site.

As discussed previously in the section of Site Geology, the existing bridge is situated within a small canyon with two sides comprised of granitic bedrock. For purpose of developing Caltrans ARS curves, a Soil Profile Type B/A, (Rock/Hard Rock) as been assumed. A V_{S30} of 1,500 m/s has been used in developing Caltrans ARS curves. The ARS curves were developed using ARS online tool (http://dap3.dot.ca.gov/ARS_Online/index.php). The calculated Caltrans ARS curves are attached with this memo. As it can be seen on Plate 2, the seismic design spectrum is controlled by the minimum deterministic spectrum for periods less then 1.0 seconds and by

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the probabilistic spectrum for periods beyond. The peak horizontal ground acceleration is 0.17g and the associated earthquake magnitude is 6.5.

Considering the site geology, liquefaction, seismically induced settlement or lateral spread do not constitute any hazard to the site.

Bridge Foundations

The substructure of three rehabilitation/retrofit alternatives and temporary bridges can be supported by conventional spread footings founded on the bedrock or drilled Cast-In-Drilled-Hole (CIDH) piles with concrete rock sockets. Table 1 provides the recommended bearing resistance for the spread footings to be supported on the bedrock. Footings should penetrate into the grantic rock a depth of about 0.5 foot.

TABLE 1
PRELIMINARY DESIGN PARAMETERS FOR SPREAD FOOTINGS

Load Condition	Factored Bearing Resistance (ksf)
Service Limit (φ = 0.35)	15
Strength Limit (φ = 0.45)	20
Extreme Event (φ = 1.0)	45

If for any reason CIDH piles with concrete rock sockets are to be considered as an alternative to spread footings, preliminary evaluation could use the factored bond strength between the rock socket and granitic bedrock shown in Table 2. It is assumed the rock strength will exceed the concrete strength. Therefore, the ultimate bonding strength is 10% of the unconfined compressive strength of the concrete (i.e. 360 psi for f_c' of 3600 psi).

TABLE 2
FACTORED BOND STRENGTH

Load Condition	Factored Bond Strength (psi)
Service Limit (φ = 0.50)	180
Strength Limit (φ = 0.70)	250
Extreme Event (φ = 1.0)	360

Where the available dead weight is insufficient to resist overturning uplift, additional resistance to uplift can be provided by post-tensioned rock anchors. It is anticipated the unconfined compressive strength of the granitic rock is greater than that of the grout. Therefore the available ultimate friction resistance is limited to 5% of the compressive strength of the grout. The rock anchor will have to include sufficient un-bonded length to allow for proper tensioning of the rock anchor.

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Construction Considerations

The granitic rock is relatively massive. It is anticipated blasting or hydraulic splitting will be required to excavate the road approach slopes and footings. Heavy duty boom-mounted demolition hammers would only be expected to do minor fine excavation within footings. Rock sockets will require coring.

Retaining Walls

Various wingwalls will be required with the structure alternatives. Preliminary evaluation can consider Caltrans Standard Plan Walls. The need to limit foundation excavation may result in relatively narrow steps between wall segments.

Closing

We appreciate the opportunity to provide our services to you on this project. If you have any questions concerning the information presented in this letter, please contact the undersigned at 559-486-0750.

Respectfully
KLEINFELDER, INC.

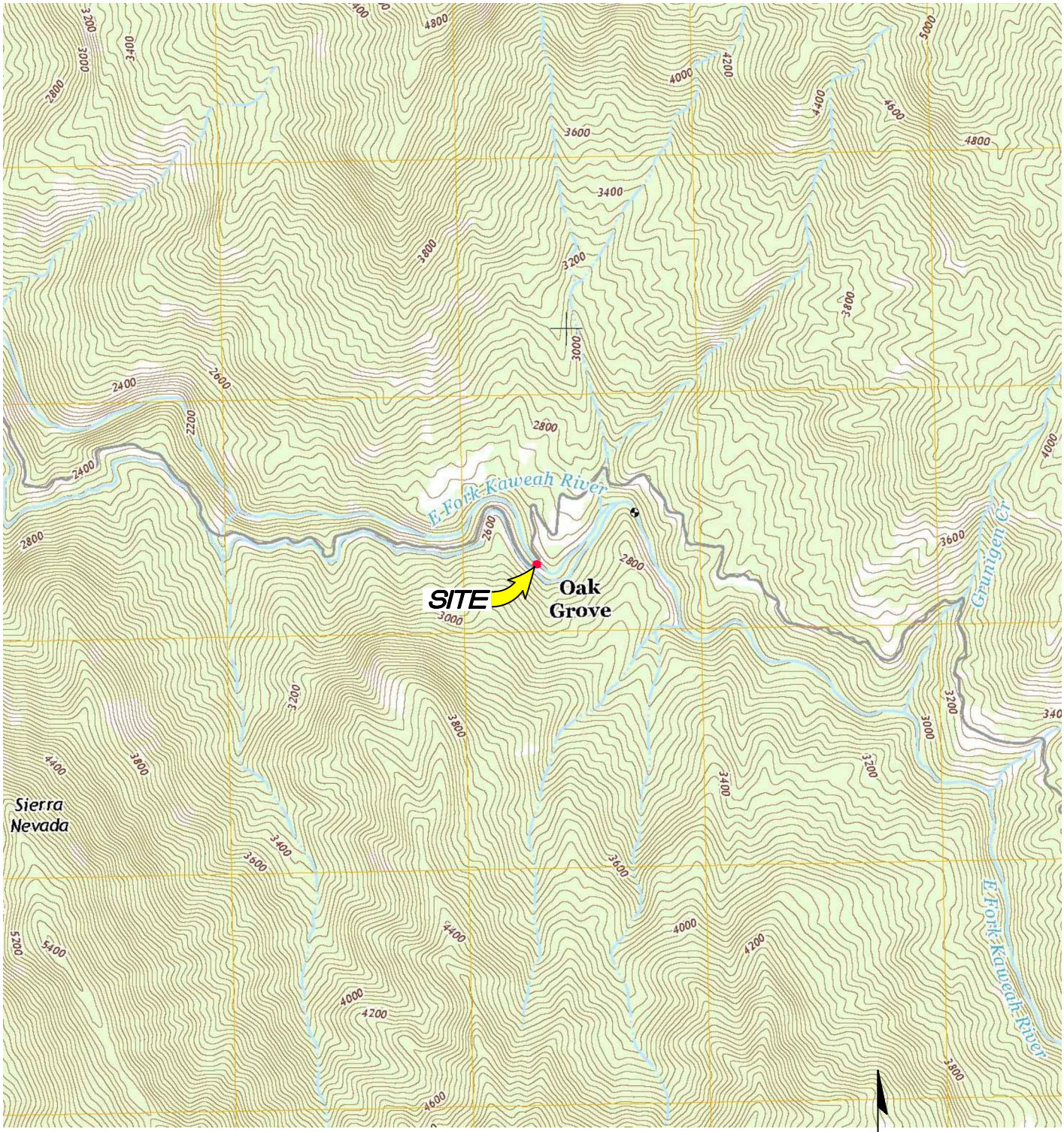
Neva Popenoe, PE, GE
Project Manager

David L. Pearson, PE, GE
Senior Principal Geotechnical Engineer

Attachments:
Site Vicinity Map
Caltrans ARS Curve

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Site Vicinity Map



SOURCE: U.S.G.S. / US Topo, 7.5' Topographic series, Case Mountain, California Quadrangle 2015.

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ATTACHED IMAGES: Images: USGS_USTopo_CaseMountain-CA_2015_Quad.jpg
ATTACHED XREFS:
LONG BEACH, CA
CAD FILE: L:CADD\2015\20154157\Mineral King_4-2015\ LAYOUT: 1
PLOTTED: 21 Apr 2015, 5:14pm, MGriffin

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PROJECT NO.	20154157
DRAWN:	4/2015
DRAWN BY:	MRG
CHECKED BY:	AA
FILE NAME:	20154157-fig1_SVM.dwg

SITE VICNITY MAP

MINERAL KING ROAD OVER KAWEAH RIVER
THREE RIVERS TULARE COUNTY, CALIFORNIA

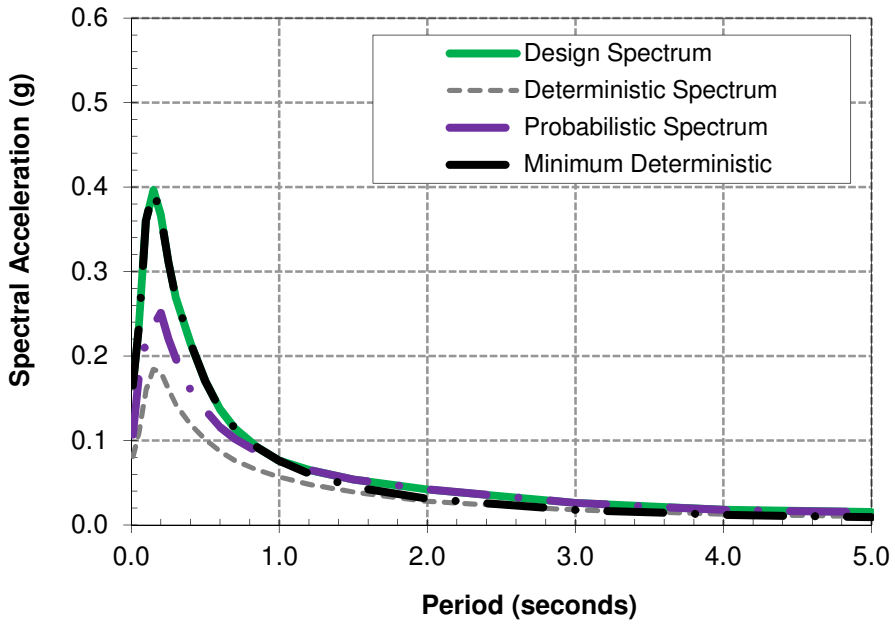
FIGURE
1

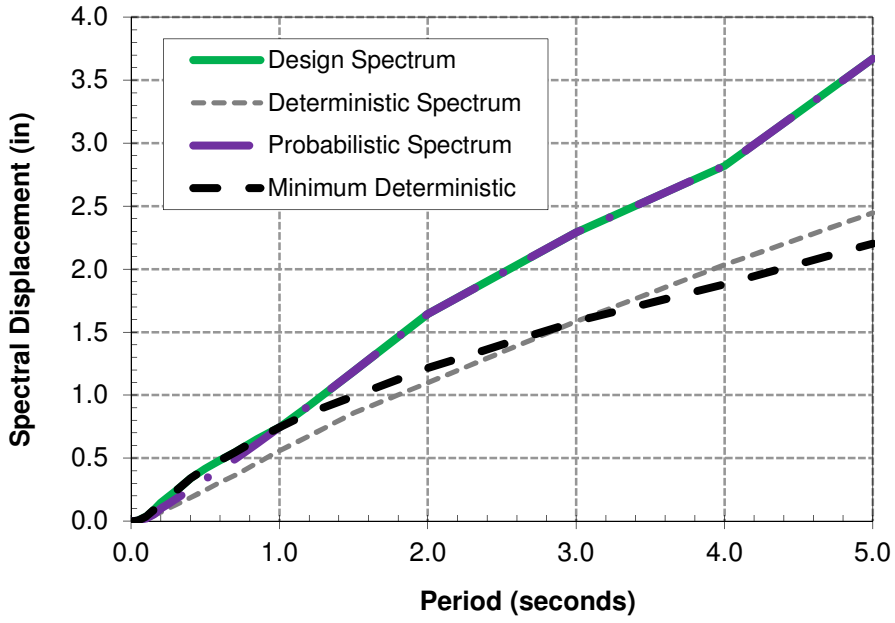
Caltrans ARS Curve

SITE DATA

Latitude:	36.4494	Shear Wave Velocity	1500 m/s
Longitude:	-118.7930	Depth to Vs = 1.0 km/s:	N/A
		Depth to Vs = 2.5 km/s:	N/A

Period (s)	SA (g)	SD (in)
0.01 (PGA)	0.165	0.00
0.05	0.233	0.01
0.1	0.361	0.04
0.15	0.396	0.09
0.2	0.367	0.14
0.25	0.311	0.19
0.3	0.269	0.24
0.4	0.215	0.34
0.5	0.170	0.42
0.6	0.137	0.48
0.7	0.114	0.55
0.85	0.092	0.65
1	0.076	0.74
1.2	0.065	0.92
1.5	0.054	1.19
2	0.042	1.64
3	0.026	2.29
4	0.018	2.82
5	0.015	3.67





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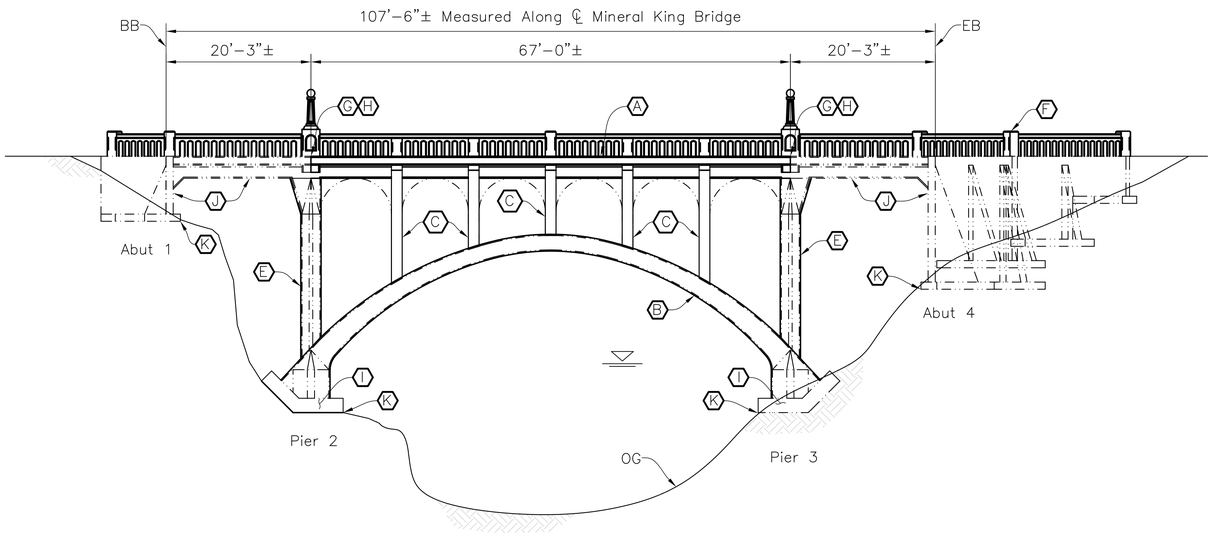
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DRAWN BY:	N. POPENOE
CHECKED BY:	N. DAHLEN
FILE NAME:	

PRELIMINARY CALTRANS ARS CURVES

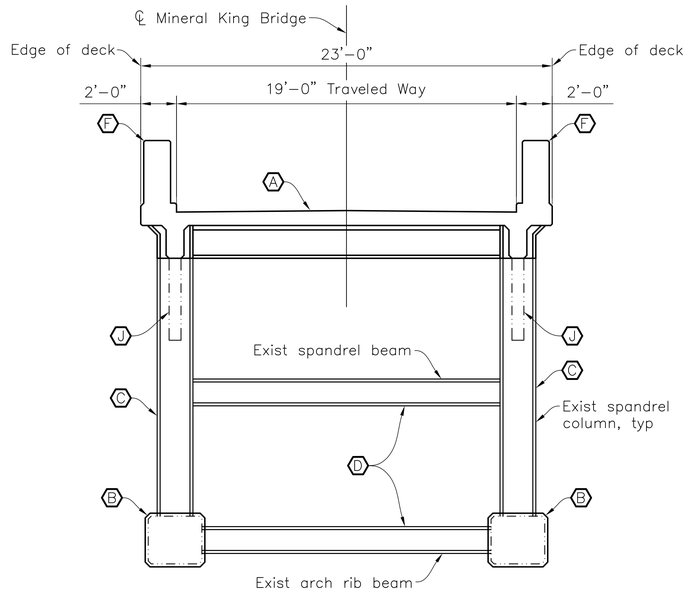
MINERAL KING AT KAWEAH RIVER
TULARE COUNTY, CALIFORNIA

FIGURE
2

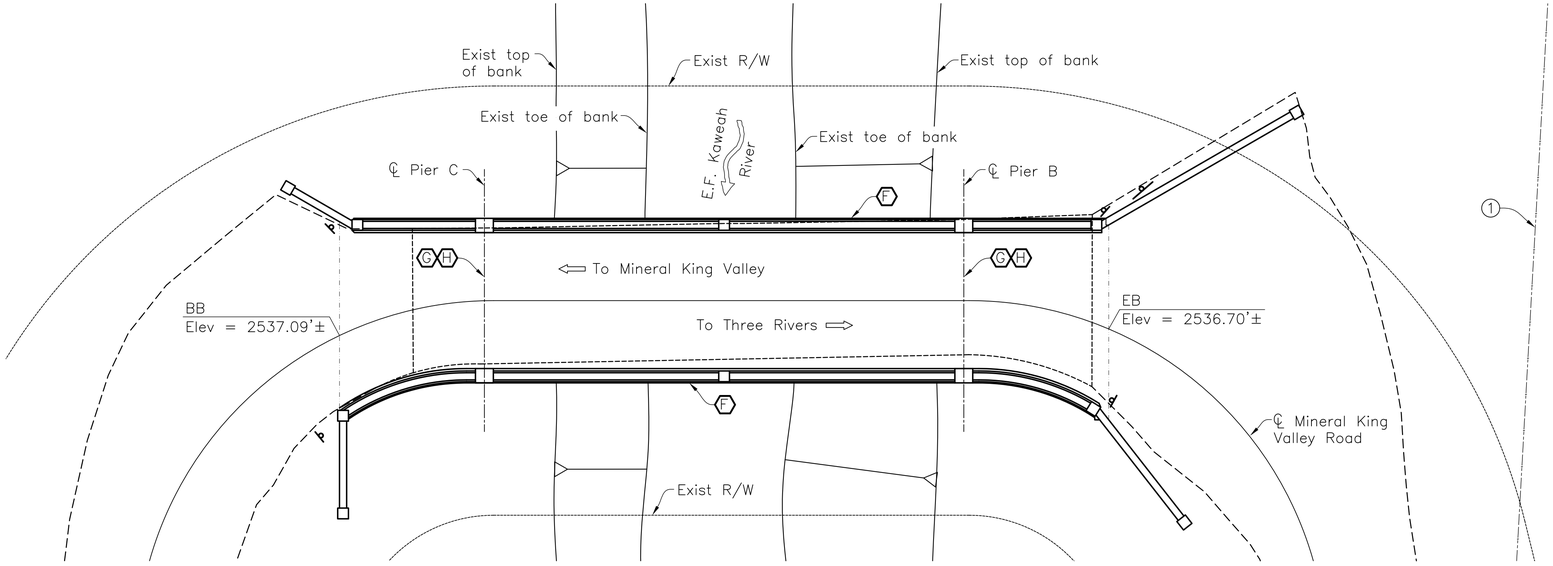
Appendix I
Bridge General Plans



ELEVATION
1"=10'–0"



TYPICAL SECTION
1/4"=1'–0"



PLAN
1"=10'–0"

SEISMIC RETROFIT/REHABILITATION LEGEND:

- (A) Replace Deck, Transverse Deck Beams, & Longitudinal Exterior Beam over Main Arch Span
- (B) Remove & Replace Carbonated Concrete from Arch Ribs
- (C) Wrap Spandrel Columns with Fiber Reinforced Polymer
- (D) Wrap Arch Rib Beams & Spandrel Beams with Fiber Reinforced Polymer
- (E) Remove & Replace Carbonated Concrete from Pier Spandrel Columns
- (F) Replace Concrete Barrier
- (G) Install Restrainer at Joint
- (H) Replace Joint Seal
- (I) Epoxy Inject Cracks
- (J) Apply Silane Waterproofing Treatment to All Remaining Exposed Surfaces of Existing Concrete
- (K) Pressure Grout Below Existing Footing

LEGEND:

- (1) Existing overhead telephone line
- Indicates new construction
- Indicates existing bridge (Br. No. 46C–0196)
- Indicates existing sign
- Indicates existing utility pole
- Indicates direction of traffic

REGISTERED PROFESSIONAL ENGINEER
TODD M. GOOLKASIAN
No. S3543
EXP. 3/31/15
STRUCTURAL
STATE OF CALIFORNIA

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS			
NO.	DESCRIPTION	DATE	BY

CORNERSTONE structural engineering group
986 W Alluvial Ave • Suite 201
Fresno, California 93711
559.320.3200
fax 559.320.3201

COUNTY OF TULARE CALIFORNIA

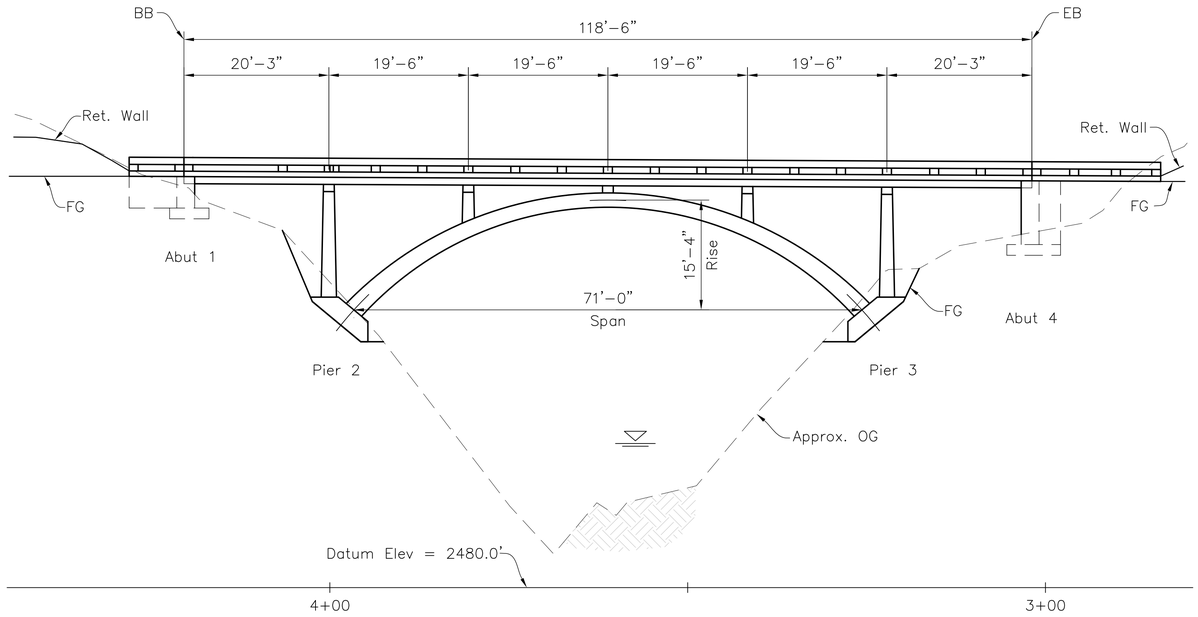
TULARE COUNTY RESOURCE MANAGEMENT AGENCY
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DESIGNED	SMC
DRAWN	NRZ
CHECKED	MAW
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DATE	3/18/14

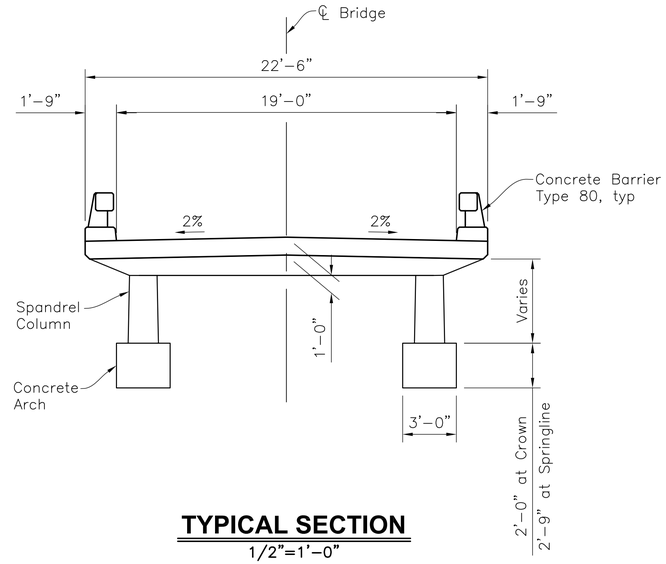
GENERAL PLAN - ALTERNATIVE No. 1
M375A MINERAL KING BRIDGE OVER THE EAST FORK OF THE KAWEAH RIVER

SHEET No. S1 / X OF XX

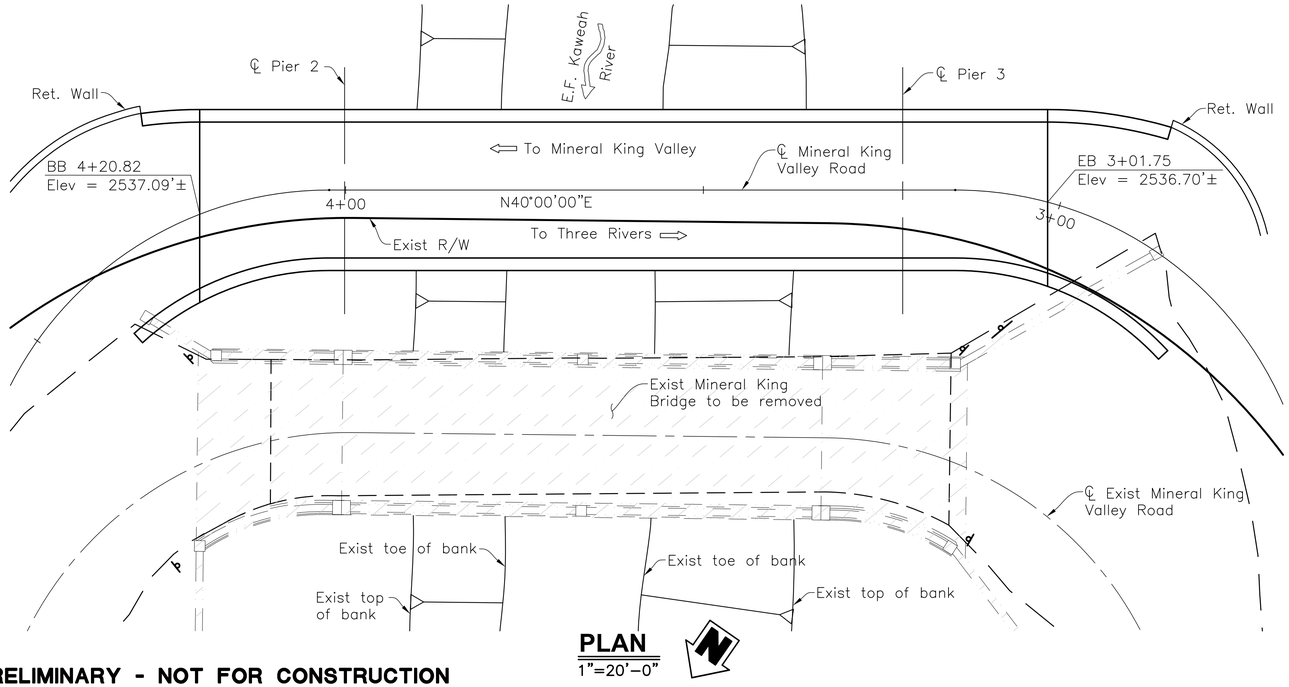
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ELEVATION
1"=10'–0"



TYPICAL SECTION
1/2"=1'–0"



PLAN
1"=20'–0"

Legend:

——— Indicates new construction

— · · — Indicates existing bridge (Br. No. 46C–0196)

B0-3 / 3-1 — Indicates Caltrans standard plan sheet no. / Indicates detail no.

PRELIMINARY - NOT FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
TODD M. GOOLKASIAN
No. S3543
EXP. 3/31/15
STRUCTURAL
STATE OF CALIFORNIA

REVISIONS			
NO.	DESCRIPTION	DATE	BY

CORNERSTONE structural engineering group
986 W Alluvial Ave • Suite 201
Fresno, California 93711
559.320.3200
fax 559.320.3201

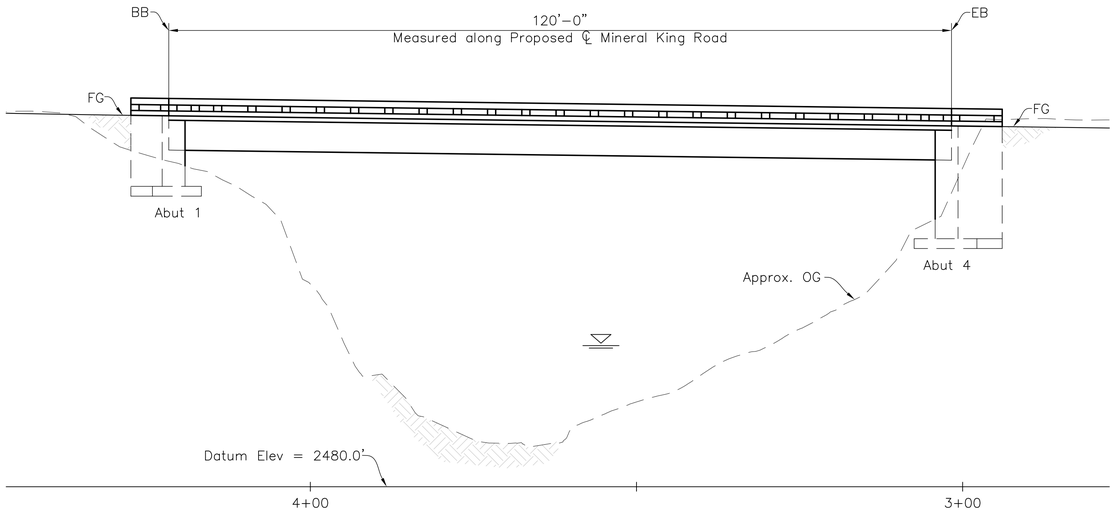
TULARE COUNTY RESOURCE MANAGEMENT AGENCY
5961 SOUTH MOONEY BLVD., VISALIA, CALIFORNIA 93277

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CHECKED	MAW
FILE NAME	2014046
DATE	3/18/14

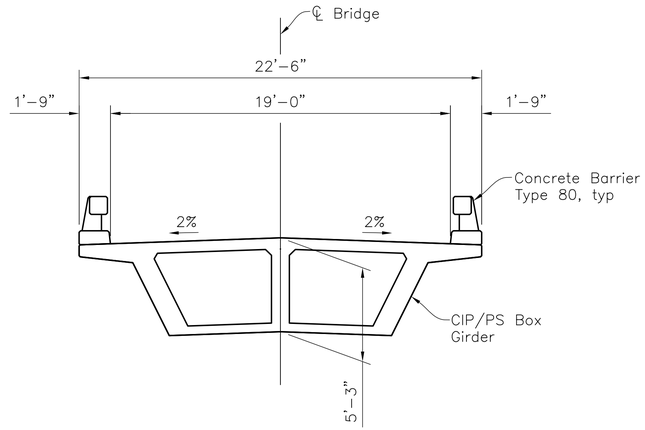
GENERAL PLAN - ALTERNATIVE No. 2A
M375A MINERAL KING BRIDGE OVER THE EAST FORK OF THE KAWEAH RIVER

SHEET No. S1
X OF XX

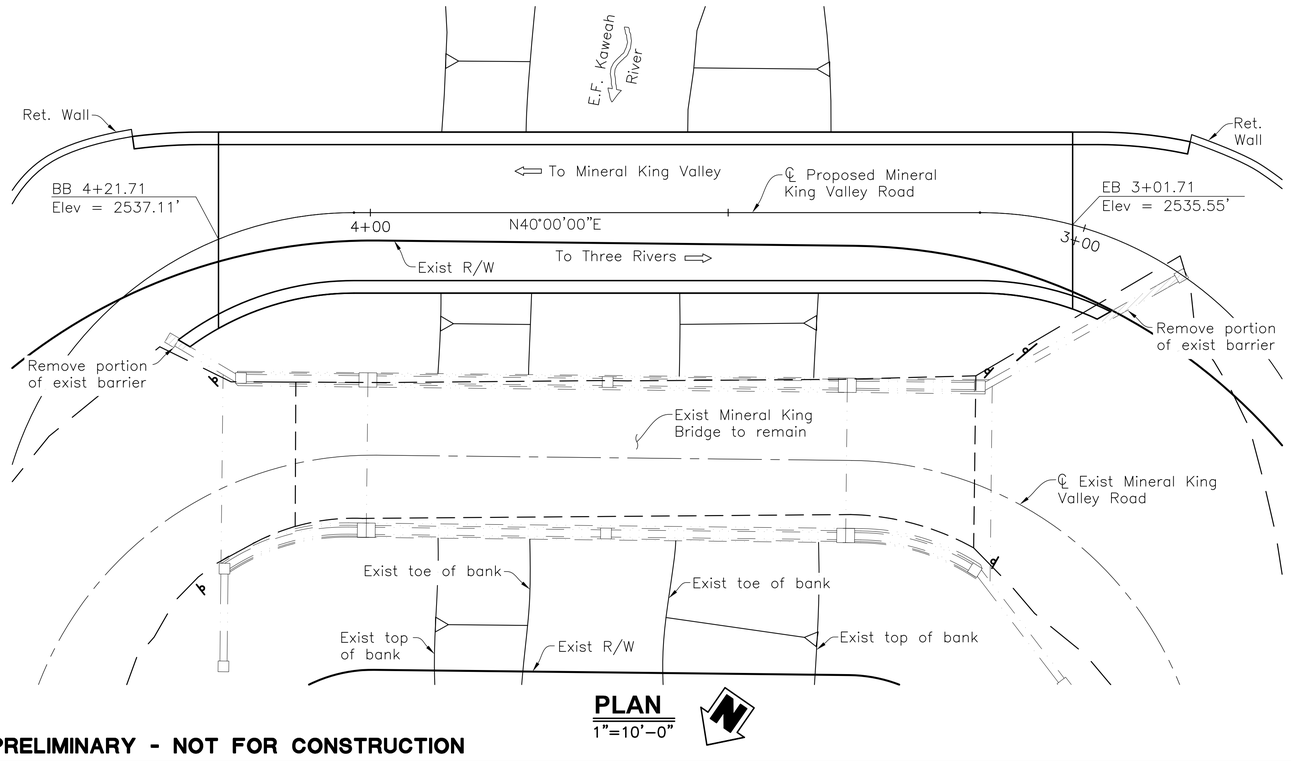
W:\2014\2014046 Mineral King\2014046S1 – Alt. No. 2A General Plan No. 1 (NRZ Revisions).dwg – 5/20/2015 2:49 PM



DEVELOPED ELEVATION
1"=10'-0"



TYPICAL SECTION
1/2"=1'-0"



PLAN
1"=10'-0"

Legend:
- Indicates new construction
- Indicates existing bridge (Br. No. 46C-0196)
- B0-3 / 3-1 — Indicates Caltrans standard plan sheet no. / Indicates detail no.

PRELIMINARY - NOT FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
TODD W. GOOLKASIAN
No. 53543
EXP. 3/31/15
STRUCTURAL
STATE OF CALIFORNIA

REVISIONS

NO.	DESCRIPTION	DATE	BY

CORNERSTONE structural engineering group
986 W Alluvial Ave • Suite 201
Fresno, California 93711
559.320.3200
fax 559.320.3201

COUNTY OF TULARE CALIFORNIA

TULARE COUNTY RESOURCE MANAGEMENT AGENCY
5961 SOUTH MOONEY BLVD., VISALIA, CALIFORNIA 93277

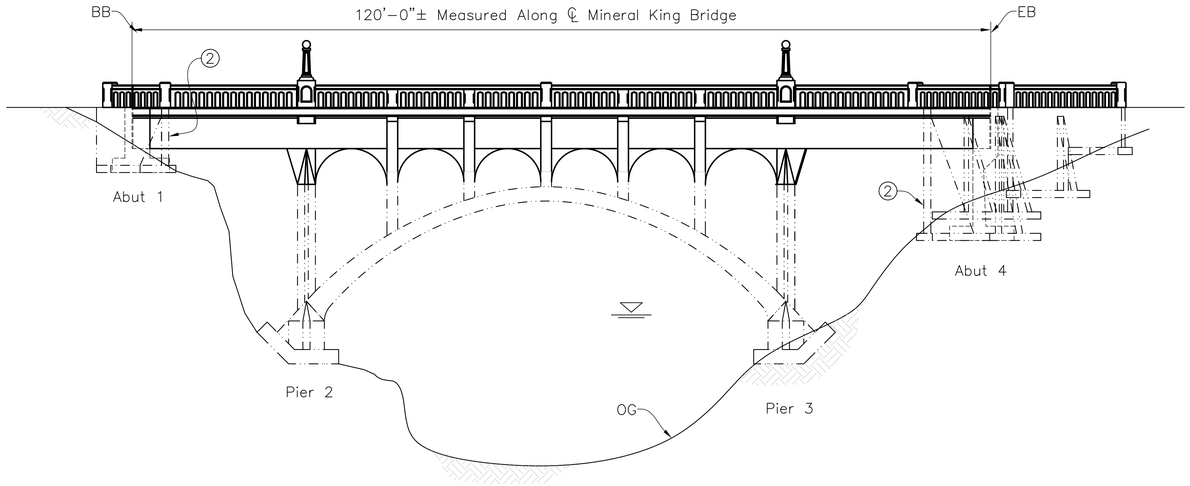
SCALE	As Noted
DESIGNED	SMC
DRAWN	NRZ
CHECKED	MAW
FILE NAME	2014046
DATE	3/18/14

GENERAL PLAN - ALTERNATIVE No. 2B

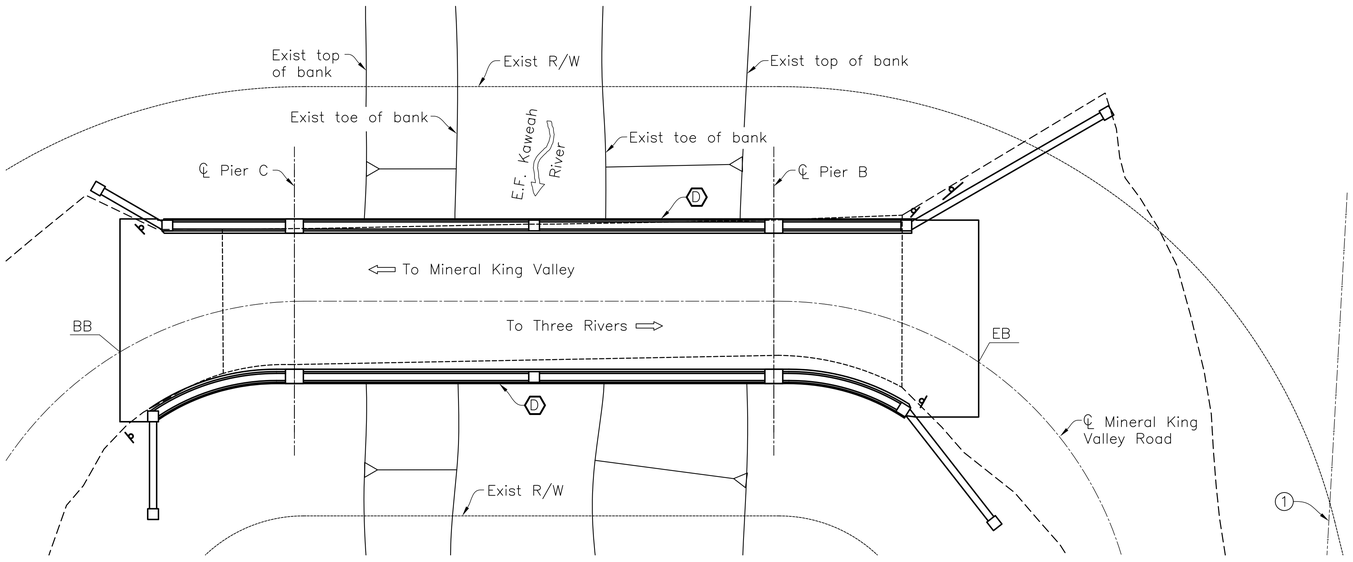
M375A MINERAL KING BRIDGE OVER THE EAST FORK OF THE KAWEAH RIVER

SHEET No. **S1** / **X** OF **XX**

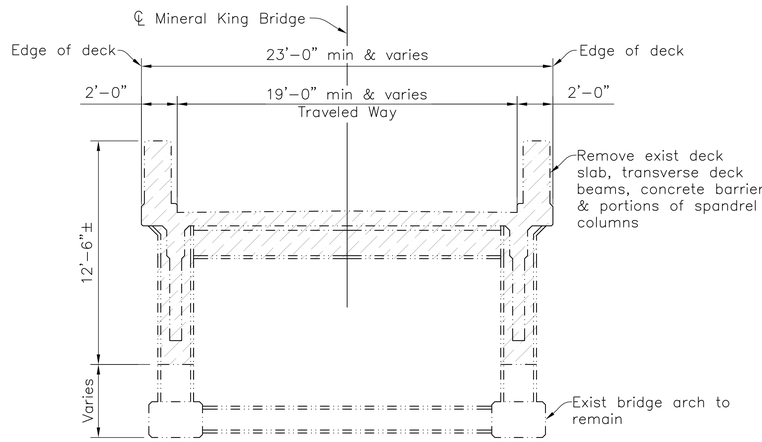
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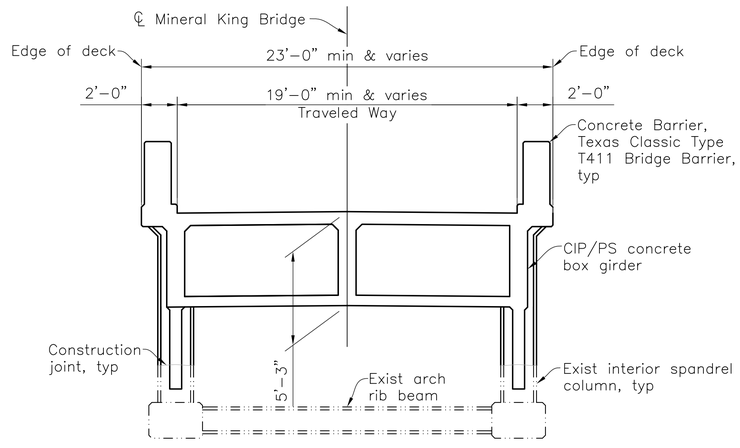
ELEVATION
1"=10'–0"



PLAN
1"=10'–0"



Stage 1 – Demo Portion of Existing Bridge



Stage 2 – Construct New Superstructure

TYPICAL SECTION
1/4"=1'–0"

LEGEND:

- ① Existing overhead telephone line
- ② Existing abutments & wingwalls to remain
- Indicates new construction
- Indicates existing bridge (Br. No. 46C–0196)
- Indicates existing sign
- Indicates existing utility pole
- Indicates direction of traffic

REGISTERED PROFESSIONAL ENGINEER
TODD M. COOLKASIAN
No. S3543
EXP. 3/31/15
STRUCTURAL
STATE OF CALIFORNIA

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS			
NO.	DESCRIPTION	DATE	BY

CORNERSTONE structural engineering group
986 W Alluvial Ave • Suite 201
Fresno, California 93711
559.320.3200
fax 559.320.3201

TULARE COUNTY RESOURCE MANAGEMENT AGENCY
5961 SOUTH MOONEY BLVD., VISALIA, CALIFORNIA 93277

SCALE	As Noted
DESIGNED	SMC
DRAWN	NRZ
CHECKED	MAW
FILE NAME	2014046
DATE	3/18/14

GENERAL PLAN - ALTERNATIVE No. 3
M375A MINERAL KING BRIDGE OVER THE EAST FORK OF THE KAWEAH RIVER

SHEET No. **S1** / **X** OF **XX**

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Appendix J
Cost Estimates

M375A Mineral King Bridge
Total Project Costs for Each Alternative

ALTERNATIVE	COST
Alternative 1 - Rehabilitation/Retrofit of Existing Bridge	$4,640,000.00
Alternative 2A - Replacement with Reinforced Concrete Open Spandrel Arch Bridge (Remove Existing Bridge)	$4,570,000.00
Alternative 2B - Replacement with Cast-in-Place Post Tensioned Box Girder (Preserve Existing Bridge)	$4,010,000.00
Alternative 3 - Hybrid Rehabilitation/Retrofit & Replacement	$4,740,000.00

M375A Mineral King Bridge

Alternative 1 - Rehabiltiation/Retrofit of Existing Bridge

Preliminary Engineering	$	1,330,000
Additional Corrosion Survey	$	40,000
Right of Way	$	-
Roadway	$	23,000
Bridge	$	2,809,000
Construction Engineering	$	430,000
Total Project Cost	**$**	**4,640,000**

M375A Mineral King Bridge

Alternative 2A - Replacement with Reinforced Concrete Open Spandrel Arch
(Remove Existing Bridge)

Preliminary Engineering	$	1,430,000
Additional Corrosion Survey	$	-
Right of Way	$	20,000
Roadway	$	393,000
Bridge	$	2,308,000
Construction Engineering	$	410,000

Total Project Cost **$** **4,570,000**

M375A Mineral King Bridge

Alternative 2B - Replacement with Cast-in-Place Post Tensioned Box Girder
(Preserve Existing Bridge)

Preliminary Engineering	$	1,330,000
Additional Corrosion Survey	$	-
Right of Way	$	20,000
Roadway	$	393,000
Bridge	$	1,910,000
Construction Engineering	$	350,000
Total Project Cost	**$**	**4,010,000**

M375A Mineral King Bridge

Alternative 3 - Hybrid Rehabilitation/Retrofit & Replacement

Preliminary Engineering	$	1,330,000
Additional Corrosion Survey	$	-
Right of Way	$	-
Roadway	$	23,000
Bridge	$	2,933,000
Construction Engineering	$	450,000
Total Project Cost	**$**	**4,740,000**

X	GENERAL PLAN ESTIMATE		ADVANCE PLANNING ESTIMATE

RCVD BY: **IN EST:**
OUT EST:

BRIDGE: MINERAL KING ROAD - ALTERNATIVE No. 1 **BR. No.:** 46C-0196 **DISTRICT:** 06

TYPE: SPANDREL ARCH CENTER SPAN, WITH RC ABUTS **RTE:**

CU: **CO:** TULARE

EA: **PM:**

LENGTH: 107.5 **WIDTH:** Varies **AREA (SF) =** 2,560

DESIGN SECTION:

OF STRUCTURES IN PROJECT : 01 **EST. NO.**

PRICES BY : NRZ **COST INDEX:** 2012 - 2015

QUANTITIES BY: MIP **DATE:** 5/5/2015

QUANTITIES CHECKED BY: **DATE:**

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1	TEMPORARY BRIDGE		LS	1	$700,000.00	$700,000.00
2	INJECT CRACK (EPOXY)		SF	955	$100	$95,500.00
3	STRUCTURAL CONCRETE, BRIDGE		CY	63	$3,000.00	$189,000.00
4	MINOR CONCRETE (BACKFILL)		CY	5	$550.00	$2,750.00
5	JOINT SEAL (MR = 1")		LF	46	$120.00	$5,520.00
6	BAR REINFORCING STEEL (BRIDGE)		LB	19,404	$2.75	$53,361.00
7	SILANE WATERPROOFING TREATMENT		SF	2,997	$12.00	$35,964.00
8	CONCRETE BARRIER (SPECIAL)		LF	291	$500.00	$145,500.00
9	COMPOSITE COLUMN CASING		SF	1,825	$140	$255,500.00
10	REPAIR CARBONATED CONCRETE		SF	2,353	$160	$376,480.00

SUBTOTAL	$1,859,575
TIME RELATED OVERHEAD (@ 10 %)	$185,958
MOBILIZATION (@ 10 %)	$185,958
SUBTOTAL BRIDGE ITEMS	$2,231,490
CONTINGENCIES (@ 25%)	$557,873
BRIDGE TOTAL COST	$2,789,363
COST PER SQ. FT.	$1,089.59
BRIDGE REMOVAL (CONTINGENCIES INCL.)	$19,200
WORK BY RAILROAD OR UTILITY FORCES	$0
GRAND TOTAL	$2,808,563
FOR BUDGET PURPOSES - SAY	**$2,809,000**

ROUTING

1. DES SECTION
2. OFFICE OF BRIDGE DESIGN - NORTH
3. OFFICE OF BRIDGE DESIGN - CENTRAL
4. OFFICE OF BRIDGE DESIGN - SOUTH
5. OFFICE OF BRIDGE DESIGN - WEST
6. OFFICE OF BRIDGE DESIGN SOUTHERN CALIFORNIA

COMMENTS:

X	GENERAL PLAN ESTIMATE		ADVANCE PLANNING ESTIMATE

RCVD BY: **IN EST:**
OUT EST:

BRIDGE: MINERAL KING ROAD - ALTERNATIVE No. 2A **BR. No.:** 46C-0196 **DISTRICT:** 06
TYPE: CIP/RC OPEN SPANDREL ARCH BRIDGE **RTE:**
CU: **CO:** TULARE
EA: **PM:**
LENGTH: 118'-6" **WIDTH:** Varies **AREA (SF) =** 2,702

DESIGN SECTION:
OF STRUCTURES IN PROJECT : 01 **EST. NO.**
PRICES BY : **NRZ** **COST INDEX:** 2012 - 2015
QUANTITIES BY: MIP **DATE:** 5/5/2015
QUANTITIES CHECKED BY: **DATE:**

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1	STRUCTURE EXCAVATION (BRIDGE)		CY	174	$220.00	$38,280.00
2	STRUCTURE BACKFILL (BRIDGE)		CY	117	$180.00	$21,060.00
3	TIEDOWN ANCHOR		LS	15	$6,000.00	$90,000.00
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		CY	48	$1,500.00	$72,000.00
5	STRUCTURAL CONCRETE, BRIDGE		CY	202	$5,000.00	$1,010,000.00
6	JOINT SEAL (MR = 1")		LF	52	$120.00	$6,240.00
7	BAR REINFORCING STEEL (BRIDGE)		LB	62,500	$2.75	$171,875.00
8	CONCRETE BARRIER (TYPE 80)		LF	297	$300.00	$89,100.00

SUBTOTAL	$1,498,555
TIME RELATED OVERHEAD (@ 10 %)	$149,856
MOBILIZATION (@ 10 %)	$149,856
SUBTOTAL BRIDGE ITEMS	$1,798,266
CONTINGENCIES (@ 25%)	$449,567
BRIDGE TOTAL COST	$2,247,833
COST PER SQ. FT.	$831.91
BRIDGE REMOVAL (CONTINGENCIES INCL.)	$60,000
WORK BY RAILROAD OR UTILITY FORCES	$0
GRAND TOTAL	$2,307,833
FOR BUDGET PURPOSES - SAY	**$2,308,000**

ROUTING

1. DES SECTION
2. OFFICE OF BRIDGE DESIGN - NORTH
3. OFFICE OF BRIDGE DESIGN - CENTRAL
4. OFFICE OF BRIDGE DESIGN - SOUTH
5. OFFICE OF BRIDGE DESIGN - WEST
6. OFFICE OF BRIDGE DESIGN SOUTHERN CALIFORNIA

COMMENTS:

X	GENERAL PLAN ESTIMATE		ADVANCE PLANNING ESTIMATE

RCVD BY: **IN EST:** **OUT EST:**

BRIDGE: MINERAL KING ROAD - ALTERNATIVE No. 2B **BR. No.:** 46C-0196 **DISTRICT:** 06
TYPE: CLEAR SPAN CIP/PS CONCRETE BOX GIRDER **RTE:**
CU: **CO:** TULARE
EA: **PM:**
LENGTH: 120'-0" **WIDTH:** Varies **AREA (SF) =** 2,726

DESIGN SECTION:
OF STRUCTURES IN PROJECT : 01 **EST. NO.**
PRICES BY : **NRZ** **COST INDEX:** 2012 - 2015
QUANTITIES BY: MIP **DATE:** 5/5/2015
QUANTITIES CHECKED BY: **DATE:**

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1	STRUCTURE EXCAVATION (BRIDGE)		CY	244	$220.00	$53,680.00
2	STRUCTURE BACKFILL (BRIDGE)		CY	163	$180.00	$29,340.00
3	PRESTRESSING CAST-IN-PLACE CONCRETE		LS	1	$24,150.00	$24,150.00
4	TIEDOWN ANCHOR		LS	16	$6,000.00	$96,000.00
5	STRUCTURAL CONCRETE, BRIDGE FOOTING		CY	25	$1,500.00	$37,500.00
6	STRUCTURAL CONCRETE, BRIDGE		CY	264	$3,000.00	$792,000.00
7	JOINT SEAL (MR = 1")		LF	52	$120.00	$6,240.00
8	BAR REINFORCING STEEL (BRIDGE)		LB	55,235	$2.75	$151,896.25
9	CONCRETE BARRIER (TYPE 80)		LF	275	$300.00	$82,500.00

SUBTOTAL	$1,273,306
TIME RELATED OVERHEAD (@ 10 %)	$127,331
MOBILIZATION (@ 10 %)	$127,331
SUBTOTAL BRIDGE ITEMS	$1,527,968
CONTINGENCIES (@ 25%)	$381,992
BRIDGE TOTAL COST	$1,909,959
COST PER SQ. FT.	$700.65
BRIDGE REMOVAL (CONTINGENCIES INCL.)	$0
WORK BY RAILROAD OR UTILITY FORCES	$0
GRAND TOTAL	$1,909,959
FOR BUDGET PURPOSES - SAY	**$1,910,000**

ROUTING

1. DES SECTION
2. OFFICE OF BRIDGE DESIGN - NORTH
3. OFFICE OF BRIDGE DESIGN - CENTRAL
4. OFFICE OF BRIDGE DESIGN - SOUTH
5. OFFICE OF BRIDGE DESIGN - WEST
6. OFFICE OF BRIDGE DESIGN SOUTHERN CALIFORNIA

COMMENTS:

X	GENERAL PLAN ESTIMATE		ADVANCE PLANNING ESTIMATE

RCVD BY: **IN EST:**
OUT EST:

BRIDGE: MINERAL KING ROAD - ALTERNATIVE No. 3 **BR. No.:** 46C-0196 **DISTRICT:** 06
CIP/PS BOX GIRDER REPLACEMENT
SUPERSTRUCTURE, ARCHITECTURAL OPEN
TYPE: SPANDREL HISTORIC ARCH WITH RC ABUTS **RTE:**
CU: **CO:** TULARE
EA: **PM:**
LENGTH: 120'-0" **WIDTH:** Varies **AREA (SF) =** 2,785

DESIGN SECTION:
OF STRUCTURES IN PROJECT : 01 **EST. NO.**
PRICES BY : **NRZ** **COST INDEX:** 2012 - 2015
QUANTITIES BY: MIP **DATE:** 5/5/2015
QUANTITIES CHECKED BY: **DATE:**

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1	TEMPORARY BRIDGE		LS	1	$700,000.00	$700,000.00
2	STRUCTURE EXCAVATION (BRIDGE)		CY	328	$220.00	$72,160.00
3	STRUCTURE BACKFILL (BRIDGE)		CY	250	$180.00	$45,000.00
4	PRESTRESSING CAST-IN-PLACE CONCRETE		LS	1	$24,150.00	$24,150.00
5	TIEDOWN ANCHOR		LS	16	$6,000.00	$96,000.00
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		CY	29	$1,500.00	$43,500.00
7	STRUCTURAL CONCRETE, BRIDGE		CY	277	$2,250.00	$623,250.00
8	JOINT SEAL (MR = 1")		LF	56	$120.00	$6,720.00
9	BAR REINFORCING STEEL (BRIDGE)		LB	66,096	$2.75	$181,764.00
10	CONCRETE BARRIER (SPECIAL)		LF	291	$500.00	$145,500.00

SUBTOTAL	$1,938,044
TIME RELATED OVERHEAD (@ 10 %)	$193,804
MOBILIZATION (@ 10 %)	$193,804
SUBTOTAL BRIDGE ITEMS	$2,325,653
CONTINGENCIES (@ 25%)	$581,413
BRIDGE TOTAL COST	$2,907,066
COST PER SQ. FT.	$1,043.83
BRIDGE REMOVAL (CONTINGENCIES INCL.)	$25,600
WORK BY RAILROAD OR UTILITY FORCES	$0
GRAND TOTAL	$2,932,666
FOR BUDGET PURPOSES - SAY	**$2,933,000**

COMMENTS:

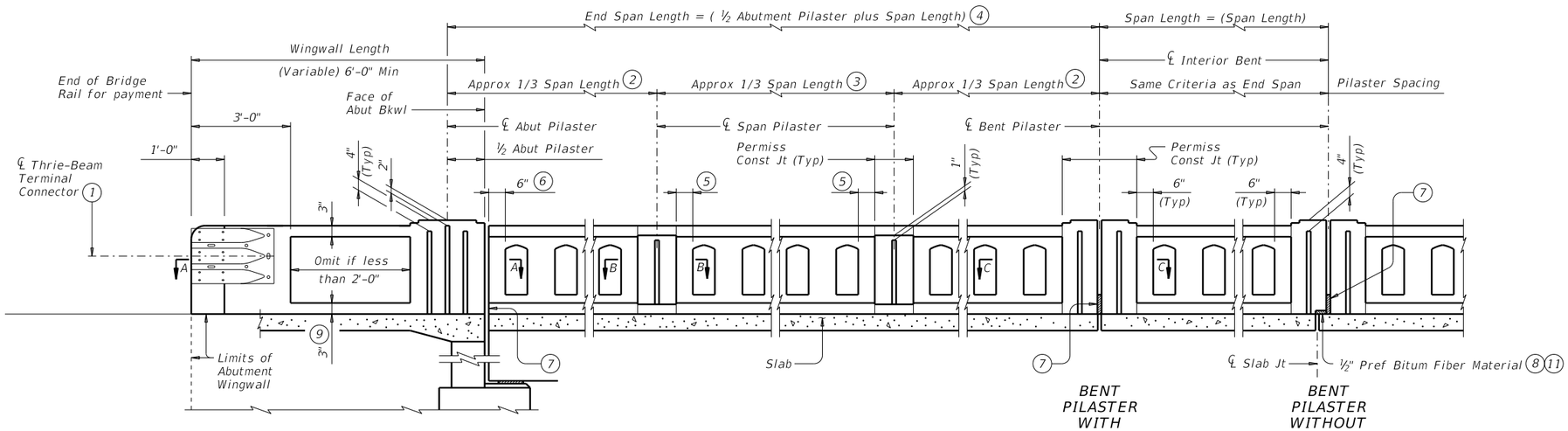
ROUTING

1. DES SECTION
2. OFFICE OF BRIDGE DESIGN - NORTH
3. OFFICE OF BRIDGE DESIGN - CENTRAL
4. OFFICE OF BRIDGE DESIGN - SOUTH
5. OFFICE OF BRIDGE DESIGN - WEST
6. OFFICE OF BRIDGE DESIGN SOUTHERN CALIFORNIA

Appendix K
Texas Classic Type T411 Barrier Rail Plans

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



(1) Terminal Connectors and associated hardware are to be paid for under the Item "Metal Beam Guard Fence". Attach Metal Beam Guard Fence Transitions to the bridge unless otherwise shown in the plans.

(2) Number of windows in exterior bays are equal.

(3) Number of windows in interior bay(s) are not less than the amount in exterior bays (Note 2).

(4) Space Span Pilasters at 1/3 span length (Approx) when spans are 100 ft and less, as shown. Space Span Pilasters at 1/5 span length (Approx) for spans greater than 100 ft.

(5) Dimension is the same for all posts adjacent to Span Pilasters in a span. Dimension may vary from span to span, Min = 3", Max = 7 ½".

(6) Min = 6", Max = 1'-3".

(7) Provide rail joints at ends of all spans the same width as Slab joint opening, except that Rail Joints over construction joints must be ¼" Min to ¾" Max in width. Joints must be open if slab joint opening is not sealed. Joints over construction joints and over sealed deck joints must be plugged. Forming material used in joints may be left in place if it is light in color and compressible, such as the following materials: polystyrene, molded cork granules, sponge rubber sheet, etc. If forming material is not left in place, plug the bottom 6" with slab joint sealing compound to prevent drainage and staining.

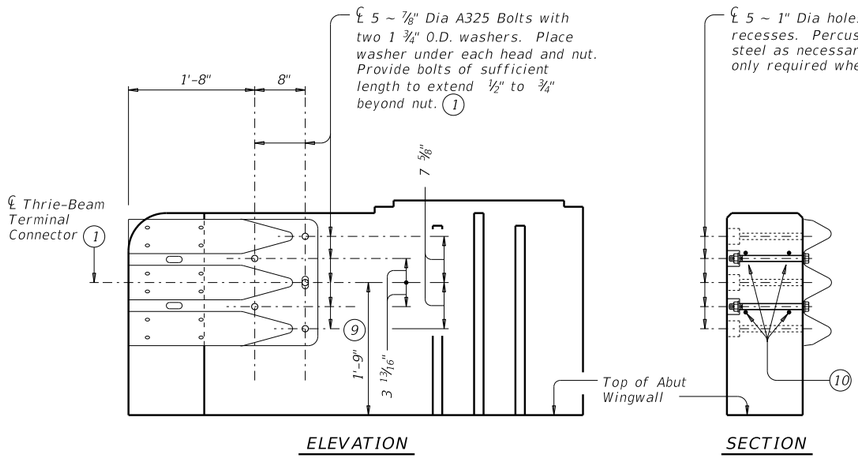
(8) Place Preformed Bituminous Fiber Material between slab and rail when rail extends over expansion joint. Shift Bars U as necessary.

(9) Increase 2" for structures with overlay.

(10) Place 4 additional Bars WH(#5) 3'-8" in length inside Bars S(#5) and centered 2'-0" from end of rail when Terminal Connections are required. Field bend as needed.

(11) Shift U Bars from region below ½" Preformed Bituminous Fiber Material at joints.

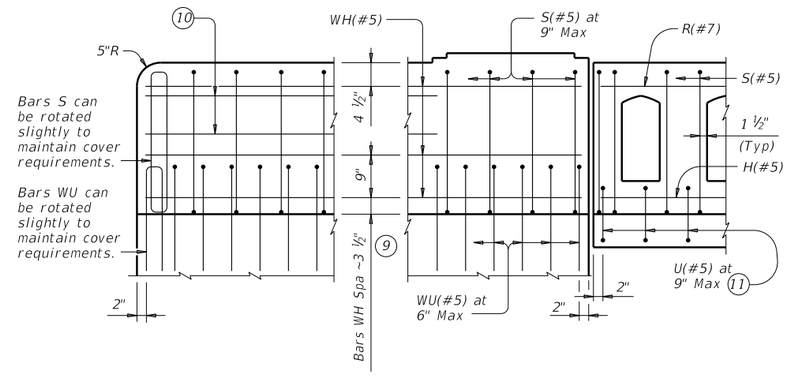
ROADWAY ELEVATION OF RAIL



TERMINAL CONNECTION DETAILS

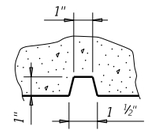
(Showing parapet with Pilaster on 6'-0" Wingwall)

℄ 5 ~ 1" Dia holes and 2 ½" Dia x 2" deep recesses. Form or core holes and recesses. Percussion drilling is not permitted. Adjust placement of reinforcing steel as necessary to avoid bolt holes and recesses. Bolt recesses are only required when pedestrian sidewalks are adjacent to back of rail.

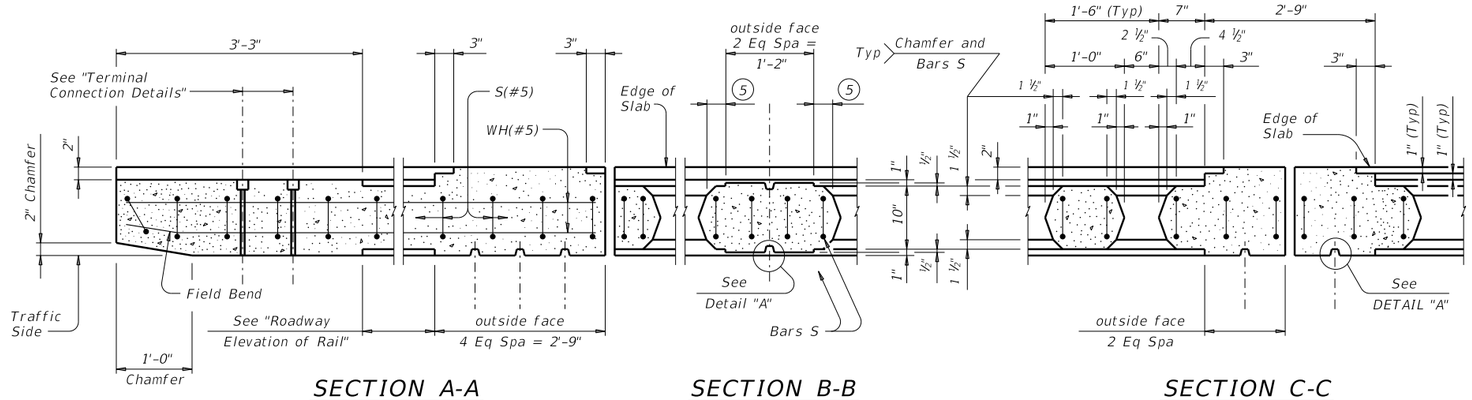


ELEVATION SHOWING TYPICAL REINFORCING PLACEMENT

The use of this railing is restricted to speeds of 45 mph or less.



DETAIL "A"



SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

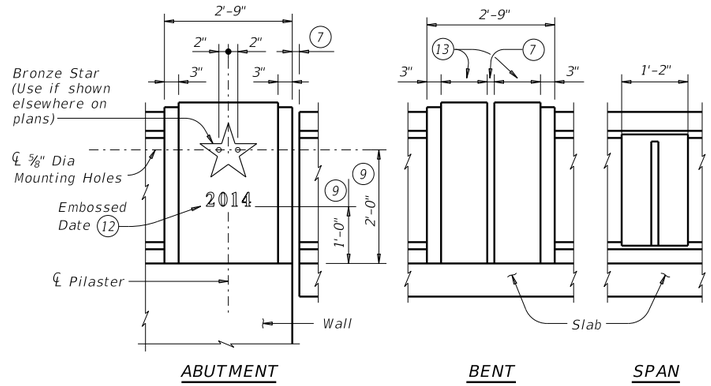
TRAFFIC RAIL TEXAS CLASSIC

TYPE T411

FILE: rlstd008.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT July 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

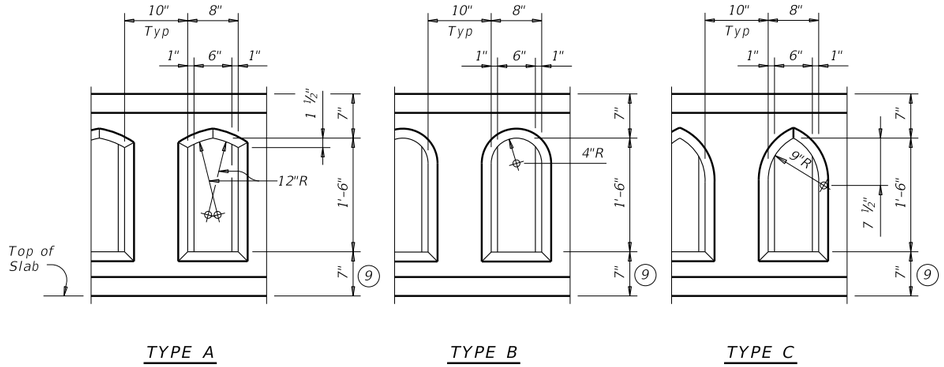
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DATE:
FILE:



ABUTMENT BENT SPAN

EXTERIOR PILASTER ELEVATIONS



TYPE A TYPE B TYPE C

WINDOW TYPES

(7) Provide rail joints at ends of all spans the same width as Slab joint opening, except that Rail Joints over construction joints must be ¼" Min to ¾" Max in width. Joints must be open if slab joint opening is not sealed. Joints over construction joints and over sealed deck joints must be plugged. Forming material used in joints may be left in place if it is light in color and compressible, such as the following materials: polystyrene, molded cork granules, sponge rubber sheet, etc. If forming material is not left in place, plug the bottom 6" with slab joint sealing compound to prevent drainage and staining.

(9) Increase 2" for structures with overlay.

(12) Construction year (use if shown elsewhere on plans) 3" High "Plantin Bold" Typeface with ¼" recess. Placed at one Abutment only or as directed by the Engineer.

(13) Dimensions must be the same on each side of joint.

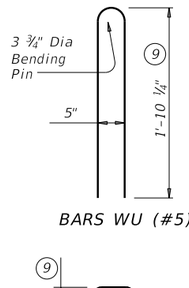
(14) Reduce by 2" or field bend over Preformed Bituminous Fiber Material to gain cover.

(15) 5 ¼" when vertical reinforcing has closer clear cover over horizontal reinforcing in abutment wingwalls or retaining walls on traffic side of wall.

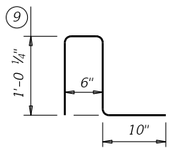
(16) As an aid in supporting reinforcement, additional longitudinal bars may be used in the slab with the approval of the Engineer. Such bars must be furnished at the Contractor's expense.

(17) Top longitudinal slab bar may be adjusted laterally 3" plus or minus to tie reinforcing.

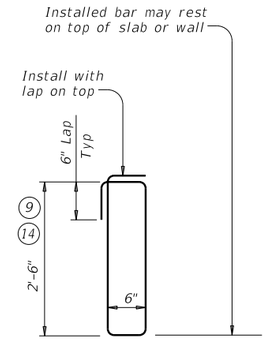
(18) Bronze Star dimensions of the final product can be slightly smaller due to shrinkage after casting.



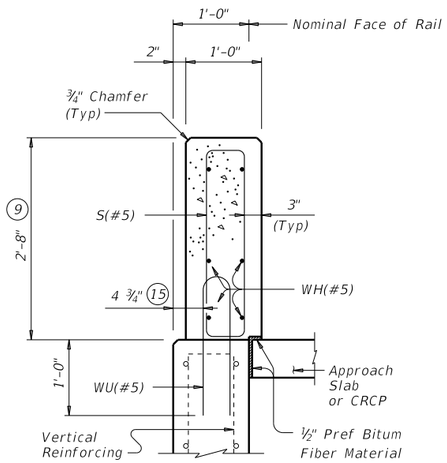
BARS WU (#5)



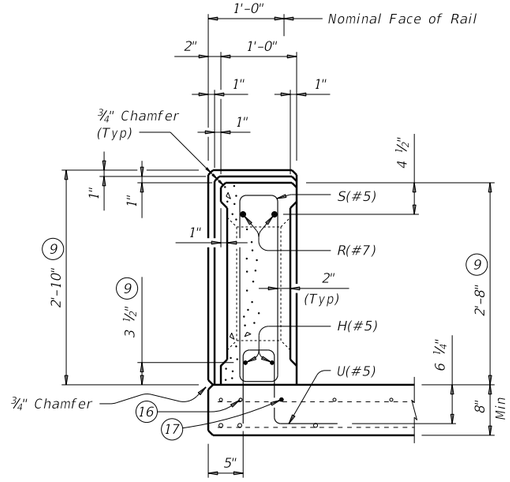
BARS U (#5)



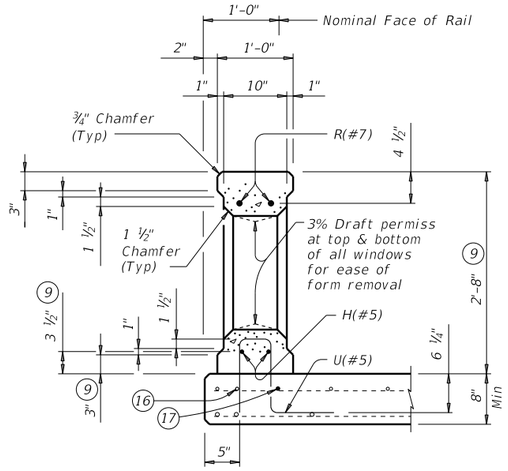
BARS S (#5)



ON ABUTMENT WINGWALLS
OR CIP RETAINING WALLS

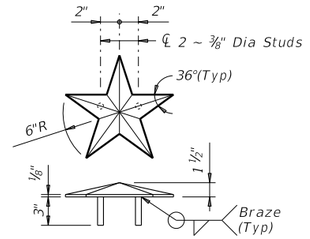


SECTION THRU
POST ON BRIDGE SLAB
(Showing Pilaster)



SECTION THRU
WINDOW ON BRIDGE SLAB

SECTIONS THRU RAIL



BRONZE STAR DETAIL (18)

Two known manufacturers are:

1. Kassons Castings
   Austin, Texas

2. Southwell Company
   San Antonio, Texas

CONSTRUCTION NOTES:

Attach Bronze Star with a Type III Class C epoxy. Clamp star until epoxy achieves set. Remove any visible epoxy "squeeze out" from under star.

Face of rail and pilasters, parapet must be plumb unless otherwise approved.

Apply a one rub finish to all railing surfaces unless otherwise shown elsewhere on the plans.

MATERIAL NOTES:

Provide Class "C" concrete for railing. Provide Class "C" (HPC) concrete if shown elsewhere in the plans.

Provide Grade 60 reinforcing steel.

Provide bar laps, where required, as follows:

Uncoated ~ #5 = 1'-9"
Uncoated ~ #7 = 2'-9"
Epoxy coated ~ #5 = 2'-7"
Epoxy coated ~ #7 = 4'-1"

Epoxy coat all rail reinforcement if slab bars are epoxy coated.

Bronze Star must be cast of architectural bronze having the following composition: Copper 85 %, Tin 5 %, Lead 5 %, Zinc 5 %.

GENERAL NOTES:

This rail was evaluated based on the results of previous crash tests and approved for a NCHRP Report 350 TL-2 rating. This rail is only approved for low speed use, speeds of 45 mph and less.

Do not use this railing on bridges with expansion joints providing more than 5" movement.

Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Shop drawings will not be required for this rail.

See Bridge Layout or other plan sheets for the following: dimensions with the number of span pilasters, dimensions with the number of windows, window type, inclusion of bronze stars, inclusion of construction year with abutment identity.

Submit erection drawings showing span number, span pilaster locations, number of windows between pilasters and spacing to first window (see Note 6) to the Engineer for approval.

Average weight of railing with no overlay increase and no pilasters is 270 plf.

Cover dimensions are clear dimensions, unless noted otherwise.

Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation

Bridge Division Standard

TRAFFIC RAIL
TEXAS CLASSIC

TYPE T411

FILE: rlstd008.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT July 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.







Cornerstone Structural Engineering Group Inc.

986 West Alluvial Avenue, Suite 201, Fresno, CA 93711 | TEL (559) 320-3200 | FAX (559) 320-3201 | www.cseg.com

Initial Site Assessment (2018)

Phase I Initial Site Assessment

MINERAL KING ROAD BRIDGE PROJECT

AKA HISTORIC OAK GROVE BRIDGE

Bridge Number: 46C-0196

Federal Project Number: BRLO 5946(106)

Tulare County, California

WKA No. 10909.01

November 2, 2016

Revised April 11, 2018

Prepared for:

Ms. Erinn Silva

GPA Consulting

231 California Street

El Segundo, California 90245

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 U.S.C. 327 and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans.

Phase I Initial Site Assessment

MINERAL KING ROAD BRIDGE PROJECT

AKA HISTORIC OAK GROVE BRIDGE

Bridge Number: 46C-0196

Federal Project Number: BRLO 5946(106)

Approximately 6.5 Miles East of State Route 198

Tulare County, California

WKA No. 10909.01

November 2, 2016

Revised April 11, 2018

Wallace-Kuhl & Associates (WKA), on behalf of GPA Consulting, prepared this Phase I Initial Site Assessment for the Mineral King Road Bridge (also known as Historic Oak Grove Bridge) (Bridge Number 46C-0196) Project in Tulare County, California. This project is identified as Federal Project Number BRLO 5946(106). The project will utilize federal Highway Bridge Program funding, and the project is being processed through Caltrans' Local Assistance Program. Caltrans is the Lead Agency under the National Environmental Policy Act and the County of Tulare (the project proponent) is the Lead Agency under the California Environmental Quality Act (CEQA). We declare that, to the best of our professional knowledge and belief, the report preparer and reviewer both meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312 and have the "specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312." Resumes of the key staff who prepared this report are included in Appendix A.

WALLACE▪KUHL & ASSOCIATES



Bryan C. Yates
Project Manager

Kurt Balasek, P.G., C.HG.
Senior Hydrogeologist

Phase I Initial Site Assessment

MINERAL KING ROAD BRIDGE PROJECT

AKA HISTORIC OAK GROVE BRIDGE

Bridge Number: 46C-0196

Federal Project Number: BRLO 5946(106)

WKA No. 10909.01

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A Resumes
B ASTM E 1527-13 User Questionnaire and Helpful Documents Checklist
C EDR® Radius Map Report Executive Summary
D Preliminary Screen for Vapor Encroachment Conditions Matrix

Attached CD contains: EDR® Reports: (Radius Map Report, Aerial Photographic Decade Package, Historical Topographic Maps, Sanborn Map Search), and Phase I ISA Mineral King Road Bridge Project AKA Historic Oak Grove Bridge (Bridge Number 46C-0196) (WKA No. 10909.01 dated November 2, 2016 Revised April 11, 2018).

Phase I Initial Site Assessment

MINERAL KING ROAD BRIDGE PRONECT

AKA HISTORIC OAK GROVE BRIDGE

Bridge Number: 46C-0196

Federal Project Number: BRLO 5946(106)

WKA No. 10909.01

EXECUTIVE SUMMARY

The purpose of this Phase I Initial Site Assessment (ISA) was to assess the Mineral King Road Bridge (also known as Historic Oak Grove Bridge) (Bridge Number 46C-0196) and three separate construction staging areas, Staging Areas 1 through 3, (herein referred to as Site) (Figure 1) for evidence of Recognized Environmental Conditions (RECs) resulting from current and/or former Site activities. Since the Site is located within existing public right-of-way, no Tulare County Assessor's Parcel Numbers (APNs) have been assigned. The bridge was constructed in 1923. This project is identified as Federal Project Number BRLO 5946(106).

The following presents a list of observations and findings identified during the preparation of this report:

- The historical land use research dating back to late 1904 revealed that the Site has remained in use as a surface roadway(s), bridge(s) and right-of-way;
- No agency-listed facilities are located within the immediate vicinity of the Site. Based on the completion of the vapor encroachment condition (VEC) screening matrix, WKA concludes a VEC can be ruled out because a VEC does not or is not likely to exist;
- The existing bridge within the Site has been in place since 1923;
- Mineral King Road has crossed the Site since at least 1904;
- KELLCO completed the Asbestos and Lead Paint Inspection Report on October 25, 2016. The report states that asbestos and lead paint was not found in any of the tested materials.
- Numerous piles of ground asphalt, concrete waste, green waste, and wood debris were observed within proposed construction Staging Area 2 (Figure 3A & 3B). Two large areas of surface soil staining were observed within the proposed construction staging area #2. These stained soil areas had a petroleum hydrocarbon odor. We estimate the depth of the staining to be approximately four inches.
- Proposed construction staging area #3 was observed to house multiple vehicles, small equipment storage, and dry materials storage. The dry materials was observed to include fencing materials, pvc piping, wood paneling, and a natural gas barbeque.

We have performed a Phase I ISA in conformance with the scope and limitations of ASTM Practice E 1527-13 for the Mineral King Road Bridge (also known as Historic Oak Grove Bridge) (Bridge Number 46C-0196) and three separate construction staging areas. Any exceptions to, or deletions from, this practice are described in Section 6.4 of this report. This assessment has revealed no evidence of RECs in connection with the Site.

Phase I Initial Site Assessment

MINERAL KING ROAD BRIDGE PROJECT

AKA HISTORIC OAK GROVE BRIDGE

Bridge Number: 46C-0196

Federal Project Number: BRLO 5946(106)

WKA No. 10909.01

1.0 INTRODUCTION

1.1 Purpose

The purpose of this Phase I Initial Site Assessment (ISA) was to evaluate the Site for evidence of potential Recognized Environmental Conditions (RECs) resulting from current and/or former Site activities as defined by the American Society of Testing and Materials (ASTM) Standard E 1527-13 (ASTM, 2013).

According to the ASTM, "this practice is intended to permit a *user* to satisfy one of the requirements to qualify for the *innocent landowner*, *contiguous property owner*, or *bona fide prospective purchaser* limitations on CERCLA [Comprehensive Environmental Response, Compensation and Liability Act] liability (hereinafter, the "*landowner liability protections*," or "*LLPs*"): that is, the practice that constitutes "*all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601(35)(B)."

This ISA has been performed in general conformance with the ASTM Standard E 1527-13 and the scope and limitations defined in Wallace-Kuhl & Associates (WKA) proposal number, 3PR14083R, dated April 1, 2014. This ISA was completed as a technical study for the Mineral King Road Bridge (also known as Historic Oak Grove Bridge) (Bridge Number 46C-0196) Project in Tulare County, California. The project will utilize federal Highway Bridge Program funding, and the project is being processed through Caltrans' Local Assistance Program. Caltrans is the Lead Agency under the National Environmental Policy Act and the County of Tulare (the project proponent) is the Lead Agency under the California Environmental Quality Act (CEQA).

1.2 Scope of Services

WKA has completed this ISA for the Site shown on Figures 1 through 3. Mr. Richard Galvin with GPA Consulting authorized WKA to proceed with this assessment on January 16, 2015, through an executed GPA Consulting, Consultant Services Agreement between GPA Consulting and WKA. On June 29, 2017, Mr. Richard Galvin authorized WKA to proceed with a supplemental Site visit in order to complete a windshield survey of one additional proposed construction staging area (proposed construction staging area #3).

The scope of this assessment included the following:

- Conduct a Site reconnaissance for visual evidence of surface contamination and potential sources of subsurface contamination;

- Conduct a visual inspection of the adjoining properties for evidence of RECs
- Conduct interviews with the following, as available:
  - Key site manager,
  - Major occupants,
  - Past and present owners, operators,
  - Government and/or agency personnel, and,
  - Inquiries conducted at abandoned sites may include interviews with owners or occupants of neighboring or nearby properties;
- Conduct a records review, which included the following:
  - Physical setting documents to determine regional geology, general soil information, and local and regional groundwater conditions,
  - Historical information, including but not limited to, Sanborn maps, topographic maps, aerial photographs, ownership records, building department records, local street directories, zoning and land use records, and prior assessments, as available,
  - Environmental records, including federal, state, tribal, and county regulatory agency lists that will help identify RECs on the Site and the adjoining properties, and,
  - Based on the outcome of the database search, review of specific regulatory agency files for identified contaminated facilities in order to evaluate whether the listed facilities are hazardous materials threats to the Site;
- Conduct a preliminary screen for vapor encroachment conditions on the Site per ASTM E2600-10;
- Review of the completed *ASTM E 1527-13 User Questionnaire* (*Questionnaire*) regarding Recorded Environmental Liens, activity and use limitations (AULs), relationship of the purchase price to the fair market value of the Site, and any specialized knowledge of the Site;
- Review of environmental liens and AULs reports, as provided; and
- Prepare a final report of the results of the ISA.

1.3 Special Terms and Conditions

No special terms or conditions to the GPA Consulting, Consultant Services Agreement or the WKA scope of services were requested or performed during the preparation of this report. WKA was not authorized to conduct a search for environmental liens and AULs. GPA consulting provided WKA with a Preliminary Title Report that included a search for environmental liens and AULs covering any portion of the Site identified as right-of-way acquisition (including temporary construction easements).

1.4 User Provided Information

WKA provided GPA Consulting a copy of the User Questionnaire and the Helpful Documents checklist. These documents were not returned for our review at the time of completion of this report. In an effort to refine the study footprint and project description, GPA provided the following documents:

- Preliminary Environmental Study;
- Area of Potential Effects Map
- Project Scoping Study
- Project Footprint Map
- Project Location Map
- Project Staging Area Map

2.0 SITE DESCRIPTION

2.1 Site and Vicinity General Characteristics

The Site consists of the existing Mineral King Road Bridge (also known as Historic Oak Grove Bridge) (Bridge Number 46C-0196) and three separate construction staging areas, Staging Areas 1 through 3 (Figures 1 and 2). The project footprint includes land occupied by the bridge, the northern and southern bridge approaches, the footprint for a proposed temporary construction bridge, and three proposed construction staging areas. Since the bridge and associated roads are located within existing public right-of-way, no Tulare County Assessor's Parcel Numbers (APNs) have been assigned to those areas. The bridge was constructed in 1923.

2.2 Site Reconnaissance

A visual Site reconnaissance was conducted by WKA on August 3, 2016. A supplemental reconnaissance was completed on August 18, 2017. Figure 4 provides color photographs of photographs taken during the Site reconnaissance.

On the day of field reconnaissance, the Site consisted of Mineral King Road, the Mineral King Road Bridge (also known as Historic Oak Grove Bridge) (Bridge Number 46C-0196) over the Kaweah River, and vacant land. Mineral King Road was paved and the bridge appeared to be a cast-in-place concrete arch bridge. Dry seasonal grasses covered Staging Area 1. Numerous piles of ground asphalt, concrete waste, green waste, and wood debris were observed within proposed construction Staging Area 2. Two large areas of surface soil staining were observed within the proposed construction Staging Area 2. These stained soil areas had a petroleum hydrocarbon odor. Utilizing a shovel, we estimate the depth of the staining to be approximately four inches. Proposed construction staging area #3 was observed to house multiple vehicles, small equipment storage, and dry materials storage. The dry materials were observed to include fencing materials, pvc piping, wood paneling, and a natural gas barbeque.

2.2.1 Municipal Infrastructure and Utilities

Mineral King Road and the Mineral King Road Bridge (also known as Historic Oak Grove Bridge) (Bridge Number 46C-0196) are located within the Site. No other utilities or infrastructure were observed within the Site.

2.3 Adjoining Properties

The adjoining properties consist of vacant land, rural residences, water canals, and mountain roads.

3.0 INTERVIEWS

Interviews with various persons familiar with the Site vicinity, including representatives of public agencies, were conducted for the purpose of identifying past and present uses, which may have contributed to RECs on the Site. Results of those interviews are discussed in the following sections.

3.1 Owner or Key Site Manager

WKA provided GPA Consulting a copy of the User Questionnaire and the Helpful Documents checklist. These documents were not returned for our review at the time of completion of this report.

3.2 Occupants (Multi-family or Major)

No habitable structures or occupants are located within the Site boundaries.

3.3 Past and Present Owners, Operators, and/or Occupants

Tulare County owns and operates the Site including the bridge. Tulare County staff have indicated that the bridge within the Site was constructed in 1923 and is commonly referred to as the Historic Oak Grove Bridge (Bridge Number 46C-0196). No other information regarding past owners or uses was received by WKA during completion of this report.

3.4 State and/or Local Government Officials

Tulare County provided no information on the Site, except for that presented in Section 3.3 of this report.

WKA staff reviewed the State Water Resources Control Board Geotracker database for past or ongoing environmental investigations or cleanups within or near the Site. Facilities found within this database search can be found in Section 4.3 of this report.

WKA staff reviewed the State of California, Environmental Protection Agency, Department of Toxic Substances Control Envirostor database for past or ongoing environmental investigations or cleanups within or near the Site. Facilities found within this database search can be found in Section 4.3 of this report.

3.5 Abandoned Properties

As referenced in 40 CFR Part 312, in the case of inquiries conducted at "abandoned properties," as defined in §312.23(d), "where there is evidence of potential unauthorized uses of the Site or evidence of uncontrolled access to the site, the environmental professional's inquiry must include interviewing one or more (as necessary) owners or occupants of neighboring or nearby properties from which it appears possible to have observed uses of, or releases at, such abandoned properties…" No evidence of potential unauthorized uses, or evidence of uncontrolled access to the Site was observed. The Site is not considered an abandoned property and therefore, WKA did not interview owners or occupants of neighboring properties.

4.0 RECORDS REVIEW

The purpose of the records review is to obtain and review information concerning the current and historical use of the Site and adjoining properties that would help identify the presence of RECs in connection with the Site. The records review included review and discussion of the following, as available:

- Physical Setting Source(s);
- Historical Use Information; and,
- Environmental Record Sources.

4.1 Physical Setting Source(s)

The Site is depicted on the 2012 United States Geological Survey (USGS) 7.5 Minute topographic map of the Case Mountain*, California Quadrangle.* Mineral King Road is mapped crossing the East Fork of the Kaweah River. Mineral King Bridge (also known as Historic Oak Grove Bridge) (Bridge Number 46C-0196), and the Staging Areas 1 and 3, are located within Section 15, Township 17 South, Range 29 East, Mount Diablo Base and Meridian. Staging Area 2 is located within Section 39, Township 17 South, Range 29 East, Mount Diablo Base and Meridian. The Site ranges in elevation from 2,800 feet relative to mean sea level (msl) at Staging Area 1 to 2,400 feet msl at Staging Area 2.

4.1.1 Regional and Local Geology

The Site is located on the western slope the Sierra Nevada geomorphic province. The 450-mile long Sierra Nevada is a 40- to 50-mile wide west dipping fault block consisting of a series of uplifted Mesozoic granitic batholiths overlain by metamorphic and volcanic units. Elevations in the range extend from 400 feet in the western foothills up to 14,000 feet on its eastern edge where extensional block faulting of the basin and range province has produced high peaks and dramatic relief. Steep, rocky faces and glacier carved valleys feed high-energy streams descending to rolling foothills, where plutonic and metamorphosed rock abut flat-lying alluvial sediments of the province's western boundary with the Great Valley. (Norris and Webb, 1990).The Sierran block extends west beneath the Cenozoic alluvium of the Great Valley to presumably contact the Eastern Franciscan Formation of the Coast Ranges.

The complex structure of the Sierra Nevada is reflective of its equally complex geologic history. Faulting in the western Sierra Nevada mountains trends north-northwest.

The Geologic Map of California, Fresno Sheet shows the Site to be underlain by Mesozoic granitic rock (granodiorite).

4.1.2 Soil Survey

The United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) has created a web-based service for accessing soil information. According to the NRCS Web Soil Survey (WSS) the Site consists of Walong-Rock outcrop complex, Blasingame sandy loam, and Fallbrook sandy loam (USDA 2016).

4.1.3 Regional and Local Groundwater

The Site is located within the California Department of Water Resources (DWR) defined Tulare Lake Hydrologic Region. The Site is mapped outside of the alluvial groundwater basins and sub-basins. WKA searched data on the DWR website and found no DWR monitored wells within 1-mile of the Site (DWR, 2016).

WKA also searched the State Water Resources Control Board's (SWRCB) GeoTracker website for quarterly groundwater monitoring reports completed for facilities in the immediate vicinity of the Site. The GeoTracker website lists no facilities that are located within ½-mile of the Site.

4.2 Historical Use Information

WKA reviewed historical information to develop a history of the previous uses of the Site and surrounding area, in order to evaluate the Site and adjoining properties for evidence of RECs. Standard historical sources reviewed during the preparation of this report included the following, as available:

- Sanborn® Maps;
- Topographic Maps;
- Oil and Gas Well Maps;
- Aerial Photographs;
- Ownership Records;
- Building Department Records;
- Local Street Directories;
- Zoning and Land Use Records;

- Other Historical Sources; and,
- Prior Assessments.

Discussion of these historical sources is provided in the following sections.

4.2.1 Sanborn® Maps

Sanborn® Maps with coverage of the Site were obtained through Environmental Data Resources, Inc. (EDR®). EDR® is a national commercial provider of environmental database information. Sanborn® Maps are detailed drawings of site development, and were typically used by fire insurance companies to determine Site fire insurability. According to EDR®, Sanborn® Map coverage of the Site is not available (EDR®, 2016a-1 and EDR®, 2016a-2).

4.2.2 Topographic Maps

Historical USGS topographic maps with coverage of the Site and outlying land areas were reviewed. Topographic maps with coverage of the site dated 1904, 1909, 1937, 1957, 1967, 1987, 1994, and 2012 were available for review (EDR®, 2016b-1 and EDR®, 2016b-2).

Table 2

Year	Series	Observations
1904	30-Minute	A road is mapped crossing the Site oriented such that it appears generally consistent with the present day alignment of Mineral King Road. The area where the Site is mapped is labeled Oak Grove. No other structures or improvements are mapped within the Site or immediate vicinity.
1909	30-Minute	No significant changes were mapped within the Site and surrounding parcels.
1937	30-Minute	No significant changes were mapped within the Site and surrounding parcels.
1957	15-Minute	Two small structures are mapped on either side (east and west) of the Staging Area 1 portion of the Site. These mapped structures appear generally consistent with structures presently located adjacent to Staging Area 1.
1967	15-Minute	With the exception of a gauging station mapped less than ¼-mile east of the Staging Area 1, no significant changes were mapped within the Site and surrounding parcels.
1987	7.5-Minute	No significant changes were mapped within the Site and surrounding parcels
1994	7.5-Minute	No significant changes were mapped within the Site and surrounding parcels
2012	7.5-Minute	No significant changes were mapped within the Site and surrounding parcels.

4.2.3 Oil and Gas Well Maps

Review of California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) website showed that the Site is not located in a designated natural gas field. No DOGGR oil or gas wells are located within the Site. Additionally, no oil or natural gas wells were mapped within ¼-mile of the Site (DOGGR, 2016).

4.2.4 Aerial Photographs

Historical aerial photographs of the Site and general vicinity were compiled by EDR®. Photographs covering the years 1952, 1955, 1976, 1984, 1987, 1989, 2005, 2009, 2010, and 2012 (EDR®, 2016c-1 and EDR®, 2016c-2). Table 2 notes the changes on the Site and in the vicinity.

Table 3

Year	Scale	Observations
1952	1" = 500'	A roadway is visible within the bridge portion of the Site. This roadway is consistent with Mineral King Road and the Historic Oak Grove Bridge. Both the Staging Area 1 and Staging Area 2 portions of the Site are vacant. A roadway is visible crossing the southern area of the Staging Area 2 portion of the site and the northern portion of the Staging Areas 1 and 3 portions of the Site. No other improvements or structures are visible within the immediate vicinity of the Site.
1955	1" = 500'	No significant changes are noted for the Site or the vicinity.
1976	1" = 500'	No significant changes are noted for the Site or the vicinity.
1984	1" = 500'	No significant changes are noted for the Site or the vicinity.
1987	1" = 500'	Two small structures are visible on either side (east and west) of the Staging Area 1 portion of the Site. An area of disturbed soil is visible within the eastern portion of Staging Area 3. No other significant changes are noted for the Site or the vicinity.
1989	1" = 500'	This aerial photographic set only covers the Historic Oak Grove Bridge area and the Staging Area 1 portions of the Site. No significant changes are noted for these portions of Site or the vicinity.
2005	1" = 500'	No significant changes are noted for the Site or the vicinity.
2009	1" = 500'	A dirt road is visible crossing the Staging Area 3 portion of the Site. The dirt road appears to extend to a small structure located less than ¼-mile east of Staging Area 3. No other significant changes are noted for the Site or the vicinity.

Table 3		
Year	**Scale**	**Observations**
2010	1" = 500'	Parked vehicles are visible within the Staging Area 3 portion of the Site. No other significant changes are noted for the Site or the vicinity.
2012	1" = 500'	No significant changes are noted for the Site or the vicinity.

4.2.5 Ownership Records

The Site consists of mostly existing municipal right-of-way, no parcel numbers are associated with that portion of the Site. The only right-of-way acquisition planned for the proposed project is a temporary construction easement.

GPA consulting provided WKA with a Preliminary Title Report that included a search for environmental liens and AULs covering temporary construction easement. The Preliminary Title Report issued by First American Title Company dated December 28, 2017 identified the temporary construction easement to fall within Tulare County Assessor's Parcel Number (APN) 069-390-010-000. According to the report, title is said to be vested in Mr. Jamison Haley. No environmental liens or AULs were listed within the report.

4.2.6 Building Department Records

Tulare County identified the Mineral King Road Bridge (also known as Historic Oak Grove Bridge) (Bridge Number 46C-0196) as having been constructed in 1923. No other information regarding past owners or uses was received by WKA during completion of this report.

4.2.7 Local Street Directories

Local street directories with coverage of the site and adjoining properties were obtained from EDR® (EDR®, 2016d-1 and EDR®, 2016d-2). These documents contain business listings based on street number identifiers. The Site and surrounding parcels were not listed.

4.2.8 Zoning and Land Use Records

A review of the Tulare County zoning maps found that the Site is located outside of the areas within the county with specified zoning.

A review of the FEMA Flood Insurance Rate Map database found that the Site is located in an area where the flood map panel has not been printed and is not available.

4.2.9 Other Historical Sources

Review of additional historical sources was not warranted in order for the Environmental Professional to make a determination as to evidence of potential RECs on the Site.

4.2.10 Prior Assessments

No prior assessments were provided for our review.

4.3 Environmental Record Sources

4.3.1 Regulatory Agency Databases

EDR® was contacted to provide a summary of facilities listed on regulatory agency databases (EDR®, 2016e-1 and EDR®, 2016e-2). Table 3 summarizes the researched ASTM required *Standard Environmental Record Sources*, as well as several *Additional Environmental Record Sources*, as defined in Sections 8.2.1 and 8.2.2 of the ASTM Standard. For additional reference, the Executive Summary of the EDR® report is included in Appendix B.

Table 3

	EDR Listed Database	*ASTM E 1527-13 Search Distance*	No. of Facilities Listed (within Search Radius)
Federal			
Federal NPL Site List	*NPL*	1-mile	0
Federal Delisted NPL Site List	*Delisted NPL*	1/2-mile	0
Federal CERCLIS List	*CERCLIS*	1/2-mile	0
Federal CERCLIS NFRAP Site List	*CERCLIS NFRAP*	1/2-mile	1
Federal RCRA CORRACTS Facilities List	*CORRACTS*	1-mile	0
Federal RCRA Generators List:			
Small Quantity and Large Quantity Generators	*RCRA SQG*	site & adjoining	0
	RCRA LQG		0
Landfills and Solid Waste Management Units	*RCRA TSDF*	1/2-mile	0
Federal Institutional Control / Engineering Control Registries	*US ENG Controls*	site only	0
	US INST Controls		0
Federal ERNS List	*ERNS*	site only	0
State			
State-equivalent NPL (Hist. Cal-Sites)	*Hist. Cal-Sites*	1-mile	0
State-equivalent CERCLIS	*RESPONSE*	1/2-mile	0
State Landfill and/or Solid Waste Disposal Site	*SWF/LF (SWIS)*	1/2-mile	0
	WMUDS/SWAT		0

Table 3

	EDR Listed Database	*ASTM E 1527-13 Search Distance*	No. of Facilities Listed (within Search Radius)
State Leaking Underground Storage Tanks	*LUST- Reg 5 Geotracker*	1/2-mile	0
Tribal Leaking Underground Storage Tanks	*Indian LUST*	1/2-mile	0
State Registered Underground Storage Tanks	*UST*	site & adjoining	0
Tribal Registered Underground Storage Tanks	*Indian UST*	site & adjoining	0
State Registered Aboveground Storage Tanks	*AST*	site & adjoining	0
State Institutional Control Registries	*DEED*	site only	0
State Voluntary Cleanup Sites	*VCP*	1/2-mile	0
Additional Environmental Record Sources			
Hazardous Waste & Substances Sites List	*CORTESE*	1/2-mile	0
DTSC EnviroStor (includes Cal-Sites)	*EnviroStor*	1-mile	0
SLIC	*SLIC - Reg 5*	1/2-mile	0
Cleaner Facilities	*Drycleaners*	1/4-mile	0
HAZNET	*HAZNET*	1/4-mile	0
Local – County			
Tulare County	*Tulare County*	1/2-mile	0

Review of the EDR® report indicates the Site and surrounding parcels are not listed on any of the EDR® databases.

4.3.2 Preliminary Screen for Vapor Encroachment Conditions

WKA conducted a preliminary screening for vapor encroachment conditions (VEC) beneath the Site using the Tier 1 vapor encroachment screening evaluation[1]. The Tier I screening included performing a *Search Distance Test* to identify if there are any known or suspect contaminated properties surrounding or upgradient of the Site within specific search radii, and a *Chemicals of Concern (COC) Test* (for those known or suspect contaminated properties identified within the *Search Distance Test*) to evaluate whether or not COC are likely to be present. The Vapor Encroachment Screening Matrix is included in Appendix C.

Based on the completion of the VEC-screening matrix, a VEC can be ruled out because a VEC does not or is not likely to exist.

[1] The Preliminary Screen for Vapor Encroachment Conditions was based on the guidelines presented in the ASTM *E 2600-10 Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*.

EDR® was contacted to provide a Vapor Encroachment Screen for the site (EDR®, 2014f-1 and EDR®, 2014f-2). No areas of concern were identified.

4.3.3 Environmental Lien Search

The Site consists of mostly existing municipal right-of-way, no parcel numbers are associated with that portion of the Site. The only right-of-way acquisition planned for the proposed project is a temporary construction easement.

GPA consulting provided WKA with a Preliminary Title Report that included a search for environmental liens and AULs covering temporary construction easement. The Preliminary Title Report issued by First American Title Company dated December 28, 2017 identified the temporary construction easement to fall within Tulare County Assessor's Parcel Number (APN) 069-390-010-000. According to the report, title is said to be vested in Mr. Jamison Haley. No environmental liens or AULs were listed within the report.

5.0 ASBESTOS AND LEAD PAINT INSPECTION

At the request of GPA Consulting, WKA retained the services of KELLCO Services, Inc. (KELLCO) to complete a lead and asbestos inspection report of the Mineral King Road Bridge (also known as Historic Oak Grove Bridge) (Bridge Number 46C-0196). KELLCO completed the Asbestos and Lead Paint Inspection Report on October 25, 2016, (KELLCO Job No. 1610-03). The specific inspector(s) utilized by KELLCO included an asbestos inspector licensed with the State of California, Department of Occupational Safety and Health and a lead inspector licensed by the State of California Department of Public Health. KELLCO collected samples of the bridge materials only. The KELLCO report states that asbestos and lead paint was not found in any of the tested materials. The KELLCO report makes the following recommendations:

- The inspection was a reasonable attempt to find suspect materials that were hidden within walls, behind structures, in vertical shafts or in areas not normally accessible. If any non-sampled materials are uncovered, these should be submitted for asbestos and/or lead paint analysis.
- Although the materials analyzed were negative for lead paint, for the purposes of demolition it is recommended that all painted materials be considered as lead containing.

A copy of the KELLCO Asbestos and Lead Paint Inspection Report can be found in Appendix D of this report.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Data Gaps

WKA identified the following data gaps during the completion of this report:

- The time intervals between the Standard Historical Sources (i.e., topographic maps, aerial photographs, other historical sources) exceeded the ASTM minimum five-year period. However, the use of the Site appears unchanged within the time gaps, and therefore, research of the Site use during the time gaps is not required by the ASTM Standard (Refer to *Section 8.3.2.1 – Intervals* of the ASTM E 1527-13 standard).
- The User Questionnaire and Helpful Documents Checklist were not completed and returned at the time of completion of this report. A listing of the previously completed documents provided to WKA and utilized to refine the project scope are listed in Section 1.4 of this report.
- Limited Site history was provided by Tulare County.

It is the opinion of WKA that no significant data gaps were identified during the preparation of this report that affects the ability of the Environmental Professional to identify RECs on the Site.

6.2 Conclusions

The following presents a list of observations and findings identified during the preparation of this report:

- The historical land use research dating back to the late 1904 revealed that the Site has remained in use as a surface roadway(s), bridge(s) and right-of-way;
- No agency-listed facilities are located within the immediate vicinity of the Site. Based on the completion of the vapor encroachment condition (VEC) screening matrix, WKA concludes a VEC can be ruled out because a VEC does not or is not likely to exist;
- The existing Mineral King Road Bridge (also known as Historic Oak Grove Bridge) (Bridge Number 46C-0196) within the Site has been in place since 1923;
- Mineral King Road has crossed the Site since at least 1904;
- KELLCO completed the Asbestos and Lead Paint Inspection Report on October 25, 2016. The report states that asbestos and lead paint was not found in any of the tested materials.
- Numerous piles of ground asphalt, concrete waste, green waste, and wood debris were observed within proposed construction Staging Area 2 (Figure 3A & 3B). Two large areas of surface soil staining were observed within the proposed construction staging area #2. These stained soil areas had a petroleum hydrocarbon odor. We estimate the depth of the staining to be approximately four inches.
- Proposed construction staging area #3 was observed to house multiple vehicles, small equipment storage, and dry materials storage. The dry materials was observed to include fencing materials, pvc piping, wood paneling, and a natural gas barbeque.

We have performed a Phase I ISA in conformance with the scope and limitations of ASTM Practice E 1527-13 for the Mineral King Road Bridge (also known as Historic Oak Grove Bridge) (Bridge Number 46C-0196) and two separate construction staging areas. Any exceptions to, or deletions from, this practice are described in Section 6.4 of this report. This assessment has revealed no the following evidence of RECs in connection with the Site:

6.3 Recommendations

Based on the conclusions presented and the documentation contained herein, WKA recommends the following actions:

- The KELLCO lead paint and asbestos inspection was a reasonable attempt to find suspect materials that were hidden within walls, behind structures, in vertical shafts or in areas not normally accessible. If any non-sampled materials are uncovered, these should be submitted for asbestos and/or lead paint analysis.
- Although the materials analyzed by KELLCO were negative for lead paint, for the purposes of demolition and worker health and safety, it is recommended that all painted materials be considered as lead containing.
- Numerous piles of ground asphalt, concrete waste, green waste, and wood debris were observed within proposed construction Staging Area 2. Two large areas of surface soil staining were observed within the proposed construction Staging Area 2. We recommend that this debris and stained soil be collected for appropriate disposal.
- Proposed construction staging area #3 was observed to house multiple vehicles, small equipment storage, and dry materials storage. The dry materials was observed to include fencing materials, pvc piping, wood paneling, and a natural gas barbeque. We recommend that a pre-occupation inspection be completed prior to contractor occupation of Staging Area 3.

6.4 Exceptions and/or Deletions

With the exception of the Data Gaps listed in Section 5.1 of this report, no exceptions or deletions from the ASTM E 1527-13 standard were made during the performance of this ISA.

6.5 Additional Services

Non-scope considerations, such as assessment for naturally occurring asbestos (NOA), wetlands evaluation, indoor air quality, laboratory testing of the soils and groundwater beneath the Site for environmental contaminants (such as agricultural-related pesticides, termiticides, polychlorinated biphenyls [PCBs], or arsenic), were not included or requested as part of this ISA. Additionally, this ISA included conducting a Tier 1 vapor encroachment screening in accordance with the ASTM *E 2600-10 Vapor Encroachment Screening on Property Involved in Real Estate Transactions.*

7.0 LIMITATIONS

The statements and conclusions in this report are based upon the scope of work described above and on observations made only on the date of the field reconnaissance, August 3, 2016 and August 18, 2017. Work was performed using a degree of skill consistent with that of competent environmental consulting firms performing similar work in the area. Information regarding the Site that is *publicly available* and *practically reviewable,* as described in the ASTM standard, was obtained. Additional research or receipt of information regarding the site that was not disclosed or available to WKA during this assessment may result in revision of the conclusions. The conclusions in this report should be reevaluated if site conditions change. No recommendation is made as to the suitability of the site for any purpose. The results of this assessment do not preclude the possibility that materials currently or in the future defined as hazardous are present on the Site, nor do the results of this work guarantee the potability of groundwater beneath the Site. This report is applicable only to the investigated Site and should not be used for any other property. No warranty is expressed or implied.

This report is viable for one year from the publication date of the report provided the following components are updated within 180 days of the date of purchase or (for transactions not involving an acquisition) the date of the intended transaction:

- Interviews with current owners/occupants and/or in order to identify changes in Site conditions or uses since the publication date of this report
- Searches for recorded environmental cleanup liens
- Visual inspection of the site and of adjoining properties with emphasis on changes in conditions or uses since the publication date of this report
- A current review of federal, state, tribal and county databases
- The declaration by the environmental professional responsible for the assessment.

Environmental Site Assessments completed more than one year prior to the date of purchase must be reviewed and updated in order for the *Environmental Site Assessment* to be considered valid per Section 4.6 (*Continued Viability of Environmental Site Assessment*), and Sections 4.7 and 8.4 (*Prior Assessment Usage*) of the ASTM E 1527-13 Standard.

8.0 REFERENCES

ASTM International. 2013. American Society for Testing and Materials, ASTM Standard E 1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, Pennsylvania (November 2013).

ASTM International. 2010. American Society for Testing and Materials, ASTM Standard E 2600-10, *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, Pennsylvania (June 2010).

Environmental Data Resources, Inc. (EDR®):

-2016a-1. *Certified Sanborn Map Report, Mineral King 1, Inquiry Number 4680212.3*, Milford, Connecticut (July 21, 2016).

-2016a-2. *Certified Sanborn Map Report, Mineral King 2, Inquiry Number 4680212.13*, Milford, Connecticut (July 21, 2016).

-2016b-1. *The EDR Historical Topographic Map Report, Mineral King 1, Inquiry Number 4680212.4*, Milford, Connecticut (July 21, 2016).

-2016b-2. *The EDR Historical Topographic Map Report, Mineral King 2, Inquiry Number 4680212.14*, Milford, Connecticut (July 21, 2016).

-2016c-1. *The EDR Aerial Photo Decade Package Report, Mineral King 1, Inquiry Number 4680212.10*, Milford, Connecticut (July 25, 2016).

-2016c-2. *The EDR Aerial Photo Decade Package Report, Mineral King 2, Inquiry Number 4680212.20*, Milford, Connecticut (July 25, 2016).

-2016d-1. *The EDR City Directory Abstract, Mineral King 1, Inquiry Number 4680212.6*, Milford, Connecticut (July 25, 2016).

-2016d-2. *The EDR City Directory Abstract, Mineral King 2, Inquiry Number 4680212.15*, Milford, Connecticut (July 25, 2016).

-2016e-1. The EDR Radius Map Report with Geocheck*, Mineral King 1, Inquiry Number 4680212.2s*, Milford, Connecticut (July 21, 2016).

-2016e-2. The EDR Radius Map Report with Geocheck*, Mineral King 2, Inquiry Number 4680212.12s*, Milford, Connecticut (July 21, 2016).

-2016f-1. *The EDR Vapor Encroachment Screen, Mineral King 1, Inquiry Number 4680212.7s*, Milford, Connecticut (July 21, 2016).

-2016f-2. *The EDR Vapor Encroachment Screen, Mineral King 2, Inquiry Number 4680212.16s*, Milford, Connecticut (July 21, 2016).

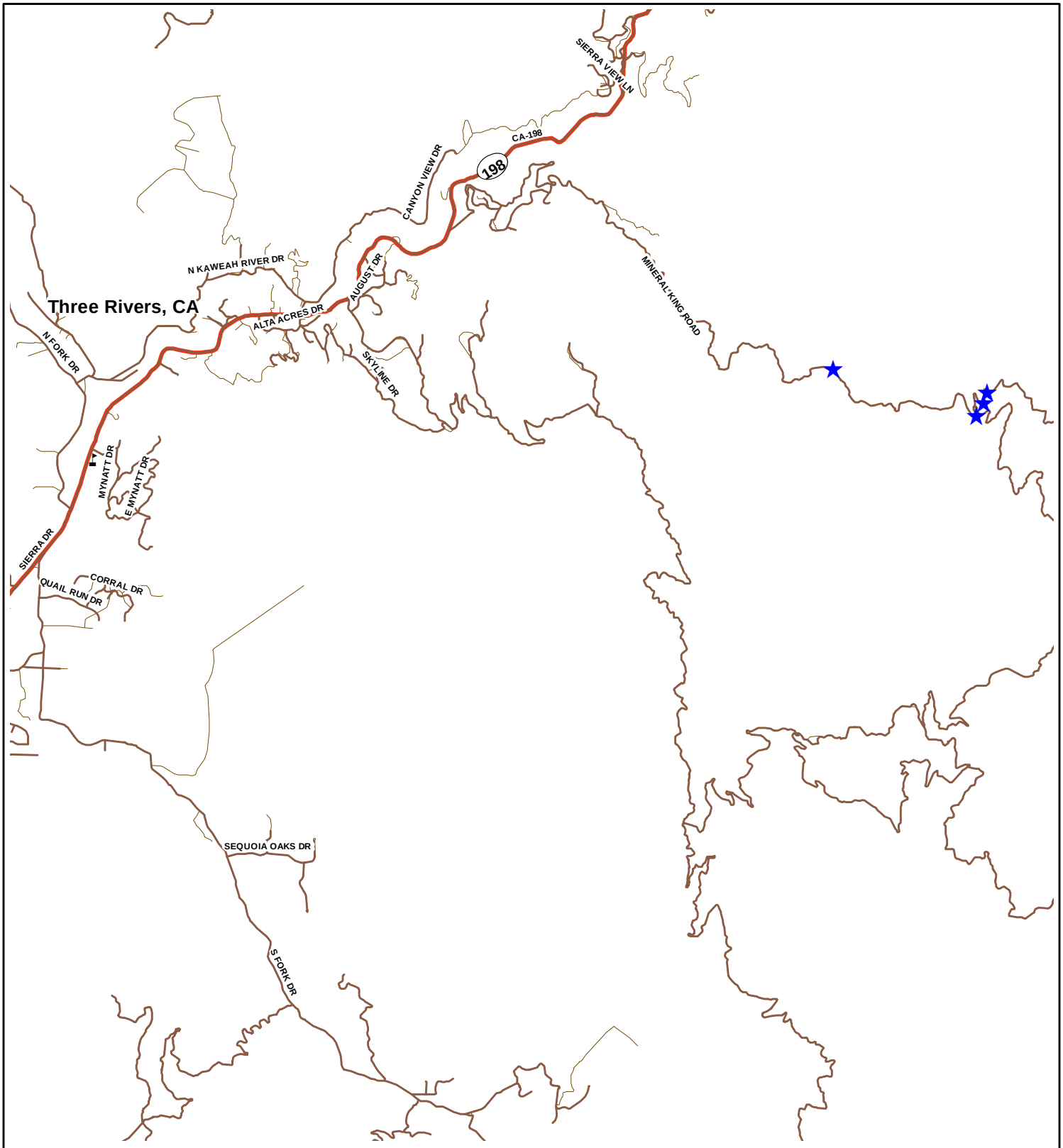
Norris, R. M., Webb, R. W., 1990, *Geology of California* Second Edition, John Wiley and Sons, Inc. New York.

State of California, Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR), http://maps.conservation.ca.gov/doggr/index.html (July 2016).

United States Department of Agriculture, Natural Resources Conservation Service, *Web Soil Survey,* http://soils.usda.gov/technical/classification/osd/index.html (USDA 2016).

Matthews, R.A., and Burnett, J.L., State of California, California Geologic Survey, 1965, Geologic Map of California, Fresno Sheet, 1:250,000.

FIGURES



Street data courtesy of Tulare County.
Projection: NAD 83, California State Plane, Zone VI
Prepared by Wallace-Kuhl and Associates.

Legend

★ Sites

N

0 2,500 5,000

Feet

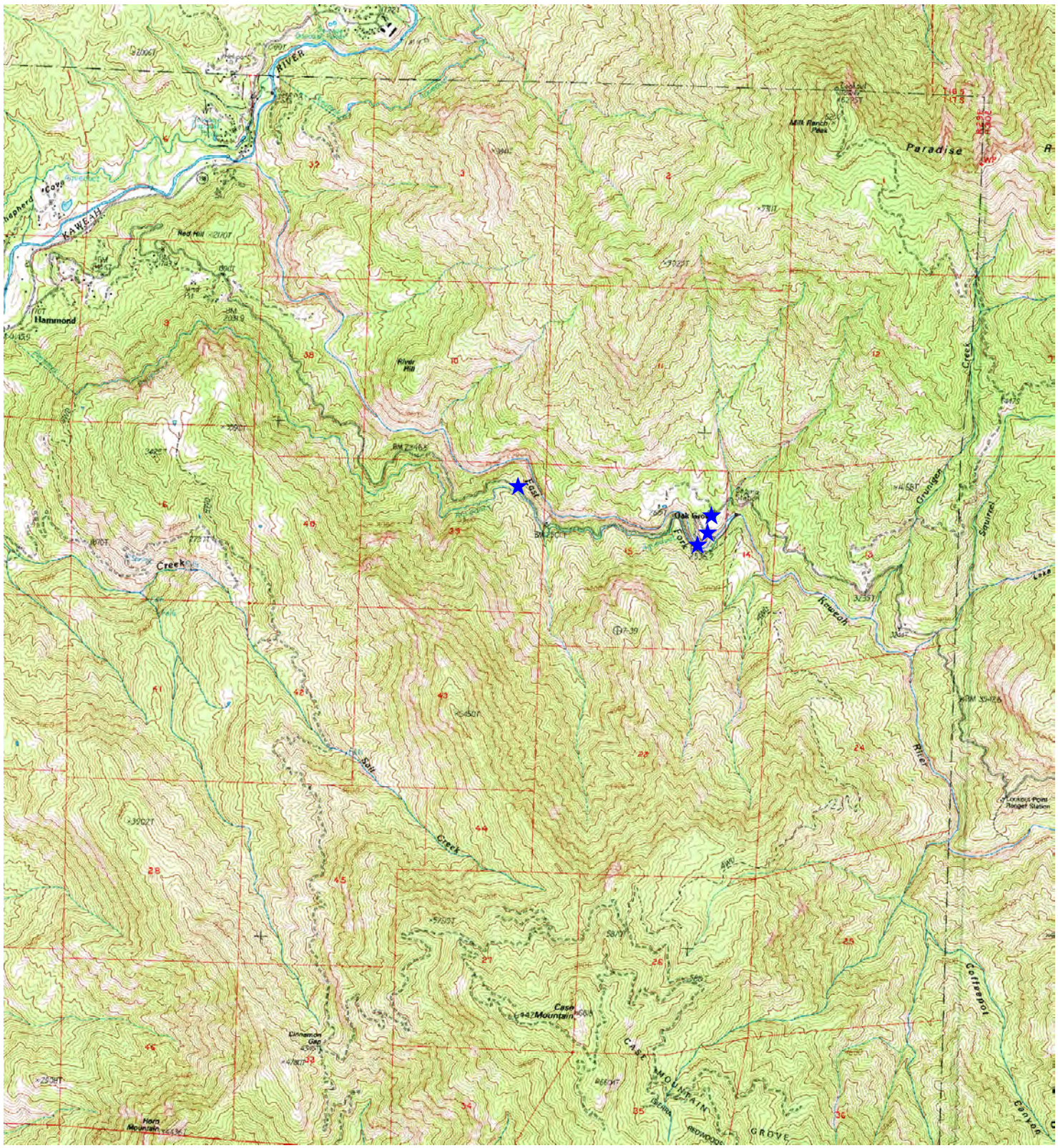
VICINITY MAP

MINERAL KING ROAD BRIDGE
AKA: HISTORIC OAK GROVE BRIDGE

Tulare County, California

FIGURE	1
DRAWN BY	RWO
CHECKED BY	DBN
PROJECT MGR	BCY
DATE	01/18

WKA NO. 10909.01



Adapted from U.S. Geological Survey 7.5 minute topographic maps of the Case Mountain quadrangle, California, dated 1994
Projection: NAD 83, California State Plane, Zone VI
Prepared by Wallace-Kuhl and Associates.

Legend

★ Sites

N

0 2,000 4,000

Feet

TOPOGRAPHIC MAP

MINERAL KING ROAD BRIDGE

AKA: HISTORIC OAK GROVE BRIDGE

Tulare County, California

FIGURE	2
DRAWN BY	RWO
CHECKED BY	DBN
PROJECT MGR	BCY
DATE	01/18

WKA NO. 10909.01



Aerial provided by ESRI.
Projection: NAD 83, California State Plane, Zone VI

Prepared by Wallace-Kuhl and Associates.

Legend

Site Boundary

N

0 100 200

Feet

AERIAL SITE MAP

MINERAL KING ROAD BRIDGE

AKA: HISTORIC OAK GROVE BRIDGE

Tulare County, California

FIGURE	3A
DRAWN BY	RWO
CHECKED BY	DBN
PROJECT MGR	BCY
DATE	01/18
WKA NO. 10909.01	



Aerial provided by ESRI.
Projection: NAD 83, California State Plane, Zone VI
Prepared by Wallace-Kuhl and Associates.

Legend

Site Boundary

N

0 100 200
Feet

AERIAL SITE MAP

MINERAL KING ROAD BRIDGE
AKA: HISTORIC OAK GROVE BRIDGE
Tulare County, California

FIGURE	3B
DRAWN BY	RWO
CHECKED BY	DBN
PROJECT MGR	BCY
DATE	01/18
WKA NO. 10909.01	

APPENDIX A

RESUMES

BRYAN C. YATES
ENVIRONMENTAL SPECIALIST

Bryan C. Yates has managed projects dealing with multiple aspects of private and public development including master-planned communities, residential subdivisions, schools, churches, commercial properties, and light industrial facilities since 1998.

At Wallace Kuhl & Associates, Mr. Yates provides consulting services for multiple disciplines including:

- Stormwater Pollution Prevention Plans
- Municipal Stormwater Management Planning/Permitting
- Environmental Site Assessments
- Geotechnical Feasibility Studies
- Construction Management
- Land Development Consultation
- Land Development Constraints Analysis
- Political Consulting/Public Agency Interaction

SELECTED PROJECT EXPERIENCE

Castle Farms, Merced, CA: Mr. Yates prepared a Phase I Environmental Site Assessment, assisted in the geotechnical feasibility study, planned and coordinated a ground water assessment, which included an aquifer pumping test. His work also included quarterly surface water and air monitoring that continued for three years. Castle Farms consists of approximately 2,500 acres of agriculture production land formerly used for growing almond and wine grapes crops. The property is surrounded by a chicken ranch, a former military installation a Class III Disposal Landfill and a dairy farm.

Leona Quarry, Oakland, CA: Mr. Yates coordinated the efforts of multiple members of the development and construction team with local and regional agencies. He assisted in the preparation of the Stormwater Management Plan and SWPPP for this reclaimed quarry located in the Oakland Hills. Re-use planning revolved around approximately 400 condominium and single-family residential lots within the former quarry. Leona Quarry was an aggregate mine in Alameda County, California that was undergoing closure/re-use Studies.

.

North Spring Street Bridge Widening Project, Los Angeles, CA: Mr. Yates completed, an Initial Site Assessment in general conformance with Caltrans Standard Environmental Reference. The proposed project would widen the existing 50-foot-wide viaduct by approximately 20 feet on each side, resulting in a 90-foot-wide by 700-foot-long viaduct the California Department of Transportation and the City of Los Angeles had voiced concerns over the hazardous materials impacts by the proposed project during the NEPA/CEQA environmental documentation process.

Sacramento Stucco Property, West Sacramento, CA: Mr. Yates completed a Phase I Environmental Site Assessment for the three-acre property located northwest of the intersection of Riske Lane and South River Road and assisted in getting the Property through the enrollment process for the VCA program with the DTSC.. The property was occupied by the active Sacramento Stucco Company operation. Development plans for the property include a 30- to 50-story building occupied by commercial space, a parking structure, and approximately 300 condominiums. This Brownfield property currently lies within the redevelopment zone identified by the City of West Sacramento. The property was historically occupied by a lead acid battery recycling operation,

Transcan/Hillcrest Area Specific Plan, Antioch, CA, Mr. Yates completed a modified Environmental Site Assessment in support of the initial planning land acquisition activities for this proposed 375-acre transit oriented development. Mr. Yates also assisted the project proponent in completing an opportunities and constraints analysis for the project. The project is planned for a multi-facetted transit oriented development with a town center, 2,500 high density residential units, and no single family residences. Initial planning was complicated by a mix of historic agriculture and industrial uses that will be mitigated throughout the development process.

Folsom Boulevard Streetscape, Rancho Cordova, CA, Mr. Yates completed multiple Phase I Environmental Site Assessments in support of the efforts by the City of Rancho Cordova to upgrade and revitalize the five-mile Folsom Boulevard Corridor. These assessments were completed as part of the technical studies for project NEPA/CEQA documentation and compliance. The

Folsom Boulevard corridor is the heart of the City of Rancho Cordova Redevelopment Zone. Special features within the corridor include 4 Sacramento Regional Transit Light Rail Stations, and 3 Park & Ride Lots. Two US EPA Superfund sites are located within one mile of the Project boundary.

Northeast Fairfield Specific Plan, Fairfield, CA, Mr. Yates completed a hazardous materials assessment study for this large master planned community. This project included the development of previously undeveloped land, the redevelopment of the Cement Hill industrial area, a transit village with Capitol Corridor service, a railroad grade separation, and redevelopment of former railroad facilities. The planned uses included more than 6,000 single family residences, an employment center, retail, warehouse, and commercial.

Livingston's Concrete Services, Multiple Locations, CA, Mr. Yates has provided stormwater consulting services for Livingston's Concrete Services facilities in Lincoln, Rancho Cordova, North Highlands, Marysville, and Ophir (proposed).

Sunset, Roseville, CA, The Sunset project consists of approximately 1,000 acres of cattle grazing land. Mr. Yates completed a Phase I Environmental Site Assessment for this project. He also facilitated domestic water services discussions between Placer County Water Agency, the City of Roseville, and the project proponent.

Church Street Subdivision, Half Moon Bay, CA, Mr. Yates completed several technical studies in support of the environmental planning and permitting of this residential infill project located within Half Moon Bay, California. Bryan completed a modified Phase I Environmental Site Assessment that included soils sampling and analysis, preliminary drainage study. The environmental sampling was completed as a screening tool to assess the potential for pesticides residues to be present in near surface soil of the site. The preliminary drainage study was complicated by dense riparian vegetation along the banks of Pilarcitos Creek, floodplain issues, and the potential need to realign the stream channel to accommodate for the potential of an upstream earthen dam failure.

Solano County Fairgrounds Redevelopment, Vallejo, CA, Mr. Yates completed a modified Phase I Environmental Site Assessment in support of the initial planning phase of the proposed redevelopment of this 180 acre existing county fairgrounds site. Large areas of undocumented fill, underground fuel storage tanks, animal disposal pits, lead/asbestos, PCBs, and animal waste in shallow groundwater were all issues identified in the initial phases of the assessment.

Stockton Waterfront Project, Stockton, CA, Mr. Yates was Project Manager for the approximately 70-acre designated Brownfield project. This site was the location of the Colberg Boat Works that had historically been used to build and repair mine sweeping ships during World War II and more recently had been utilized for a variety of industrial activities. Bryan completed the Phase I Environmental Site Assessment for this complex waterfront project. The project will encompass 69 single-family, waterfront residences with internal streets, underground utilities, landscaping, and clubhouse.

HIGHER EDUCATION:

California State University, Sacramento
Bachelors of Science-2000

University of California, Davis
Certificate in Land Use & Environmental Planning-2008

PROFESSIONAL REGISTRATIONS:

American Institute of Certified Planners (AICP) #188463

Registered Environmental Assessor, CA #08011-Program Suspended

Caltrans Certified Erosion Control Specialist 2003

24 Hour Hazardous Waste Training Course, 2003 (Updated Annually)

Certified Environmental Manager, Nevada #1926

Certified Professional in Erosion and Sediment Control (CPESC) #3824

Qualified SWPPP Developer & Practitioner (QSD/QSP), California # 21052

LEED Green Associate, GBCI #10747592

KURT M. BALASEK

SENIOR HYDROGEOLOGIST/DIRECTOR OF ENVIRONMENTAL SERVICES

Mr. Balasek has provided a leadership role in hydrogeologic and environmental consulting in the Western US. since 1989. His experience includes, residential and commercial land development, litigation support, permitting, regulatory compliance and technical team building. Mr. Balasek and his team have conducted a wide range of impacted soil and groundwater investigations, mine location and reclamation activities, water resource evaluations and conjunctive use studies. Mr. Balasek has supported municipal efforts to redevelop blighted neighborhoods using private and federal funding and has prepared successful grant applications for EPA Brownfield funding. Mr. Balasek has facilitated public stakeholder processes, organized public comments and used the information gathered from these efforts to prioritize neighborhood and regional site investigations and remedial activities.

Mr. Balasek specializes in unique approaches to problem solving and leverages nearly 30 years of regulatory relationships to assist clients facing enforcement actions. Mr. Balasek has saved his clients hundreds of thousands of dollars in reduced fines, monitoring requirements or realized project efficiencies.

SELECTED PROJECT EXPERIENCE

Stockton Worknet, Stockton, CA: Project was conducted for the City of Stockton Redevelopment Agency and involved delineation, removal and disposal for hydrocarbon and lead-contaminated soil discovered during a construction project. The project also involved a component of public outreach because a children's museum was located immediately adjacent to the site.

Hayden Hill Mine, Lassen, CA: Project consisted of third party review of mine closure plan for Lassen County. Provided technical assistance to Lassen County Planning Commission to facilitate permanent closure of large open pit mine.

Willow Creek, Folsom, CA: Project involved site investigation and subsequent removal of petroleum hydrocarbon-contaminated soil to facilitate private development of commercial property. Under my direction, I facilitated the investigation, excavation and coordination of closure petitions.

City of West Sacramento, West Sacramento, CA: Multiple Projects. These projects involved initial site evaluation of several hundred individual sites for the redevelopment of West Sacramento. Subsequent work involved site investigation and remediation of several sites under U.S. EPA Grants. Provided technical assistance to City staff and collaborated with them to best utilize the public funds and coordinate public outreach. Provided emergency consultation related to peroxide release at city water treatment plant and provides on-going management and monitoring of groundwater pump and treat system at the Port of Sacramento

Rominger Property, Winters, CA (on-going): This project involves detailed site investigation, hydrogeologic analysis and evaluation, and the selection of appropriate remediation technologies for a large plume of (MTBE) contamination on an Ag-industrial site. Project involvement included client and regulatory interaction.

HIGHER EDUCATION:

University of California, Santa Barbara
BA, Geological Sciences (1986)
California State University, Chico
MS, Hydrogeology/Hydrology (1990)

PROFESSIONAL REGISTRATIONS:

Professional Geologist No. 6162, CA
Certified Hydrogeologist No. 299, CA
Qualified Storm Water Developer
California Engineering Contractor A-Haz, C-57,

APPENDIX B

EDR® Radius Map Report Executive Summary

Mineral King 1
Mineral King Road
Three Rivers, CA 93271

Inquiry Number: 4680212.2s
July 21, 2016

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

MINERAL KING ROAD
THREE RIVERS, CA 93271

COORDINATES

Latitude (North):	36.4494100 - 36° 26' 57.87''
Longitude (West):	118.7928720 - 118° 47' 34.33''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	339322.8
UTM Y (Meters):	4035088.5
Elevation:	2527 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5603056 CASE MOUNTAIN, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140810, 20140723
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
MINERAL KING ROAD
THREE RIVERS, CA 93271

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List

US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land
SLIC ---------- Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST ---------- Underground Storage Tank Listing
UST ---------- Active UST Facilities
AST ---------- Aboveground Petroleum Storage Tank Facilities
INDIAN UST ---------- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ---------- Voluntary Cleanup Priority Listing
VCP ---------- Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS ---------- Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ---------- Waste Management Unit Database
SWRCY ---------- Recycler Database
HAULERS ---------- Registered Waste Tire Haulers Listing
INDIAN ODI ---------- Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ---------- Torres Martinez Reservation Illegal Dump Site Locations
ODI ---------- Open Dump Inventory

EXECUTIVE SUMMARY

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	Delisted National Clandestine Laboratory Register
HIST Cal-Sites	Historical Calsites Database
SCH	School Property Evaluation Program
CDL	Clandestine Drug Labs
Toxic Pits	Toxic Pits Cleanup Act Sites
US CDL	National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

SWEEPS UST	SWEEPS UST Listing
HIST UST	Hazardous Substance Storage Container Database
CA FID UST	Facility Inventory Database

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database

HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
FINDS	Facility Index System/Facility Registry System
DOCKET HWC	Hazardous Waste Compliance Docket Listing
UXO	Unexploded Ordnance Sites
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
FUELS PROGRAM	EPA Fuels Program Registered Listing
ECHO	Enforcement & Compliance History Information

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historic Gas Stations
EDR Hist Cleaner	EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List
RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

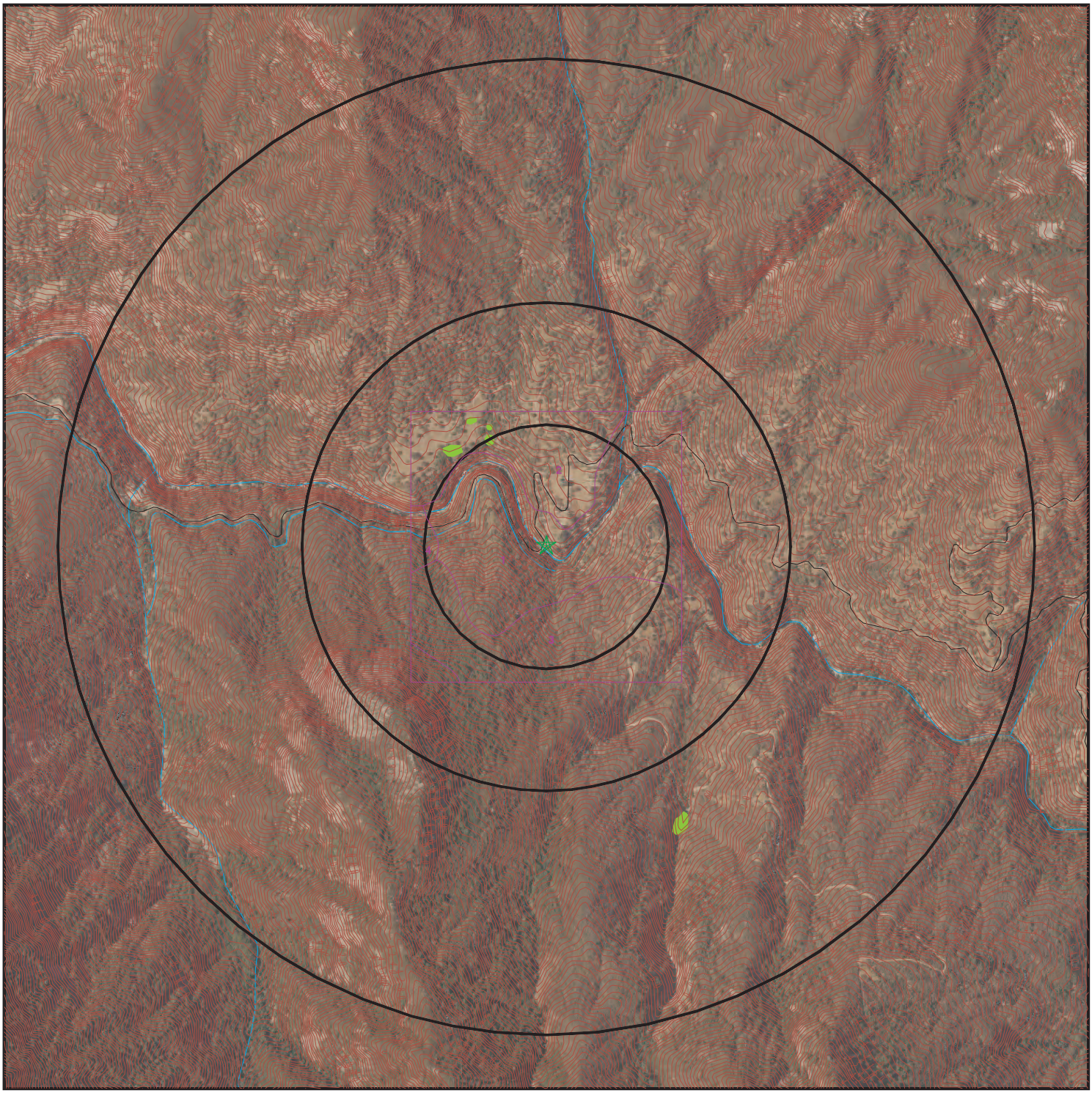
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
PACIFIC BELL - LOWER SITE	LUST, HIST CORTESE

OVERVIEW MAP - 4680212.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 1/4 1/2 1 Miles

- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

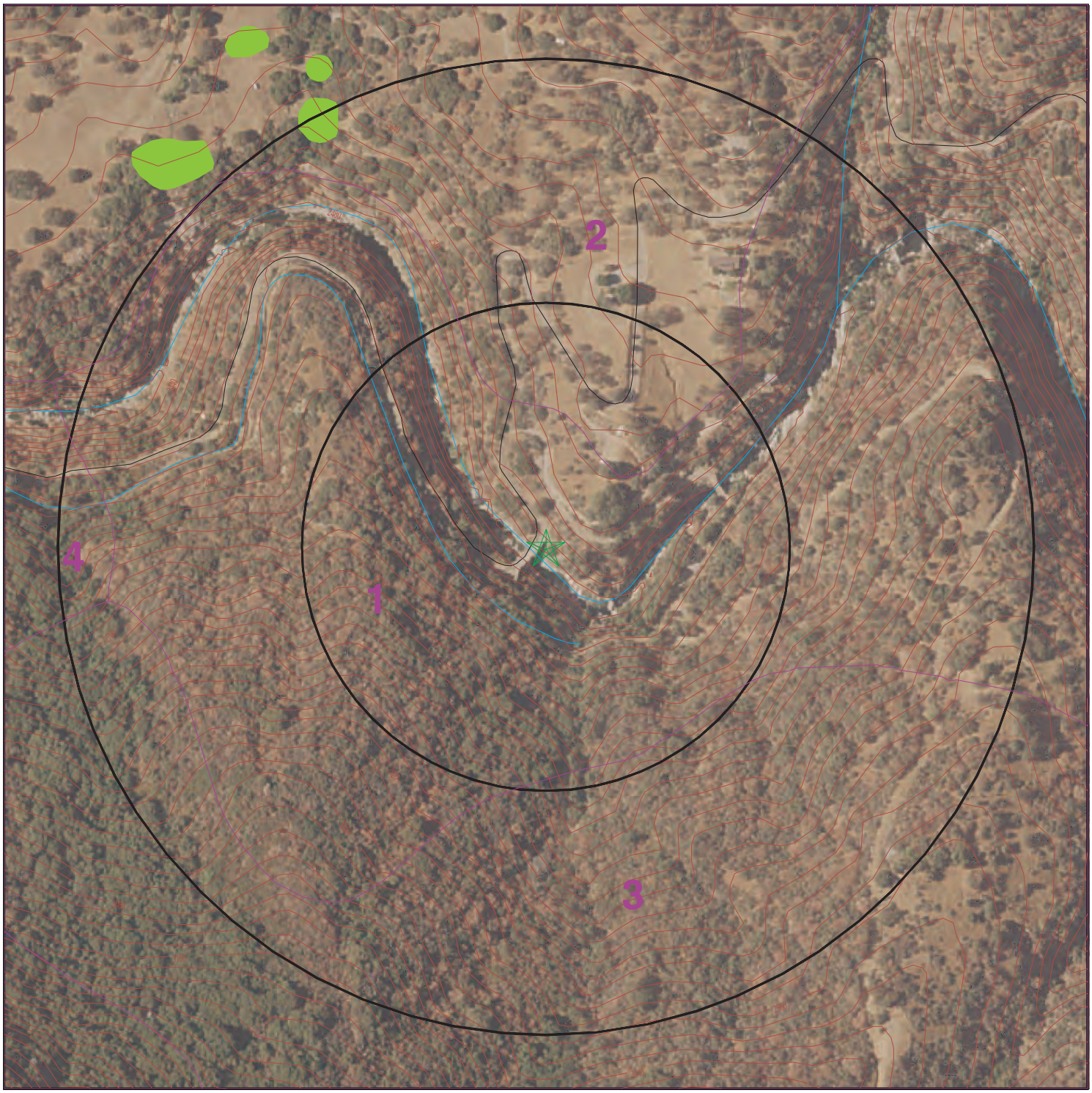
N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Mineral King 1	CLIENT:	Wallace - Kuhl & Associates
ADDRESS:	Mineral King Road Three Rivers CA 93271	CONTACT:	Bryan Yates
LAT/LONG:	36.44941 / 118.792872	INQUIRY #:	4680212.2s
		DATE:	July 21, 2016 1:35 pm

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DETAIL MAP - 4680212.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Mineral King 1	CLIENT: Wallace - Kuhl & Associates
ADDRESS: Mineral King Road Three Rivers CA 93271	CONTACT: Bryan Yates
LAT/LONG: 36.44941 / 118.792872	INQUIRY #: 4680212.2s DATE: July 21, 2016 1:36 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
MINES	TP		NR	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	0	0	0	0	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Mineral King 2
Mineral King Road
Three Rivers, CA 93271

Inquiry Number: 4680212.12s
July 21, 2016

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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Longitude (West):	118.8109170 - 118° 48' 39.30''
Universal Tranverse Mercator:	Zone 11
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UTM Y (Meters):	4035579.5
Elevation:	2505 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5603056 CASE MOUNTAIN, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140810, 20140723
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
MINERAL KING ROAD
THREE RIVERS, CA 93271

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

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CORRACTS ---------- Corrective Action Report

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Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List

US INST CONTROL---------- Sites with Institutional Controls

Federal ERNS list

ERNS---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST---------- Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST---------- Leaking Underground Storage Tanks on Indian Land
SLIC---------- Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST---------- Underground Storage Tank Listing
UST---------- Active UST Facilities
AST---------- Aboveground Petroleum Storage Tank Facilities
INDIAN UST---------- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP---------- Voluntary Cleanup Priority Listing
VCP---------- Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS---------- Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT---------- Waste Management Unit Database
SWRCY---------- Recycler Database
HAULERS---------- Registered Waste Tire Haulers Listing
INDIAN ODI---------- Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9---------- Torres Martinez Reservation Illegal Dump Site Locations
ODI---------- Open Dump Inventory

EXECUTIVE SUMMARY

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	Delisted National Clandestine Laboratory Register
HIST Cal-Sites	Historical Calsites Database
SCH	School Property Evaluation Program
CDL	Clandestine Drug Labs
Toxic Pits	Toxic Pits Cleanup Act Sites
US CDL	National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

SWEEPS UST	SWEEPS UST Listing
HIST UST	Hazardous Substance Storage Container Database
CA FID UST	Facility Inventory Database

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database

HIST FTTS ---- FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ---- Incident and Accident Data
CONSENT ---- Superfund (CERCLA) Consent Decrees
INDIAN RESERV ---- Indian Reservations
FUSRAP ---- Formerly Utilized Sites Remedial Action Program
UMTRA ---- Uranium Mill Tailings Sites
LEAD SMELTERS ---- Lead Smelter Sites
US AIRS ---- Aerometric Information Retrieval System Facility Subsystem
US MINES ---- Mines Master Index File
FINDS ---- Facility Index System/Facility Registry System
DOCKET HWC ---- Hazardous Waste Compliance Docket Listing
UXO ---- Unexploded Ordnance Sites
CA BOND EXP. PLAN ---- Bond Expenditure Plan
Cortese ---- "Cortese" Hazardous Waste & Substances Sites List
CUPA Listings ---- CUPA Resources List
DRYCLEANERS ---- Cleaner Facilities
EMI ---- Emissions Inventory Data
ENF ---- Enforcement Action Listing
Financial Assurance ---- Financial Assurance Information Listing
HAZNET ---- Facility and Manifest Data
HIST CORTESE ---- Hazardous Waste & Substance Site List
HWP ---- EnviroStor Permitted Facilities Listing
HWT ---- Registered Hazardous Waste Transporter Database
MINES ---- Mines Site Location Listing
MWMP ---- Medical Waste Management Program Listing
NPDES ---- NPDES Permits Listing
PEST LIC ---- Pesticide Regulation Licenses Listing
PROC ---- Certified Processors Database
Notify 65 ---- Proposition 65 Records
UIC ---- UIC Listing
WASTEWATER PITS ---- Oil Wastewater Pits Listing
WDS ---- Waste Discharge System
WIP ---- Well Investigation Program Case List
FUELS PROGRAM ---- EPA Fuels Program Registered Listing
ECHO ---- Enforcement & Compliance History Information

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ---- EDR Proprietary Manufactured Gas Plants
EDR Hist Auto ---- EDR Exclusive Historic Gas Stations
EDR Hist Cleaner ---- EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF ---- Recovered Government Archive Solid Waste Facilities List
RGA LUST ---- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

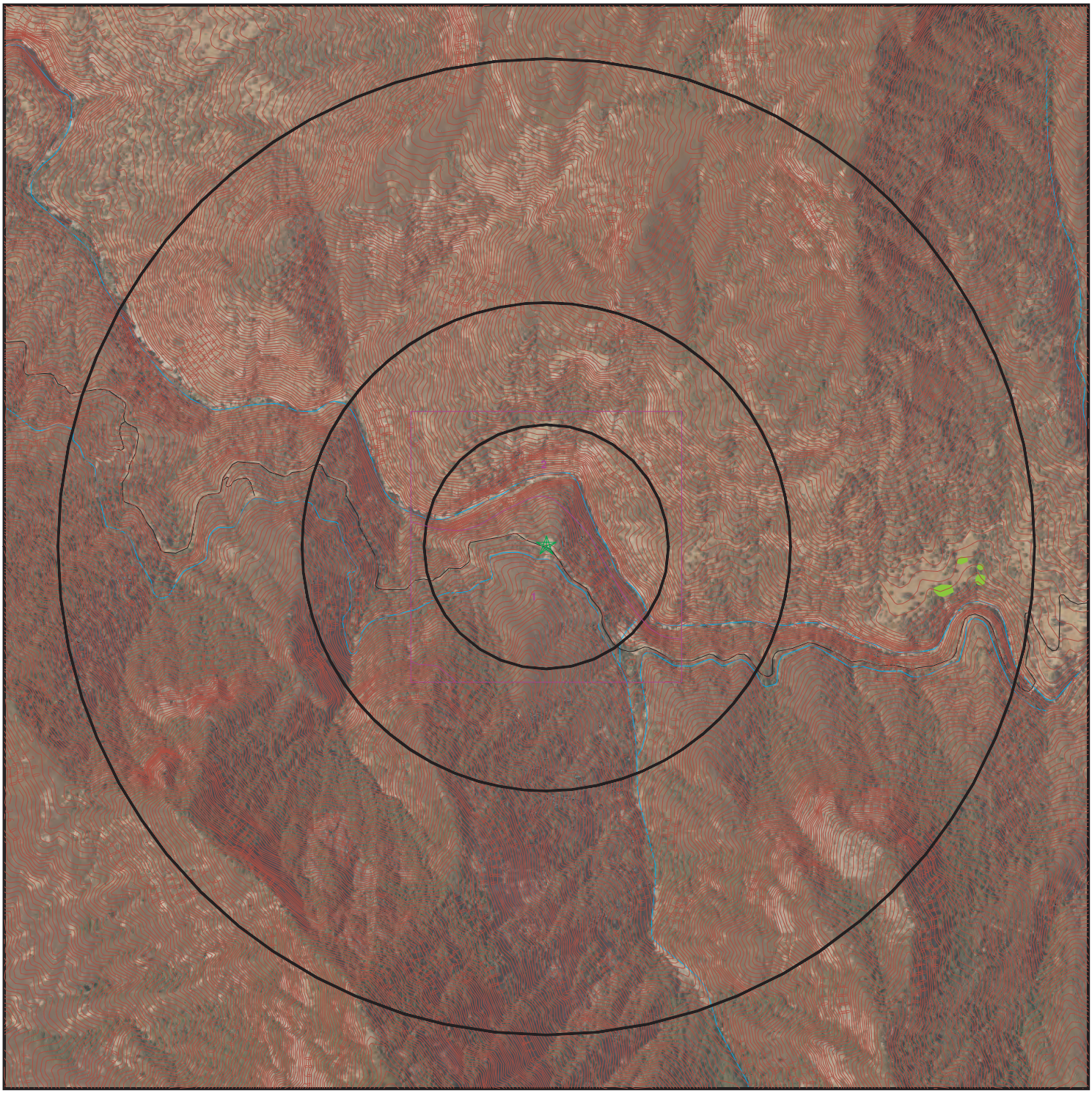
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
PACIFIC BELL - LOWER SITE	LUST, HIST CORTESE

OVERVIEW MAP - 4680212.12S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 1/4 1/2 1 Miles

- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

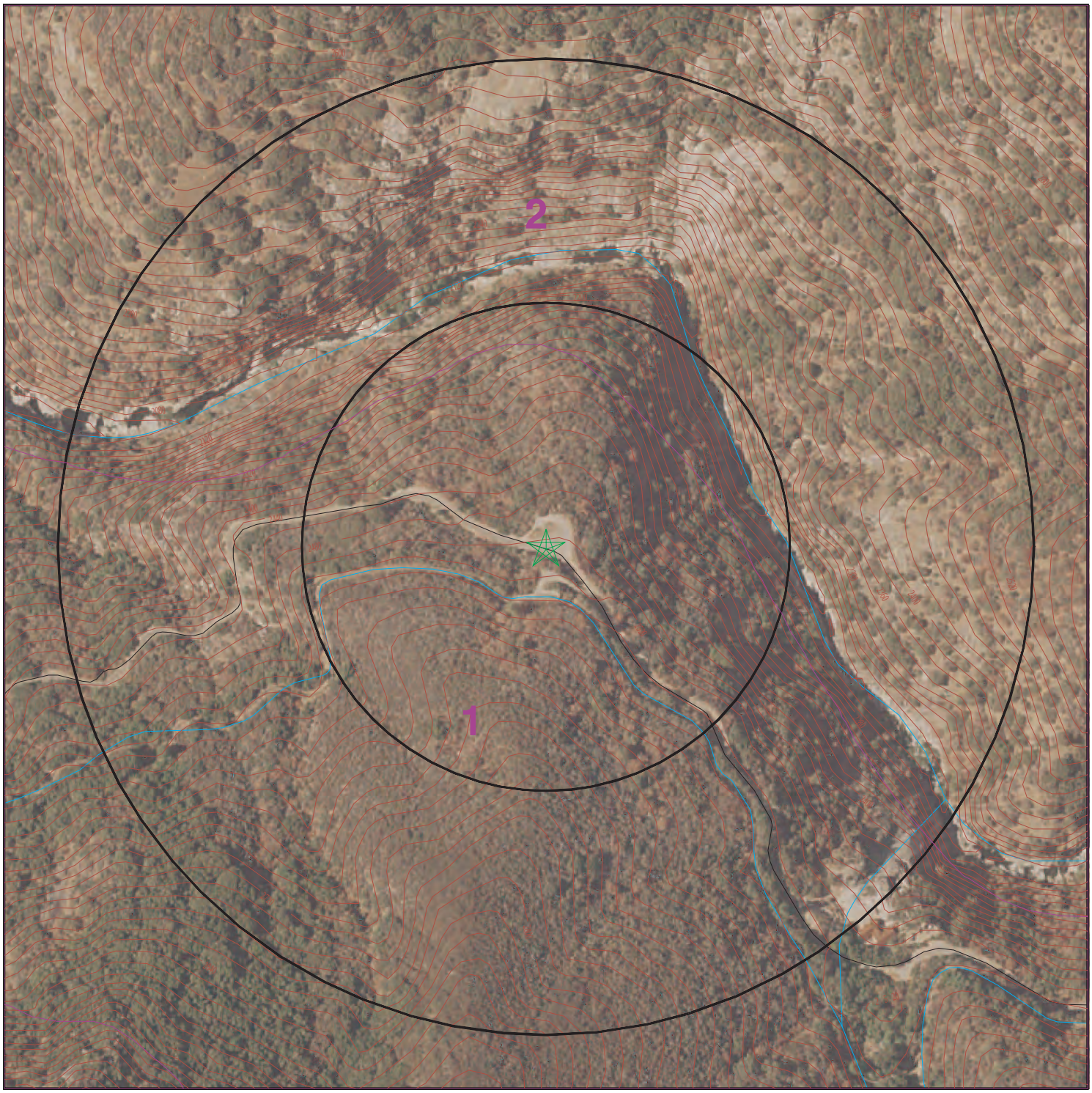
N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Mineral King 2	CLIENT:	Wallace - Kuhl & Associates
ADDRESS:	Mineral King Road Three Rivers CA 93271	CONTACT:	Bryan Yates
LAT/LONG:	36.453563 / 118.810917	INQUIRY #:	4680212.12s
		DATE:	July 21, 2016 1:37 pm

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DETAIL MAP - 4680212.12S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Mineral King 2	CLIENT:	Wallace - Kuhl & Associates
ADDRESS:	Mineral King Road Three Rivers CA 93271	CONTACT:	Bryan Yates
LAT/LONG:	36.453563 / 118.810917	INQUIRY #:	4680212.12s
		DATE:	July 21, 2016 1:38 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
MINES	TP		NR	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	0	0	0	0	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

APPENDIX C

Preliminary Screen for Vapor Encroachment Conditions Matrix

Screen for Vapor Encroachment Conditions Matrix
MINERAL KING ROAD BRIDGE
WKA No. 10909.01

Phase I ESA Screen for Vapor Encroachment Conditions (VEC) matrix includes a (1) **Search Radius Test,** (2) **Chemicals of Concern Test (COC),** and (3) a **Critical Distance Test**[1].

(1) Search Radius Test: Are there any known or suspect contaminated sites in the primary area of concern within the corresponding search radii? (if yes, see attached Table A).

Yes (No) If No, then screening for a VEC is complete and no VEC *currently* exists, go to #4. If Yes, then:

(2) **Chemicals of Concern**[2] **Test**: Are COC likely to be present within the area of concern for those known or suspect contaminated sites identified based on the Search Distance Test?

Yes No If No, then screening for a VEC is complete and no VEC *currently* exists, go to #4. If Yes, then:

If Yes, check all COC that apply on attached Table B.

(3) Critical Distance Test: A plume test to determine whether or not COC in the contaminated plume(s) may be within the critical distance.

(3a) Is information related to the contaminated(s) plume available (i.e. isoconcentration maps, site drawings, etc.)?
Yes No

(3b) If ***No***, then screening for a VEC is complete and no VEC *currently* exists, go to #4. If ***Yes***, then:

(3c) Is the site less than 100 feet to the nearest edge of a contaminated [non-petroleum hydrocarbon] plume(s)?
Yes No

(3d) Is the site less than 30 feet to the nearest edge of a dissolved petroleum hydrocarbon plume(s)?
Yes No

If the distance from the nearest edge of a contaminated plume to the nearest existing or planned structure on the site is less than 100 feet for non-petroleum hydrocarbon COC, or less than 30 feet for dissolved petroleum hydrocarbons, then it is presumed that a VEC *currently* exists beneath the site. If the distance from the nearest edge of the contaminated plume is greater than or equal to 100 feet for non-petroleum hydrocarbons, or 30 feet for dissolved petroleum hydrocarbon chemicals of concern, then it is presumed unlikely that a VEC *currently* exists beneath the site.

(4) Is it likely that a VEC *currently* exists beneath the site?
Yes (No) If *Yes,* then recommend performing a full scope VEC assessment according to ASTM E 2600-10.

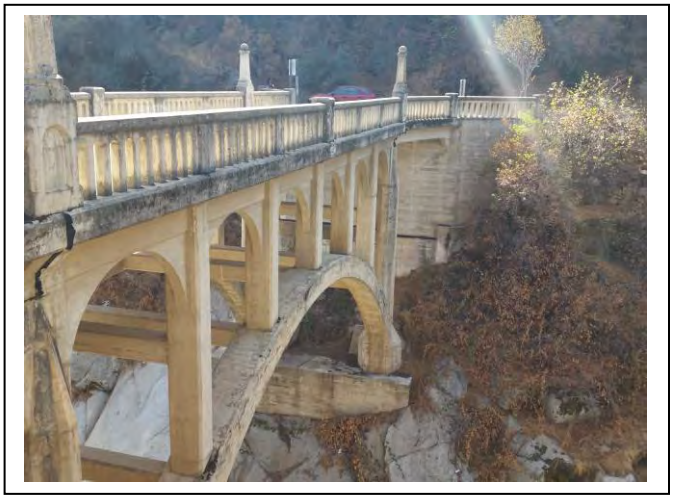
[1] Based on guidance presented in the ASTM E 2600-10 Standard.
[2] Chemical(s) of concern (COC): See attached table for typical chemicals of concern (as presented in Appendix X6.1 of the ASTM E 2600-10 Standard).

APPENDIX D

Asbestos and Lead Paint Inspection Report

Sequoia National Forest
Mineral King Bridge (Kaweah River Bridge)
Mineral King Road
Sequoia National Park, CA





KELLCO Job #1610-03

Asbestos and Lead Inspection Report

for

Wallace Kuhl & Associates
3050 Industrial Boulevard
West Sacramento, CA 95691

October 25, 2016

3137 Diablo Avenue • Hayward, CA 94545-2701• (510) 786-9751 • fax (510) 786-9625
http://www.kellco.com •: mailbox3137@kellco.co

Asbestos and Lead Paint Inspection Report

Date:	October 25, 2016
KELLCO Job #:	1610-03
Client:	Wallace Kuhl & Associates 3050 Industrial Boulevard West Sacramento, CA 95691
Location:	Sequoia National Forest Mineral King Bridge (Kaweah River Bridge) Mineral King Road Sequoia National Park, CA
Date of Inspection:	October 22, 2016
Inspectors:	Derrik Quach CSST #02-3214 Tim Cannard CAC #94-1395, CDPH Lead #764
Lab Reports:	189536, 189537
Description Of The Inspected Area:	The inspection was conducted on the Bridge located on Mineral King Road inside the Sequoia National Forest in California. KELLCO took samples for asbestos and lead only of the building materials used to make the bridge.

Background

This is an asbestos and lead inspection on a bridge located in the Sequoia National Forest in California.

Synopsis

Asbestos was **NOT** found in any of the tested materials.

Lead paint was **NOT** found in the tested materials.

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http://www.kellco.com •: mailbox3137@kellco.co

About the Inspection

The inspection performed was both visual and tactile. Samples were taken of suspect materials located at the exterior of the survey area.

The inspection was a reasonable attempt to find suspect materials that were hidden within walls, behind structures, in vertical shafts or in areas not normally accessible. If any non-sampled materials are uncovered, these should be submitted for asbestos and/or lead paint analysis.

The following numbering convention was used for this inspection:

LETTER	STANDS FOR	EXAMPLE	MEANING
XXXX-YY	Building DESIGNATION based on information provided on drawings provided to us prior to inspection	MKB-A-01	Mineral King Bridge, Asphalt Sample, First Sample
zz	Sample type **if not asbestos** (eg, M: mold; pb: Lead AND Sample number and layer	67-PB01	Building 67 lead 01

- ***Asbestos Findings***

Asbestos samples were analyzed in Schneider Laboratories Global by Polarized Light Microscopy, the EPA's recommended method. Copies of the full laboratory reports are attached. These valuable reports can be utilized as future reference to determine if a particular material was tested.

Photographs of sampled materials are included. Sample locations are noted on the attached not-to-scale drawing.

The determination of a material to be Asbestos Containing Material (ACM) was made either by direct sampling or by homogeneity with at least one positive sample of the same material.

Tested materials that were **none detected** for asbestos are:

LAB #	FIELD #	FIELD DESCRIPTION	LAYER #	LAYER NAME	LAYER DESCRIPTION
189536-001	MKB-A-01	Road - SW End Black Asphalt	1	Asphalt Material	Black, Granular
189536-002	MKB-B-02	Road - S. End Grey Concrete	1	Concrete	Gray, Hard
189536-003	MKB-C-03	Column - SE End Grey Concrete	1	Concrete	Gray, Hard
189536-004	MKB-D-04	Rails - SE End Grey Concrete	1	Concrete	Gray, Hard

LAB #	FIELD #	FIELD DESCRIPTION	LAYER #	LAYER NAME	LAYER DESCRIPTION
189536-005	MKB-E-05	Expansion Joint NE End Black Sealant / Spacer	1	Sealant	Black, Bituminous/Fibrous
189536-006	MKB-C-06	Column - NE End Grey Concrete	1	Concrete	Gray, Hard
189536-007	MKB-B-07	Road - NE End Grey Concrete	1	Concrete	Gray, Hard
189536-008	MKB-D-08	Rails - NE End Grey Concrete	1	Concrete	Gray, Hard
189536-009	MKB-D-09	Rail - NW End Grey Concrete	1	Concrete	Gray, Hard
189536-010	MKB-B-10	Base - NW Side Grey Concrete	1	Concrete	Gray, Hard
189536-011	MKB-B-11	Base - NE Side Grey Concrete	1	Concrete	Gray, Hard
189536-012	MKB-E-12	Road Between Asphalt & Concrete Black Sealant / Spacer	1	Sealant	Black, Bituminous/Fibrous
189536-013	MKB-E-13	Road Between Asphalt & Concrete Grey Concrete	1	Concrete	Gray, Hard
189536-014	MKB-C-14	Column - SW End Grey Concrete	1	Concrete	Gray, Hard
189536-015	MKB-A-15	Road - Mid Way Black Asphalt	1	Asphalt Material	Black, Hard
189536-016	MKB-A-16	Road - SW End Black Asphalt	1	Asphalt Material	Black, Hard

Client took and submitted for CARB 435 1000 Asbestos Point Count Method and came back **None Detected** for Asbestos are:

LAB #	FIELD #	FIELD DESCRIPTION
522-01469-001	C6102-1	North East Wing Wall, Concrete
522-01469-002	C6102-2	North West Abutment
522-01469-003	C6102-3	Deck, West End
522-01469-004	C6102-4	Deck, East End

- ***Paint Findings***

Lead samples were analyzed by Atomic Absorption in Schneider Laboratories Global. OSHA requires protection of workers from exposure to any lead. Paint should be considered as containing lead if it is the same color as any positive tested material, unless it has specifically been tested and shown to be **none detected** for lead.

The following are materials for which the lead was **none detected**:

LAB #	FIELD #	FIELD LOCATION	LEAD mg/kg (PPM)	LEAD %
189537-001	MKB-Pb-01	Road Black Sealant / Spacer	< 19.9	<0.00200

Although there are some materials that are negative for lead paint, for the purposes of demolition it is recommended that all painted materials be considered as lead containing.

Regulatory Requirements

The Environmental Protection Agency (EPA) defines Asbestos Containing Material as any material that contains greater than 1% asbestos.

Analytical Procedures

- ***POLARIZED LIGHT MICROSCOPY (PLM)***

  Bulk samples were analyzed in accordance with U.S. EPA "Test Method for Determination of Asbestos in Bulk Building Materials, 1993," with inclusion of area percent estimates of the sample components. The use of the McCrone Color Dispersion Staining Technique supplements the analysis when considered useful by the analyst. The samples are prepared with refractive immersion oil and are examined under Polarized Light Microscopy (PLM). The accuracy of the visual estimate method is 1%.

  As per the standard "...The accuracy in the determination of the presence or absence of asbestos of greater than 1 area percent asbestos is greater than 99%." ASTM Committee D22.05, 1/18/88, Standard *Method of Testing for Asbestos Containing Materials by Polarized Light Microscopy*. If the sample matrix is reduced to minimize non-asbestos components, the detection limit can be mathematically enhanced, based on the amount of material remaining after matrix reduction. This method is called gravimetric reduction. This method involves ashing and chemical dissolution of the sample.

- ***ATOMIC ABSORPTION FOR LEAD***

  Paint samples were collected for atomic absorption (AA) analysis. The detection limit for each sample depends upon many factors including the sensitivity of the instrument and the sample size. In the laboratory utilizing flame AA, the detection limit is normally .01% or 100 parts per million (ppm).

KELLCO Qualifications

The KELLCO asbestos inspector is licensed with the State of California Department of Occupational Safety and Health (CAL-OSHA).

The KELLCO lead inspector is licensed by the California Department of Public Health (CDPH)

The following supporting documents are attached to this report:

- Laboratory analytical reports
- Photographs of sample locations
- Floor plan or sketch showing sample locations

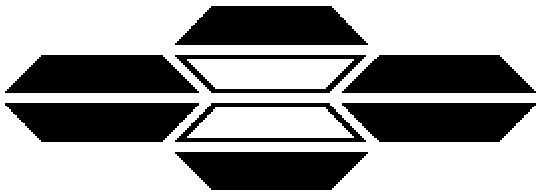
Please call KELLCO if there are any questions and/or clarifications regarding this report. We look forward to working with you in the future.

Sincerely,

KELLCO Services, Inc.



Tim C. Cannard CAC #94-1395, CDPH Lead #764
Senior Project Manager



ASBESTOS TEM LABORATORIES, INC.

CARB Method 435
Polarized Light Microscopy
Analytical Report

Laboratory Job # 522-01469

630 Bancroft Way
Berkeley, CA 94710
(510) 704-8930
FAX (510) 704-8429

ASBESTOS TEM LABORATORIES, INC

CA DPH ELAP
Lab No. 1866

NVLAP Lab Code: 101891-0
Berkeley, CA

Aug/02/2016

Michele Moreno
Kellco Services, Inc.
3137 Diablo Avenue
Hayward, CA 94545-2701

RE: LABORATORY JOB # 522-01469
Polarized light microscopy analytical results for 4 bulk sample(s).
Job Site: 1607-04
Job No.: Mineral King Road Bridge Sequoia National Forest

Enclosed please find the bulk material analytical results for one or more samples submitted for asbestos analysis. The analyses were performed in accordance with the California Air Resources Board (ARB) Method 435 for the determination of asbestos in serpentine aggregate samples.

Prior to analysis, samples are logged-in and all data pertinent to the sample recorded. The samples are checked for damage or disruption of any chain-of-custody seals. A unique laboratory ID number is assigned to each sample. A hard copy log-in sheet containing all pertinent information concerning the sample is generated. This and all other relevant paper work are kept with the sample throughout the analytical procedures to assure proper analysis.

Sample preparation follows a standard CARB 435 prep method. The entire sample is dried at 135-150 C and then crushed to ~3/8" gravel size using a Bico Chipmunk crusher. If the submitted sample is >1 pint, the sample was split using a 1/2" riffle splitter following ASTM Method C-702-98 to obtain a 1 pint aliquot. The entire 1 pint aliquot, or entire original sample, is then pulverized in a Bico Braun disc pulverizer calibrated to produce a nominal 200 mesh final product. If necessary, additional homogenization steps are undertaken using a 3/8" riffle splitter. Small aliquots are collected from throughout the pulverized material to create three separate microsope slide mounts containing the appropriate refractive index oil. The prepared slides are placed under a polarizing light microscope where standard mineralogical techniques are used to analyze the various materials present, including asbestos. If asbestos is identified and of less than 10% concentration by visual area estimate then an additional five sample mounts are prepared. Quantification of asbestos concentration is obtained using the standard CAL ARB Method 435 point count protocol. For samples observed to contain visible asbestos of less than 10% concentration, a point counting techinique is used with 50 points counted on each of eight sample mounts for a total of 400 points. The data is then compiled into standard report format and subjected to a thorough quality assurance check before the information is released to the client.

While the CARB 435 method has much to commend it, there are a number of situations where it fails to provide sufficient accuracy to make a definitive determination of the presence/absence of asbestos and/or an accurate count of the asbestos concentration present in a given sample. These problems include, but are not limited to, 1) statistical uncertainty with samples containing <1% asbestos when too few particles are counted, 2) definitive identification and discrimination between various fibrous amphibole minerals such as tremolite/actinolite/hornblende and the "Libby amphiboles" such as tremolite/winchite/richterite/arfvedsonite, and C) small asbestiform fibers which are near or below the resolution limit of the PLM microscope such as those found in various California coast range serpentine bodies. In these cases, further analysis by transmission electron microscopy is recommended to obtain a more accurate result.

Sincerely Yours,

Lab Manager
ASBESTOS TEM LABORATORIES, INC.

--- These results relate only to the samples tested and must not be reproduced, except in full, without the approval of the laboratory. ---

POLARIZED LIGHT MICROSCOPY
CARB 435 ANALYTICAL REPORT

Contact: Michele Moreno

Address: Kellco Services, Inc.
3137 Diablo Avenue
Hayward, CA

Samples Submitted: 4

Samples Analyzed: 4

Job Site / No. Mineral King Road Bridge Sequoia National Forest
1607-04

Report No. **342937**
Date Submitted: Jul-28-16
Date Reported: Aug-02-16

SAMPLE ID	POINTS COUNTED	ASBESTOS %	ASBESTOS TYPE	LOCATION / DESCRIPTION
C6102-1		**<0.10%**	**None Detected**	North East wing wall, concrete No Asbestos Detected - ARB Exception I
Lab ID # 522-01469-001	**1000** - Total Points			
C6102-2		**<0.10%**	**None Detected**	North West abatement No Asbestos Detected - ARB Exception I
Lab ID # 522-01469-002	**1000** - Total Points			
C6102-A2		**<0.10%**	**None Detected**	Deck, West end No Asbestos Detected - ARB Exception I
Lab ID # 522-01469-003	**1000** - Total Points			
C6102-A1		**<0.10%**	**None Detected**	Deck, East end No Asbestos Detected - ARB Exception I
Lab ID # 522-01469-004	**1000** - Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			

QC Reviewer _____ **Analyst** _____

#342937

CLIENT	JOBSITE
Wallace Kuhl & Associates 3050 Industrial Boulevard West Sacramento CA 95691	Mineral King Road Bridge Sequoia National Forest CA.

KELLCO Services JOB# **1607-04** LAB LOGIN # 160726A

COLLECTED BY: Neva Popenoe

COLLECTED DATE 7/20/2016

TURN AROUND TIME: (Normal 24 TAT) 4 8 24 48 5-DAY

RESULTS NEEDED BY

CIRCLE TYPE OF BULK ANALYSIS

PLM LEAD PAINT LEAD WIPE NON VIABLE MOLD VIABLE MOLD eCOLI (OTHER) Asbestos CARB 435 1000 Point Count Sample Analysis

SAMPLES REC'D 4 ANALYZE TO FIRST POSITIVE YES NO

REPORT RESULTS TO PROJECT MANAGER: Tim Cannard

NOTES & COMMENTS:

CHAIN OF CUSTODY & SAMPLE SUBMITAL FORM PAGE 1 OF 1

KELLCO Services JOB#: **1607-04**
Mineral King Road Bridge

FIELD NUMBER	LOCATION (bldg, rm#, area)	COLOR	MATERIAL or SUBSTRATE (ft w/ size, mastic, tjc, etc.)	NOTES: Like condition, damage, quantity, inside what, beneath what? direction in building (N,S,E,W) etc.)
C6102-1	North East Wing Wall Concrete	Grey	Concrete	
C6102-2	North West Abatement	Grey	Concrete	
C6102-A2	Deck West End	Grey	Concrete	
C6102-A1	Deck East End	Grey	Concrete	

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Neva Popenoe	7/20/16	5:00 PM	Michele Moreno	7/26/16	12:00 PM
Michele Moreno	7/26/16	5:00 PM			

Analysis Report

Schneider Laboratories Global, Inc

2512 W. Cary Street • Richmond, Virginia • 23220-5117
804-353-6778 • 800-785-LABS (5227) • Fax 804-359-1475

Customer: Kellco Services Inc. (193)
Address: 3137 Diablo Avenue
Hayward, CA 94545-2701

Attn:

Project: Mineral King Rd/ Mineral King
Location: Sequoia National Park, CA
Number: 1610-03

Order #: 189536

Received 10/25/16
Analyzed 10/25/16
Reported 10/25/16

PO Number:

Method: EPA 600/R-93/116 & 600/M4-82-020

PLM Analysis

Sample ID	Collected	Cust. ID	Location	Asbestos Fibers	Other Materials
189536-001	10/22/16	MKB-A-01	Road - SW End		
Layer 1: Asphalt Material Black, Granular				None Detected	100% NON FIBROUS MATERIAL
189536-002	10/22/16	MKB-B-02	Road - S. End		
Layer 1: Concrete Gray, Hard				None Detected	100% NON FIBROUS MATERIAL
189536-003	10/22/16	MKB-C-03	Column - SE End		
Layer 1: Concrete Gray, Hard				None Detected	100% NON FIBROUS MATERIAL
189536-004	10/22/16	MKB-D-04	Rails - SE End		
Layer 1: Concrete Gray, Hard				None Detected	100% NON FIBROUS MATERIAL
189536-005	10/22/16	MKB-E-05	NE End		
Layer 1: Sealant Black, Bituminous/Fibrous				None Detected	20% CELLULOSE FIBER 80% NON FIBROUS MATERIAL
189536-006	10/22/16	MKB-C-06	Column - NE End		
Layer 1: Concrete Gray, Hard				None Detected	100% NON FIBROUS MATERIAL
189536-007	10/22/16	MKB-B-07	Road - NE End		
Layer 1: Concrete Gray, Hard				None Detected	100% NON FIBROUS MATERIAL
189536-008	10/22/16	MKB-D-08	Rails - NE End		
Layer 1: Concrete Gray, Hard				None Detected	100% NON FIBROUS MATERIAL

Reporting Limit: 1% PLM analysis is based on Visual Estimation and NESHAP recommends that any asbestos content less than 10 percent be verified by PLM Point Count or TEM Analysis. The EPA recommends that any vermiculite sample with a trace (<1) or greater amount of asbestos is a concern and should be treated as Asbestos Containing Material (ACM). This report must not be reproduced except in full with the approval of the laboratory. The test results reported relate only to the samples submitted.

Method: EPA 600/R-93/116 & 600/M4-82-020 **PLM Analysis**

Sample ID	Collected	Cust. ID	Location	Asbestos Fibers	Other Materials
189536-009	10/22/16	MKB-D-09	Rail - NW End		
Layer 1: Concrete Gray, Hard				None Detected	100% NON FIBROUS MATERIAL
189536-010	10/22/16	MKB-B-10	Base - NW Side		
Layer 1: Concrete Gray, Hard				None Detected	100% NON FIBROUS MATERIAL
189536-011	10/22/16	MKB-B-11	Base - NE Side		
Layer 1: Concrete Gray, Hard				None Detected	100% NON FIBROUS MATERIAL
189536-012	10/22/16	MKB-E-12	Road		
Layer 1: Sealant Black, Bituminous/Fibrous				None Detected	20% CELLULOSE FIBER 80% NON FIBROUS MATERIAL
189536-013	10/22/16	MKB-E-13	4		
Layer 1: Concrete Gray, Hard				None Detected	100% NON FIBROUS MATERIAL
189536-014	10/22/16	MKB-C-14	Column - SW End		
Layer 1: Concrete Gray, Hard				None Detected	100% NON FIBROUS MATERIAL
189536-015	10/22/16	MKB-A-15	Road - Mid Way		
Layer 1: Asphalt Material Black, Hard				None Detected	100% NON FIBROUS MATERIAL
189536-016	10/22/16	MKB-A-16	Road - SW End		
Layer 1: Asphalt Material Black, Hard				None Detected	100% NON FIBROUS MATERIAL

Analyst: Wilson, John
Total layers analyzed on order: 16
189536-10/25/16 01:23 PM

Reviewed By: **Hind Eldanaf**
Microscopy Supervisor

Reporting Limit: 1% PLM analysis is based on Visual Estimation and NESHAP recommends that any asbestos content less than 10 percent be verified by PLM Point Count or TEM Analysis. The EPA recommends that any vermiculite sample with a trace (<1) or greater amount of asbestos is a concern and should be treated as Asbestos Containing Material (ACM). This report must not be reproduced except in full with the approval of the laboratory. The test results reported relate only to the samples submitted.

CLIENT	JOBSITE
Wallace Kuhl & Associates	Sequoia National Forest
3050 Industrial Blvd	Mineral King Rd / Mineral King Bridge
West Sacto, CA 95691	Sequoia National Park, CA

KELLCO Services JOB# 1610-03 LAB LOGIN #_____

COLLECTED BY: Derrik

COLLECTED DATE 10.22.16

TURN AROUND TIME: 4 8 24 48 5-DAY

RESULTS NEEDED BY

CIRCLE TYPE OF BULK ANALYSIS

PLM LEAD PAINT LEAD WIPE NON VIABLE MOLD VIABLE MOLD eCOLI OTHER_____

SAMPLES REC'D _____ ANALYZE TO FIRST POSITIVE YES NO

REPORT RESULTS TO PROJECT MANAGER: Tim C

NOTES & COMMENTS: _____

CHAIN OF CUSTODY & SAMPLE SUBMITAL FORM PAGE 1 OF 2 KELLCO Services JOB#: 1610-03

FIELD NUMBER	LOCATION (bldg, rm#, area)	COLOR	MATERIAL or SUBSTRATE (ft w/ size, mastic, tjc, etc.)	NOTES: Like condition, damage, quantity, inside what, beneath what? direction in building (N,S,E,W) etc.)
MKB-A-01	Road - SW End	Blk	Asphalt	
B-02	Road - S. End	grey	Concrete	
C-03	Column - SE end	"	"	
D-04	Rails - SE End	"	"	
E 05	Expansion joint - NE end	Blk	sealant / spacer	
C-06	Column - NE end	grey	concrete	
B-07	Road - NE. End	"	"	
D-08	Rails - NE End	"	"	
D-09	Rail - NW End	grey	concrete	

189536 X 16

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UPS 1Z2E2899846 16729952

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	10 / 22 / 16				

CHAIN OF CUSTODY & SAMPLE SUBMITAL FORM PAGE 2 OF 2 KELLCO Services JOB#: 1610-03

FIELD NUMBER	LOCATION (bldg, rm#, area)	COLOR	MATERIAL or SUBSTRATE (ft w/ size, mastic, tjc, etc.)	NOTES: Like condition, damage, quantity, inside what, beneath what? direction in building (N,S,E,W) etc.)
MKB - B - 10	Base - NW side	grey	Concrete	
B - 11	Base - NE side	〃	〃	
E - 12	Road bet Asphalt / Concrete	Blk	Sealant / Spacer	
E - 13	〃	grey	Concrete	
C - 14	Column - SW End	grey	〃	
A - 15	Road - ~~SW End~~ Mid Way	Blk	Asphalt	
A - 16	Road - ~~SW End~~ SW. End	Blk	〃	
~~17~~				
~~18~~				
~~19~~				
~~20~~				

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	10/22/16				

Analysis Report

Schneider Laboratories Global, Inc

2512 W. Cary Street • Richmond, Virginia • 23220-5117
804-353-6778 • 800-785-LABS (5227) • Fax 804-359-1475

Customer: Kellco Services Inc. (193)
Address: 3137 Diablo Avenue
Hayward, CA 94545-2701

Attn:

Project: Mineral King Rd/Mineral King
Location: Sequoia National Park, CA
Number: 1610-03

Order #: 189537

Matrix	Bulk
Received	10/25/16
Analyzed	10/25/16
Reported	10/25/16

PO Number:

Sample ID / Parameter	Cust. Sample ID	Location / Method	Sample Date	Weight / Total µg	% / Wt.	Conc.	RL*
189537-001		Road	10/22/16	502 mg			
Lead		EPA 7000B / 3050B		<10.0 µg	<0.00200 %	<20.0 mg/kg	19.9 mg/kg

Analyst: OHE
189537-10/25/16 04:23 PM

Abisola O Kasali

Reviewed By: **Abisola Kasali**
Metals Supervisor

*Reporting Limit. All internal QC parameters were met. Concentration and Reporting Limit (RL) based on areas provided by client. Unusual sample conditions, if any, are described. Surrogate Spike results designated with "D" indicate that the analyte was diluted out. "MI" indicates matrix interference. Values are reported to three significant figures. PPM = mg/kg | PPB = µg/kg. The test results reported relate only to the samples submitted.

CLIENT
Wallace Kuhl & Associates
3050 Industrial Blvd
West Sacto. CA 95691

JOBSITE
Sequoia National Forest
Mineral King Rd / Mineral King
Sequoia National Park, CA

KELLCO Services JOB# 1610-03 LAB LOGIN #_____
COLLECTED BY: Derrick Bixler
COLLECTED DATE 10/22/16
TURN AROUND TIME: 4 8 (24) 48 5-DAY

RESULTS NEEDED BY

CIRCLE TYPE OF BULK ANALYSIS

PLM (LEAD PAINT) LEAD WIPE NON VIABLE MOLD VIABLE MOLD eCOLI OTHER_____

SAMPLES REC'D _____ ANALYZE TO FIRST POSITIVE YES NO

REPORT RESULTS TO PROJECT MANAGER

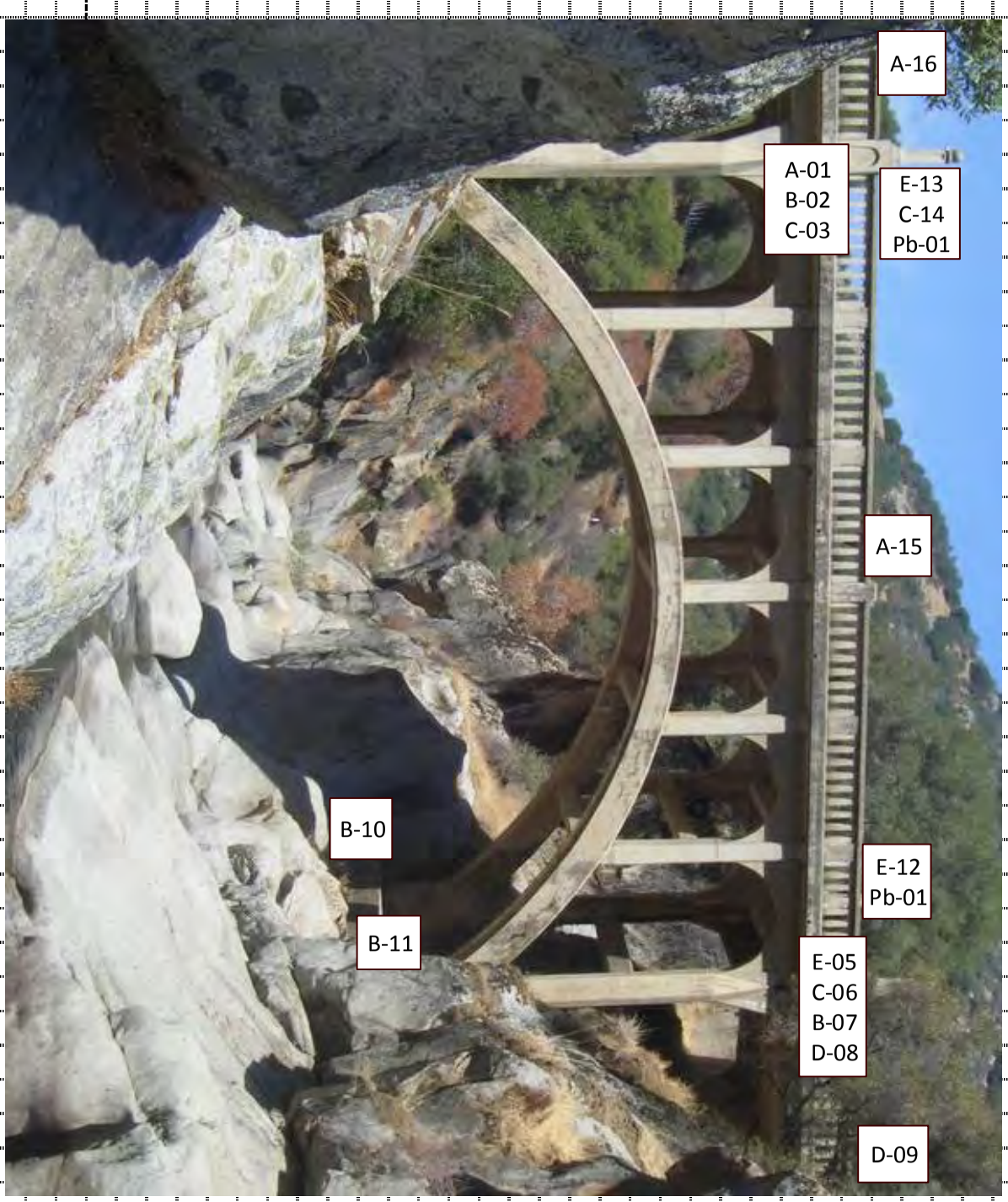
NOTES & COMMENTS:

CHAIN OF CUSTODY & SAMPLE SUBMITAL FORM PAGE 1 OF ____ KELLCO Services JOB#: 1610-03

FIELD NUMBER	LOCATION (bldg, rm#, area)	COLOR	MATERIAL or SUBSTRATE (ft w/ size, mastic, tjc, etc.)	NOTES: Like condition, damage, quantity, inside what, beneath what? direction in building (N,S,E,W) etc.)
MkB-Pb-01	Road	blk	sealant / spacer	

189537 R 1
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UPS 1Z2E2899846 6729 52

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	10/22/16				



Legend

A- asphalt Pb- lead
B- concrete road / base
C- concrete column
D- concrete rails
E- sealant / spacer

N

Site Plan

Kaweah River Bridge

Mineral King Rd.

Three Rivers CA

Kellco Services, Inc.

3137 Dioblo Ave.

Hayward CA 94545

510-786-9751

Kellco Job # 1610-04		Date: 10/22/16	Figure 1
Drawn By: DQ	Scale: NTS	Reviewed By: TC	














HISTORIC BRIDGE
KAWEAH RIVER
BRIDGE
1923





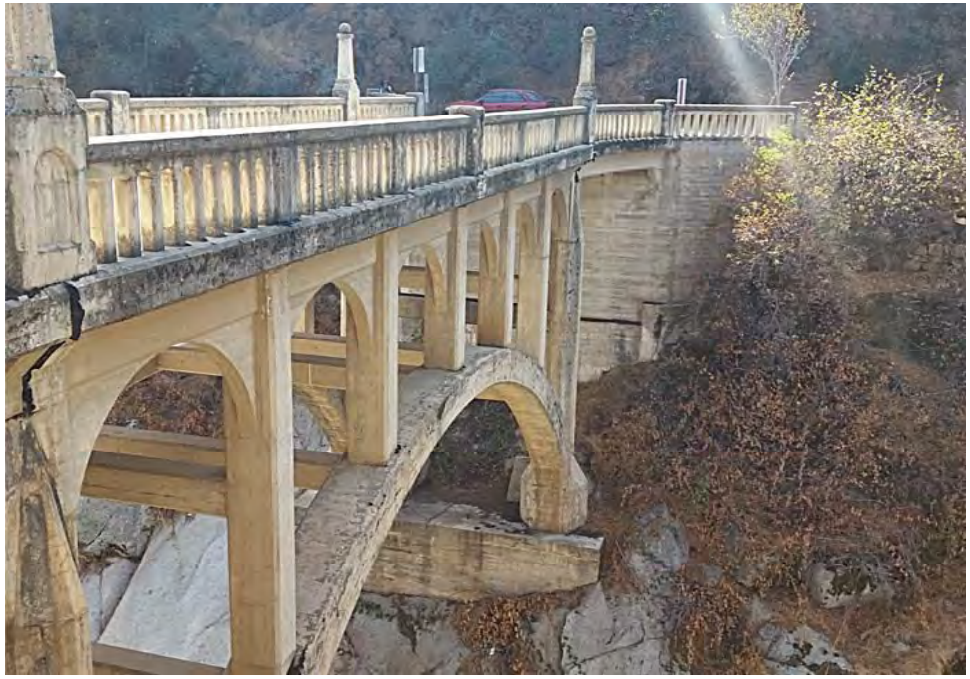









HKB-A-01






MKB-C-03


MKB-B-07


MKB-E-02


MKB-D-1


MKB-D-08


MKB-D-09


MKB-E-05

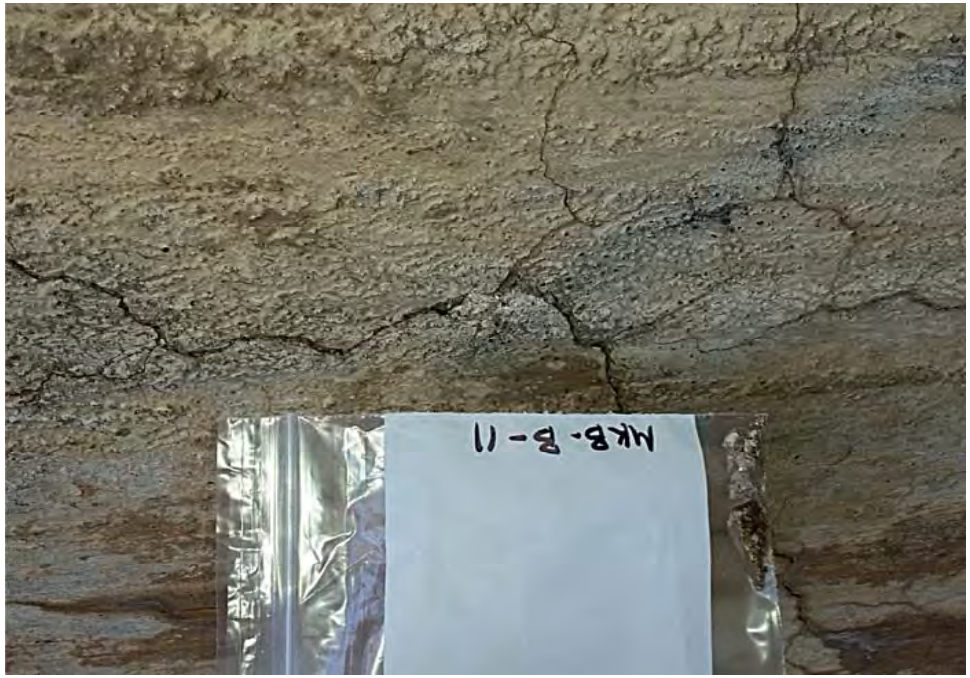

MKB-C-06

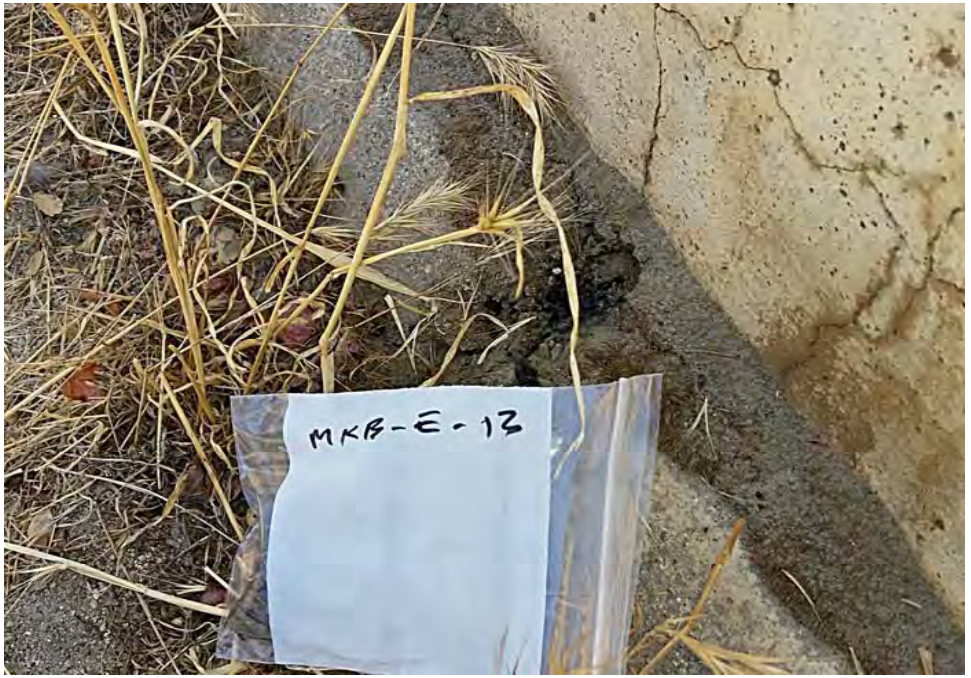





MKB- B-10




MKB-B-11

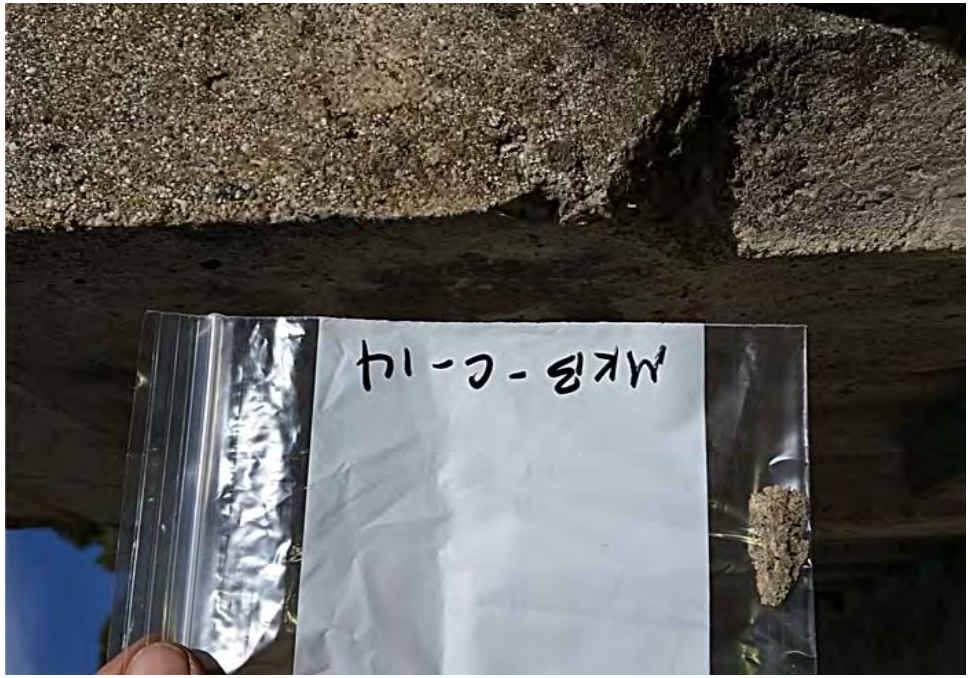

MKB-E-13



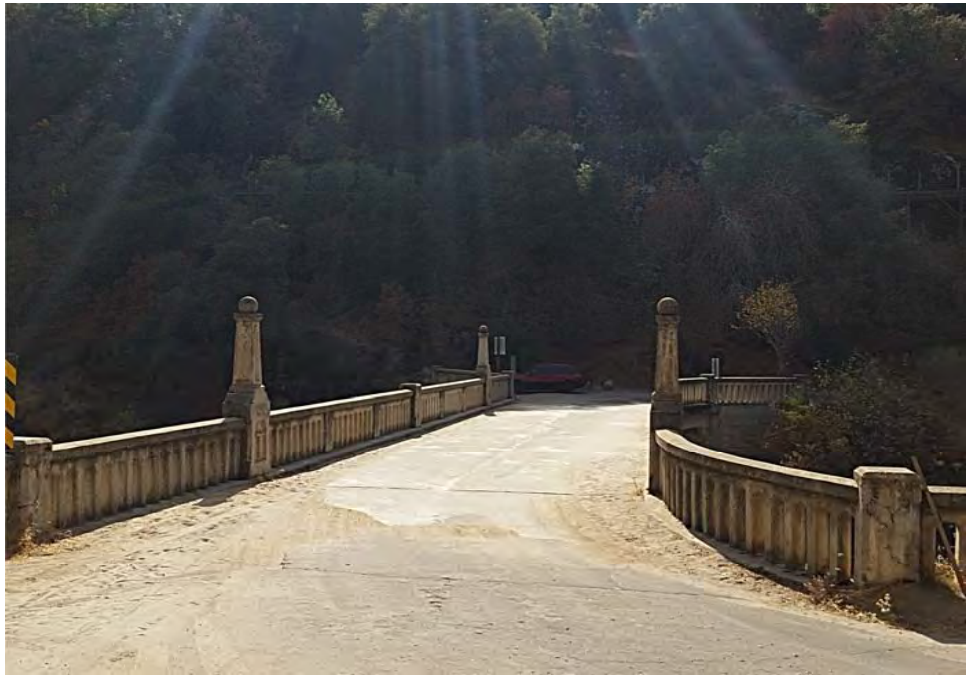

MKB-E-12


MKB-A-15

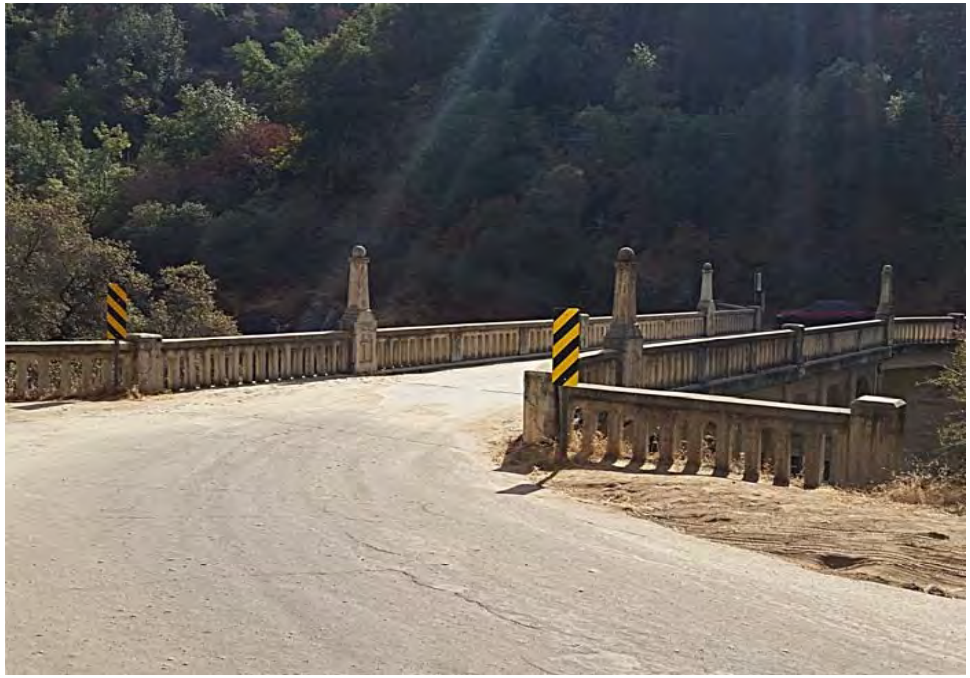



MKB-C-14


MKB-A-16

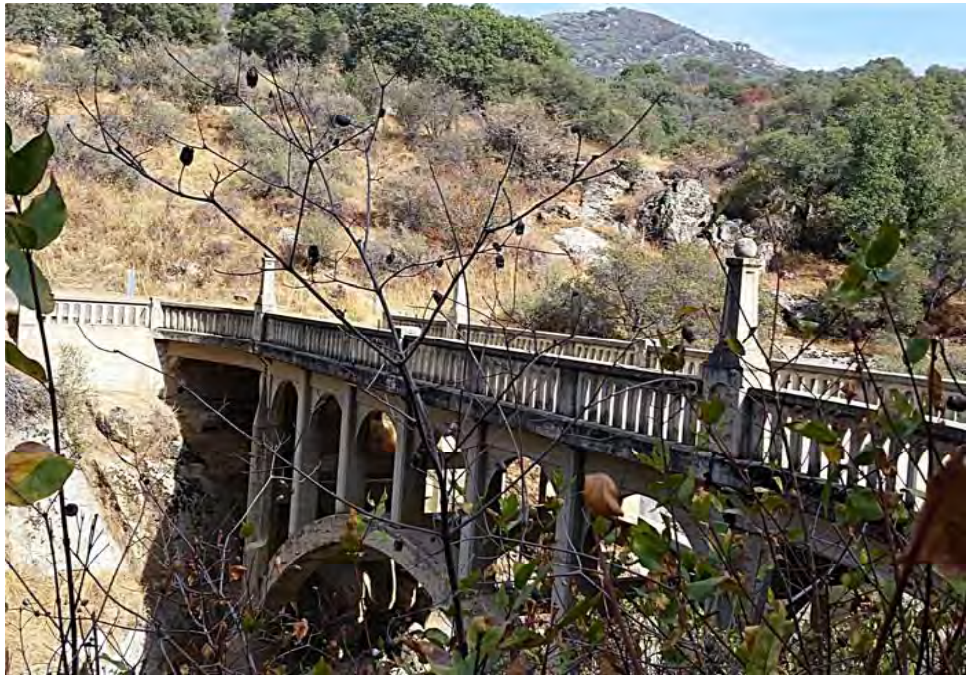









KAWEAH RIVER
BRIDGE
1923





Initial Site Assessment 2016

Phase I Initial Site Assessment

MINERAL KING ROAD BRIDGE PROJECT

AKA HISTORIC OAK GROVE BRIDGE

Approximately 6.5 Miles East of State Route 198

Tulare County, California

WKA No. 10909.01

November 2, 2016

DRAFT

Prepared for:

Ms. Erinn Silva

GPA Consulting

231 California Street

El Segundo, California 90245

Wallace Kuhl & Associates

Corporate Office
3050 Industrial Boulevard
West Sacramento, CA 95691
916.372.1434 phone
916.372.2565 fax

Stockton Office
3422 West Hammer Lane, Suite D
Stockton, CA 95219
209.234.7722 phone
209.234.7727 fax

Phase I Initial Site Assessment

MINERAL KING ROAD BRIDGE PROJECT

AKA HISTORIC OAK GROVE BRIDGE

Approximately 6.5 Miles East of State Route 198

Tulare County, California

WKA No. 10909.01

November 2, 2016

Wallace-Kuhl & Associates (WKA), on behalf of GPA Consulting, prepared this Phase I Initial Site Assessment for the Mineral King Road Bridge (also known as Historic Oak Grove Bridge) Project in Tulare County, California. We declare that, to the best of our professional knowledge and belief, the report preparer and reviewer both meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312 and have the "specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312." Resumes of the key staff who prepared this report are included in Appendix A.

DRAFT

WALLACE▪KUHL & ASSOCIATES



Bryan C. Yates
Project Manager

Kurt Balasek, P.G., C.HG.
Senior Hydrogeologist

Phase I Initial Site Assessment

MINERAL KING ROAD BRIDGE PRONECT

AKA HISTORIC OAK GROVE BRIDGE

WKA No. 10909.01

EXECUTIVE SUMMARY

The purpose of this Phase I Initial Site Assessment (ISA) was to assess the Mineral King Road Bridge (also known as Historic Oak Grove Bridge) and two separate construction staging areas, Staging Areas 1 and 2, (herein referred to as Site) (Figure 1) for evidence of Recognized Environmental Conditions (RECs) resulting from current and/or former Site activities. Since the Site is located within existing public right-of-way, no Tulare County Assessor's Parcel Numbers (APNs) have been assigned. The bridge was constructed in 1923.

The following presents a list of observations and findings identified during the preparation of this report:

- The historical land use research dating back to late 1904 revealed that the Site has remained in use as a surface roadway(s), bridge(s) and right-of-way;
- No agency listed facilities are located within the immediate vicinity of the Site. Based on the completion of the vapor encroachment condition (VEC) screening matrix, WKA concludes a VEC can be ruled out because a VEC does not or is not likely to exist;
- The existing bridge within the Site has been in place since 1923;
- Mineral King Road has crossed the Site Since at least 1904;
- KELLCO completed the Asbestos and Lead Paint Inspection Report on October 25, 2016. The report states that asbestos and lead paint was not found in any of the tested materials.
- Numerous piles of ground asphalt, concrete waste, green waste, and wood debris were observed within proposed construction Staging Area 2 (Figure 3A & 3B). Two large areas of surface soil staining were observed within the proposed construction staging area #2. These stained soil areas had a petroleum hydrocarbon odor. We estimate the depth of the staining to be approximately four inches.

We have performed a Phase I ISA in conformance with the scope and limitations of ASTM Practice E 1527-13 for the Mineral King Road Bridge (also known as Historic Oak Grove Bridge) and two separate construction staging areas. Any exceptions to, or deletions from, this practice are described in Section 6.4 of this report. This assessment has revealed no evidence of RECs in connection with the Site.

DRAFT

1.0 INTRODUCTION

1.1 Purpose

The purpose of this Phase I Initial Site Assessment (ISA) was to evaluate the Site for evidence of potential Recognized Environmental Conditions (RECs) resulting from current and/or former Site activities as defined by the American Society of Testing and Materials (ASTM) Standard E 1527-13 (ASTM, 2013).

According to the ASTM, "this practice is intended to permit a *user* to satisfy one of the requirements to qualify for the *innocent landowner*, *contiguous property owner*, or *bona fide prospective purchaser* limitations on CERCLA [Comprehensive Environmental Response, Compensation and Liability Act] liability (hereinafter, the "*landowner liability protections*," or "*LLPs*"): that is, the practice that constitutes "*all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601(35)(B)."

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This ISA has been performed in general conformance with the ASTM Standard E 1527-13 and the scope and limitations defined in Wallace-Kuhl & Associates (WKA) proposal number, 3PR14083R, dated April 1, 2014.

1.2 Scope of Services

WKA has completed this ISA for the Site shown on Figures 1 through 3. Mr. Richard Galvin with GPA Consulting authorized WKA to proceed with this assessment on January 16, 2015, through an executed GPA Consulting, Consultant Services Agreement between GPA Consulting and WKA.

The scope of this assessment included the following:

- Conduct a Site reconnaissance for visual evidence of surface contamination and potential sources of subsurface contamination;
- Conduct a visual inspection of the adjoining properties for evidence of RECs

- Conduct interviews with the following, as available:
  - Key site manager,
  - Major occupants,
  - Past and present owners, operators,
  - Government and/or agency personnel, and,
  - Inquiries conducted at abandoned sites may include interviews with owners or occupants of neighboring or nearby properties;
- Conduct a records review, which included the following:
  - Physical setting documents to determine regional geology, general soil information, and local and regional groundwater conditions,
  - Historical information, including but not limited to, Sanborn maps, topographic maps, aerial photographs, ownership records, building department records, local street directories, zoning and land use records, and prior assessments, as available,
  - Environmental records, including federal, state, tribal, and county regulatory agency lists that will help identify RECs on the Site and the adjoining properties, and,
  - Based on the outcome of the database search, review of specific regulatory agency files for identified contaminated facilities in order to evaluate whether the listed facilities are hazardous materials threats to the Site;
- Conduct a preliminary screen for vapor encroachment conditions on the Site per ASTM E2600-10;
- Review of the completed *ASTM E 1527-13 User Questionnaire* (*Questionnaire*) regarding Recorded Environmental Liens, activity and use limitations (AULs), relationship of the purchase price to the fair market value of the Site, and any specialized knowledge of the Site;
- Review of environmental liens and AULs reports, as provided; and
- Prepare a final report of the results of the ISA.

1.3 Special Terms and Conditions

No special terms or conditions to the GPA Consulting, Consultant Services Agreement or the WKA scope of services were requested or performed during the preparation of this report. WKA was not authorized to conduct a search for environmental liens and AULs.

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1.4 User Provided Information

WKA provided GPA Consulting a copy of the User Questionnaire and the Helpful Documents checklist. These documents were not returned for our review at the time of completion of this report.

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2.0 SITE DESCRIPTION

2.1 Site and Vicinity General Characteristics

The Site consists of the existing Mineral King Road Bridge (also known as Historic Oak Grove Bridge) and two separate construction staging areas, Staging Areas 1 and 2, (Figures 1 and 2). The project footprint includes land occupied by the bridge, the northern and southern bridge approaches, the footprint for a proposed temporary construction bridge, and two proposed construction staging areas. Since the bridge and associated roads are located within existing public right-of-way, no Tulare County Assessor's Parcel Numbers (APNs) have been assigned to those areas. The bridge was constructed in 1923.

2.2 Site Reconnaissance

A visual Site reconnaissance was conducted by WKA on August 3, 2016. Figure 4 provides color photographs of the Site taken during the Site reconnaissance.

On the day of field reconnaissance, the Site consisted of the Mineral King Road, the Mineral King Road Bridge (also known as Historic Oak Grove Bridge) over the Kaweah River, and vacant land. Mineral King Road was paved and the bridge appeared to be a cast-in-place concrete arch bridge. Staging Area 1 is covered by dry seasonal grasses. Numerous piles of ground asphalt, concrete waste, green waste, and wood debris were observed within proposed construction Staging Area 2. Two large areas of surface soil staining were observed within the proposed construction Staging Area 2. These stained soil areas had a petroleum hydrocarbon odor. Utilizing a shovel, we estimate the depth of the staining to be approximately four inches.

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2.2.1 Municipal Infrastructure and Utilities

The Mineral King Road and the bridge over the Kaweah River are located within the Site. No other utilities or infrastructure were observed within the Site.

2.3 Adjoining Properties

The adjoining properties consist of vacant land, rural residences, water canals, and mountain roads.

3.0 INTERVIEWS

Interviews with various persons familiar with the Site vicinity, including representatives of public agencies, were conducted for the purpose of identifying past and present uses, which may have contributed to RECs on the Site. Results of those interviews are discussed in the following sections.

3.1 Owner or Key Site Manager

WKA provided GPA Consulting a copy of the User Questionnaire and the Helpful Documents checklist. These documents were not returned for our review at the time of completion of this report.

3.2 Occupants (Multi-family or Major)

No habitable structures or occupants are located within the Site boundaries.

3.3 Past and Present Owners, Operators, and/or Occupants

Tulare County owns and operates the Site including the bridge. Tulare County staff have indicated that the bridge within the Site was constructed in 1923. No other information regarding past owners or uses was received by WKA during completion of this report.

3.4 State and/or Local Government Officials

Tulare County provided no information on the Site, except for that presented in Section 3.3 of this report.

WKA staff reviewed the State Water Resources Control Board Geotracker database for past or ongoing environmental investigations or cleanups within or near the Site. Facilities found within this database search can be found in Section 4.3 of this report.

WKA staff reviewed the State of California, Environmental Protection Agency, Department of Toxic Substances Control Envirostor database for past or ongoing environmental investigations or cleanups within or near the Site. Facilities found within this database search can be found in Section 4.3 of this report.

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3.5 Abandoned Properties

As referenced in 40 CFR Part 312, in the case of inquiries conducted at "abandoned properties," as defined in §312.23(d), "where there is evidence of potential unauthorized uses of the Site or evidence of uncontrolled access to the site, the environmental professional's inquiry must include interviewing one or more (as necessary) owners or occupants of neighboring or nearby properties from which it appears possible to have observed uses of, or releases at, such abandoned properties…" No evidence of potential unauthorized uses, or evidence of uncontrolled access to the Site was observed. The Site is not considered an abandoned property and therefore, WKA did not interview owners or occupants of neighboring properties.

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4.0 RECORDS REVIEW

The purpose of the records review is to obtain and review information concerning the current and historical use of the Site and adjoining properties that would help identify the presence of RECs in connection with the Site. The records review included review and discussion of the following, as available:

- Physical Setting Source(s);
- Historical Use Information; and,
- Environmental Record Sources.

4.1 Physical Setting Source(s)

The Site is depicted on the 2012 United States Geological Survey (USGS) 7.5 Minute topographic map of the Case Mountain*, California Quadrangle.* Mineral King Road is mapped crossing the East Fork of the Kaweah River. The Historic Oak Grove Bridge and the Staging Area 1 portions of the Site are located within Section 15, Township 17 South, Range 29 East, Mount Diablo Base and Meridian. The Staging Area 2 portion of the Site is located within Section 39, Township 17 South, Range 29 East, Mount Diablo Base and Meridian. The Site ranges in elevation from 2,800 feet relative to mean sea level (msl) at the Staging Area 1 portion of the Site to 2,400 feet msl at the Staging Area 2 portion of the Site.

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4.1.1 Regional and Local Geology

The Site is located on the western slope the Sierra Nevada geomorphic province. The 450-mile long Sierra Nevada is a 40- to 50-mile wide west dipping fault block consisting of a series of uplifted Mesozoic granitic batholiths overlain by metamorphic and volcanic units. Elevations in the range extend from 400 feet in the western foothills up to 14,000 feet on its eastern edge where extensional block faulting of the basin and range province has produced high peaks and dramatic relief. Steep, rocky faces and glacier carved valleys feed high-energy streams descending to rolling foothills, where plutonic and metamorphosed rock abut flat-lying alluvial sediments of the province's western boundary with the Great Valley. (Norris and Webb, 1990).The Sierran block extends west beneath the Cenozoic alluvium of the Great Valley to presumably contact the Eastern Franciscan Formation of the Coast Ranges.

The complex structure of the Sierra Nevada is reflective of its equally complex geologic history. Faulting in the western Sierra Nevada mountains trends north-northwest.

The Geologic Map of California, Fresno Sheet shows the Site to be underlain by Mesozoic granitic rock (granodiorite).

4.1.2 Soil Survey

The United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) has created a web-based service for accessing soil information. According to the NRCS Web Soil Survey (WSS) the Site consists of Walong-Rock outcrop complex, Blasingame sandy loam, and Fallbrook sandy loam (USDA 2016).

4.1.3 Regional and Local Groundwater

The Site is located within the California Department of Water Resources (DWR) defined Tulare Lake Hydrologic Region. The Site is mapped outside of the alluvial groundwater basins and sub-basins. WKA searched data on the DWR website and found no DWR monitored wells within 1-mile of the Site (DWR, 2016).

WKA also searched the State Water Resources Control Board's (SWRCB) GeoTracker website for quarterly groundwater monitoring reports completed for facilities in the immediate vicinity of the Site. The GeoTracker website lists no facilities that are located within ½-mile of the Site.

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4.2 Historical Use Information

WKA reviewed historical information to develop a history of the previous uses of the Site and surrounding area, in order to evaluate the Site and adjoining properties for evidence of RECs. Standard historical sources reviewed during the preparation of this report included the following, as available:

- Sanborn® Maps;
- Topographic Maps;
- Oil and Gas Well Maps;
- Aerial Photographs;
- Ownership Records;
- Building Department Records;
- Local Street Directories;
- Zoning and Land Use Records;
- Other Historical Sources; and,
- Prior Assessments.

Discussion of these historical sources is provided in the following sections.

4.2.1 Sanborn® Maps

Sanborn® Maps with coverage of the Site were obtained through Environmental Data Resources, Inc. (EDR®). EDR® is a national commercial provider of environmental database information. Sanborn® Maps are detailed drawings of site development, and were typically used by fire insurance companies to determine Site fire insurability. According to EDR®, Sanborn® Map coverage of the Site is not available (EDR®, 2016a-1 and EDR®, 2016a-2).

4.2.2 Topographic Maps

Historical USGS topographic maps with coverage of the Site and outlying land areas were reviewed. Topographic maps with coverage of the site dated 1904, 1909, 1937, 1957, 1967, 1987, 1994, and 2012 were available for review (EDR®, 2016b-1 and EDR®, 2016b-2).

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Table 2

Year	Series	Observations
1904	30-Minute	A road is mapped crossing the Site oriented such that it appears generally consistent with the present day alignment of Mineral King Road. The area where the Site is mapped is labeled Oak Grove. No other structures or improvements are mapped within the Site or immediate vicinity.
1909	30-Minute	No significant changes were mapped within the Site and surrounding parcels.
1937	30-Minute	No significant changes were mapped within the Site and surrounding parcels.
1957	15-Minute	Two small structures are mapped on either side (east and west) of the Staging Area 1 portion of the Site. These mapped structures appear generally consistent with structures presently located adjacent to Staging Area 1.
1967	15-Minute	With the exception of a gauging station mapped less than ¼-mile east of the Staging Area 1, no significant changes were mapped within the Site and surrounding parcels.
1987	7.5-Minute	No significant changes were mapped within the Site and surrounding parcels
1994	7.5-Minute	No significant changes were mapped within the Site and surrounding parcels
2012	7.5-Minute	No significant changes were mapped within the Site and surrounding parcels.

4.2.3 Oil and Gas Well Maps

Review of California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) website showed that the Site is not located in a designated natural gas field. No DOGGR oil or gas wells are located within the Site. Additionally, no oil or natural gas wells were mapped within ¼-mile of the Site (DOGGR, 2016).

4.2.4 Aerial Photographs

Historical aerial photographs of the Site and general vicinity were compiled by EDR®. Photographs covering the years 1952, 1955, 1976, 1984, 1987, 1989, 2005, 2009, 2010, and 2012 (EDR®, 2016c-1 and EDR®, 2016c-2). Table 2 notes the changes on the Site and in the vicinity.

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Table 3

Year	Scale	Observations
1952	1" = 500'	A roadway is visible within the bridge portion of the Site. This roadway is consistent with Mineral King Road and the Historic Oak Grove Bridge. Both the Staging Area 1 and Staging Area 2 portions of the Site are vacant. A roadway is visible crossing the southern area of the Staging Area 2 portion of the site and the northern portion of the Staging Area 1 portion of the Site. No other improvements or structures are visible within the immediate vicinity of the Site.
1955	1" = 500'	No significant changes are noted for the Site or the vicinity.
1976	1" = 500'	No significant changes are noted for the Site or the vicinity.
1984	1" = 500'	No significant changes are noted for the Site or the vicinity.
1987	1" = 500'	Two small structures are visible on either side (east and west) of the Staging Area 1 portion of the Site. No other significant changes are noted for the Site or the vicinity.
1989	1" = 500'	This aerial photographic set only covers the Historic Oak Grove Bridge area and the Staging Area 1 portions of the Site. No significant changes are noted for these portions of Site or the vicinity.
2005	1" = 500'	No significant changes are noted for the Site or the vicinity.
2009	1" = 500'	No significant changes are noted for the Site or the vicinity.
2010	1" = 500'	No significant changes are noted for the Site or the vicinity.
2012	1" = 500'	No significant changes are noted for the Site or the vicinity.

4.2.5 Ownership Records

Since the Site consists of existing municipal right-of-way, no parcel numbers are associated with the Site. No right-of-way acquisition is planned for the proposed project within the Site. In this particular instance, no title report, lien search, or activity use limitation search was completed for the Site.

4.2.6 Building Department Records

Tulare County provided WKA with the bridge construction year of 1923. No other information regarding past owners or uses was received by WKA during completion of this report.

4.2.7 Local Street Directories

Local street directories with coverage of the site and adjoining properties were obtained from EDR® (EDR®, 2016d-1 and EDR®, 2016d-2). These documents contain business listings based on street number identifiers. The Site and surrounding parcels were not listed.

4.2.8 Zoning and Land Use Records

A review of the Tulare County zoning maps found that the Site is located outside of the areas within the county with specified zoning.

A review of the FEMA Flood Insurance Rate Map database found that the Site is located in an area where the flood map panel has not been printed and is not available.

4.2.9 Other Historical Sources

Review of additional historical sources was not warranted in order for the Environmental Professional to make a determination as to evidence of potential RECs on the Site.

4.2.10 Prior Assessments

No prior assessments were provided for our review.

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4.3 Environmental Record Sources

4.3.1 Regulatory Agency Databases

EDR® was contacted to provide a summary of facilities listed on regulatory agency databases (EDR®, 2016e-1 and EDR®, 2016e-2). Table 3 summarizes the researched ASTM required *Standard Environmental Record Sources*, as well as several *Additional Environmental Record Sources*, as defined in Sections 8.2.1 and 8.2.2 of the ASTM Standard. For additional reference, the Executive Summary of the EDR® report is included in Appendix B.

Table 3

	EDR Listed Database	*ASTM E 1527-13 Search Distance*	No. of Facilities Listed (within Search Radius)
Federal			
Federal NPL Site List	*NPL*	1-mile	0
Federal Delisted NPL Site List	*Delisted NPL*	1/2-mile	0
Federal CERCLIS List	*CERCLIS*	1/2-mile	0
Federal CERCLIS NFRAP Site List	*CERCLIS NFRAP*	1/2-mile	1
Federal RCRA CORRACTS Facilities List	*CORRACTS*	1-mile	0
Federal RCRA Generators List:			
Small Quantity and Large Quantity Generators	*RCRA SQG*	site & adjoining	0
	RCRA LQG		0
Landfills and Solid Waste Management Units	*RCRA TSDF*	1/2-mile	0
Federal Institutional Control / Engineering Control Registries	*US ENG Controls*	site only	0
	US INST Controls		0
Federal ERNS List	*ERNS*	site only	0
State			
State-equivalent NPL (Hist. Cal-Sites)	*Hist. Cal-Sites*	1-mile	0
State-equivalent CERCLIS	*RESPONSE*	1/2-mile	0
State Landfill and/or Solid Waste Disposal Site	*SWF/LF (SWIS)*	1/2-mile	0
	WMUDS/SWAT		0
State Leaking Underground Storage Tanks	*LUST- Reg 5 Geotracker*	1/2-mile	0
Tribal Leaking Underground Storage Tanks	*Indian LUST*	1/2-mile	0
State Registered Underground Storage Tanks	*UST*	site & adjoining	0
Tribal Registered Underground Storage Tanks	*Indian UST*	site & adjoining	0
State Registered Aboveground Storage Tanks	*AST*	site & adjoining	0
State Institutional Control Registries	*DEED*	site only	0
State Voluntary Cleanup Sites	*VCP*	1/2-mile	0

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Table 3			
	EDR Listed Database	*ASTM E 1527-13 Search Distance*	No. of Facilities Listed (within Search Radius)
Additional Environmental Record Sources			
Hazardous Waste & Substances Sites List	*CORTESE*	1/2-mile	0
DTSC EnviroStor (includes Cal-Sites)	*EnviroStor*	1-mile	0
SLIC	*SLIC - Reg 5*	1/2-mile	0
Cleaner Facilities	*Drycleaners*	1/4-mile	0
HAZNET	*HAZNET*	1/4-mile	0
Local – County			
Tulare County	*Tulare County*	1/2-mile	0

Review of the EDR® report indicates the Site and surrounding parcels are not listed on any of the EDR® databases.

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4.3.2 Preliminary Screen for Vapor Encroachment Conditions

WKA conducted a preliminary screening for vapor encroachment conditions (VEC) beneath the Site using the Tier 1 vapor encroachment screening evaluation[1]. The Tier I screening included performing a *Search Distance Test* to identify if there are any known or suspect contaminated properties surrounding or upgradient of the Site within specific search radii, and a *Chemicals of Concern (COC) Test* (for those known or suspect contaminated properties identified within the *Search Distance Test*) to evaluate whether or not COC are likely to be present. The Vapor Encroachment Screening Matrix is included in Appendix C.

Based on the completion of the VEC-screening matrix, a VEC can be ruled out because a VEC does not or is not likely to exist.

EDR® was contacted to provide a Vapor Encroachment Screen for the site (EDR®, 2014f-1 and EDR®, 2014f-2). No areas of concern were identified.

[1] The Preliminary Screen for Vapor Encroachment Conditions was based on the guidelines presented in the ASTM *E 2600-10 Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*.

4.3.3 Environmental Lien Search

Since the Site consists of existing municipal right-of-way, no parcel numbers are associated with the Site. No right-of-way acquisition is planned for the proposed project within the Site. In this particular instance, no title report, lien search, or activity use limitation search was completed for the Site.

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5.0 ASBESTOS AND LEAD PAINT INSPECTION

At the request of GPA Consulting, WKA retained the services of KELLCO Services, Inc. (KELLCO) to complete a lead and asbestos inspection report of the Mineral King Bridge (also known as Historic Oak Grove Bridge). KELLCO completed the Asbestos and Lead Paint Inspection Report on October 25, 2016, (KELLCO Job No. 1610-03). The specific inspector(s) utilized by KELLCO included an asbestos inspector licensed with the State of California, Department of Occupational Safety and Health and a lead inspector licensed by the State of California Department of Public Health. KELLCO collected samples of the bridge materials only. The KELLCO report states that asbestos and lead paint was not found in any of the tested materials. The KELLCO report makes the following recommendations:

- The inspection was a reasonable attempt to find suspect materials that were hidden within walls, behind structures, in vertical shafts or in areas not normally accessible. If any non-sampled materials are uncovered, these should be submitted for asbestos and/or lead paint analysis.
- Although the materials analyzed were negative for lead paint, for the purposes of demolition it is recommended that all painted materials be considered as lead containing.

A copy of the KELLCO Asbestos and Lead Paint Inspection Report can be found in Appendix D of this report.

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6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Data Gaps

WKA identified the following data gaps during the completion of this report:

- The time intervals between the Standard Historical Sources (i.e., topographic maps, aerial photographs, other historical sources) exceeded the ASTM minimum five-year period. However, the use of the Site appears unchanged within the time gaps, and therefore, research of the Site use during the time gaps is not required by the ASTM Standard (Refer to *Section 8.3.2.1 – Intervals* of the ASTM E 1527-13 standard).
- Since the bridge area consists of existing municipal right-of-way, no parcel numbers are associated with it. No right-of-way acquisition is planned for the proposed project within the Site. In this particular instance, no title report, lien search, or activity use limitation search was completed for the Site.

- The User Questionnaire and Helpful Documents Checklist were not completed and returned at the time of completion of this report.
- Limited Site history was provided by Tulare County.

It is the opinion of WKA that no significant data gaps were identified during the preparation of this report that affects the ability of the Environmental Professional to identify RECs on the Site.

6.2 Conclusions

The following presents a list of observations and findings identified during the preparation of this report:

- The historical land use research dating back to the late 1904 revealed that the Site has remained in use as a surface roadway(s), bridge(s) and right-of-way;
- No agency listed facilities are located within the immediate vicinity of the Site. Based on the completion of the vapor encroachment condition (VEC) screening matrix, WKA concludes a VEC can be ruled out because a VEC does not or is not likely to exist;
- The existing bridge within the Site has been in place since 1923;
- Mineral King Road has crossed the Site Since at least 1904;
- KELLCO completed the Asbestos and Lead Paint Inspection Report on October 25, 2016. The report states that asbestos and lead paint was not found in any of the tested materials.
- Numerous piles of ground asphalt, concrete waste, green waste, and wood debris were observed within proposed construction Staging Area 2 (Figure 3A & 3B). Two large areas of surface soil staining were observed within the proposed construction staging area #2. These stained soil areas had a petroleum hydrocarbon odor. We estimate the depth of the staining to be approximately four inches.

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We have performed a Phase I ISA in conformance with the scope and limitations of ASTM Practice E 1527-13 for the Mineral King Road Bridge (also known as Historic Oak Grove Bridge) and two separate construction staging areas. Any exceptions to, or deletions from, this practice are described in Section 6.4 of this report. This assessment has revealed no the following evidence of RECs in connection with the Site:

6.3 Recommendations

Based on the conclusions presented and the documentation contained herein, WKA recommends the following actions:

- The KELLCO lead paint and asbestos inspection was a reasonable attempt to find suspect materials that were hidden within walls, behind structures, in vertical shafts or in areas not normally accessible. If any non-sampled materials are uncovered, these should be submitted for asbestos and/or lead paint analysis.
- Although the materials analyzed by KELLCO were negative for lead paint, for the purposes of demolition and worker health and safety, it is recommended that all painted materials be considered as lead containing.
- Numerous piles of ground asphalt, concrete waste, green waste, and wood debris were observed within proposed construction Staging Area 2. Two large areas of surface soil staining were observed within the proposed construction Staging Area 2. We recommend that this debris and stained soil be collected for appropriate disposal.

6.4 Exceptions and/or Deletions

With the exception of the Data Gaps listed in Section 5.1 of this report, no exceptions or deletions from the ASTM E 1527-13 standard were made during the performance of this ISA.

6.5 Additional Services

Non-scope considerations, such as assessment for naturally occurring asbestos (NOA), wetlands evaluation, indoor air quality, laboratory testing of the soils and groundwater beneath the Site for environmental contaminants (such as agricultural-related pesticides, termiticides, polychlorinated biphenyls [PCBs], or arsenic), were not included or requested as part of this ISA. Additionally, this ISA included conducting a Tier 1 vapor encroachment screening in accordance with the ASTM *E 2600-10 Vapor Encroachment Screening on Property Involved in Real Estate Transactions.*

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7.0 LIMITATIONS

The statements and conclusions in this report are based upon the scope of work described above and on observations made only on the date of the field reconnaissance, August 3, 2016. Work was performed using a degree of skill consistent with that of competent environmental consulting firms performing similar work in the area. Information regarding the Site that is *publicly available* and *practically reviewable,* as described in the ASTM standard, was obtained. Additional research or receipt of information regarding the site that was not disclosed or available to WKA during this assessment may result in revision of the conclusions. The conclusions in this report should be reevaluated if site conditions change. No recommendation is made as to the suitability of the site for any purpose. The results of this assessment do not preclude the possibility that materials currently or in the future defined as hazardous are present on the Site, nor do the results of this work guarantee the potability of groundwater beneath the Site. This report is applicable only to the investigated Site and should not be used for any other property. No warranty is expressed or implied.

This report is viable for one year from the publication date of the report provided the following components are updated within 180 days of the date of purchase or (for transactions not involving an acquisition) the date of the intended transaction:

- Interviews with current owners/occupants and/or in order to identify changes in Site conditions or uses since the publication date of this report
- Searches for recorded environmental cleanup liens
- Visual inspection of the site and of adjoining properties with emphasis on changes in conditions or uses since the publication date of this report
- A current review of federal, state, tribal and county databases
- The declaration by the environmental professional responsible for the assessment.

Environmental Site Assessments completed more than one year prior to the date of purchase must be reviewed and updated in order for the *Environmental Site Assessment* to be considered valid per Section 4.6 (*Continued Viability of Environmental Site Assessment*), and Sections 4.7 and 8.4 (*Prior Assessment Usage*) of the ASTM E 1527-13 Standard.

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8.0 REFERENCES

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-2016a-2. *Certified Sanborn Map Report, Mineral King 2, Inquiry Number 4680212.13*, Milford, Connecticut (July 21, 2016).

-2016b-1. *The EDR Historical Topographic Map Report, Mineral King 1, Inquiry Number 4680212.4*, Milford, Connecticut (July 21, 2016).

-2016b-2. *The EDR Historical Topographic Map Report, Mineral King 2, Inquiry Number 4680212.14*, Milford, Connecticut (July 21, 2016).

-2016c-1. *The EDR Aerial Photo Decade Package Report, Mineral King 1, Inquiry Number 4680212.10*, Milford, Connecticut (July 25, 2016).

-2016c-2. *The EDR Aerial Photo Decade Package Report, Mineral King 2, Inquiry Number 4680212.20*, Milford, Connecticut (July 25, 2016).

-2016d-1. *The EDR City Directory Abstract, Mineral King 1, Inquiry Number 4680212.6*, Milford, Connecticut (July 25, 2016).

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-2016e-2. The EDR Radius Map Report with Geocheck*, Mineral King 2, Inquiry Number 4680212.12s*, Milford, Connecticut (July 21, 2016).

-2016f-1. *The EDR Vapor Encroachment Screen, Mineral King 1, Inquiry Number 4680212.7s*, Milford, Connecticut (July 21, 2016).

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Phase I Initial Site Assessment

MINERAL KING ROAD BRIDGE PROJECT

AKA HISTORIC OAK GROVE BRIDGE

WKA No. 10909.01

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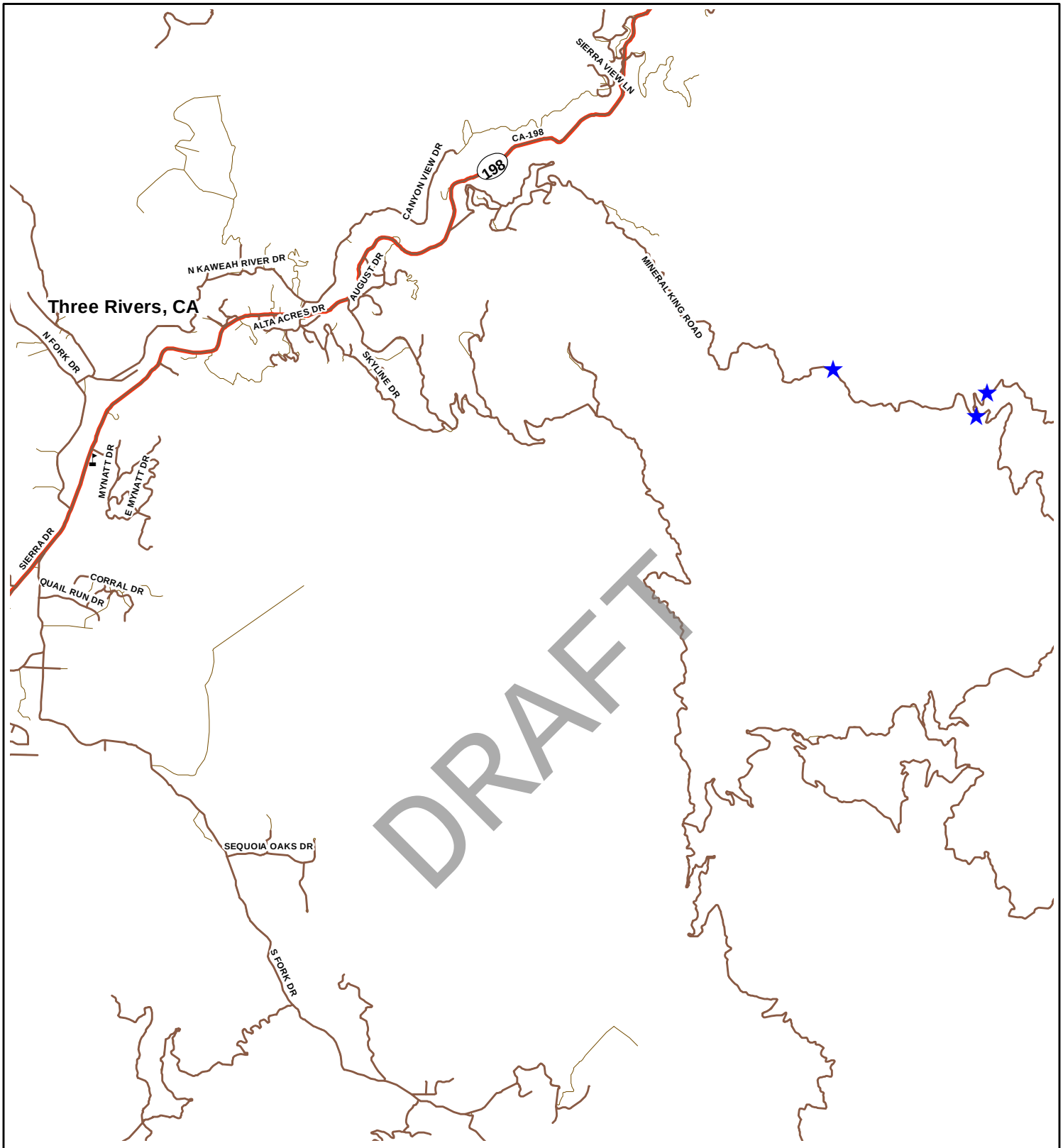
APPENDICES

A Resumes
B ASTM E 1527-13 User Questionnaire and Helpful Documents Checklist
C EDR® Radius Map Report Executive Summary
D Preliminary Screen for Vapor Encroachment Conditions Matrix

Attached CD contains: EDR® Reports: (Radius Map Report, Aerial Photographic Decade Package, Historical Topographic Maps, Sanborn Map Search), and Phase I ISA, Phase I ISA Mineral King Road Bridge (WKA No. 10909.01 dated November 2, 2016).

FIGURES

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Street data courtesy of Tulare County.
Projection: NAD 83, California State Plane, Zone VI

Legend

★ Sites

N

0 2,500 5,000

Feet

WallaceKuhl & ASSOCIATES

VICINITY MAP

MINERAL KING ROAD BRIDGE
AKA: HISTORIC OAK GROVE BRIDGE

Tulare County, California

FIGURE	1
DRAWN BY	RWO
CHECKED BY	DBN
PROJECT MGR	BCY
DATE	07/16

WKA NO. 10909.01



Adapted from U.S. Geological Survey 7.5 minute topographic maps of the Case Mountain quadrangle, California, dated 1994
Projection: NAD 83, California State Plane, Zone VI

Legend

★ Sites

N

0 2,000 4,000

Feet

WallaceKuhl & ASSOCIATES

TOPOGRAPHIC MAP

MINERAL KING ROAD BRIDGE

AKA: HISTORIC OAK GROVE BRIDGE

Tulare County, California

FIGURE	2
DRAWN BY	RWO
CHECKED BY	DBN
PROJECT MGR	BCY
DATE	07/16
WKA NO. 10909.01	



Aerial provided by ESRI.
Projection: NAD 83, California State Plane, Zone VI

Legend

Site Boundary

N

0 100 200

Feet

WallaceKuhl & ASSOCIATES

AERIAL SITE MAP

MINERAL KING ROAD BRIDGE

AKA: HISTORIC OAK GROVE BRIDGE

Tulare County, California

FIGURE	3A
DRAWN BY	RWO
CHECKED BY	DBN
PROJECT MGR	BCY
DATE	07/16
WKA NO. 10909.01	



Aerial provided by ESRI.
Projection: NAD 83, California State Plane, Zone VI

Legend

Site Boundary

N

0 100 200

Feet

WallaceKuhl & ASSOCIATES

AERIAL SITE MAP

MINERAL KING ROAD BRIDGE
AKA: HISTORIC OAK GROVE BRIDGE
Tulare County, California

FIGURE	3B
DRAWN BY	RWO
CHECKED BY	DBN
PROJECT MGR	BCY
DATE	07/16

WKA NO. 10909.01



Northeast facing view across the bridge.



North facing view of the bridge



North facing view of the under-side of the bridge.



South facing view of the bridge.

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COLOR PHOTOGRAPHS

MINERAL KING ROAD BRIDGE (aka HISTORIC OAK GROVE BRIDGE)

Tulare County, California

FIGURE	4a
DRAWN BY	BCY
CHECKED BY	KMB
PROJECT MGR	BCY
DATE	10/16

WKA NO. 10909.01



Northeast facing view through Staging Area #1



East facing view through Staging Area #2.



West facing view through Staging Area #2.



Debris and stained soil within Staging Area #2.

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COLOR PHOTOGRAPHS

MINERAL KING ROAD BRIDGE (aka HISTORIC OAK GROVE BRIDGE)

Tulare County, California

FIGURE	4b
DRAWN BY	BCY
CHECKED BY	KMB
PROJECT MGR	BCY
DATE	10/16

WKA NO. 10909.01

APPENDIX A

RESUMES

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BRYAN C. YATES

ENVIRONMENTAL SPECIALIST

Bryan C. Yates has managed projects dealing with multiple aspects of private and public development including master-planned communities, residential subdivisions, schools, churches, commercial properties, and light industrial facilities since 1998.

At Wallace Kuhl & Associates, Mr. Yates provides consulting services for multiple disciplines including:

- Stormwater Pollution Prevention Plans
- Municipal Stormwater Management Planning/Permitting
- Environmental Site Assessments
- Geotechnical Feasibility Studies
- Construction Management
- Land Development Consultation
- Land Development Constraints Analysis
- Political Consulting/Public Agency Interaction

SELECTED PROJECT EXPERIENCE

Castle Farms, Merced, CA: Mr. Yates prepared a Phase I Environmental Site Assessment, assisted in the geotechnical feasibility study, planned and coordinated a ground water assessment, which included an aquifer pumping test. His work also included quarterly surface water and air monitoring that continued for three years. Castle Farms consists of approximately 2,500 acres of agriculture production land formerly used for growing almond and wine grapes crops. The property is surrounded by a chicken ranch, a former military installation a Class III Disposal Landfill and a dairy farm.

Leona Quarry, Oakland, CA: Mr. Yates coordinated the efforts of multiple members of the development and construction team with local and regional agencies. He assisted in the preparation of the Stormwater Management Plan and SWPPP for this reclaimed quarry located in the Oakland Hills. Re-use planning revolved around approximately 400 condominium and single-family residential lots within the former quarry. Leona Quarry was an aggregate mine in Alameda County, California that was undergoing closure/re-use Studies.

.

North Spring Street Bridge Widening Project, Los Angeles, CA: Mr. Yates completed, an Initial Site Assessment in general conformance with Caltrans Standard Environmental Reference. The proposed project would widen the existing 50-foot-wide viaduct by approximately 20 feet on each side, resulting in a 90-foot-wide by 700-foot-long viaduct the California Department of Transportation and the City of Los Angeles had voiced concerns over the hazardous materials impacts by the proposed project during the NEPA/CEQA environmental documentation process.

Sacramento Stucco Property, West Sacramento, CA: Mr. Yates completed a Phase I Environmental Site Assessment for the three-acre property located northwest of the intersection of Riske Lane and South River Road and assisted in getting the Property through the enrollment process for the VCA program with the DTSC.. The property was occupied by the active Sacramento Stucco Company operation. Development plans for the property include a 30- to 50-story building occupied by commercial space, a parking structure, and approximately 300 condominiums. This Brownfield property currently lies within the redevelopment zone identified by the City of West Sacramento. The property was historically occupied by a lead acid battery recycling operation,

Transcan/Hillcrest Area Specific Plan, Antioch, CA, Mr. Yates completed a modified Environmental Site Assessment in support of the initial planning land acquisition activities for this proposed 375-acre transit oriented development. Mr. Yates also assisted the project proponent in completing an opportunities and constraints analysis for the project. The project is planned for a multi-facetted transit oriented development with a town center, 2,500 high density residential units, and no single family residences. Initial planning was complicated by a mix of historic agriculture and industrial uses that will be mitigated throughout the development process.

Folsom Boulevard Streetscape, Rancho Cordova, CA, Mr. Yates completed multiple Phase I Environmental Site Assessments in support of the efforts by the City of Rancho Cordova to upgrade and revitalize the five-mile Folsom Boulevard Corridor. These assessments were completed as part of the technical studies for project NEPA/CEQA documentation and compliance. The

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BRYAN C. YATES

Folsom Boulevard corridor is the heart of the City of Rancho Cordova Redevelopment Zone. Special features within the corridor include 4 Sacramento Regional Transit Light Rail Stations, and 3 Park & Ride Lots. Two US EPA Superfund sites are located within one mile of the Project boundary.

Northeast Fairfield Specific Plan, Fairfield, CA, Mr. Yates completed a hazardous materials assessment study for this large master planned community. This project included the development of previously undeveloped land, the redevelopment of the Cement Hill industrial area, a transit village with Capitol Corridor service, a railroad grade separation, and redevelopment of former railroad facilities. The planned uses included more than 6,000 single family residences, an employment center, retail, warehouse, and commercial.

Livingston's Concrete Services, Multiple Locations, CA, Mr. Yates has provided stormwater consulting services for Livingston's Concrete Services facilities in Lincoln, Rancho Cordova, North Highlands, Marysville, and Ophir (proposed).

Sunset, Roseville, CA, The Sunset project consists of approximately 1,000 acres of cattle grazing land. Mr. Yates completed a Phase I Environmental Site Assessment for this project. He also facilitated domestic water services discussions between Placer County Water Agency, the City of Roseville, and the project proponent.

Church Street Subdivision, Half Moon Bay, CA, Mr. Yates completed several technical studies in support of the environmental planning and permitting of this residential infill project located within Half Moon Bay, California. Bryan completed a modified Phase I Environmental Site Assessment that included soils sampling and analysis, preliminary drainage study. The environmental sampling was completed as a screening tool to assess the potential for pesticides residues to be present in near surface soil of the site. The preliminary drainage study was complicated by dense riparian vegetation along the banks of Pilarcitos Creek, floodplain issues, and the potential need to realign the stream channel to accommodate for the potential of an upstream earthen dam failure.

Solano County Fairgrounds Redevelopment, Vallejo, CA, Mr. Yates completed a modified Phase I Environmental Site Assessment in support of the initial planning phase of the proposed redevelopment of this 180 acre existing county fairgrounds site. Large areas of undocumented fill, underground fuel storage tanks, animal disposal pits, lead/asbestos, PCBs, and animal waste in shallow groundwater were all issues identified in the initial phases of the assessment.

Stockton Waterfront Project, Stockton, CA, Mr. Yates was Project Manager for the approximately 70-acre designated Brownfield project. This site was the location of the Colberg Boat Works that had historically been used to build and repair mine sweeping ships during World War II and more recently had been utilized for a variety of industrial activities. Bryan completed the Phase I Environmental Site Assessment for this complex waterfront project. The project will encompass 69 single-family, waterfront residences with internal streets, underground utilities, landscaping, and clubhouse.

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HIGHER EDUCATION:

California State University, Sacramento
Bachelors of Science-2000

University of California, Davis
Certificate in Land Use & Environmental Planning-2008

PROFESSIONAL REGISTRATIONS:

American Institute of Certified Planners (AICP) #188463

Registered Environmental Assessor, CA #08011-Program Suspended

Caltrans Certified Erosion Control Specialist 2003

24 Hour Hazardous Waste Training Course, 2003 (Updated Annually)

Certified Environmental Manager, Nevada #1926

Certified Professional in Erosion and Sediment Control (CPESC) #3824

Qualified SWPPP Developer & Practitioner (QSD/QSP), California # 21052

LEED Green Associate, GBCI #10747592

KURT M. BALASEK

SENIOR HYDROGEOLOGIST/DIRECTOR OF ENVIRONMENTAL SERVICES

Mr. Balasek has provided a leadership role in hydrogeologic and environmental consulting in the Western US. since 1989. His experience includes, residential and commercial land development, litigation support, permitting, regulatory compliance and technical team building. Mr. Balasek and his team have conducted a wide range of impacted soil and groundwater investigations, mine location and reclamation activities, water resource evaluations and conjunctive use studies. Mr. Balasek has supported municipal efforts to redevelop blighted neighborhoods using private and federal funding and has prepared successful grant applications for EPA Brownfield funding. Mr. Balasek has facilitated public stakeholder processes, organized public comments and used the information gathered from these efforts to prioritize neighborhood and regional site investigations and remedial activities.

Mr. Balasek specializes in unique approaches to problem solving and leverages nearly 30 years of regulatory relationships to assist clients facing enforcement actions. Mr. Balasek has saved his clients hundreds of thousands of dollars in reduced fines, monitoring requirements or realized project efficiencies.

SELECTED PROJECT EXPERIENCE

Stockton Worknet, Stockton, CA: Project was conducted for the City of Stockton Redevelopment Agency and involved delineation, removal and disposal for hydrocarbon and lead-contaminated soil discovered during a construction project. The project also involved a component of public outreach because a children's museum was located immediately adjacent to the site.

Hayden Hill Mine, Lassen, CA: Project consisted of third party review of mine closure plan for Lassen County. Provided technical assistance to Lassen County Planning Commission to facilitate permanent closure of large open pit mine.

Willow Creek, Folsom, CA: Project involved site investigation and subsequent removal of petroleum hydrocarbon-contaminated soil to facilitate private development of commercial property. Under my direction, I facilitated the investigation, excavation and coordination of closure petitions.

City of West Sacramento, West Sacramento, CA: Multiple Projects. These projects involved initial site evaluation of several hundred individual sites for the redevelopment of West Sacramento. Subsequent work involved site investigation and remediation of several sites under U.S. EPA Grants. Provided technical assistance to City staff and collaborated with them to best utilize the public funds and coordinate public outreach.

Rominger Property, Winters, CA (on-going): This project involves detailed site investigation, hydrogeologic analysis and evaluation, and the selection of appropriate remediation technologies for a large plume of (MTBE) contamination on an Ag-industrial site. Project involvement included client and regulatory interaction.

HIGHER EDUCATION:

University of California, Santa Barbara
BA, Geological Sciences (1986)
California State University, Chico
MS, Hydrogeology/Hydrology (1990)

PROFESSIONAL REGISTRATIONS:

Professional Geologist No. 6162, CA
Certified Hydrogeologist No. 299, CA
Qualified Storm Water Developer
California Engineering Contractor A-Haz, C-57,

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APPENDIX B

EDR® Radius Map Report Executive Summary

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Mineral King 1
Mineral King Road
Three Rivers, CA 93271

Inquiry Number: 4680212.2s
July 21, 2016

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The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

MINERAL KING ROAD
THREE RIVERS, CA 93271

COORDINATES

Latitude (North):	36.4494100 - 36° 26' 57.87''
Longitude (West):	118.7928720 - 118° 47' 34.33''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	339322.8
UTM Y (Meters):	4035088.5
Elevation:	2527 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5603056 CASE MOUNTAIN, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140810, 20140723
Source:	USDA

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MAPPED SITES SUMMARY

Target Property Address:
MINERAL KING ROAD
THREE RIVERS, CA 93271

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

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EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List

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US INST CONTROL ..... Sites with Institutional Controls

Federal ERNS list

ERNS ..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ..... State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ..... EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ..... Solid Waste Information System

State and tribal leaking storage tank lists

LUST ..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land
SLIC ..... Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST ..... Underground Storage Tank Listing
UST ..... Active UST Facilities
AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS ..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ..... Waste Management Unit Database
SWRCY ..... Recycler Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
ODI ..... Open Dump Inventory

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EXECUTIVE SUMMARY

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	Delisted National Clandestine Laboratory Register
HIST Cal-Sites	Historical Calsites Database
SCH	School Property Evaluation Program
CDL	Clandestine Drug Labs
Toxic Pits	Toxic Pits Cleanup Act Sites
US CDL	National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

SWEEPS UST	SWEEPS UST Listing
HIST UST	Hazardous Substance Storage Container Database
CA FID UST	Facility Inventory Database

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database

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HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
FINDS	Facility Index System/Facility Registry System
DOCKET HWC	Hazardous Waste Compliance Docket Listing
UXO	Unexploded Ordnance Sites
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
FUELS PROGRAM	EPA Fuels Program Registered Listing
ECHO	Enforcement & Compliance History Information

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EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historic Gas Stations
EDR Hist Cleaner	EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List
RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

Unmappable (orphan) sites are not considered in the foregoing analysis.

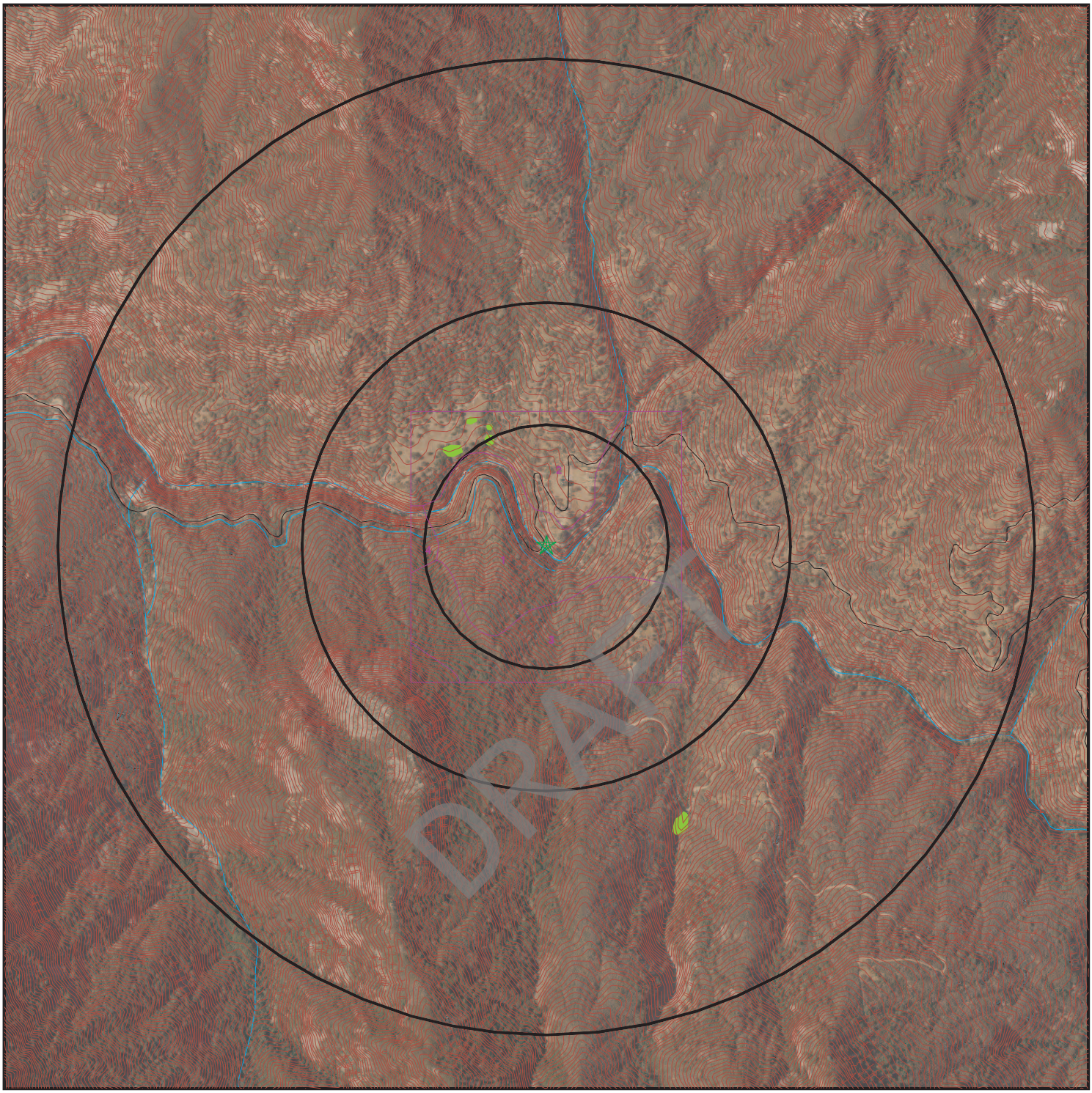
EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
PACIFIC BELL - LOWER SITE	LUST, HIST CORTESE

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OVERVIEW MAP - 4680212.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 1/4 1/2 1 Miles

- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Mineral King 1	CLIENT: Wallace - Kuhl & Associates
ADDRESS: Mineral King Road Three Rivers CA 93271	CONTACT: Bryan Yates
LAT/LONG: 36.44941 / 118.792872	INQUIRY #: 4680212.2s DATE: July 21, 2016 1:35 pm

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DETAIL MAP - 4680212.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Mineral King 1	CLIENT:	Wallace - Kuhl & Associates
ADDRESS:	Mineral King Road Three Rivers CA 93271	CONTACT:	Bryan Yates
LAT/LONG:	36.44941 / 118.792872	INQUIRY #:	4680212.2s
		DATE:	July 21, 2016 1:36 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
MINES	TP		NR	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	0	0	0	0	0

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NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Mineral King 2
Mineral King Road
Three Rivers, CA 93271

Inquiry Number: 4680212.12s
July 21, 2016

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The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

MINERAL KING ROAD
THREE RIVERS, CA 93271

COORDINATES

Latitude (North):	36.4535630 - 36° 27' 12.82''
Longitude (West):	118.8109170 - 118° 48' 39.30''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	337714.2
UTM Y (Meters):	4035579.5
Elevation:	2505 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5603056 CASE MOUNTAIN, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140810, 20140723
Source:	USDA

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MAPPED SITES SUMMARY

Target Property Address:
MINERAL KING ROAD
THREE RIVERS, CA 93271

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

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EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List

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US INST CONTROL ..... Sites with Institutional Controls

Federal ERNS list

ERNS ..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ..... State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ..... EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ..... Solid Waste Information System

State and tribal leaking storage tank lists

LUST ..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land
SLIC ..... Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST ..... Underground Storage Tank Listing
UST ..... Active UST Facilities
AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS ..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ..... Waste Management Unit Database
SWRCY ..... Recycler Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
ODI ..... Open Dump Inventory

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EXECUTIVE SUMMARY

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	Delisted National Clandestine Laboratory Register
HIST Cal-Sites	Historical Calsites Database
SCH	School Property Evaluation Program
CDL	Clandestine Drug Labs
Toxic Pits	Toxic Pits Cleanup Act Sites
US CDL	National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

SWEEPS UST	SWEEPS UST Listing
HIST UST	Hazardous Substance Storage Container Database
CA FID UST	Facility Inventory Database

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database

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HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
FINDS	Facility Index System/Facility Registry System
DOCKET HWC	Hazardous Waste Compliance Docket Listing
UXO	Unexploded Ordnance Sites
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
FUELS PROGRAM	EPA Fuels Program Registered Listing
ECHO	Enforcement & Compliance History Information

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historic Gas Stations
EDR Hist Cleaner	EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List
RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

Unmappable (orphan) sites are not considered in the foregoing analysis.

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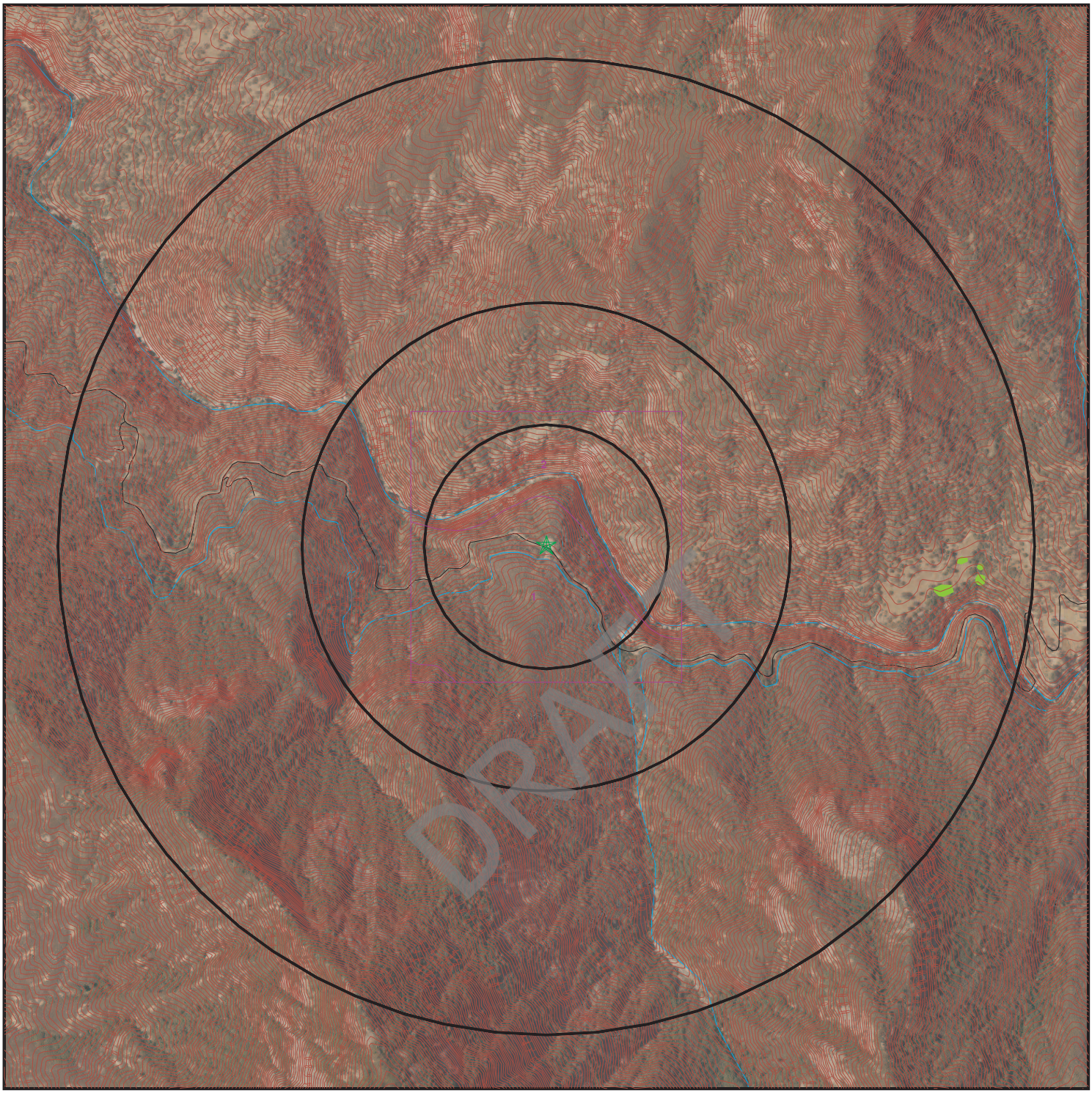
EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
PACIFIC BELL - LOWER SITE	LUST, HIST CORTESE

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OVERVIEW MAP - 4680212.12S



0 1/4 1/2 1 Miles

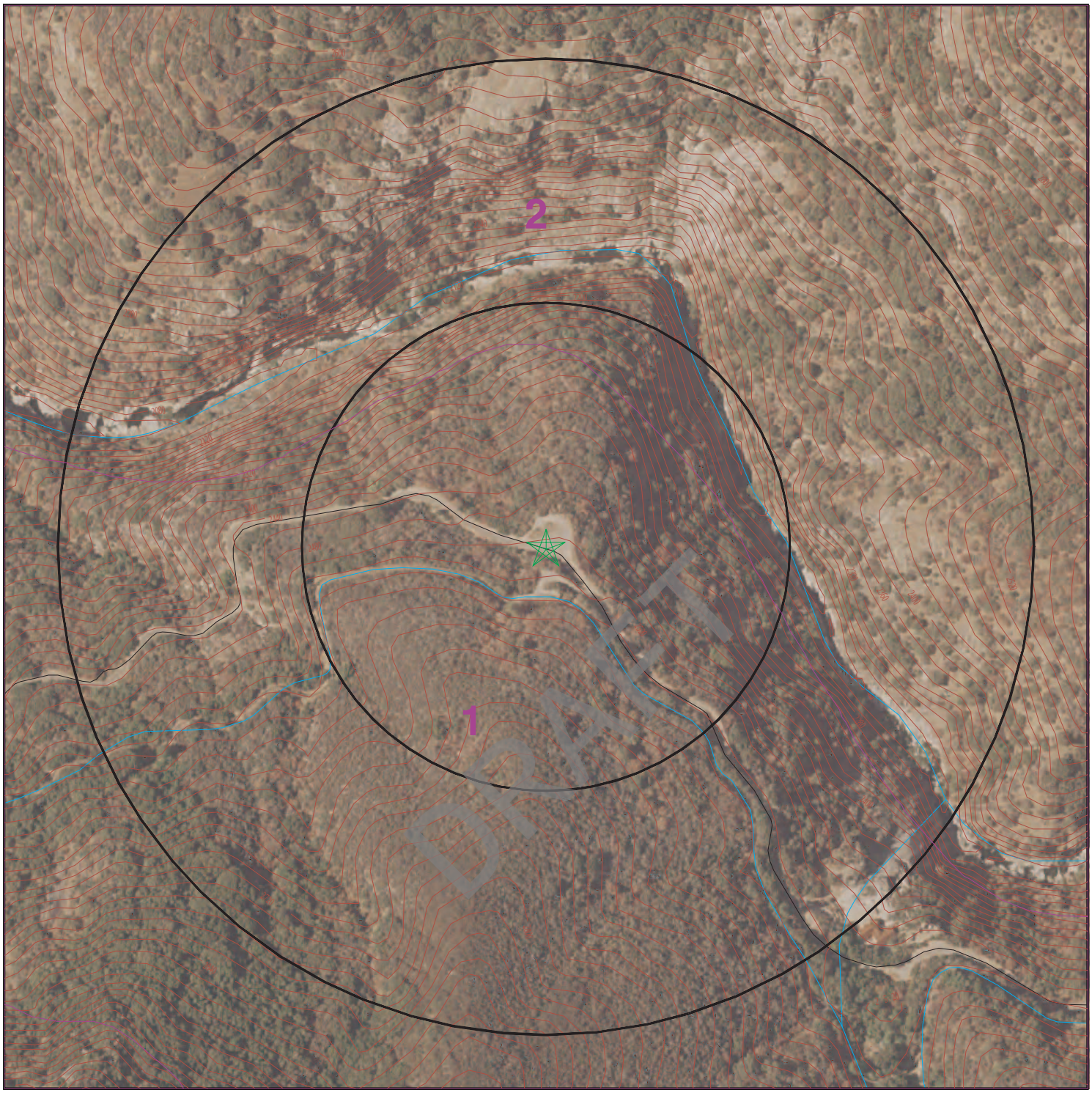
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Mineral King 2	CLIENT:	Wallace - Kuhl & Associates
ADDRESS:	Mineral King Road Three Rivers CA 93271	CONTACT:	Bryan Yates
LAT/LONG:	36.453563 / 118.810917	INQUIRY #:	4680212.12s
		DATE:	July 21, 2016 1:37 pm

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DETAIL MAP - 4680212.12S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Mineral King 2	CLIENT: Wallace - Kuhl & Associates
ADDRESS: Mineral King Road Three Rivers CA 93271	CONTACT: Bryan Yates
LAT/LONG: 36.453563 / 118.810917	INQUIRY #: 4680212.12s DATE: July 21, 2016 1:38 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
MINES	TP		NR	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	0	0	0	0	0

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NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

APPENDIX C

Preliminary Screen for Vapor Encroachment Conditions Matrix

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APPENDIX D

Asbestos and Lead Paint Inspection Report

DRAFT

Screen for Vapor Encroachment Conditions Matrix
MINERAL KING ROAD BRIDGE
WKA No. 10909.01

Phase I ESA Screen for Vapor Encroachment Conditions (VEC) matrix includes a (1) **Search Radius Test,** (2) **Chemicals of Concern Test (COC),** and (3) a **Critical Distance Test**[1].

(1) Search Radius Test: Are there any known or suspect contaminated sites in the primary area of concern within the corresponding search radii? (if yes, see attached Table A).

Yes (No) If No, then screening for a VEC is complete and no VEC *currently* exists, go to #4. If Yes, then:

(2) **Chemicals of Concern**[2] **Test**: Are COC likely to be present within the area of concern for those known or suspect contaminated sites identified based on the Search Distance Test?

Yes No If No, then screening for a VEC is complete and no VEC *currently* exists, go to #4. If Yes, then:

If Yes, check all COC that apply on attached Table B.

(3) Critical Distance Test: A plume test to determine whether or not COC in the contaminated plume(s) may be within the critical distance.

(3a) Is information related to the contaminated(s) plume available (i.e. isoconcentration maps, site drawings, etc.)?
Yes No

(3b) If ***No***, then screening for a VEC is complete and no VEC *currently* exists, go to #4. If ***Yes***, then:

(3c) Is the site less than 100 feet to the nearest edge of a contaminated [non-petroleum hydrocarbon] plume(s)?
Yes No

(3d) Is the site less than 30 feet to the nearest edge of a dissolved petroleum hydrocarbon plume(s)?
Yes No

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If the distance from the nearest edge of a contaminated plume to the nearest existing or planned structure on the site is less than 100 feet for non-petroleum hydrocarbon COC, or less than 30 feet for dissolved petroleum hydrocarbons, then it is presumed that a VEC *currently* exists beneath the site. If the distance from the nearest edge of the contaminated plume is greater than or equal to 100 feet for non-petroleum hydrocarbons, or 30 feet for dissolved petroleum hydrocarbon chemicals of concern, then it is presumed unlikely that a VEC *currently* exists beneath the site.

(4) Is it likely that a VEC *currently* exists beneath the site?
Yes (No) If *Yes,* then recommend performing a full scope VEC assessment according to ASTM E 2600-10.

[1] Based on guidance presented in the ASTM E 2600-10 Standard.
[2] Chemical(s) of concern (COC): See attached table for typical chemicals of concern (as presented in Appendix X6.1 of the ASTM E 2600-10 Standard).

ATTACHMENT "F"

HYDROLOGY & WATER QUALITY RESOURCES:

Water Quality Technical Memorandum (2020)

Water Quality Assessment Report (2017)

Water Quality Technical Memorandum

CONSULTING

GPA

Memorandum

Date: January 20, 2021

For: Alex Rangel, Associate Environmental Planner
California Department of Transportation, District 6

REVIEWED
By Alex Rangel at 9:49 am, Jan 26, 2021

From: Jennifer Johnson, Senior Biologist
GPA Consulting

Subject: Mineral King Road Bridge (aka Historic Oak Grove Bridge) Project
Second Supplemental Water Quality Memorandum
Federal Project No: BRLO 5946 (106)

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans), proposes to construct a new bridge upstream of the existing Mineral King Road Bridge (also named Historic Oak Grove Bridge), Bridge #46C-0916 on Mineral King Road over the east fork of the Kaweah River (project). The existing bridge, built in 1923, is a 108-foot long reinforced concrete open spandrel arch bridge and is considered structurally deficient. The purpose of the project is to correct seismic deficiencies to meet current seismic standards; resolve structural deficiencies to enhance public safety; and maintain access over the East Fork of the Kaweah River.

A Water Quality Assessment Report (WQAR) was completed for the project in May 2017. Since the WQAR was completed, the Rehabilitation Alternative (Alternative 1) was chosen as the only viable build alternative because it would not result in an adverse effect to a historic resource (Mineral King Road Bridge). A Supplemental Water Quality Memorandum was prepared in June 2018 to analyze Alternative 1. Following an additional corrosion assessment of the existing bridge, a Corrosion Assessment Report was prepared in February 2020 that concluded the Alkali Silica Reactivity (ASR) in the existing concrete bridge arches was in a severe state, and ASR was observed throughout the depth of the coring samples, indicating the ASR extended throughout the entire structural section of the arches. Based on these findings, it was determined that rehabilitation of the bridge is no longer feasible. Alternative 2B, described in more detail below, is analyzed in this Second Supplemental Water Quality Memorandum.

Project Description

Alternative 2B: Replacement (Preserve Existing Bridge)

Alternative 2B would construct a new steel plate girder bridge on a new alignment located approximately 50 feet upstream of the existing bridge. The proposed structure would be located upstream to avoid impacts to existing historic elements of the existing bridge. Traffic will be maintained on the existing bridge during construction of the new structure. The new alignment will require cutting into the existing hillside at both bridge approaches as well as the construction of rock anchor retaining walls. Specialized rock removal will be required in order to construct the proposed bridge abutments and rock anchor retaining walls.

Two methods of specialized rock removal are anticipated. The first would utilize expansive rock breaking non-explosive demolition agents, such as expanding grout, to facilitate the excavation of the proposed roadway. This method eliminates fly rock (rock that is ejected as a result of an explosion), limits the amount of noise produced by this operation, and is a vibration-free excavation method ideal for environmentally sensitive areas or areas adjacent to existing structures. Due to the higher cost and increased construction duration associated with expansive rock breaking non-explosive demolition agents, it is anticipated the contractor may also utilize controlled fracturing of rock using minimal quantities of explosive chemical compounds placed in judiciously spaced predetermined drilled holes. Fly rock, dust, and noise transmission associated with this method would be reduced through the use of large, rubber mats placed over the area prior to fracturing.

The existing bridge, as well as the existing viewshed of the historic structure while approaching the crossing along Mineral King Road, will be preserved as part of this alternative. It is anticipated that the existing structure may still be used as a pedestrian crossing. Natural boulders would be placed at the ends of the bridge deck in lieu of bollards to prevent vehicular access to the historic bridge, but it will still be visually apparent that the Oak Grove Bridge had served as part of the highway. Furthermore, the Federal Highway Bridge Program allows the funds not spent on removing the existing bridge to be used to perform minor rehabilitation work on the existing structure in order to maximize its remaining life. Such work may include replacing the joint seals, applying methacrylate to the existing bridge deck, and epoxy injecting larger cracks in the arch ribs, pier spandrel columns, and foundation elements.

<u>Superstructure</u>

The proposed replacement bridge superstructure consists of a new 100-foot-long clear span steel plate girder bridge. The depth of the steel plate girder superstructure is five feet, six inches. Advantages of a steel plate girder superstructure include its relatively low cost, long span length,

shallow superstructure depth, ease of maintenance, and familiarity with this type of construction among a variety of contractors.

Substructure

The new bridge abutments are anticipated to consist of seat type abutments. Depending upon the depth to bedrock, the abutments will be supported on either cast-in-drilled-hole concrete piles with concrete rock sockets or spread footings cast directly on bedrock. In the case that spread footings are selected and dead load of the structure proves insufficient to resist uplift due to overturning, post tensioned rock anchors will be used to provide additional resistance. Specialized rock removal is anticipated at the abutments to provide a level surface to construct the abutment foundations. In addition, new cantilever retaining walls will be required at the abutments to support the proposed roadway approaches.

Staging Areas

Three possible construction staging areas have been identified. The first is located approximately 800 feet northeast of the existing bridge. The second is located immediately north of Mineral King Road approximately 1.3 miles west of the existing bridge. The third staging area is approximately 400 feet northeast of the existing bridge. Temporary construction easements and right-of-way acquisitions would be required to accommodate construction of the project. Utility relocation is not anticipated as part of the project; however, coordination with the utility owners would be required.

Water Quality Assessment

Construction of the project would involve installation of a replacement bridge upstream of the existing bridge over the east fork of the Kaweah River. Work would be conducted outside of the wetted portion of the channel, and a water diversion is not anticipated. However, there is potential for construction debris and materials to fall into the river below the bridge, resulting in water quality impacts. In addition, the new alignment would require cutting into the existing hillside at both bridge approaches for excavation of the proposed roadway as well as the construction of rock anchor retaining walls. Rock removal would also be required at the abutments to construct the abutment foundations. Depending on the method of rock removal that is chosen, there is potential for fly rock to enter the river; however, rubber mats would be used prior to fracturing the hillside to contain the rock debris. Excavation of the roadway and construction of the retaining walls have the potential to cause erosion of the hillside which could affect water quality in the river from an increase in dust and turbidity.

As discussed in the WQAR, installation of the new bridge would result in an increase in impervious surface area. The project would result in a minor increase in storm water runoff; however, the

project would be designed to accommodate existing and anticipated runoff levels, and would not result in substantial increases in polluted runoff.

With implementation of the avoidance and minimization measures outlined in Section 6.0 of the WQAR, direct and indirect impacts on water quality from construction and operation of the project would be minimized, and there would be no adverse impacts. Potential impacts on water quality have not changed from what is discussed in the WQAR; therefore, there would be no additional water quality impacts to consider from the selection of Alternative 2B as the Build Alternative.

If you have any questions or would like additional information, please contact me at (310) 792-2690 or via email at jennifer@gpaconsulting-us.com.

Water Quality Assessment Report

WATER QUALITY ASSESSMENT REPORT

Mineral King Road Bridge Project



Mineral King Road Bridge Project
Tulare County, California
District 6 –Tulare – Mineral King Road
HBP 5946 (106)
Bridge #46C-0196

May 2017

Caltrans

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 U.S.C. 327 and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans.

Water Quality Assessment Report

Mineral King Road Bridge Project
Tulare County, California
District 6 –Tulare – Mineral King Road
HBP 5946 (106)
Bridge #46C-0196

May 2017

STATE OF CALIFORNIA
Department of Transportation

Prepared By: _____ Date: 05/02/2017

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Environmental Analysis, Planning & Local Programs

Executive Summary

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans), proposes to replace and/or rehabilitate the existing Mineral King Road Bridge (also named Historic Oak Grove Bridge), Bridge #46-0916 on Mineral King Road over the east fork of the Kaweah River (project). The existing bridge, built in 1923, is a 108-foot long reinforced concrete open spandrel arch bridge and is considered structurally deficient. The purpose of the project is to correct seismic deficiencies and resolve structural deficiencies of the bridge while maintaining access and public safety.

The primary purpose of a Water Quality Assessment Report (WQAR) is to fulfill the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and provide information, to the extent possible, for the National Pollution Discharge Elimination System (NPDES) permitting.

This WQAR includes a discussion of the project, the physical setting of the project area, and the regulatory framework with respect to water quality. It also provides data on the project area watershed and existing water quality, describes water quality impairments and beneficial uses, identifies potential water quality impacts/benefits associated with the project, and recommends avoidance and/or minimization measures for potentially adverse impacts.

The project is located in the Sierra Nevada foothills and the bridge serves as a seasonal entrance to Mineral King Valley in Sequoia National Park, approximately 1.45 miles east of the project area. The bridge is surrounded by mostly undisturbed wildlands with rolling hills and dense vegetation, including mature trees within and surrounding the project area. The project area is in a remote location, and the closest residence is more than 700 feet northeast of the bridge. The project area is in the East Fork Kaweah River watershed (HUC 1803000702) in the Tulare Lake Basin. The Tulare Lake Basin is a closed drainage basin (does not drain to the ocean) at the south end of the San Joaquin Valley, south of the San Joaquin River watershed. Within the project area, Kaweah River has a natural bottom lined with solid granite rock and flows southwest to Lake Kaweah.

Construction of the project would involve rehabilitating or replacing the existing bridge over the east fork of the Kaweah River and installing temporary scaffolding within the creek, and could potentially impact water quality from an increase in dust and turbidity. However, with the implementation of proposed avoidance and minimization measures, direct and indirect impacts on water quality would be minimized, and there would be no adverse impacts. The project would not be expected to result in cumulatively considerable impacts on water quality.

The Kaweah River is considered waters of the United States (U.S.) and state, and is therefore protected under federal (Clean Water Act (CWA) Section 404) and state (CWA Section 401 and California Fish and Game Code Section 1602) regulations. A pre-construction notification under CWA Section 404 Nationwide Permit 14 from the United States Army Corps of Engineers (USACE), a CWA Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB), and a California Fish and Game Code Section 1602 Streambed Alteration Agreement from the California Department of Fish and Wildlife (CDFW) would be required for the project.

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1.0 INTRODUCTION

1.1 Project Location

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans), proposes to replace and/or rehabilitate the existing Mineral King Road Bridge (also named Historic Oak Grove Bridge), Bridge #46-0916 on Mineral King Road over the east fork of the Kaweah River (project). The project is located approximately six miles east of the census designated place of Three Rivers near the entrance to Sequoia National Park in the county of Tulare, California (see **Figure 1** and **Figure 2**). The project is listed in the Tulare County Association of Governments (TCAG) 2010/2011 Federal Transportation Improvement Program (FTIP).

1.2 Project History

In August 2010, the bridge was programmed in the TCAG 2010/2011 FTIP for rehabilitation/replacement funding through the Highway Bridge Program (HBP). A Sufficiency Rating and a status flag indicating whether a bridge is Structurally Deficient are used to establish eligibility for HBP funds. The bridge's current Sufficiency Rating is 78.8, and the bridge is considered Structurally Deficient.

Based on the bridge load rating and seismic analysis conducted for the project, the bridge has the following deficiencies (Cornerstone Structural Engineering Group, 2015):

- The existing bridge deck over the main arch span has insufficient strength under the load from a 36-ton semi-trailer truck (HS20-44 loading) resulting from inadequate reinforcing steel.
- The existing barrier rails are in poor condition and do not meet current federal barrier rail safety standards.
- The existing transverse cap beams in the main arch span are insufficient under HS20-44 loading.
- Six of the 10 existing spandrel columns are projected to fail during a seismic event.
- Concrete core samples taken from the bridge deck, arch, and wingwalls were tested, and chemical reactions (alkali-silica reactivity and carbonation) were detected that have resulted in the deterioration of the concrete. Moderate to large cracks (up to 0.25 inch thick) are present in both the substructure and superstructure of the bridge.

The existing bridge, built in 1923, is a 108-foot long reinforced concrete open spandrel arch bridge. The bridge's deck width is approximately 23 feet and carries two lanes of traffic, one in each direction, over the east fork of the Kaweah River. The bridge provides access to several private residences along the river, and serves as a seasonal entrance to Mineral King Valley in Sequoia National Park, approximately 1.45 miles east of the project area. The bridge also serves as an access road for fire protection services provided by both state and federal agencies (California Department of Forestry and Fire Protection (Cal Fire) and United States Forest Service Fire & Aviation Management). The bridge is historically significant and is eligible for the National Register of Historic Places.

1.3 Project Description

The project includes the replacement and/or rehabilitation of the Mineral King Road Bridge.

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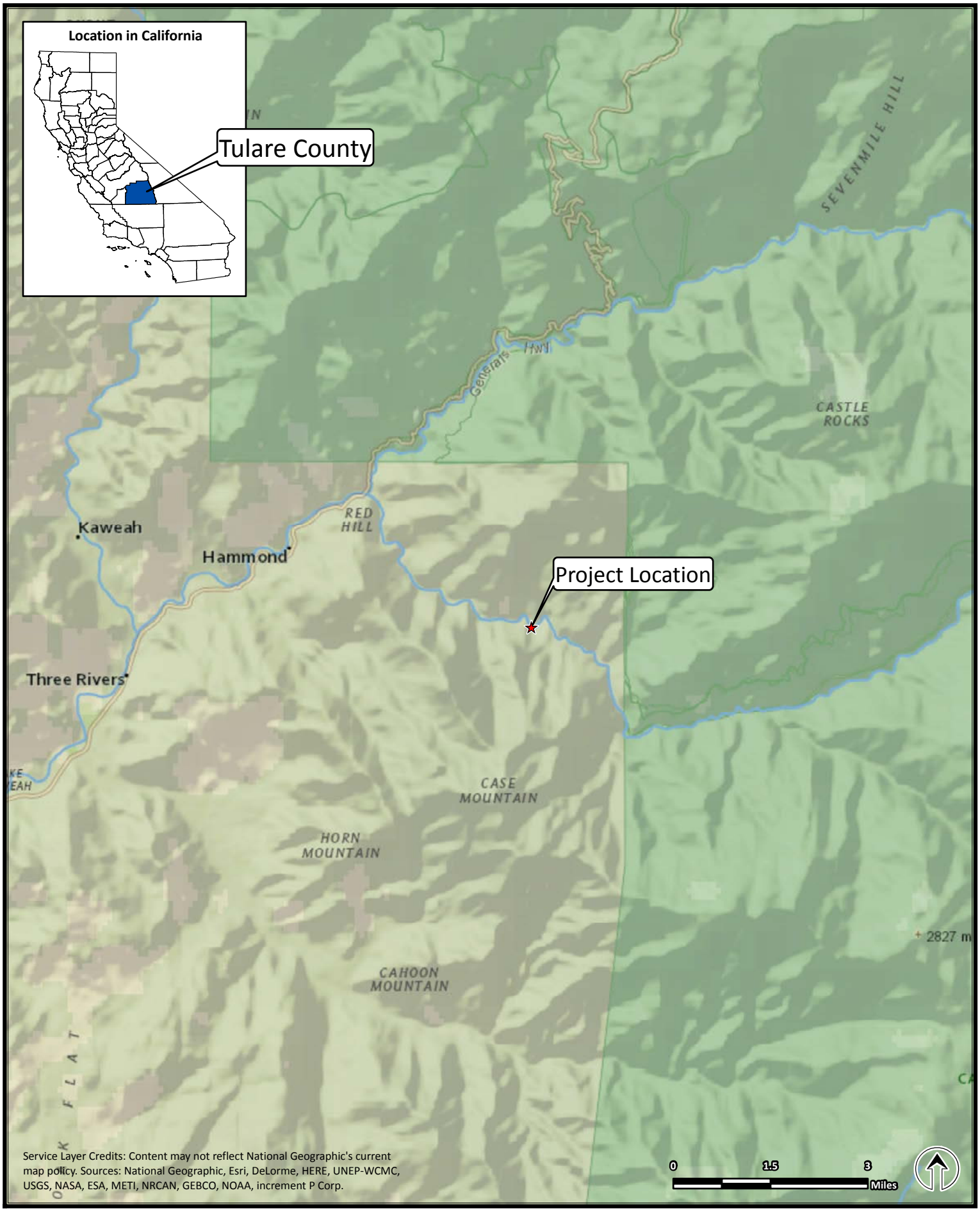


FIGURE 1: REGIONAL LOCATION MAP
Mineral King Road Bridge Project



FIGURE 2: PROJECT LOCATION
Mineral King Road Bridge Project

Alternative 1: Rehabilitation/Retrofit

The Rehabilitation/Retrofit Alternative would include removal and replacement of the bridge deck, spandrel columns, spandrel crossbeams, arch fins, transverse deck beams, and longitudinal exterior beam over the main arch span; repair of carbonated concrete at the pier spandrel columns and arch; replacement of the existing deficient concrete barrier rails with new concrete barrier rails meeting current federal barrier rail safety standards; and application of silane waterproofing treatment to all remaining exposed concrete surfaces (see **Attachment A**, Engineering Drawings).

To make the necessary repairs, a temporary scaffolding system would be required. The scaffolding would be placed within the creek. Because the existing bridge would be closed during construction, a temporary bridge would be required downstream of the existing bridge to maintain traffic during construction. The centerline of the temporary bridge would be located approximately 50 feet north of the existing bridge's northern edge of deck. The span length of the temporary bridge would be approximately 120 to 130 feet. The temporary bridge would be supported on temporary cast-in-place abutments that would be removed following rehabilitation of the existing bridge. Because of limitations on the size of equipment that can access the site, the temporary bridge would likely be placed in three or more sections on two temporary supports in the channel.

Alternative 2B: Replacement (Preserve Existing Bridge)

The Replacement Alternative would include construction of a replacement bridge with a new cast-in-place tensioned concrete box girder on a new alignment. The new bridge would be constructed immediately upstream of the existing bridge. The replacement bridge would consist of an approximately 120-foot-long single-span bridge (see **Attachment A**, Engineering Drawings). The replacement bridge would be the same width as the existing bridge, approximately 19 feet wide from curb to curb. The total bridge width, with Type 80 barrier rails, would be 22.5 feet (including a 19-foot travel way plus two 1-foot, 9-inch barrier rails).

The replacement bridge would be located east (upstream) of the existing bridge, and traffic would continue to use the existing bridge until construction is completed. Following construction, the existing bridge would likely be used as a pedestrian crossing.

Because the alignment of the bridge would be shifted to the east, the approach roadways would also be realigned. The new alignment would require cutting into the hillside at both bridge approaches. Depending on the depth to bedrock, blasting or hydro drilling of the existing rock would be required. Retaining walls would likely be needed to accommodate both roadway approaches and bridge abutments. In addition, new fill and retaining walls would be required to support the proposed alignment at the southwest corner of the structure. Under this alternative, minor rehabilitation work on the existing bridge is proposed to maximize its remaining life. This may include replacing the joint seals, applying methacrylate to the bridge deck, and/or injecting epoxy into the larger cracks in the arch ribs and pier spandrel columns.

Alternative 3: Hybrid Rehabilitation/Replacement

The Hybrid Rehabilitation/Replacement Alternative is a combination of Alternatives 1 and 2B. The original arches of the existing bridge would be maintained, and the existing bridge deck would be reconstructed with a new girder type bridge (see **Attachment A**, Engineering Drawings). All aesthetic features on the new bridge deck would be reconstructed to match the existing bridge.

The new girder type bridge would consist of a cast-in-place post-tensioned concrete box girder constructed over the existing arch to mimic the appearance of the existing structure. This would be accomplished by forming the exterior girder to give the appearance of the existing exterior face along the bridge deck. The box girder would be a single span, approximately the same length as the existing bridge (approximately 120 feet). This span would require a box girder depth of approximately five feet. While this depth is greater than the existing exterior floor beams, which are approximately 2.5 feet deep, the exterior appearance of the new bridge would be almost identical to the existing bridge. The existing arch ribs, spandrel columns, and piers would be repaired and laterally stabilized against transverse and longitudinal motion by pin dowels that would be placed into the new box girder bridge.

Because the existing bridge deck would need to be removed, a temporary bridge, as described in Alternative 1, would be required to maintain traffic during construction. After erection of the temporary bridge, construction of the new structure would begin with the demolition of the existing deck, spandrel beams to the tops of the spandrel columns, and abutments. New abutments would be constructed behind the existing abutments. Temporary bracing (i.e., falsework) would be installed for the existing arch ribs and spandrel columns, and the arches would then be used to help support the temporary falsework for construction of the box girder. Construction of the box girder would be completed, and the temporary falsework would be removed.

Three potential staging areas are being considered: the first construction staging area (East Construction Staging Area) is located approximately 800 feet northeast of the existing bridge; the second construction staging area (West Construction Staging Area) is located immediately north of Mineral King Road, approximately 1.3 miles west of the existing bridge; and the third construction staging area (South Construction Staging Area) is located approximately 370 feet northeast of the existing bridge (see **Figure 3**).



FIGURE 3. PROJECT AREA AND STAGING AREAS
Mineral King Road Bridge Project

2.0 REGULATORY SETTING

2.1 Clean Water Act

The United States Army Corps of Engineers (USACE) regulates the placement of dredged and fill material into waters of the United States (U.S.), including wetlands, under Section 404 of the Clean Water Act (CWA). The limits of USACE jurisdiction extend to the ordinary high water mark. No discharge of dredged or fill material into waters of the U.S. is permitted unless authorized under an USACE Nationwide Permit or Individual Permit. For all work subject to an USACE Section 404 permit, project proponents must obtain a Water Quality Certification from the applicable Regional Water Quality Control Board (RWQCB) under CWA Section 401 stating that the project would comply with applicable water quality regulations.

The State Water Resources Control Board (SWRCB) determines water rights, sets water pollution control policy, issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving basin plans, Total Maximum Daily Loads, and National Pollutant Discharge Elimination System (NPDES) permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

2.2 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the state include groundwater and surface waters not considered waters of the U.S. Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements and may be required even when the discharge is already permitted or exempt under the CWA.

2.3 National Pollutant Discharge Elimination System Stormwater Discharge Permits

The RWQCB administers the NPDES stormwater permitting program, under Section 402(p) of the CWA. Under Section 402 of the CWA, a NPDES permit is required for any point source discharge of pollutants into waters of the U.S., and establishes monitoring and reporting requirements. Construction activities that involve disturbance of more than one acre require compliance with the statewide NPDES storm water general permit for construction activities. Construction activity that results in soil disturbances of less than one acre is subject to this permit if there is potential for substantial water quality impairment resulting from the activity as determined by the RWQCB.

2.4 California Streambed Alteration Program

Section 1602 of the California Fish and Game Code governs construction activities that substantially divert or obstruct natural stream flow or substantially change the bed, channel, or bank of any river, stream, or lake under the jurisdiction of California Department of Fish and Wildlife (CDFW). Under the California Fish and Game Code, the limits of CDFW's jurisdiction within streams and other drainages extends from the top of the stream bank to the top of the opposite bank, to the outer drip line in areas

containing riparian vegetation, and/or within the 100-year floodplain of a stream or river system containing fish or wildlife resources. Under Section 1602, a Streambed Alteration Agreement must be issued by the CDFW prior to the initiation of construction activities that may substantially modify a river, stream, or lake under CDFW's jurisdiction.

2.5 Water Quality Control Plan for the Central Valley Basin

Section 13240 of the Porter-Cologne Act requires each RWQCB to formulate and adopt water quality control plans, or basin plans, for all areas within the region. The project area is under the jurisdiction of the Central Valley RWQCB Office.

The *Water Quality Control Plan for the Tulare Lake Basin Second Edition* (Basin Plan) lists the beneficial uses of surface waters and ground waters in the basin (Central Valley RWQCB, 2002). Beneficial uses are uses that may be protected against water quality degradation. These uses generally include, but are not limited to, domestic, municipal, agricultural and industrial supply, power generation, recreation, aesthetic enjoyment, navigation, and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

The Basin Plan also includes water quality objectives, which are the limits or levels of water quality constituents or characteristics that are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.

2.6 Tulare County General Plan

The 2030 Tulare County General Plan (County's General Plan) contains the County's goals and desires concerning land use and is designed to serve as the basis for development decisions. The following goals and policies from the County's General Plan Water Resources Element are applicable to the project:

- Goal WR-2: To provide for the current and long-range water needs of the County and for the protection of the quality of surface water and groundwater resources.
- Policy W-2.1. *Protect Water Quality*: All major land use and development plans shall be evaluated as to their potential to create surface and groundwater contamination hazards from point and non-point sources. The County shall confer with other appropriate agencies, as necessary, to assure adequate water quality review to prevent soil erosion; direct discharge of potentially harmful substances; ground leaching from storage of raw materials, petroleum products, or wastes; floating debris; and runoff from the site.
- Policy W-2.2. *National Pollutant Discharge Elimination System Enforcement*: The County shall continue to support the State in monitoring and enforcing provisions to control non-point source water pollution contained in the U.S. Environmental Protection Agency NPDES program as implemented by the RWQCB.
- Policy W-2.3. *Best Management Practices*: The County shall continue to require the use of feasible Best Management Practices (BMP) and other mitigation measures designed to protect surface water and groundwater from the adverse effects of construction activities, agricultural operations requiring a County permit, and urban runoff in coordination with the RWQCB.
- Policy W-2.4. *Construction Site Sediment Control*: The County shall continue to enforce provisions to control erosion and sediment from construction sites.

2.7 Southern Sierra Integrated Regional Water Management Plan

The Southern Sierra Regional Water Management Group (SSRWMG) is a group of diverse stakeholders that was formed in 2008 to take a collaborative, integrated approach for implementing regional natural resource/watershed management actions that enhance the natural resources and human communities of the Southern Sierra Region. THE SSRMG is the governing body responsible for implementing the Southern Sierra Integrated Regional Water Management Plan (SSIRWMP). The SSIRWMP is a non-regulatory planning document that identifies water management goals and objectives that provide a framework to address issues such as water supply, water quality, habitat and environment, recreation and land use. The following goals and objectives from the SSIRWMP are applicable to the project:

- Goal No. 2: Protect and Improve Water Quality: Improve water quality to help ensure drinking water meets California Health standards, and natural water bodies can support livestock and native wildlife.
    - Objective 2a: Protect natural streams, lakes and other water bodies from contamination.
    - Objective 2b: Promote best management practices to protect water quality or reduce water contamination.
    - Objective 2c: Reduce erosion and sedimentation. Several measures can be taken to reduce erosion and sedimentation including slope stabilization, road maintenance, road decommissioning, grading and drainage improvements, and best management practices during construction.
    - Objective 2d: Promote storm water management planning and implementation. Development and implementation of stormwater management plans can help to improve drainage and discharge of pollutants to natural waterbodies.
- Goal No. 4: Improve Watershed and Environmental Resource Management: Promote best management practices for all land uses in the Region. Preserve open space and natural habitats that protect and enhance water resources and native species.

3.0 METHODS

3.1 Literature and Database Review

As part of this analysis, reviews were conducted of the Water Quality Control Plan for the Tulare Lake Basin, the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Tulare County, the Natural Resources Conservation Service (NRCS) Web Soils Survey for Tulare County, California Central part, and the County's General Plan. In order to determine the impacts on water quality, the increase in impervious surface area of the new bridge was calculated, and impacts of construction activities were considered.

3.2 Surveys

A biological survey of the project area was conducted by senior biologist Marieka Schrader, senior biologist Stan Glowacki, and associate biologist Sheri Mayta on April 9 and April 10, 2015. Additional surveys were conducted by Ms. Schrader and Ms. Mayta on July 25 and July 26, 2016. The project area was visually surveyed on foot, to the extent feasible, and all plant and animal species within the project area were identified to determine the potential for protected species to be in the project area.

3.3 Previous Studies

Fish surveys were conducted in 1986 to assess the water quality of the east fork of the Kaweah River (from the Confluence of the Kaweah River to the Confluence with Horse Creek) and to determine if this section of the river should be listed on the 303(d) list for impaired water bodies (SWRCB, 2012a). The pollutant assessed for this area was invasive species. The 1986 study used baseline data from studies conducted between 1969 and 1971 to compare the composition of native species against non-native species. The comparison showed an overall net increase of native species, as well as an increase of non-native species (Brown and Moyle, 1993). During the 2006 listing, the SWRCB determined that this section of the river should not be placed on the 303(d) list because applicable water quality standards for the pollutant were not exceeded (SWRCB, 2006). No new data for this segment of the Kaweah River has been assessed since the 2006 listing; therefore, the east fork of the Kaweah River from the confluence with the Kaweah River to the confluence with Horse Creek is not currently listed on the 303(d) list of impaired water bodies.

A recent study was conducted by the California Department of Water Resources (DWR) on the geology, hydrology, quality of water, and water supply of the Three Rivers area. The study was prepared for the to provide information applicable to the integrated regional water management plan (IRWMP) area. The study area includes the nine local watersheds of the Kaweah River that contribute to groundwater recharge. Groundwater within the study area is a blend of high quality surface water and groundwater flowing through rock fractures of the watersheds. The study determined that during average precipitation conditions, groundwater recharge within the East Fork Kaweah River Watershed exceeds the groundwater usage and results in a positive water balance within the area (California Department of Water Resources, 2016).

4.0 ENVIRONMENTAL SETTING

4.1 Study Area

The project area is within the Sierra Nevada foothills, and the bridge serves as a seasonal entrance to Mineral King Valley in Sequoia National Park, approximately 1.45 miles east of the project area (see **Figure 3**). The bridge is surrounded by mostly undisturbed wildlands with rolling hills and dense vegetation, including mature trees, within and surrounding the project area. The project area is in a remote location, and the closest residence is more than 700 feet northeast of the bridge. The elevation in the project area is approximately 2,515 feet above mean sea level (msl).

4.2 Site Topography and Soils

Tulare County is divided into two major geologic regions: the Sierra Nevada Mountains and the Central Valley. The area between these two sections comprises the Sierra Nevada Foothills. The project area is within the lower Sierra Nevada Foothills (Jepson Flora Project, 2016).

The composition, moisture, and compaction of soil are all major factors in determining soil erosion potential. Sediments containing more clay tend to be more resistant to erosion than those with sand or silt, because clay helps bind soil particles together. In addition, soils with high levels of organic materials are often more resistant to erosion because the organic materials create a stronger, more stable soil structure.

According to the United States Department of Agriculture Web Soil Survey (Web Soil Survey), the project area is underlain by Fallbrook sandy loam, 30 to 50 percent slopes, based on survey area data for Tulare County, California, Central Part dated, September 25, 2014 (USDA NRCS, 2014). The Fallbrook sandy loam soil units are composed of sandy loam from zero to eight inches and sandy clay loam, clay loam, and weathered bedrock from eight to 51 inches. Fallbrook sandy loam soils are characterized as well drained soils with a water table depth of more than 80 inches.

According to the Web Soil Survey, the project area has a severe erosion hazard because of the erodibility of the slopes in the project area. A severe rating indicates that substantial erosion is expected and erosion-control measures are needed.

According to the FEMA FIRM Panel 06107C0735F (effective June 16, 2009), the project area is located in Zone X, which is an area of minimal flood hazard that is outside the 100-year floodplain (FEMA, 2009). In addition, the FIRM shows that the project area is not located in a regulatory floodway.

4.3 Project Area Watershed

The project area is in the East Fork Kaweah River watershed (HUC 1803000702) in the Upper Kaweah Subbasin within the Tulare Lake Basin (see **Figure 4**). The Tulare Lake Basin is a closed drainage basin (does not drain to the ocean) at the south end of the San Joaquin Valley, south of the San Joaquin River watershed (County, 2012). The Kaweah River originates in the Sierra Nevada Mountains within Sequoia National Park and drains the west face of the Sierra Nevada Mountains. Within the project area, the Kaweah River has a solid granite rock bottom and flows southwest to Lake Kaweah. From Lake Kaweah, the river flows toward the city of Visalia and splits into the Kaweah River and St. John's River as it flows west into the Tulare Lakebed. There is a flume (a deep narrow channel or ravine with a stream running through it) on the upper hillside adjacent to the project area that is owned by Southern California Edison.

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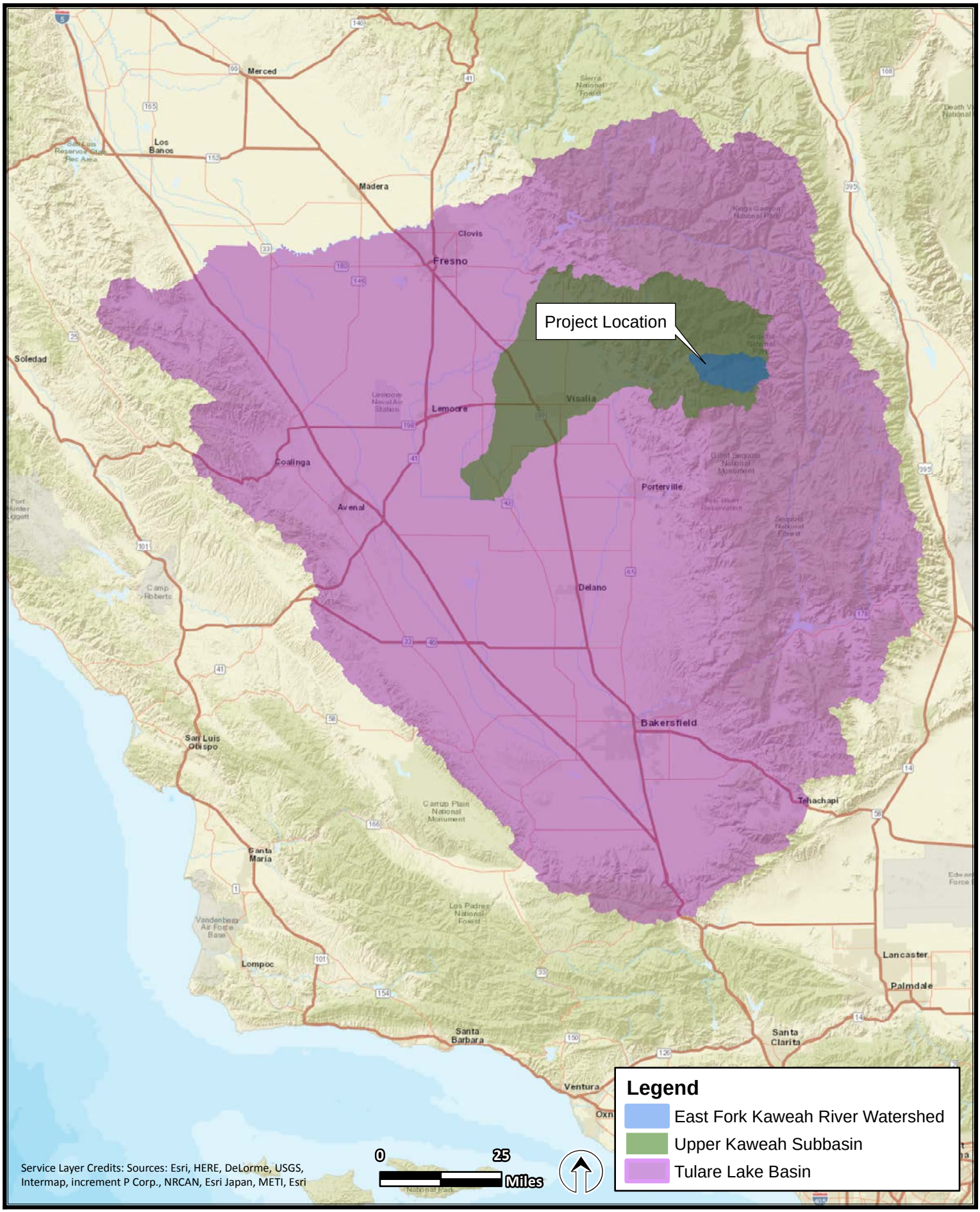


FIGURE 4. WATERSHED MAP
Mineral King Road Bridge Project

4.4 Water Quality

The protection and enhancement of the beneficial uses of waterways against water quality degradation is a requirement under the Porter-Cologne Water Quality Control Act. In determining water quality objectives, the RWQCB must consider past, present, and future beneficial uses of water. The designated surface water beneficial uses for the Kaweah River, above Lake Kaweah, are Municipal and Domestic Supply (MUN), Hydropower Generation (POW), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Warm Freshwater Habitat (WARM), Cold Freshwater Habitat (COLD), Wildlife Habitat (WILD), Rare, Threatened, or Endangered Species (RARE), Spawning, Reproduction, and/or Early Development (SPWN), and Freshwater Replenishment (FRSH).

The Central Valley RWQCB has established water quality objectives for its major regional water bodies. These objectives designate allowable limits of water quality constituents or characteristics that allow for the reasonable protection of the resource's beneficial uses. Surface water quality in the Tulare Lake Basin is generally good, with excellent quality within most eastside streams. Water quality objectives for inland surface waters include the following:

Ammonia: Waters shall not contain un-ionized ammonia in amounts which adversely affect beneficial uses. In no case shall the discharge of wastes cause concentrations of un-ionized ammonia (NH_3) to exceed 0.025 milligrams (mg) per liter (l) in receiving waters.

Bacteria: In waters designated REC-1, the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 milliliters (ml), nor shall more than 10 percent of the total number of samples taken during any 30-day period exceed 400/100 ml.

Biostimulatory Substances: Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

Chemical Constituents: Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. Water designated MUN shall not contain lead in excess of 0.015 mg/l.

Color: Waters shall be free of discoloration that causes nuisance or adversely affects beneficial uses.

Dissolved Oxygen: Waste discharges shall not cause the monthly median dissolved oxygen (DO) concentrations in the main water mass of streams and above the thermocline in lakes to fall below 85 percent of saturation concentration, and the 95 percentile concentration to fall below 75 percent of saturation concentration. The DO in surface waters shall always meet or exceed 5.0 mg/l for waters designated WARM, and 7.0 mg/l for waters designated COLD or SPWN.

Floating Material: Waters shall not contain floating material, including but not limited to solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.

Oil and Grease: Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.

pH: The pH of water shall not be depressed below 6.5, raised above 8.3, or changed at any time more than 0.3 units from normal ambient pH.

Pesticides: Waters shall not contain pesticides in concentrations that adversely affect beneficial uses. There shall be no increase in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses.

Radioactivity: Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life nor which result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

Salinity: Waters shall be maintained as close to natural concentrations of dissolved matter as is reasonable considering careful use of the water resources.

Sediment: The suspended sediment load and suspended sediment discharge rate of waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

Settleable Material: Waters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

Suspended Material: Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

Tastes and Odors: Waters shall not contain taste- or odor-producing substances in concentrations that cause nuisance, adversely affect beneficial uses, or impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to domestic or municipal water supplies.

Temperature: Natural temperatures of waters shall not be altered unless it can be demonstrated to the satisfaction of the RWQCB that such alteration in temperature does not adversely affect beneficial uses. Elevated temperature wastes shall not cause the temperature of waters designated COLD or WARM to increase by more than five degrees Fahrenheit above natural receiving water temperatures.

Toxicity: All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.

Turbidity: Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

- Where natural turbidity is between zero and five Nephelometric Turbidity Units (NTU), increases shall not exceed one NTU.
- Where natural turbidity is between five and 50 NTUs, increases shall not exceed 20 percent.
- Where natural turbidity is equal to or between 50 and 100 NTUs, increases shall not exceed 10 NTUs.
- Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

The toxicity water quality objective was assessed for this waterway to determine if this section of the river should be listed on the 303(d) list for impaired water bodies. In order to determine compliance with this objective an analysis of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests are required. The east fork of the Kaweah River was designated as a Category 3 waterway in the Final 2012 Integrated Report (CWA Section 303(d) List/305(b) Report (SWRCB,

2012b). A waterway is given a Category 3 rating if the water quality information obtained could not be used for an assessment, for reasons such as monitoring data have poor quality assurance, there are not enough samples in a dataset, there is no existing numerical objective or evaluation guideline, or the information alone cannot support an assessment, etc. Therefore, the Kaweah River within the project area is not listed on the 303(d) list of impaired waterbodies because of a lack of available information. This decision would be updated by the RWQCB when new data and information becomes available and are assessed.

4.5 Nearby Toxic Substances Database Listing

According to the SWRCB GeoTracker database, there are no known hazardous materials and/or hazardous waste sites within a 0.5-mile radius of the project area (SWRCB, 2016).

4.6 Other Toxic Substances Concerns

Structures built before 1978 have the potential to contain asbestos-containing materials and/or lead-based paint. Because the bridge was constructed in 1923, there is potential for asbestos-containing material in concrete material on the bridge and lead-based paint in pavement markings. In addition, there could be aerially-deposited lead in roadway shoulders because of the past use of leaded fuel in vehicles.

5.0 POTENTIAL IMPACTS

5.1 Construction Impacts

The project would require work within the river during construction, which could result in impacts on hydrology and water quality. Scaffolding supports would be placed in the river, and supports would be required within the river to erect a temporary bridge. Because work would be required within the river, a Section 401 Water Quality Certification, Section 404 Nationwide Permit, and Section 1602 Streambed Alteration Agreement would be required for the project.

Alternative 1 would include removal and replacement of the bridge deck, deck beams, spandrel columns, spandrel crossbeams, and arch fins, and repair of carbonated concrete at the pier spandrel columns and arch. Alternative 3 would include reconstruction of the bridge deck and repair of the existing arch ribs, spandrel columns, and piers. During removal and reconstruction of these features, there is potential for construction debris and materials to fall into the river below the bridge, resulting in water quality impacts.

Alternative 2B would include construction of a replacement bridge on a new alignment and would require cutting into the hillside at both bridge approaches. Depending on the depth to bedrock, blasting or hydro drilling of the existing rock would be required. There is potential for erosion of the hillside, and dust/soil to fall into the river, which could affect water quality from an increase in dust and turbidity. Additionally, oil, fuel, and other petroleum products used to maintain and operate construction equipment could be accidentally released. The project would require excavation to a maximum depth of 25 feet, but would not be expected to encounter groundwater or interfere with groundwater recharge.

A water diversion would likely be required to divert water around the construction area, which would alter river flows. The diversion would be minimized to the extent feasible, and would not be longer than necessary to divert water through the construction area. Following construction, the water diversion would be removed and flow patterns would be restored to their normal conditions. Therefore, there would not be a permanent change to flow patterns in the project area.

A water model has not been run for this project; therefore, the exact increase in turbidity resulting from the project is not known. However, standard BMPs outlined below in Section 6.0 would be included in the project to avoid or minimize the release of sediment and pollutants, including bridge materials and chemical toxins, into the river during construction. The project would be conducted in accordance with applicable water quality regulations and regulatory permits, and would not be expected to result in substantial water quality impacts.

5.2 Operational Impacts

Installation of the new bridge under Alternative 2B would result in an increase of approximately 216 square feet of impervious surface area. Although the project would result in a minor increase in storm water runoff, the project would be designed to accommodate existing and anticipated runoff levels, and would not result in substantial increases in polluted runoff. The new bridge would not result in an increase in traffic volumes; therefore, it would not result in an increase in pollutant runoff from vehicles. Alternatives 1 and 3 would not result in an increase in impervious surface area. The project would be designed in compliance with regulatory requirements; therefore, operational impacts on water quality would be minimal.

5.3 Impacts to Flora and Fauna

Biological surveys were conducted within the project area by senior biologist Marieka Schrader, senior biologist Stan Glowacki, and associate biologist Sheri Mayta on April 9 and April 10, 2015. Additional surveys were conducted by Ms. Schrader and Ms. Mayta on July 25 and July 26, 2016. Surveys included general biological surveys and focused aquatic surveys, bat surveys, and botanical surveys. Surveys of the project area, including two of the three staging areas, were conducted on foot and using binoculars, where necessary. Surveys of the Kaweah River within the project area were performed from the lower banks, where accessible, and from the bridge deck using binoculars. The river was surveyed approximately 100 feet upstream and 100 feet downstream from the bridge.

Rainbow trout (*Oncorhynchus mykiss*) were observed in the river, and a Sierra chorus frog (*Pseudacris regilla*) was heard calling during the evening. An unidentified snake was observed through binoculars swimming in an upstream pool. No frogs or tadpoles were observed in the river during the surveys; however, newts (*Taricha* sp.) were observed crossing Mineral King Road away from the river during the April 2015 survey.

Bat habitat assessment and emergence surveys were performed on the evening of April 9, 2015, and July 25, 2016. Bats were detected acoustically on both dates, and visually observed roosting within one of the bridge expansion joints on July 26, 2016. The large number of bats detected and observed indicate that a colony, potentially a maternal colony, is roosting on the bridge. There is also evidence that a large number of bats are night roosting on multiple locations on the bridge, and a large number of bats are using the river corridor for travel. Swallow nests were also observed on the bridge, and there are large trees within the project area that provide potential nesting habitat for birds and roosting habitat for bats (swallows nests).

No special status plant species were observed during the biological surveys conducted on April 9 and April 10, 2015, and on July 26, 2016, which were conducted during the appropriate survey window for plants with the potential to be in the project area.

The water diversion would have the potential to impact aquatic species, including fish species, if they were unable to pass through the project area or were to become caught within the diversion area. Work on or near the existing bridge would have the potential to result in temporary impacts on nesting birds and roosting bats from noise, vibration, and dust produced by construction activities. In addition, trimming or removal of trees and vegetation could also impact nesting birds. During construction, flow would be maintained through the project area and the project would not result in an impediment of water. Following construction, flow would be restored throughout the project area, and the project would not result in changes to the river channel that would be expected to affect fish or local wildlife passage in the project area. Appropriate measures would be developed to avoid, minimize, and/or mitigate impacts on wildlife species, including fish, migratory birds and bats.

6.0 AVOIDANCE, MINIMIZATION, AND OR MITIGATION STRATEGIES

6.1 Standard Conditions

Standard BMPs including erosion control measures would be incorporated into the project to comply with the County's NPDES Permit. The measures that would be implemented for the project area listed in the sections below.

6.2 Hazardous Materials Conditions

The following measures would be implemented to prevent hazardous materials from entering of the Kaweah River:

WQ-1 Appropriate hazardous material BMPs, including having a spill prevention kit on site would be implemented to minimize the potential for chemical spills or containment releases into the Kaweah River, including any non-storm water discharge.

WQ-2 All equipment refueling and maintenance would be conducted in the upland staging area away from the canal, per standard specifications and regulatory permits. In addition, vehicles and equipment would be checked daily for fluid and fuel leaks, and drip pans would be placed under all equipment that is parked and not in operation.

6.3 Applicable Best Management Practices

The following measures would be implemented during construction to avoid or minimize adverse effects on water quality within the Kaweah River during construction:

WQ-3 Work areas would be minimized to the smallest area feasible.

WQ-4 Staging areas would be sited away from the edges of the river to reduce potential for disturbance of, or non-storm water discharge to, the Kaweah River.

WQ-5 BMPs, including silt fencing and fiber rolls, would be implemented to minimize dust, dirt, and debris resulting from construction activities, and to protect the water quality of the Kaweah River pursuant to the requirements of the RWQCB and project permits.

WQ-6 Following completion of construction activities, appropriate erosion control measures would be implemented to ensure that soils disturbed by construction are stabilized, to minimize non-storm water discharges into the Kaweah River, and to meet the requirements of the RWQCB and project permits.

WQ-7 All disturbance to aquatic habitat, including riparian vegetation and jurisdictional waters, would be minimized with the use of environmentally sensitive area fencing and all soil exposed as a result of project construction would be revegetated using native-plant hydroseeding or live planting methods. Restoration would be at a minimum ratio of 1:1, or as agreed upon as part of regulatory permitting.

With the implementation of the above avoidance and minimization measures and compliance with applicable water quality regulations and regulatory permits, the project would not be expected to result in substantial water quality impacts.

7.0 PERMITS REQUIRED

Because work would be required within the river, a Section 1602 Streambed Alteration Agreement, Section 404 Nationwide Permit, and Section 401 Water Quality Certification would be required for the project.

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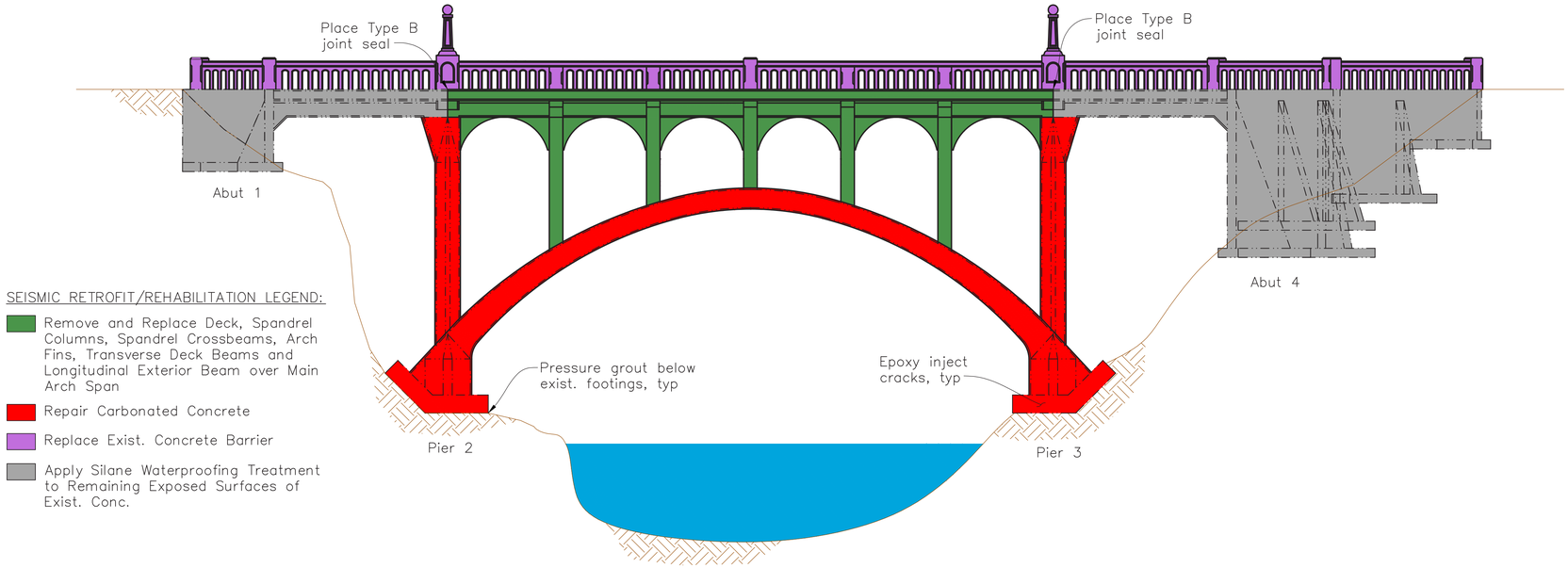
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Appendix A: Engineering Drawings

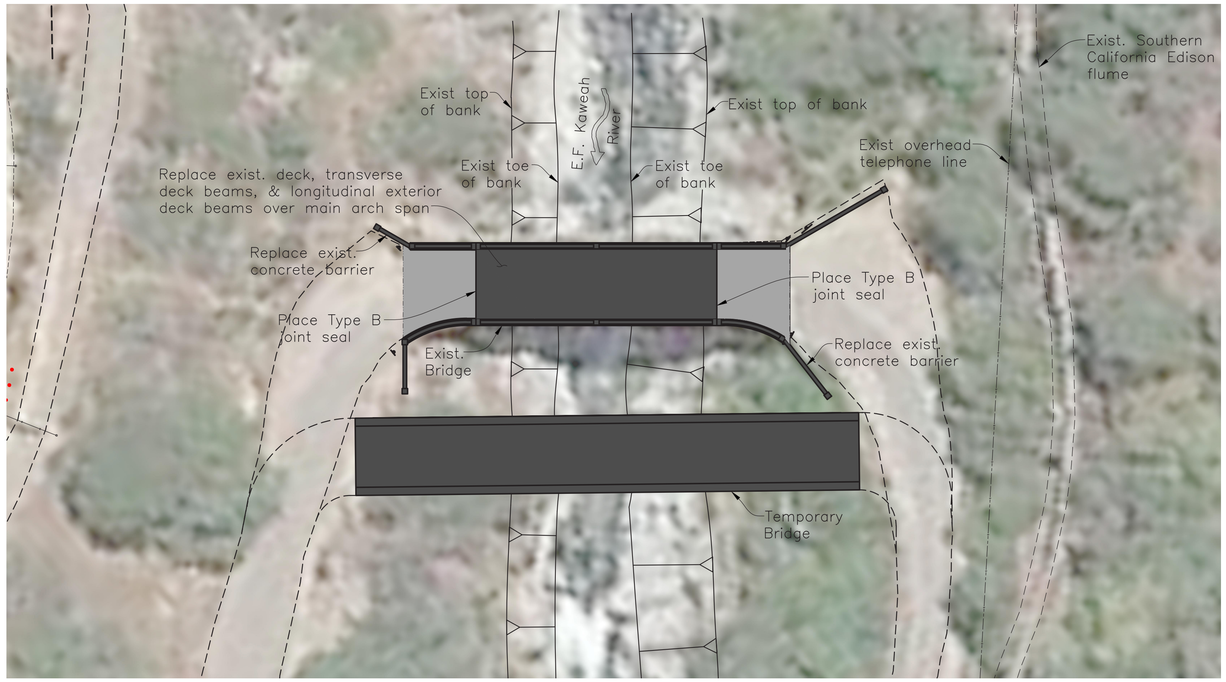


SEISMIC RETROFIT/REHABILITATION LEGEND:

- Remove and Replace Deck, Spandrel Columns, Spandrel Crossbeams, Arch Fins, Transverse Deck Beams and Longitudinal Exterior Beam over Main Arch Span
- Repair Carbonated Concrete
- Replace Exist. Concrete Barrier
- Apply Silane Waterproofing Treatment to Remaining Exposed Surfaces of Exist. Conc.

ELEVATION

NO SCALE



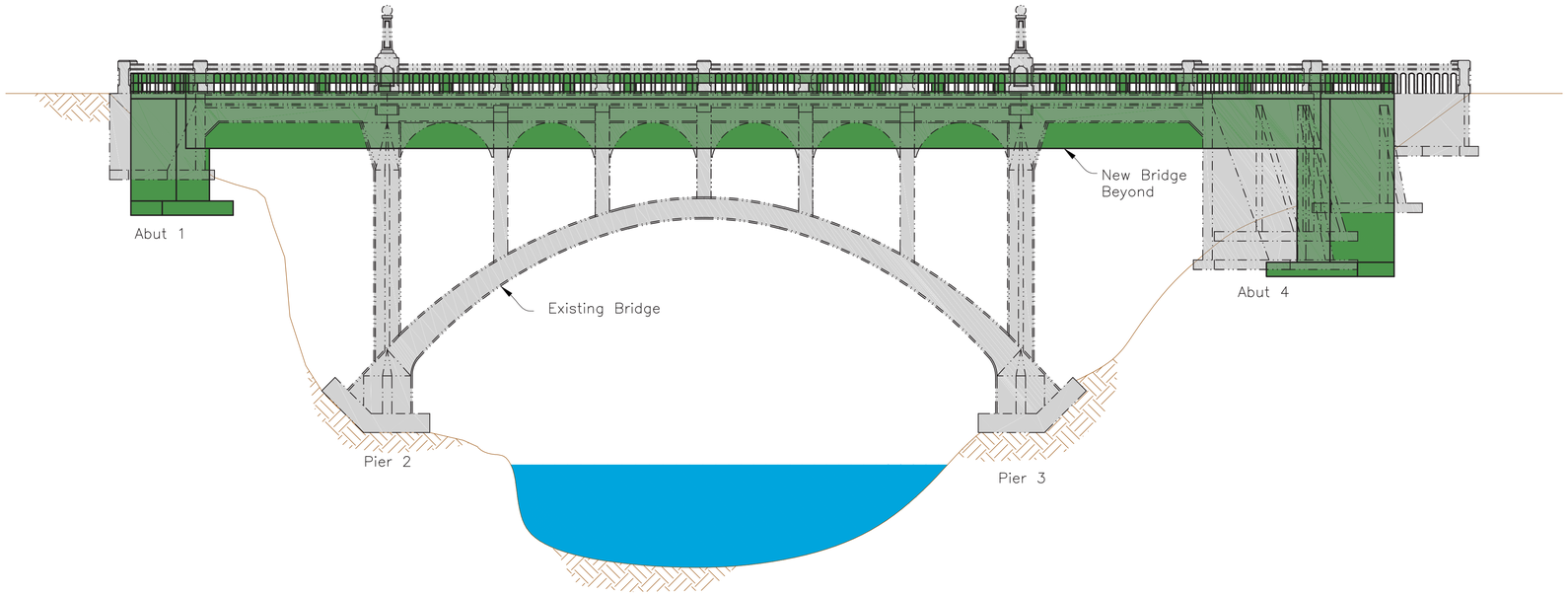
PLAN

1"=20'-0"

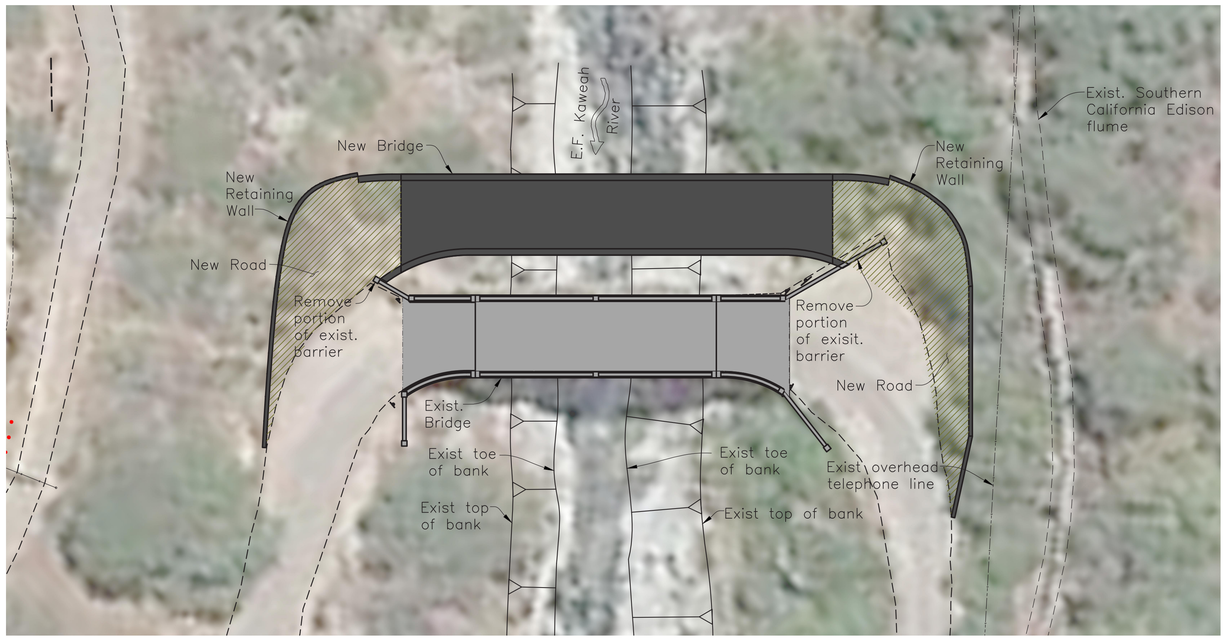
CORNERSTONE structural engineering group

TULARE COUNTY RESOURCE MANAGEMENT AGENCY
5961 SOUTH MOONEY BLVD., VISALIA, CALIFORNIA 93277

ALTERNATIVE 1 - REHAB/RETROFIT
M375A HISTORIC OAK GROVE BRIDGE OVER THE EAST FORK OF THE KAWEAH RIVER



ELEVATION
NO SCALE

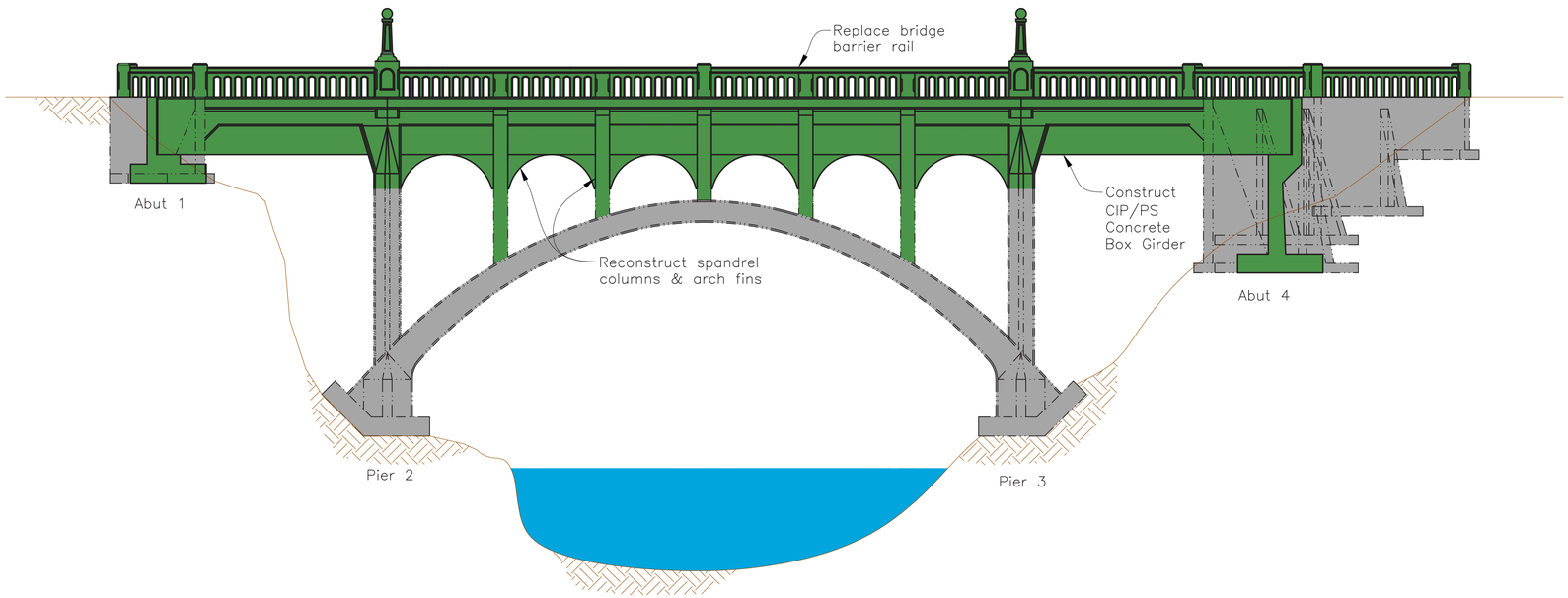


PLAN
1"=20'–0"

CORNERSTONE structural engineering group

TULARE COUNTY RESOURCE MANAGEMENT AGENCY
5961 SOUTH MOONEY BLVD., VISALIA, CALIFORNIA 93277

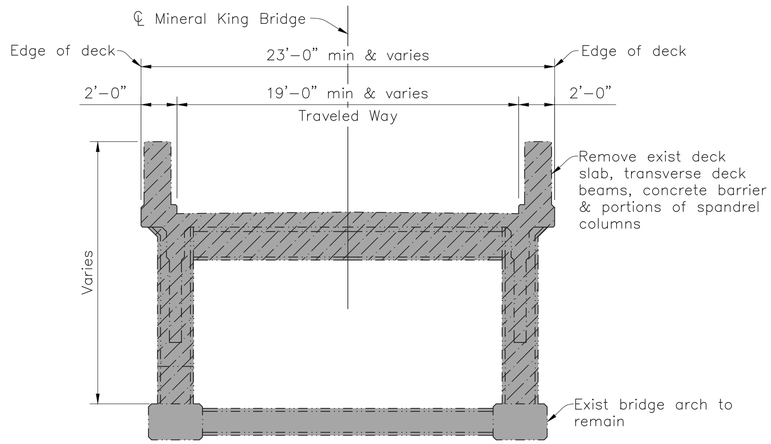
ALTERNATIVE 2B - REPLACEMENT (PRESERVE EXISTING BRIDGE)
M375A HISTORIC OAK GROVE BRIDGE OVER THE EAST FORK OF THE KAWEAH RIVER



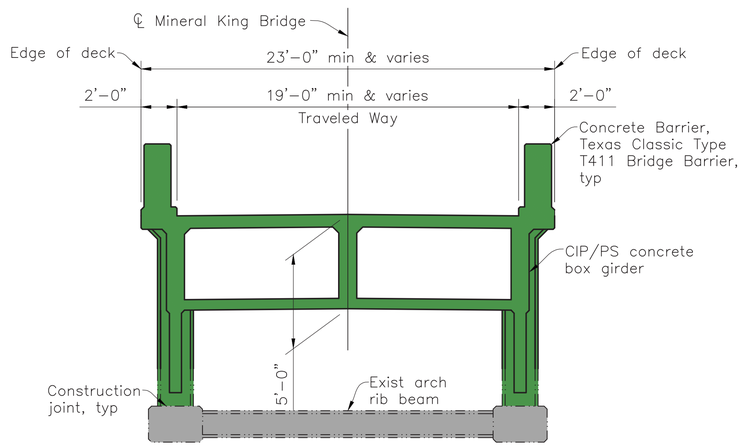
ELEVATION
NO SCALE



PLAN
1"=20'-0"



Stage 1 – Demo Portion of Existing Bridge



Stage 2 – Construct New Superstructure

TYPICAL SECTION
1/4"=1'-0"

CORNERSTONE structural engineering group

TULARE COUNTY RESOURCE MANAGEMENT AGENCY
5961 SOUTH MOONEY BLVD., VISALIA, CALIFORNIA 93277

ALTERNATIVE 3 - HYBRID REHAB/REPLACEMENT M375A HISTORIC OAK GROVE BRIDGE OVER THE EAST FORK OF THE KAWEAH RIVER

ATTACHMENT "G"

PRELIMINARY ENVIRONMENTAL STUDY (2015)

EXHIBIT 6-A PRELIMINARY ENVIRONMENTAL STUDY (PES)

Federal Project No.: HBP 5946 (106) *(Federal Program Prefix-Project No., Agreement No.)*

Final Design: 01/2016 *(Expected Start Date)*

To: Jim Perrault *(District Local Assistance Engineer)*
Caltrans District 6 *(District)*
855 M Street, Suite 200
Fresno, CA 93721 *(Address)*
James.Perrault@dot.ca.gov *(Email Address)*

From: Tulare County Resource Management Agency *(Local Agency)*
Benjamin Ruiz Jr. (559) 624-7134 *(Project Manager's Name and Telephone No.)*
5961 South Mooney Boulevard
Visalia, CA 93277 *(Address)*
BRuiz@co.tulare.ca.us *(Email Address)*

Is this Project "ON" the State Highway System? ☐ Yes ☒ No

IF YES, STOP HERE and contact the District Local Assistance Engineer regarding the completion of other environmental documentation.

Federal State Transportation Improvement Program (FSTIP) http://www.dot.ca.gov/hq/transprog/fedpgm.htm**:**
http://www.dot.ca.gov/hq/transprog/oftmp.htm

2010/2011 *(Currently Adopted Plan Date)*

Page 10 *(see **Attachment K**)*

Programming for FSTIP:	**Preliminary Engineering**		**Right of Way**		**Construction**	
	2012/13 *(Fiscal Year)*	$ 75,004 *(Dollars)*	N/A *(Fiscal Year)*	$ N/A *(Dollars)*	Beyond *(Fiscal Year)*	$ 2,506,680 *(Dollars)*

Project Description as Shown in RTP and FSTIP: Bridge No. 46C0916, M375A Mineral King Road over east fork Kaweah River, 6.68 miles E of State Route 198. Replace two lane bridge with two lane bridge.

Detailed Project Description: *(Describe the following, as applicable: purpose and need, project location and limits, required right of way acquisition, proposed facilities, staging areas, disposal and borrow sites, construction activities, and construction access.)*
The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans), proposes to replace and/or rehabilitate the existing Mineral King Bridge (#46C-0196) on Mineral King Road over the east fork of the Kaweah River (project). Please see page 6-83 for a complete project description.

(Continue description on "Notes" sheet, last page of this Exhibit, if necessary)

Preliminary Design Information:

Does the project involve any of the following? Please check the appropriate boxes and delineate on an attached map, plan, or layout including any additional pertinent information.

Yes	No		Yes	No		Yes	No	
☐	☒	Widen existing roadway	☒	☐	Ground disturbance	☒	☐	Easements
☐	☒	Increase number of through lanes	☒	☐	Road cut/fill	☒	☐	Equipment staging
☒	☐	New alignment	☒	☐	Excavation: anticipated maximum depth 25 feet	☒	☐	Temporary access road/detour
☐	☒	Capacity increasing—other (e.g., channelization)				☐	☒	Utility relocation
						☒	☐	Right of way acquisition (if yes, attach map with APN)
			☐	☒	Drainage/culverts			
☒	☐	Realignment	☐	☒	Flooding protection			
☐	☒	Ramp or street closure	☒	☐	Stream channel work	☐	☒	Disposal/borrow sites
☒	☐	Bridge work						
			☐	☒	Pile driving	☐	☒	Part of larger adjacent project
☒	☐	Vegetation removal						
☒	☐	Tree removal	☒	☐	Demolition	☐	☒	Railroad

Required Attachments:

☒ Regional map ☒ Project location map ☒ Project footprint map (existing/proposed right of way)
☒ Engineering drawings (existing and proposed cross sections), if available ☐ Borrow/disposal site location map, if applicable
(Note: all maps (except project location map and regional maps) should be consistent with the project description (minimum scale: 1" = 200').)

☒ Notes to support the conclusions of this checklist/project description continuation page (attached)

Examine the project for potential effects on the environment, direct or indirect and answer the following questions. The "construction area," as specified below, includes all areas of ground disturbance associated with the project, including staging and stockpiling areas and temporary access roads.

Each answer must be briefly documented on the "Notes" pages at the end of the PES Form.

A. Potential Environmental Effects	Yes	To Be Determined	No
General			
1. Will the project require future construction to fully utilize the design capabilities included in the proposed project?	☐	☐	☒
2. Will the project generate public controversy?	☐	☒	☐
Noise			
3. Is the project a Type I project as defined in 23 CFR 772.5(h); "construction on new location or the physical alteration of an existing highway, which significantly changes either the horizontal or vertical alignment or increases the number of through-traffic lanes"?	☐	☐	☒
4. Does the project have the potential for adverse construction-related noise impact (such as related to pile driving)?	☒	☐	☐
Air Quality			
5. Is the project in a NAAQS non-attainment or maintenance area?	☒	☐	☐
6. Is the project exempt from the requirement that a conformity determination be made? (If "Yes," state which conformity exemption in 40 CFR 93.126, Table 2 applies): Widening narrow pavements or reconstructing bridges (no additional travel lanes)	☒	☐	☐
7. Is the project exempt from regional conformity? (If "Yes," state which conformity exemption in 40 CFR 93.127, Table 3 applies): N/A. See question 6.	☐	☐	☐
8. If project is not exempt from regional conformity, (If "No" on Question #7) N/A. See question 6.			
Is project in a metropolitan non-attainment/maintenance area?	☐	☐	☐
Is project in an isolated rural non-attainment area?	☐	☐	☐
Is project in a CO, PM10 and/or PM2.5 non-attainment/maintenance area?	☐	☐	☐
Hazardous Materials/Hazardous Waste			
9. Is there potential for hazardous materials (including underground or aboveground tanks, etc.) or hazardous waste (including oil/water separators, waste oil, asbestos-containing material, lead-based paint, ADL, etc.) within or immediately adjacent to the construction area?	☒	☐	☐
Water Quality/Resources			
10. Does the project have the potential to impact water resources (rivers, streams, bays, inlets, lakes, drainage sloughs) within or immediately adjacent to the project area?	☒	☐	☐
11. Is the project within a designated sole-source aquifer?	☐	☐	☒
Coastal Zone			
12. Is the project within the State Coastal Zone, San Francisco Bay, or Suisun Marsh?	☐	☐	☒
Floodplain			
13. Is the construction area located within a regulatory floodway or within the base floodplain (100-year) elevation of a watercourse or lake?	☐	☐	☒
Wild and Scenic Rivers			
14. Is the project within or immediately adjacent to a Wild and Scenic River System?	☐	☐	☒

Biological Resources			
15. Is there a potential for federally listed threatened or endangered species, or their critical habitat or essential fish habitat to occur within or adjacent to the construction area?	☒	☐	☐
16. Does the project have the potential to directly or indirectly affect migratory birds, or their nests or eggs (such as vegetation removal, box culvert replacement/repair, bridge work, etc.)?	☒	☐	☐
17. Is there a potential for wetlands to occur within or adjacent to the construction area?	☐	☒	☐
18. Is there a potential for agricultural wetlands to occur within or adjacent to the construction area?	☐	☐	☒
19. Is there a potential for the introduction or spread of invasive plant species?	☐	☐	☒
Sections 4(f) and 6(f)			
20. Are there any historic sites or publicly owned public parks, recreation areas, wildlife or waterfowl refuges (Section 4[f]) within or immediately adjacent to the construction area?	☒	☐	☐
21. Does the project have the potential to affect properties acquired or improved with Land and Water Conservation Fund Act (Section 6[f]) funds?	☐	☐	☒
Visual Resources			
22. Does the project have the potential to affect any visual or scenic resources?	☒	☐	☐
Relocation Impacts			
23. Will the project require the relocation of residential or business properties?	☐	☐	☒
Land Use, Community, and Farmland Impacts			
24. Will the project require any right of way, including partial or full takes? Consider construction easements and utility relocations.	☒	☐	☐
25. Is the project inconsistent with plans and goals adopted by the community?	☐	☐	☒
26. Does the project have the potential to divide or disrupt neighborhoods/communities?	☐	☐	☒
27. Does the project have the potential to disproportionately affect low-income and minority populations?	☐	☐	☒
28. Will the project require the relocation of public utilities?	☐	☐	☒
29. Will the project affect access to properties or roadways?	☐	☐	☒
30. Will the project involve changes in access control to the State Highway System (SHS)?	☐	☐	☒
31. Will the project involve the use of a temporary road, detour, or ramp closure?	☒	☐	☐
32. Will the project reduce available parking?	☐	☐	☒
33. Will the project construction encroach on state or federal lands?	☒	☐	☐
34. Will the project convert any farmland to a different use or impact any farmlands?	☐	☐	☒
Cultural Resources			
35. Is there National Register listed, or potentially eligible historic properties, or archaeological resources within or immediately adjacent to the construction area? *(Note: Caltrans PQS answers question #35)*	☐	☐	☐
36. Is the project adjacent to, or would it encroach on Tribal land?	☐	☐	☐

For Sections B, C, and D, check appropriate box to indicate required technical studies, coordination, permits, or approvals.

B. Required Technical Studies and Analyses	C. Coordination	D. Anticipated Actions/Permits/Approvals
☒ **Traffic**		
Check one:		
☐ Traffic Study	☐ Caltrans	☐ Approval
☐ Technical Memorandum	☐ Caltrans	☐ Approval
☒ Discussion in ED Only	☒ Caltrans	☒ Approval
☒ **Noise**		
Check as applicable:		

	☐ Traffic Related ☒ Construction Related ***Check one:***		
	☐ Noise Study Report	☐ Caltrans	☐ Approval
	☐ NADR	☐ Caltrans	☐ Approval
	☐ Technical Memorandum	☐ Caltrans	☐ Approval
	☒ Discussion in ED Only	☒ Caltrans	☒ Approval
☐	**Air Quality** ***Check as applicable:*** ☐ Traffic Related ☐ Construction Related ***Check one:***		
	☐ Air Quality Report	☐ Caltrans	☐ Approval
	☐ Technical Memorandum	☐ Caltrans	☐ Approval
	☐ Discussion in ED Only	☐ Caltrans	☐ Approval
		☐ FHWA	☐ Conformity Finding (23 USC 327 CEs, EAs, EISs)
		☐ Caltrans	☐ Conformity Finding (23 USC 326 CEs)
		☐ Regional Agency	☐ PM10/PM2.5 Interagency Consultation
☒	**Hazardous Materials/ Hazardous Waste** ***Check as applicable:***		
	☒ Initial Site Assessment (Phase 1)	☒ Caltrans	☒ Approval
	☐ Preliminary Site Assessment (Phase 2)	☐ Caltrans	☐ Approval
	☐ Discussion in ED Only	☐ Caltrans	☐ Approval
		☐ Cal EPA DTSC	☐ Review Database
		☐ Local Agency	☐ Review Database
☒	**Water Quality/Resources** ***Check as applicable:***		
	☐ Water Quality Assess. Report	☐ Caltrans	☐ Approval
	☒ Technical Memorandum	☒ Caltrans	☒ Approval
	☐ Discussion in ED Only	☐ Caltrans	☐ Approval
☐	**Sole-Source Aquifer (Districts 5, 6 and 11)**	☐ EPA (S.F. Regional Office)	☐ Approval of Analysis in ED
☐	**Coastal Zone**	☐ CCC	☐ Coastal Zone Consistency Determination

B. Required Technical Studies and Analyses	C. Coordination	D. Anticipated Actions/Permits/Approvals
☐ **Floodplain**		
Check as applicable:		
☐ Location Hydraulic Study	☐ Caltrans	☐ Approval
☐ Floodplain Evaluation Report	☐ Caltrans	☐ Approval
☐ Summary Floodplain Encroachment Report	☐ Caltrans	☐ Approval
	☐ Caltrans	☐ Only Practicable Alternative Finding
	☐ FHWA	☐ Approves significant encroachments and concurs in Only Practicable Alternative Findings
☐ **Wild and Scenic Rivers**	☐ River Managing Agency	☐ Wild and Scenic Rivers Determination
☒ **Biological Resources**		
Check as applicable:		
☐ NES, Minimal Impact	☒ Caltrans	☒ Approval
☒ NES		
☒ BA	☒ Caltrans	☒ Approves for Consultation
	☒ USFWS ☐ NOAA Fisheries	☒ Section 7 Informal/Formal Consultation
☐ EFH Evaluation	☐ NOAA Fisheries	☐ MSA Consultation
☐ Bio-Acoustic Evaluation	☐ NOAA Fisheries	☐ Approval
☐ Technical Memorandum	☐ Caltrans	☐ Approval
☒ **Wetlands**		
Check as applicable:		
☒ WD and Assessment	☒ Caltrans	☒ Approval
	☐ ACOE	☐ Wetland Verification
	☐ NRCS	☐ Agricultural Wetland Verification
	☐ Caltrans	☐ Wetlands Only Practicable Alternative Finding
☐ **Invasive Plants**		
☐ Discussion in ED Only	☐ Caltrans	☐ Approval
☒ **Section 4(f)**		
Check as applicable:	☐ Caltrans	☐ Determine Temporary Occupancy
☐ De minimis	☐ Caltrans	☐ De minimis finding
☐ Programmatic 4(f) Evaluation Type: _____	☐ Caltrans	☐ Approval
☒ Individual 4(f) Evaluation	☒ Caltrans	☒ Approval
	☐ Agency with Jurisdiction ☒ SHPO ☐ DOI ☐ HUD ☐ USDA	

B. Required Technical Studies and Analyses	C. Coordination	D. Anticipated Actions/Permits/Approvals
☐ **Section 6(f)**	☐ Agency with Jurisdiction ☐ NPS	☐ Determines Consistency with Long-Term Management Plan
	☐ NPS	☐ Approves Conversion
☒ **Visual Resources**		
☐ Technical Memorandum	☐ Caltrans	☐ Approval
☐ Minor VIA	☐ Caltrans	☐ Approval
☐ Moderate VIA	☐ Caltrans	☐ Approval
☒ Advance/Complex VIA	☒ Caltrans	☒ Approval
☐ **Relocation Impacts**		
Check one:		
☐ Relocation Impact Memo	☐ Caltrans	☐ Approval
☐ Relocation Impact Study	☐ Caltrans	☐ Approval
☐ Relocation Impact Report	☐ Caltrans	☐ Approval
☐ **Land Use and Community Impacts**		
Check one:		
☐ CIA	☐ Caltrans	☐ Approval
☐ Technical Memorandum	☐ Caltrans	☐ Approval
☐ Discussion in ED Only	☐ Caltrans	☐ Approval
☐ **Construction/Encroachment on State Lands**		
Check as applicable:		
☐ SLC Jurisdiction	☐ SLC	☐ SLC Lease
☐ Caltrans Jurisdiction	☐ Caltrans	☐ Encroachment Permit
☐ SP Jurisdiction	☐ SP	☐ Encroachment Permit
☒ **Construction/Encroachment on Federal Lands**	☒ Federal Agency with Jurisdiction	☒ Encroachment Permit
☐ **Construction/Encroachment On Indian Trust Lands**	☐ Bureau of Indian Affairs	☐ Right of Way Permit
☐ **Farmlands**		
Check one:		
☐ CIA	☐ Caltrans	☐ Approval
☐ Technical Memorandum	☐ Caltrans	☐ Approval
☐ Discussion in ED Only	☐ Caltrans	☐ Approval
Check as applicable:		
☐ Form AD 1006	☐ NRCS	☐ Approves Conversion
	☐ CDOC	☐ Approves Conversion
☐ Conversion to Non-Agri Use	☐ ACOE	

B. Required Technical Studies and Analyses	C. Coordination	D. Anticipated Actions/Permits/ Approvals
☐ **Cultural Resources** (PQS completes this section) ***Check as applicable:***	☐ Caltrans PQS	☐ Screened Undertaking
☐ APE Map	☐ Caltrans PQS and DLAE	☐ Approves APE Map
	☐ Local Preservation Groups and/or Native American Tribes	☐ Provides Comments Regarding Concerns with Project
☐ HPSR ☐ ASR ☐ HRER	☐ Caltrans	☐ Approves for Consultation
☐ Finding of Effect Report	☐ Caltrans	☐ Concurs on No Effect, No Adverse Effect with Standard Conditions
	☐ SHPO	☐ Letter of Concurrence on Eligibility, No Adverse Effect without Standard
☐ MOA	☐ Caltrans	☐ Approves MOA
	☐ SHPO	☐ Approves MOA
	☐ ACHP (if requested)	☐ Approves MOA
☒ **Permits** Copies of permits and a list of mitigation commitments are mandatory submittals following NEPA approval.	☒ ACOE	☒ Section 404 Nationwide Permit
	☐ ACOE	☐ Section 404 Individual Permit
	☐ Caltrans/ACOE/EPA ☐ USFWS ☐ NOAA Fisheries	☐ NEPA/404 Integration MOU
	☐ ACOE	☐ Rivers and Harbors Act Section 10 Permit
	☐ USCG	☐ USCG Bridge Permit
	☒ RWQCB	☒ Section 401 Water Quality Certification
	☒ CDFG	☒ Section 1602 Streambed Alteration Agreement
	☒ RWQCB	☒ NPDES Permit
	☐ CCC ☐ Local Agency	☐ Coastal Zone Permit
	☐ BCDC	☐ BCDC Permit

Notes: Additional studies may be required for other federal agencies.

ACHP = Advisory Council on Historic Preservation
ACOE = U.S. Army Corps of Engineers
ADL = Aerially Deposited Lead
APE = Area of Potential Effect
APN = Assessor Parcel Number
ASR = Archaeological Survey Report
BA = Biological Assessment
BCDC = Bay Conservation and Development Commission
BE = Biological Evaluation
BO = Biological Opinion
Cal EPA = California Environmental Protection Agency
CCC = California Coastal Commission
CDFG = California Department of Fish and Game
CDOC = California Department of Conservation
CE = Categorical Exclusion
CIA = Community Impact Assessment
CWA = Clean Water Act
DLAE = District Local Assistance Engineer
DOI = U.S. Department of Interior
DTSC = Department of Toxic Substances Control
EA = Environmental Assessment
ED = Environmental Document
EFH = Essential Fish Habitat
EIS = Environmental Impact Statement
EPA = U.S. Environmental Protection Agency
FEMA = Federal Emergency Management Agency
FHWA = Federal Highway Administration
FONSI = Finding of No Significant Impacted
FTIP = Federal Transportation Improvement Program
HPSR = Historic Property Survey Report
HRER = Historical Resources Evaluation Report
HUD = U.S. Housing and Urban Development
MOA = Memorandum of Agreement
MSA = Magnuson-Stevens Fishery Conservation and Management Act
NEPA = National Environmental Policy Act
NADR = Noise Abatement Decision Report
NES = Natural Environment Study
NHPA = National Historic Preservation Act
NOAA = National Oceanic and Atmospheric Administration
NMFS National Marine Fisheries Service
NPDES = National Pollutant Discharge Elimination System
NPS = National Park Service
NRCS = Natural Resources Conservation Service
PM10 = Particulate Matter 10 Microns in Diameter or Less
PM2.5 = Particulate Matter 2.5 Microns in Diameter or Less
PMP = Project Management Plan
PQS = Professionally Qualified Staff
ROD = Record of Decision
RTIP = Regional Transportation Improvement Program
RTP = Regional Transportation Plan
RWQCB = Regional Water Quality Control Board
SER = Standard Environmental Reference
SEP = Senior Environmental Planner
SHPO = State Historic Preservation Officer
SLC = State Lands Commission
SP = State Parks
TIP = Transportation Improvement Program
USCG = U.S. Coast Guard
USDA = U.S. Department of Agriculture
USFWS = U.S. Fish and Wildlife Service
WD = Wetland Delineation

E. Preliminary Environmental Document Classification (NEPA)

Based on the evaluation of the project, the environmental document to be developed should be:

Check one:

- ☐ Environmental Impact Statement (*Note: Engagement with participating agencies in accordance with 23 USC 139 required)*
  - ☐ Compliance with 23 USC 139 regarding Participating Agencies required
- ☐ Complex Environmental Assessment
- ☒ Routine Environmental Assessment
- ☐ Categorical Exclusion without required technical studies.
- ☐ Categorical Exclusion with required technical studies

(if Categorical Exclusion is selected, check one of the following):

- ☐ Section 23 USC 326
  - ☐ 23 CFR 771 activity (c)(_____)
  - ☐ 23 CFR 771 activity (d) (_____)
  - ☐ Activity _____ listed in the Section 23 USC 326
- ☐ Section 23 USC 327

F. Public Availability and Public Hearing

Check as applicable:

- ☐ Not Required
- ☒ Notice of Availability of Environmental Document
- ☒ Public Meeting
- ☐ Notice of Opportunity for a Public Hearing
- ☐ Public Hearing Required

G. Signatures

Local Agency Staff and/or Consultant Signature

(Signature of Preparer)	March 14, 2015 (Date)	(310) 792-2696 (Telephone No.)

Erinn Peterson, Senior Environmental Planner
(Name)

Local Agency Project Engineer Signature

This document was prepared under my supervision, according to the *Local Assistance Procedures Manual,* Exhibit 6-B, "Instructions for Completing the Preliminary Environmental Study Form."

(Signature of Local Agency)	(Date)	(Telephone No.)

Caltrans District Professionally Qualified Staff (PQS) Signature

☐ Project does not meet definition of an "undertaking"; no further review is necessary under Section 106 ("No" Section A, #35).

☐ Project is limited to the type of activity listed in Attachment 2 of the Section 106 PA and based on the information provided in the PES Form, the project does not have the potential to affect historic properties ("No" Section A, #35).

☐ Project is limited to the type of activity listed in Attachment 2 of the Section 106 PA, but the following additional procedures or information is needed to determine the potential for effect ("To Be Determined" Section A, #35):
☐ Records Search ☐ _____ ☐ _____ ☐ _____

☐ Project meets the definition of an "undertaking"; all properties in the project area are exempt from evaluation per Attachment 4 of the Section 106 PA ("No" Section A, #35).

☐ The proposed undertaking is considered to have the potential to affect historic properties; further studies for 106 compliance are indicated in Sections B, C, and D of this PES Form ("Yes" Section A, #35).

_____ _____ _____
(Signature of Professionally Qualified Staff) *(Date)* *(Telephone No.)*

The following signatures are required for all CEs, routine and complex EAs, and EISs:

Caltrans District Senior Environmental Planner (or Designee) and DLAE Signatures

I have reviewed this Preliminary Environmental Study (PES) Form and determined that the submittal is complete and sufficient. I concur with the studies to be performed and the recommended NEPA Class of Action.

_____ _____ _____
(Signature of Senior Environmental Planner or Designee) *(Date)* *(Telephone No.)*

_____
(Name)

_____ _____ _____
(Signature of District Local Assistance Engineer or Designee) *(Date)* *(Telephone No.)*

_____
(Name)

☐ HQ DEA Environmental Coordinator concurrence _____. Email concurrence attached.
(*date*)

Preliminary Environmental Investigation
Notes to Support the Conclusions of the PES Form
(May Also Include Continuation of Detailed Project Description)

Project Description

Introduction

The County of Tulare (County) Resource Management Agency (RMA), in cooperation with the California Department of Transportation (Caltrans), proposes to replace and/or rehabilitate the existing Mineral King Bridge (#46C-0196) on Mineral King Road over the east fork of the Kaweah River (project). The project is located approximately six miles east of the census designated place of Three Rivers near the entrance to Sequoia National Park in the county of Tulare, California (see **Attachment A**, Regional Location Map; and **Attachment B**, Project Location Map). The project is listed in the Tulare County Association of Governments' (TCAG) 2010/2011 Federal Transportation Improvement Program (FTIP) (see **Attachment K**, FTIP Listing).

Existing Bridge

The existing bridge, built in 1923, is a 108-foot-long reinforced concrete open spandrel arch bridge. The bridge's deck width is approximately 23 feet and carries two lanes of traffic, one in each direction, over the east fork of the Kaweah River. The bridge is historically significant and is eligible for the National Register of Historic Places (NRHP) (see **Attachment H**, Caltrans Historic Bridge Listing).

In a Caltrans Bridge Inspection Report (BIR) completed prior to May 2012, the bridge received a sufficiency rating of 43.5 and was flagged as structurally deficient (SD); however, a more recent BIR dated May 19, 2012 was performed, and the bridge received a sufficiency rating of 71.7 and no SD flag. The bridge qualifies for replacement funding through the Highway Bridge Program (HBP) based on the original BIR ratings. Because the bridge has been programmed in the FTIP, the revised sufficiency rating would not jeopardize the HBP funding.

Proposed Project

The project includes the replacement and/or rehabilitation of the Mineral King Bridge over the east fork of the Kaweah River. The project area extends extends approximately 75 feet downstream and 60 feet upstream of the existing bridge, and includes the northern and southern approach roadways (see **Attachment C**, Project Area Map). In addition, two potential staging areas are being considered; the first construction staging area (Construction Staging Area 1) is located approximately 800 feet northeast of the existing bridge, and the second construction staging area (Construction Staging Area 2) is located immediately north of Mineral King Road approximately 1.3 miles west of the existing bridge. Temporary construction easements (TCE) would be required, and right of way (ROW) acquisitions may be required to accommodate construction of the project. There would be no utility relocation required as part of the project. Temporary catchment basins to collect storm water and shrouding (i.e., covering or wrapping) of the arch would be required to prevent debris from falling into the existing river channel during construction. Three alternatives are being considered for the project, as described below.

<u>Retrofit/Rehabilitation Alternative</u>

The Retrofit/Rehabilitation Alternative would include the replacement of the existing bridge deck and beams; construction of infill walls at Piers B and C; construction of shear walls in the two center bays between existing spandrel columns; removal of damaged concrete cover; application of new concrete to the main arch ribs; injection of epoxy into cracks in the spandrel columns, spandrel beams, deck beams, etc.; sealing of existing concrete; patching/repair of existing concrete spalls and delaminations (i.e., separations in laminated materials);

repair of existing joints consisting of cleaning the joints and installing new joint seals; replacement of the existing bridge barrier; and sealing of the existing concrete from water intrusion (see **Attachment D**, Engineering Drawings,).

To access the existing arch ribs, spandrel columns, spandrel beams, etc., to make the required repairs, a temporary scaffolding system would be required. The scaffolding would be supported within the creek. A temporary bridge would be required downstream of the existing bridge to maintain traffic during construction. The centerline of the temporary bridge would be located approximately 50 feet north of the existing bridge's northern edge of deck. The span length of this temporary bridge is anticipated to be approximately 120 to 130 feet. The temporary bridge would be supported on temporary cast-in-place abutments that would be removed following rehabilitation of the existing bridge. To erect the temporary bridge, it is anticipated that it would be placed in three sections. Two temporary supports located within the channel are anticipated during erection and assembly of the temporary bridge.

Replacement Alternative

The Replacement Alternative would include construction of a replacement bridge and removal of the existing bridge. Based on the layout of the project area, a replacement bridge would likely consist of a 110-foot-long single span bridge (see **Attachment D**, Engineering Drawings). The replacement bridge would be constructed with the same width as the existing bridge, approximately 19 feet from curb to curb. The total bridge width, with Type 80 barrier rails, would be 22.5 feet (including a 19-foot travel way plus two 1-foot, 9-inch barrier rails). The following replacement structure types are being considered:

- Steel Girder Bridge
- Precast Concrete Bridge
- Cast-in-place Box Girder

To maintain traffic during construction, the replacement bridge would be constructed to the east (upstream) of the existing bridge, with traffic being maintained on the existing bridge until the new bridge is completed. The construction of the new bridge to the east of the existing bridge would prevent construction operations from blocking the existing roadway.

Because the alignment of the bridge would shift to the east, the approach roadways would also be realigned. Construction of the new north roadway approach would require cutting into the hillside at the northeast corner of the bridge. At the southwest corner of the bridge, new fill and retaining walls would be required to support the proposed alignment. The bridge substructure (i.e., abutments) would be constructed of cast-in-place concrete. Depending on the depth to bedrock, the abutments would be supported on either cast-in-drilled-hole (CIDH) piles with concrete rock sockets, or spread footing cast directly on the bedrock.

Combined Retrofit and Replacement Alternative

The Combined Retrofit and Replacement Alternative is a combination of the retrofit/rehabilitation of the existing bridge, and construction of a replacement structure. The original arches of the existing bridge would be maintained, and the existing bridge deck would be reconstructed with a new girder type bridge (see **Attachment D**, Engineering Drawings). All aesthetic features on the new bridge deck would be reconstructed to match the existing aesthetics. This alternative provides the benefits of both a rehabilitation and replacement structure, which include maintaining the existing historic arches and spandrels, maintaining the overall aesthetic appearance of the existing bridge, and providing the County with a new, state-of-the-art structure.

The new girder type bridge (most likely a cast-in-place post-tensioned box girder) would be constructed over the existing arch and would have the appearance of the original bridge deck and overhang. This could be accomplished by forming the exterior girder to give the appearance of the existing deck exterior face. The box girder would be a single span, approximately the same length as the existing bridge (approximately 110 feet). This span would require a box girder depth of five feet. While this depth is greater than the existing exterior floor beams, which are approximately 2.5 feet deep, the exterior appearance of the new bridge would be almost identical to the existing bridge. The existing arch ribs, spandrel columns, and piers would be repaired and laterally stabilized against transverse and longitudinal motion by pin dowels that would be placed into the new box girder bridge.

Because the existing bridge deck would need to be removed, a temporary bridge, as described in the Retrofit/Rehabilitation Alternative, would be required to maintain traffic during construction. After erection of the temporary bridge, construction of the new structure would begin with the demolition of the existing deck, spandrel beams to the tops of the spandrel columns, and abutments. New abutments would be constructed in approximately the same location as the existing abutments, and would likely be supported on CIDH piles with rock sockets. Temporary bracing (i.e., falsework) would be installed for the existing arch ribs and spandrel columns, and the arches would then be used to help support the temporary falsework for construction of the box girder. Construction of the box girder would be completed, and the temporary falsework would be removed.

Brief Explanation of How Project Complies, or Will Comply with Applicable Federal Mandate (Part A):

1. No. The project would include the replacement and/or rehabilitation of a structurally deficient and functionally obsolete bridge. No other improvements would be required to meet the purpose and need of the project.

2. To Be Determined. The project area is in a remote location, and the closest residence is more than 700 feet northeast of the bridge. Therefore, the project would not require the acquisition or displacement of residences or businesses. The existing bridge serves as the gateway to Sequoia National Park, located approximately 1.45 mile east of the project area; however, traffic would be maintained through the project area during construction. Under the Retrofit/Rehabilitation Alternative and Combined Retrofit and Replacement Alternative, the project would be designed to maintain the historical significance of the bridge. However, under the Replacement Alternative, the existing bridge would be demolished, which could generate public controversy. The potential for public controversy will be assessed during the public scoping process.

3. No. The project would not result in an increased number of through lanes or substantial changes to the vertical or horizontal alignment of the bridge. Under the Replacement Alternative, the alignment of the new bridge would be located approximately 50 feet adjacent to and east of the existing bridge and would require realignment of the approach roadways. However, the nearest sensitive receptors are located more than 700 feet from the project area. The new alignment would not meet the definition of a Type I project, because it would not halve the distance between the bridge and the closest receptor, nor would it alter either the vertical alignment of the bridge or the topography between the bridge and the receptor.

4. Yes. Bridge construction under the Replacement Alternative and the Combined Retrofit and Replacement Alternative would require pile drilling, but would not require pile driving. The Replacement Alternative and the Combined Retrofit and Replacement Alternative would also require

demolition activities, which have the potential to result in substantial construction-related noise. However, the project is located in a remote area, and the closest noise-sensitive receptors are residences located approximately 700 feet northeast of the project area. Therefore, a discussion of construction-related noise impacts in the environmental document is recommended.

The project would comply with the provisions in Section 14-8.02, "Noise Control," of the Caltrans Standard Specifications, which requires that construction noise levels must not exceed 86 A-weighted decibels (dBA) at 50 feet from job site activities between 9 p.m. and 6 a.m., and that internal combustion engines, used for any purpose on the job, or related to the job, must be equipped with a muffler of a type recommended by the manufacturer. This provision also requires that all internal combustion engines must be fitted with an appropriate muffler.

5. Yes. The project is located within the San Joaquin Valley Air Pollution Control District (SJVAPCD). According to the United States (U.S.) Environmental Protection Agency (EPA), Tulare County is in an extreme non-attainment area for ozone (O_3) and a non-attainment area for particulate matter of 2.5 microns or smaller ($PM_{2.5}$) (EPA, 2012). According to the Caltrans Division of Environmental Analysis, Tulare County is in a maintenance zone for particulate matter of 10 microns or smaller (PM_{10}) (Caltrans Division of Environmental Analysis, 2014). Therefore, the project area is in a National Ambient Air Quality Standards (NAAQS) non-attainment and maintenance area, and is subject to the transportation conformity requirements in California.

6. Yes. The project meets the definition of exempt projects listed in 40 Code of Federal Regulations (CFR) 93.126, Table 2. The project would be classified as “widening narrow pavements or reconstructing bridges (no additional travel lanes).” Therefore, a conformity determination is not required.

7. N/A. See response #6.

8. N/A. See response #6.

9. Yes. Structures built before 1978 have the potential to contain asbestos-containing materials and/or lead-based paint. Because the Mineral King Bridge was constructed in 1923, there is potential for asbestos-containing material in concrete material and lead-based paint in pavement markings.

   According to the State Water Resources Board, there are no known hazardous materials and/or hazardous waste sites within a 0.5-mile radius of the project site (see **Attachment E**, Hazardous Materials Sites Map). However, the project would require structure demolition and may require acquisition of ROW; therefore, an Initial Site Assessment (Phase I) is recommended for the project. Painted and concrete surfaces on the bridge will be evaluated for the presence of asbestos-containing materials and lead-based paint, and the results will be incorporated in the Phase I.

10. Yes. The Mineral King Bridge is located over the east fork of the Kaweah River, and the project would require work within the river during rehabilitation or replacement of the existing bridge. Scaffolding supports would be placed in the river as part of the Retrofit/Rehabilitation Alternative, and supports would be required within the river to erect a temporary bridge as part of the Retrofit/Rehabilitation Alternative and Combined Retrofit and Replacement Alternative. Therefore, the project could result in impacts on water quality during construction, and a Water Quality Technical Memorandum is recommended for the project. Preventive measures would be in place to prevent material, equipment, and debris from falling into the river (e.g., temporary catchment basins and a shrouding of the arch). In

addition, standard Best Management Practices (BMP) would be incorporated into the project to meet the National Pollutant Discharge Elimination System (NPDES) requirements. Because work would be required within the river, a Section 1602 Streambed Alteration Agreement, Section 404 Nationwide Permit, and Section 401 Water Quality Certification are anticipated for the project.

11. No. According to the EPA, the project area is not located in or adjacent to a sole-source aquifer (EPA, 1979). The nearest sole-source aquifer is the Fresno County Aquifer, located more than 15 miles north of the project area.

12. No. According to the California Coastal Commission (CCC), the coastal zone extends inland 1,000 yards (and up to five miles in abundant coastal estuarine, habitat, or recreational areas) from the median high-tide line (CCC, 2012). The project area is more than 170 miles inland from the coast, and is not located in or adjacent to the coastal zone. The project area is not located in or adjacent to the San Francisco Bay or Suisun Marsh, both of which are located more than 190 miles northwest of the project area. Therefore, a Coastal Zone Consistency Determination is not recommended for the project.

13. No. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel 06107C0735F (effective June 16, 2009), the project area is located in Zone X, which is an area of minimal flood hazard that is outside the 100-year floodplain (FEMA, 2009). In addition, the FIRM shows that the project area is not located in a regulatory floodway. Therefore, a location hydraulic study is not recommended for the project.

14. No. According to the Interagency Wild and Scenic Rivers Coordinating Council (IWSRCC), the project area is not in or adjacent to a Wild and Scenic Rivers System (IWSRCC, 2009). The nearest Wild and Scenic Rivers System is the Kern River, located more than 20 miles east of the project area. Therefore, a Wild and Scenic Rivers Study is not recommended for the project.

15. Yes. According to the California Natural Diversity Database (CNDDB), there is potential for federally listed threatened or endangered species to be in the project area based on geographical range (see **Attachment F**, Special Status Species)(CNDDB, 2015). The project is in a rural, undisturbed area, and there is suitable habitat for a variety of species in the project area.

    The Blue Ridge National Wildlife Refuge, located approximately six miles from the project area, is a roosting area for the federally and state endangered California condor (*Gymnogyps californianus*). There does not appear to be nesting habitat within the project area based on initial site surveys conducted in March 2014; however, there is potential for this species to forage in the project area because the area is undeveloped, open land that is in close proximity to known roosting habitat. The federally and state endangered Southern mountain yellow-legged frog (*Rana muscosa*) has been observed within the east fork of the Kaweah River which runs beneath the existing bridge, and therefore, there is potential for this species to be in the project area. In addition, an elderberry shrub was observed adjacent to the existing bridge during the March 2014 site surveys; therefore, there is potential for the federally threatened Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) to be in the project area because the elderberry shrub provides suitable habitat for the beetle.

    Because there is suitable habitat for these species within or near the project area, a Natural Environment Study (NES) is recommended to investigate the potential for federally listed threatened or endangered species to be in the project area, and to analyze potential impacts. Formal consultation with the U.S. Fish

and Wildlife Service (USFWS) under Section 7 of the Federal Endangered Species Act (FESA) and completion of a Biological Assessment would be anticipated if the project would affect any federally listed species.

16. Yes. There are mature trees along the banks of the river within the project area that could provide nesting habitat for migratory birds. Tree and vegetation removal would be required as part of the project, which could result in impacts on migratory birds, their nests, or eggs. The vegetation removal area extends approximately 75 feet downstream from the existing bridge's northern edge of deck and 60 feet upstream from the existing southern edge of deck (see **Attachment C**, Project Area Map). The vegetation removal area includes the construction area for all of the project alternatives, and includes 1) the area required for the temporary bridge that would be downstream of the existing structure under the Retrofit/Rehabilitation Alternative and Combined Retrofit and Replacement Alternative, and 2) the area required for the replacement bridge that would be upstream of the existing bridge under the Replacement Alternative. A discussion of potential impacts and appropriate avoidance and minimization measures would be included in the NES recommended for the project.

17. To Be Determined. According to the USFWS Wetlands Mapper, there are no wetlands within the project area (see **Attachment G**, USFWS Wetlands Map) (USFWS, 2015). In addition, the Natural Resources Conservation (NRCS) Soil Resource Report for Tulare County, Central Part, identifies Fallbrook sandy loam (a soil with roughly equal proportions of sand, silt, and clay) in the project area, and does not identify any hydric soils within the project area (hydric soils are saturated by water and are indicators of wetlands) (NRCS, 2015). In addition, based on initial site surveys conducted in March 2014, the river bottom is rocky, indicating that there are no wetlands within the project area. However, because the project area includes a waterway, the potential for wetlands cannot be ruled out until additional site surveys can be completed to determine if there are wetland indicators in the project area (e.g., hydric soils, wetland vegetation, and wetland hydrology). If additional site surveys indicate the potential for wetlands to be in the project area, a Wetland Delineation (WD) would be conducted to identify jurisdictional waters and wetlands within the project area. Potential temporary and permanent impacts on waters of the U.S. and state that would result from the project would be analyzed in the NES.

18. No. The project is located within lands identified by the California Department of Conservation (CDOC) as "Non-agriculture or Natural Vegetation" (CDOC, 2014). There are no agricultural lands within the project area; therefore, the project would not result in impacts on agricultural wetlands.

19. No. Existing vegetation would be preserved to the extent feasible, and with the implementation of Executive Order 13112 BMPs, including identification of existing invasive species, avoidance of invasive species in erosion control, staff training, equipment cleaning, and monitoring, the introduction or spread of invasive species is not anticipated.

20. Yes. According to the USFWS, there are no wildlife or waterfowl refuges in or adjacent to the project area (USFWS, 2015). The nearest publicly owned public park is Sequoia National Park, located approximately 1.4 mile east of the project area. The Mineral King Bridge, built in 1923, is listed by Caltrans under Category 2 on the Historical Significance listing of Local Agency Bridges, updated November 2014 (see **Attachment H**, Caltrans Historic Bridge Listing). The bridge is eligible for the NRHP. The bridge would be considered a historic resource for the purposes of Section 4(f) of the Department of Transportation Act of 1966. Another Section 4(f) resource adjacent to the project area is a

historically significant flume (a deep narrow channel or ravine with a stream running through it) that is owned by Southern California Edison. Therefore, an Individual Section 4(f) evaluation is recommended for the project.

21. No. According to the National Park Service (NPS), there are no properties in or near the project area purchased with Section 6(f) funds (NPS, 2014). Therefore, a Section 6(f) evaluation is not recommended for the project.

22. Yes. The Mineral King Bridge is considered a scenic resource because it is historically significant and serves as a gateway for visitors to Sequoia National Park, located approximately 1.45 mile east of the project area. The bridge is surrounded by mostly undisturbed wildlands with rolling hills and substantial vegetation, and the project area and surrounding area could be considered a scenic vista (i.e., a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public).

    The project would require modifications to the existing bridge, or demolition of the existing bridge and construction of a replacement bridge; in addition, tree and vegetation removal would be required (see **Attachment C**, Project Area Map). The project would be designed to maintain or complement the aesthetic appearance of the existing bridge; however, under all alternatives, the project would likely result in noticeable visual changes to the bridge and surrounding area. The Caltrans *Questionnaire to Determine Visual Impact Assessment (VIA) Level* was completed to determine the visual impacts of the project on visual and scenic resources. The project received a score of 25 out of a total of 30 possible points, which indicates that the project would result in noticeable visual changes and a fully developed Visual Impact Assessment with photo simulations is recommended (see **Attachment J**, Visual Impact Assessment Survey).

23. No. The project would not require the relocation of residences or businesses; therefore, a Relocation Impact Study is not recommended for the project.

24. Yes. The existing bridge is located on two parcels: 1) Assessor's Parcel Number (APN) 069-390-010, owned by a private individual, and 2) APN 069-390-021, owned by Southern California Edison (ParcelQuest, 2015) (see **Attachment J**, Parcel Map). Construction Staging Area 1 is located on APN 069-390-001, which is owned by a corporation; and Construction Staging Area 2 is located on APN 069-080-042, which is owned by the United States Department of Interior (USDOI) Bureau of Land Management (BLM). TCEs on these parcels would be required, and permanent ROW acquisitions may also be required for the project. No utility relocations would be required. The project would not require the displacement of residences of businesses; therefore, a Community Impact Assessment (CIA) is not recommended.

25. No. The project would be consistent with the plans and goals adopted by the County's General Plan to "promote an efficient roadway and highway system for the movement of people and goods, which enhances the physical, economic, and social environment while being safe, environmentally friendly, and cost-effective (Tulare County, 2012)." Therefore, a CIA is not recommended for the project.

26. No. Implementation of the project is expected to maintain safe, long-term access over the east fork of the Kaweah River, and to provide a benefit to the surrounding community. Neighborhoods would not be divided or disrupted. Therefore, a CIA is not recommended for the project.

27. No. According to the 2010 U.S. Census Bureau boundaries, the project area is within Census Tract 1. Census data for this tract was obtained from the 2010 U.S. Census and the 2009-2013 American Community Survey (U.S. Census Bureau, 2010). As compared to the County, Census Tract 1 does not have a greater percentage of low-income populations. In addition, as compared to the County, this census tract did not have a greater percentage of minority populations, except for Native Hawaiian and Other Pacific Islander, which was 0.3 percent in Census Tract 1 compared to 0.1 percent in the County. The project would be expected to benefit the community as a whole by improving access across the east fork of the Kaweah River; no disproportionate effects on low-income or minority populations are anticipated. Therefore, a CIA is not recommended for the project.

28. No. There are no public utilities on the existing bridge that would be affected by the project.

29. No. During construction, traffic across the east fork of the Kaweah River would be maintained on a temporary bridge or on the existing bridge, depending on the alternative selected. Therefore, the project would not affect access to properties or roadways.

30. No. The nearest state highway is State Route 198 (Generals Highway), located approximately 3.8 miles northwest of the project area. Traffic across the east fork of the Kaweah River would be maintained on a temporary bridge or on the existing bridge, depending on the alternative selected. Therefore, the project would not involve changes in access control to the State Highway System (SHS).

31. Yes. Depending on the alternative selected, the project would require a temporary bridge across the east fork of the Kaweah River. The temporary bridge would allow vehicle access across the Kaweah River, and would not disrupt traffic operations or affect access to nearby residences or to Sequoia National Park. The project is in a remote area, and there are no through-traffic dependent businesses in proximity to the project area. Provisions have been made for access by local traffic, and the temporary bridge would not be expected to interfere with a local special event or festival, substantially change the environmental consequences of the action, or result in substantial controversy. Following construction, the temporary bridge would be removed. Therefore, a discussion of construction-related traffic impacts in the environmental document is recommended.

32. No. Parking is not currently permitted on the existing bridge; therefore, the project would not result in the reduction of available parking.

33. Yes. According to the USDOI and the United States Geological Survey (USGS), the project area is located within a USDOI BLM Wilderness Area (USDOI and USGS, 2003). According to the County assessor data, the project area is located on four parcels, three of which are privately owned where the existing bridge and Construction Staging Area 1 are located (ParcelQuest, 2015). However, Construction Staging Area 2 is located on a parcel that is owned by BLM. Therefore, Construction Staging Area 2 is located on federal land, and an encroachment permit from BLM would be required if this staging area is selected for the project.

34. No. According to the CDOC Tulare County Important Farmland 2012 map, the project area is in and adjacent to areas designated as "Nonagricultural and Natural Vegetation" (CDOC, 2014). Implementation of the project would not result in conversion or impacts on Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. Therefore, completion of

Form AD 1006 is not recommended for the project.

35. Caltrans requires that a Professionally Qualified Staff (PQS) review the project to determine whether any cultural studies are required. The Mineral King Bridge, built in 1923, is listed by Caltrans under Category 2 on the Historical Significance listing of Local Agency Bridges, updated November 2014 (see **Attachment H**, Caltrans Historic Bridge Listing). The bridge is eligible for the NRHP. In addition, a historically significant flume owned by Southern California Edison is adjacent to the project area.

36. No. According to the EPA, the only designated Tribal land in Tulare County is the Tule River (EPA, 2011), located approximately 20 miles south of the project area. The project area is not adjacent to Tribal land, and the project would not encroach on Tribal land.

Distribution 1) Original - DLAE, 2) Local Agency Project Manager, 3) DLA Environmental Coordinator
4) Senior Environmental Planner (or designee), 5) District PQS

Updated: 05/15/08

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Attachment A

Regional Location Map



REGIONAL LOCATION MAP
Mineral King Road Bridge Project

N

Attachment B

Project Location Map



PROJECT LOCATION MAP
Mineral King Road Bridge Project

N

Attachment C

Project Area Map



PROJECT FOOTPRINT MAP
Mineral King Road Bridge Project



STAGING AREAS MAP
Mineral King Road Bridge Project

N

Attachment D

Engineering Drawings

Retrofit/Rehabilitation Alternative

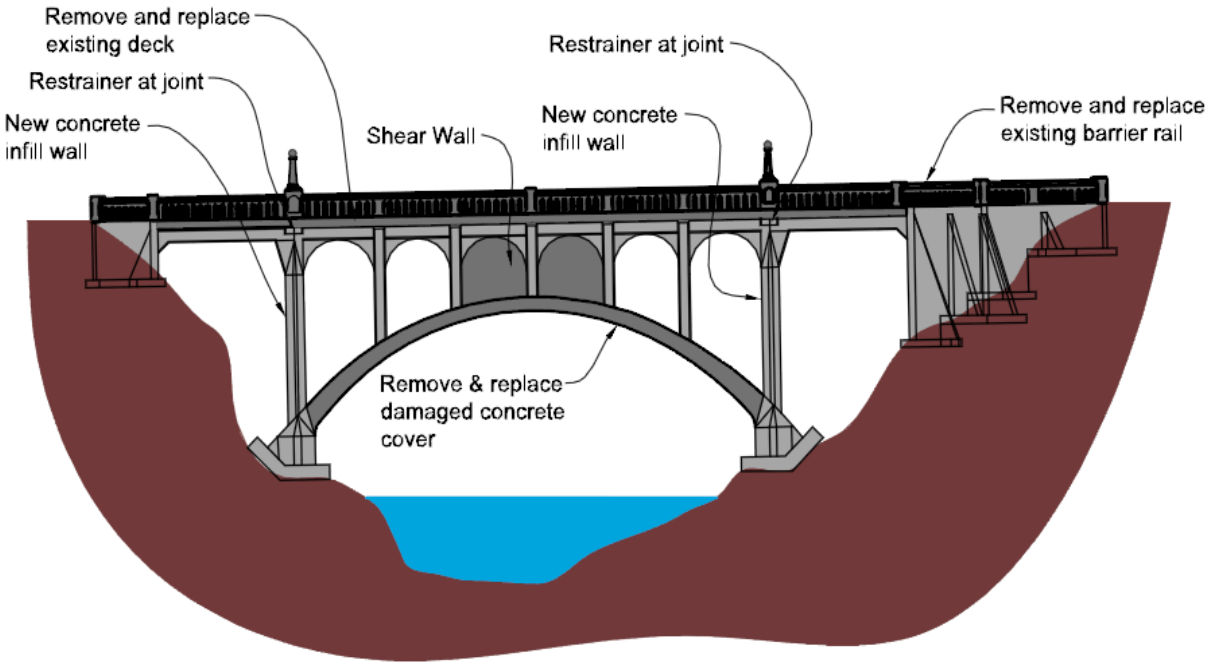


Figure 1 – Retrofit / Rehabilitation Elevation

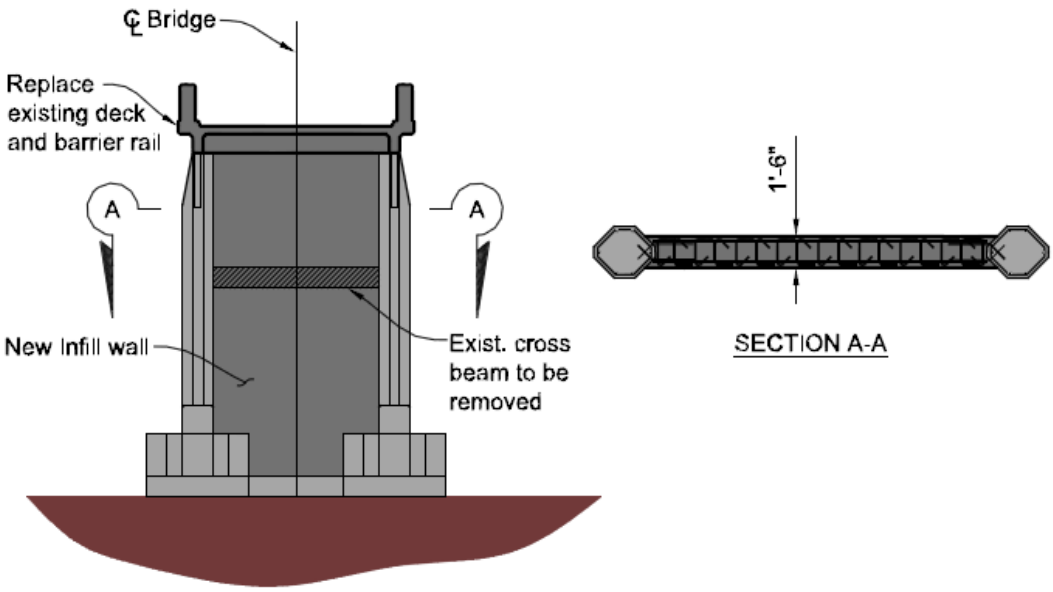


Figure 2 – Infill Walls



Figure 3 – Temporary Scaffolding System (Example)

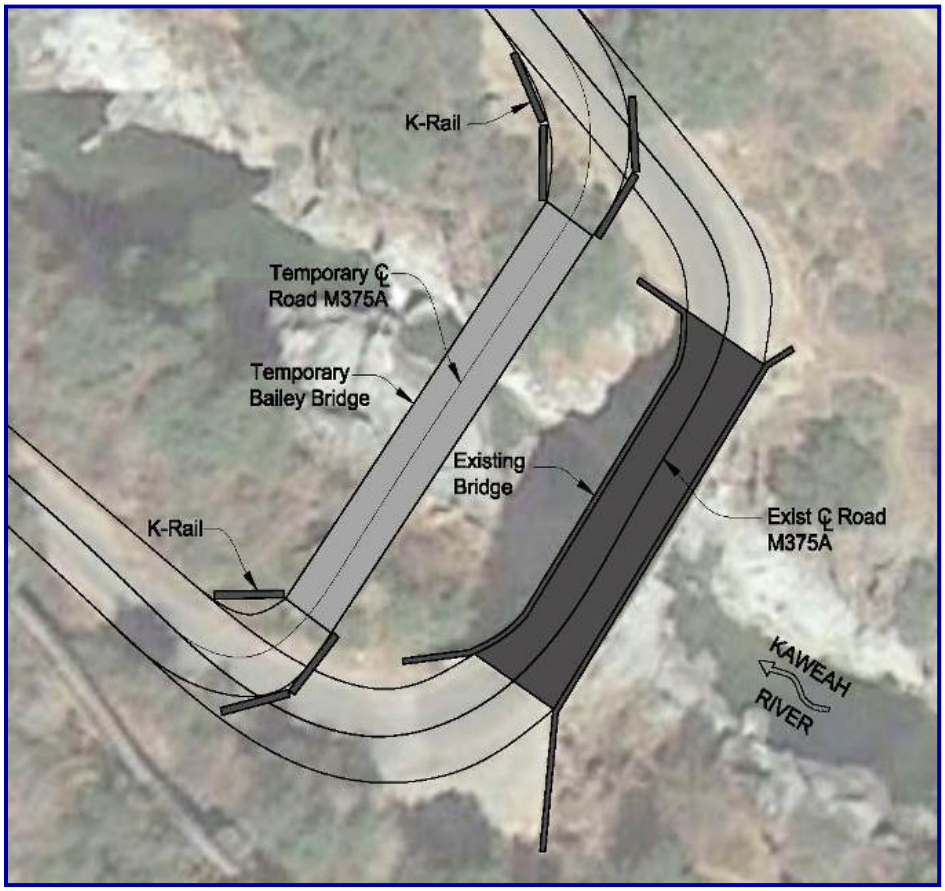


Figure 4 – Temporary Bridge



Figure 5 –Temporary Supports (Example)

Replacement Alternative

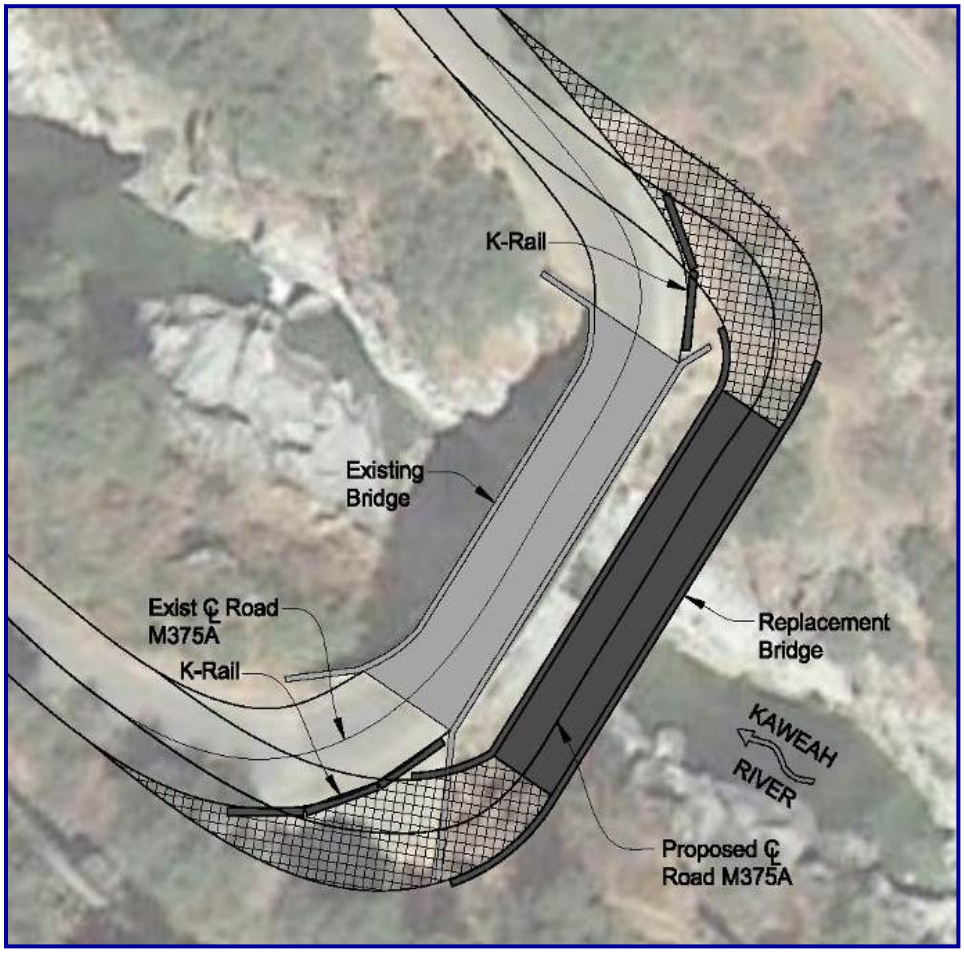


Figure 6 - Replacement Bridge Alignment

Combined Retrofit and Replacement Alternative

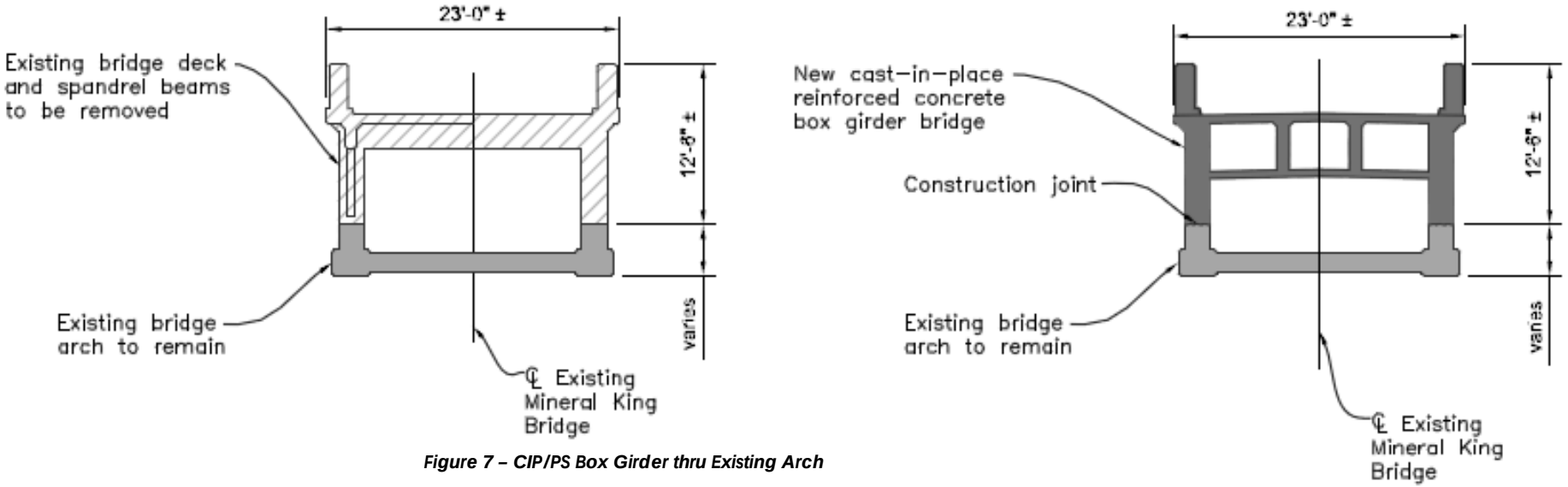


Figure 7 – CIP/PS Box Girder thru Existing Arch

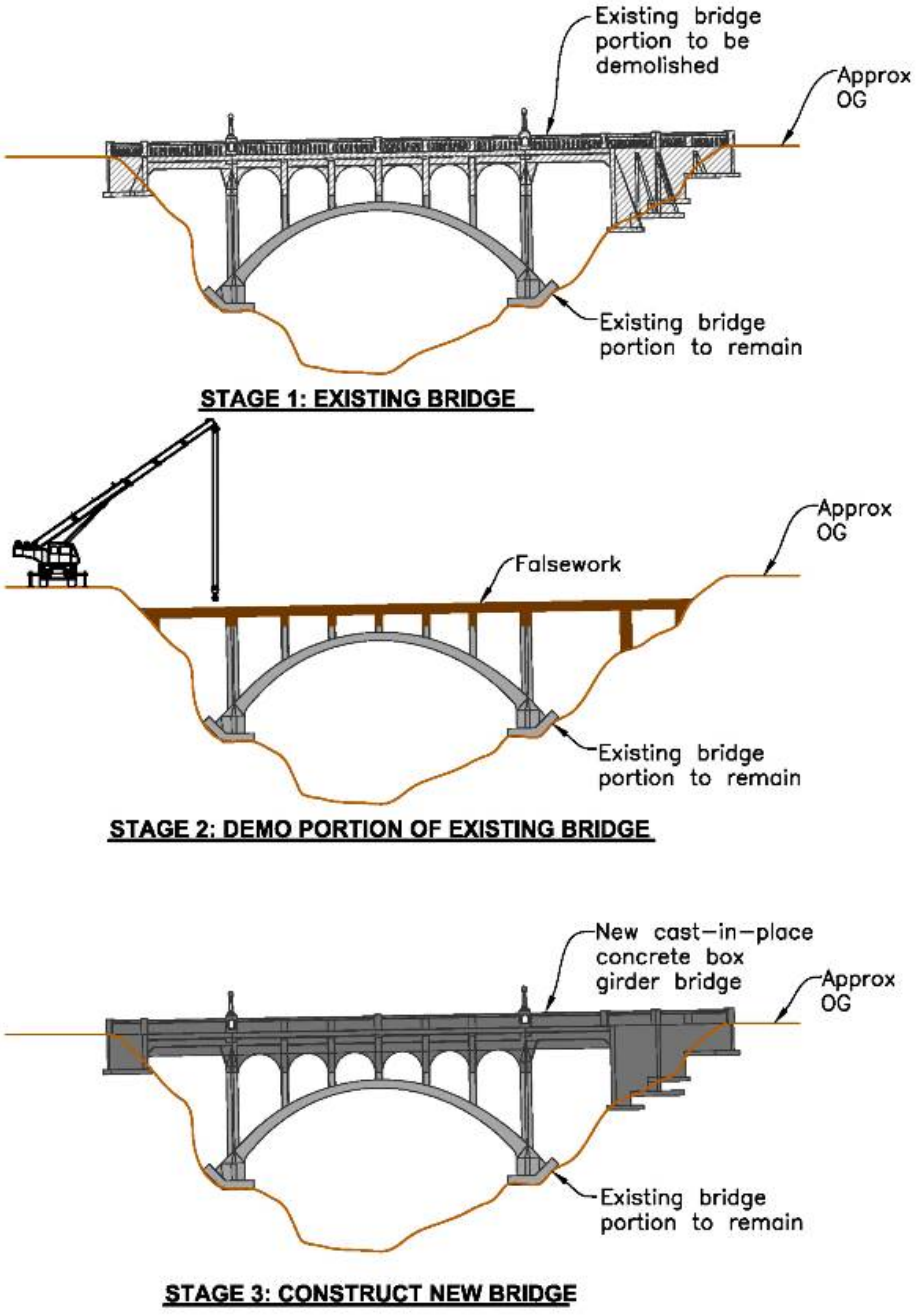
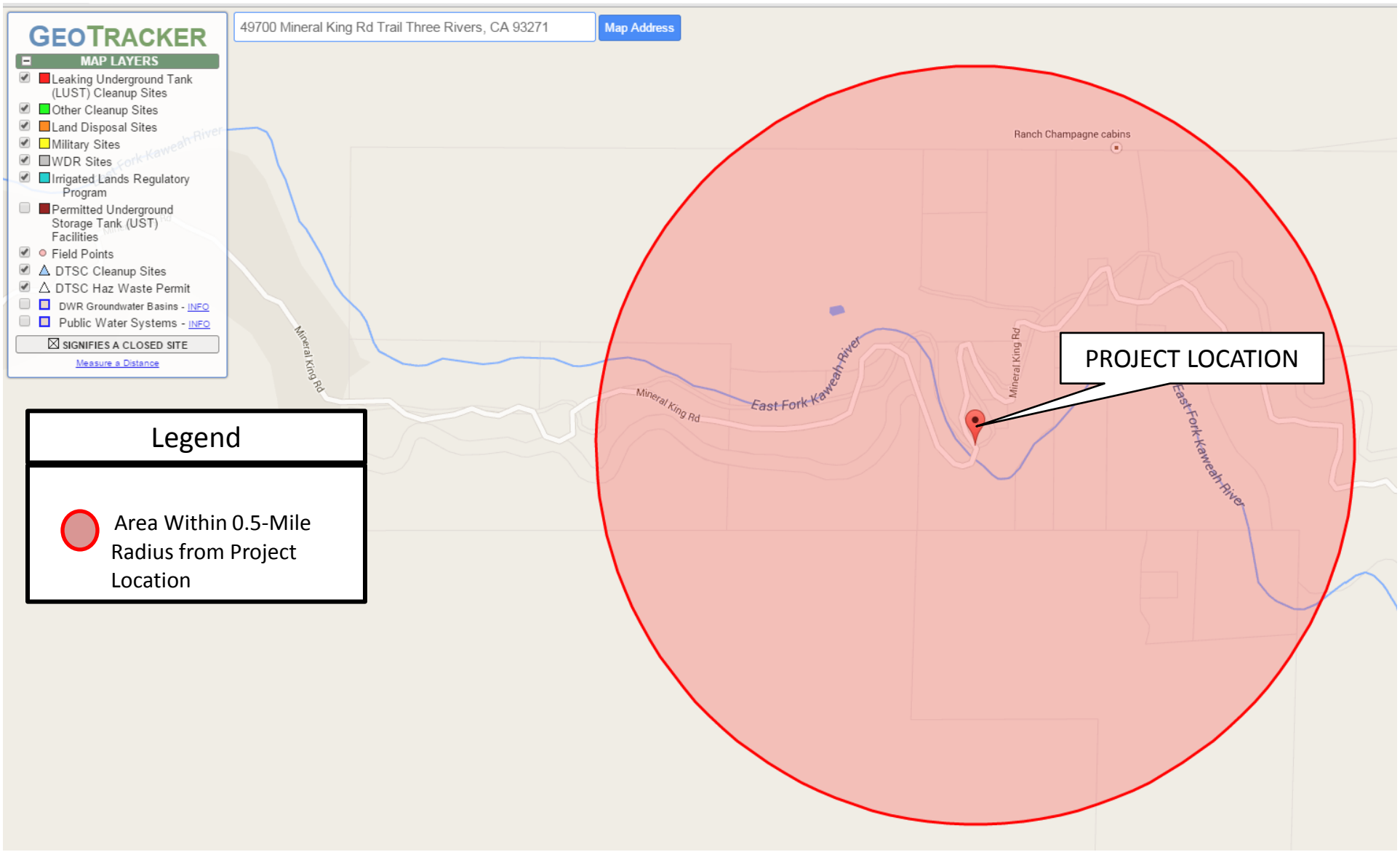


Figure 8 – Construction Sequence

Attachment E

Hazardous Materials Sites Map



HAZARDOUS MATERIALS SITES MAP
Mineral King Road Bridge Project

Attachment F

Special Status Species

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad is (Case Mountain (3611847) or Giant Forest (3611857) or Lodgepole (3611856) or Silver City (3611846) or Moses Mtn. (3611836) or Dennison Peak (3611837) or Chickencoop Canyon (3611838) or Kaweah (3611848) or Shadequarter Mtn. (3611858))

Mineral King Road Bridge

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter gentilis northern goshawk	ABNKC12060	None	None	G5	S3	SSC
Allium abramsii Abrams' onion	PMLIL02360	None	None	G2G3	S2S3	1B.2
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aplodontia rufa californica Sierra Nevada mountain beaver	AMAFA01013	None	None	G5T3T4	S2S3	SSC
Batrachoseps altasierrae Greenhorn Mountains slender salamander	AAAAD02200	None	None	G4	S3S4	SSC
Batrachoseps regius Kings River slender salamander	AAAAD02140	None	None	G1	S1	
Big Tree Forest Big Tree Forest	CTT84250CA	None	None	G3	S3.2	
Botrychium minganense mingan moonwort	PPOPH010R0	None	None	G4G5	S2	2B.2
Bowmanasellus sequoiae Sequoia cave isopod	ICMAL01210	None	None	G1	S1	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S2S3	
Brodiaea insignis Kaweah brodiaea	PMLIL0C060	None	Endangered	G1	S1	1B.2
Calicina cloughensis Clough Cave harvestman	ILARAU8090	None	None	G1	S1	
Calochortus westonii Shirley Meadows star-tulip	PMLIL0D1M0	None	None	G2	S2	1B.2
Calystegia malacophylla var. berryi Berry's morning-glory	PDCON040K2	None	None	G4G5T2T3Q	S2S3	3.3
Carlquistia muirii Muir's tarplant	PDASTDU010	None	None	G2	S2	1B.3
Central Valley Drainage Hardhead/Squawfish Stream Central Valley Drainage Hardhead/Squawfish Stream	CARA2443CA	None	None	GNR	SNR	
Cinna bolanderi Bolander's woodreed	PMPOA1H040	None	None	G2	S2	1B.2
Clarkia springvillensis Springville clarkia	PDONA05120	Threatened	Endangered	G2	S2	1B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	Candidate Threatened	G3G4	S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Cryptantha circumscissa var. rosulata rosette cushion cryptantha	PDBOR0A0G3	None	None	G5T2	S2	1B.2
Cryptochia denningi Denning's cryptic caddisfly	IITRI11030	None	None	G1G2	S1S2	
Cypseloides niger black swift	ABNUA01010	None	None	G4	S2	SSC
Delphinium purpusii rose-flowered larkspur	PDRAN0B1G0	None	None	G2	S2	1B.3
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	
Dudleya cymosa ssp. costatifolia Pierpoint Springs dudleya	PDCRA040A2	None	None	G5T1	S1	1B.2
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eriogonum nudum var. murinum mouse buckwheat	PDPGN08495	None	None	G5T2	S2	1B.2
Eryngium spinosepalum spiny-sepaled button-celery	PDAPI0Z0Y0	None	None	G2	S2	1B.2
Erythronium pusaterii Kaweah fawn lily	PMLIL0U0R0	None	None	G3	S3	1B.3
Euderma maculatum spotted bat	AMACC07010	None	None	G4	S3	SSC
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G5T4	S3S4	SSC
Fritillaria brandegeei Greenhorn fritillary	PMLIL0V040	None	None	G3	S3	1B.3
Fritillaria striata striped adobe-lily	PMLIL0V0K0	None	Threatened	G2	S2	1B.1
Glyceria grandis American manna grass	PMPOA2Y080	None	None	G5	S2	2B.3
Gulo gulo California wolverine	AMAJF03010	None	Threatened	G4	S1	FP
Gymnogyps californianus California condor	ABNKA03010	Endangered	Endangered	G1	S1	FP
Hosackia oblongifolia var. cuprea copper-flowered bird's-foot trefoil	PDFAB2A0W1	None	None	G5T2	S2	1B.3
Iris munzii Munz's iris	PMIRI090M0	None	None	G2	S2	1B.3
Ivesia campestris field ivesia	PDROS0X050	None	None	G3	S3	1B.2
Leptosiphon serrulatus Madera leptosiphon	PDPLM09130	None	None	G1?	S1?	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lupinus lepidus var. culbertsonii Hockett Meadows lupine	PDFAB2B171	None	None	G3?T2	S2	1B.3
Lytta moesta moestan blister beetle	IICOL4C020	None	None	G2	S2	
Lytta morrisoni Morrison's blister beetle	IICOL4C040	None	None	G1G2	S1S2	
Meesia triquetra three-ranked hump moss	NBMUS4L020	None	None	G5	S4	4.2
Mielichhoferia elongata elongate copper moss	NBMUS4Q022	None	None	G4	S2	2B.2
Mimulus norrisii Kaweah monkeyflower	PDSCR1B2Y0	None	None	G2	S2	1B.3
Myotis ciliolabrum western small-footed myotis	AMACC01140	None	None	G5	S3	
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Ochotona princeps schisticeps gray-headed pika	AMAEA0102H	None	None	G5T2T4	S2S4	
Oreonana purpurascens purple mountain-parsley	PDAPI1G020	None	None	G2	S2	1B.2
Orthotrichum holzingeri Holzinger's orthotrichum moss	NBMUS560E0	None	None	G3	S2	1B.3
Pekania pennanti fisher - West Coast DPS	AMAJF01021	Proposed Threatened	Candidate Threatened	G5T2T3Q	S2S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	None	G3	S2S3	SSC
Rana muscosa southern mountain yellow-legged frog	AAABH01330	Endangered	Endangered	G1	S1	SSC
Ribes menziesii var. ixoderme aromatic canyon gooseberry	PDGRO02104	None	None	G4T2	S2	1B.2
Ribes tularense Sequoia gooseberry	PDGRO021L0	None	None	G2	S2	1B.3
Strix nebulosa great gray owl	ABNSB12040	None	Endangered	G5	S1	
Trichodon cylindricus cylindrical trichodon	NBMUS7N020	None	None	G4G5	S2	2B.2
Vulpes vulpes necator Sierra Nevada red fox	AMAJA03012	None	Threatened	G5T1T2	S1	

Record Count: 60

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

March 10, 2015

Document Number: 150310023811

Jennifer Morrison
GPA Consulting
231 California Street
El Segundo, California 90245

Subject: Species List for Mineral King Road Bridge Project

Dear: Ms. Morrison

We are sending this official species list in response to your March 10, 2015 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be June 08, 2015.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found http://www.fws.gov/sacramento/es/Branch-Contacts/es_branch-contacts.htm.

Endangered Species Division

TAKE PRIDE IN AMERICA

U.S. Fish & Wildlife Service

Sacramento Fish & Wildlife Office

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 150310023811

Current as of: March 10, 2015

Quad Lists

Listed Species

Invertebrates

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Fish

Hypomesus transpacificus
delta smelt (T)

Oncorhynchus (=Salmo) aquabonita whitei
Critical habitat, little Kern golden trout (X)
Little Kern golden trout (T)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)

Rana draytonii
California red-legged frog (T)

Rana muscosa
Mountain yellow legged frog (PX)

Birds

Coccyzus americanus occidentalis
Western yellow-billed cuckoo (T)

Gymnogyps californianus
California condor (E)
Critical habitat, California condor (X)

Mammals

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

Clarkia springvillensis
Springville clarkia (T)

Candidate Species

Amphibians

Rana muscosa
mountain yellow-legged frog (C)

Mammals

Martes pennanti
fisher (C)

Quads Containing Listed, Proposed or Candidate Species:

SILVER CITY (331B)

MOSES MTN. (331C)
CASE MOUNTAIN (332A)
KAWEAH (332B)
CHICKENCOOP CANYON (332C)
DENNISON PEAK (332D)
LODGEPOLE (353C)
SHADEQUARTER MTN. (354C)
GIANT FOREST (354D)

County Lists

Tulare County

Listed Species

Invertebrates

Branchinecta conservatio
Conservancy fairy shrimp (E)

Branchinecta lynchi
Critical habitat, vernal pool fairy shrimp (X)
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Lepidurus packardi
Critical habitat, vernal pool tadpole shrimp (X)
vernal pool tadpole shrimp (E)

Fish

Gila bicolor snyderi
Owens tui chub (E)

Hypomesus transpacificus
delta smelt (T)

Oncorhynchus (=Salmo) aquabonita whitei
Critical habitat, little Kern golden trout (X)
Little Kern golden trout (T)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

Rana draytonii
California red-legged frog (T)

Rana muscosa
Mountain yellow legged frog (PX)

Rana sierrae

Mountain yellow legged frog (PX)

Reptiles

Gambelia (=Crotaphytus) sila
blunt-nosed leopard lizard (E)

Thamnophis gigas
giant garter snake (T)

Birds

Charadrius alexandrinus nivosus
western snowy plover (T)

Coccyzus americanus occidentalis
Western yellow-billed cuckoo (T)

Empidonax traillii extimus
southwestern willow flycatcher (E)

Gymnogyps californianus
California condor (E)
Critical habitat, California condor (X)

Vireo bellii pusillus
Least Bell's vireo (E)

Mammals

Dipodomys ingens
giant kangaroo rat (E)

Dipodomys nitratoides exilis
Fresno kangaroo rat (E)

Dipodomys nitratoides nitratoides
Tipton kangaroo rat (E)

Ovis canadensis californiana
Sierra Nevada (=California) bighorn sheep (E)

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

Caulanthus californicus
California jewelflower (E)

Chamaesyce hooveri
Critical habitat, Hoover's spurge (X)
Hoover's spurge (T)

Clarkia springvillensis
Springville clarkia (T)

Eremalche kernensis
Kern mallow (E)

Orcuttia inaequalis
Critical habitat, San Joaquin Valley Orcutt grass (X)
San Joaquin Valley Orcutt grass (T)

Pseudobahia peirsonii
San Joaquin adobe sunburst (T)

Sidalcea keckii
Critical habitat, Keck's checker-mallow (X)
Keck's checker-mallow (=checkerbloom) (E)

Tuctoria greenei
Greene's tuctoria (=Orcutt grass) (E)

Candidate Species

Amphibians

Bufo canorus
Yosemite toad (C)

Rana muscosa
mountain yellow-legged frog (C)

Mammals

Martes pennanti
fisher (C)

Plants

Abronia alpina
Ramshaw sand-verbena (C)

Key:

(E) *Endangered* - Listed as being in danger of extinction.
(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.
(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.
Critical Habitat - Area essential to the conservation of a species.
(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.
(C) *Candidate* - Candidate to become a proposed species.
(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.
- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species

that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be June 08, 2015.

Attachment G

USFWS Wetlands Map

U.S. Fish and Wildlife Service

National Wetlands Inventory

Mineral King Road Bridge

Mar 10, 2015



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

Riparian

- Herbaceous
- Forested/Shrub

Riparian Status

- Digital Data

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

Attachment H

Caltrans Historic Bridge Listing

Structure Maintenance & Investigations



Historical Significance - Local Agency Bridges

District 06

Tulare County

Bridge Number	Bridge Name	Location	Historical Significance	Year Built	Year Wid/Ext
46C0163	SPEAR CREEK	3 MI N OF JACK RANCH RD	5. Bridge not eligible for NRHP	1947	
46C0168	PORTER SLOUGH	AT MORTON AVE	5. Bridge not eligible for NRHP	1955	
46C0169	NORTH FORK TULE RIVER	0.1 MI BALCH PARK RD	5. Bridge not eligible for NRHP	1978	
46C0170	PORTER SLOUGH	CITY OF PORTERVILLE	5. Bridge not eligible for NRHP	1953	
46C0171	PORTER SLOUGH	CITY OF PORTERVILLE	5. Bridge not eligible for NRHP	1941	
46C0172	PORTER SLOUGH	0.5 MI N SR 190	5. Bridge not eligible for NRHP	1954	
46C0173	PORTER SLOUGH	0.4 MI N SR 190	5. Bridge not eligible for NRHP	1937	
46C0174	PACKWOOD CREEK	0.12 MI N OF AVE 280	5. Bridge not eligible for NRHP	1980	
46C0175	PACKWOOD CREEK	1.1 MI W OF RD 140	5. Bridge not eligible for NRHP	1970	
46C0176	ALTA CANAL (ALTA EAST BRANCH CANAL)	0.3 MI S OF AVE 432	5. Bridge not eligible for NRHP	1968	
46C0177	SAND CREEK	0.35 MI. N SR 201	5. Bridge not eligible for NRHP	1939	1973
46C0178	COTTONWOOD CREEK	0.4 MI N OF AVE 368	5. Bridge not eligible for NRHP	1948	
46C0179	ALTA CANAL (ALTA EAST BRANCH CANAL)	@ AVE 408	5. Bridge not eligible for NRHP	1939	1960
46C0180	FRIANT-KERN CANAL	0.2 MI NORTH OF AVE 264	4. Historical Significance not determined	1949	
46C0181	HICKMAN CREEK	3.5 MI N OF S.R. 190	5. Bridge not eligible for NRHP	1949	
46C0182	FRIANT-KERN CANAL	0.5 MI SOUTH OF SR 198	2. Bridge is eligible for NRHP	1949	
46C0183	BEAR CREEK	6.7 MI E OF BALCH PARKRD	5. Bridge not eligible for NRHP	1956	
46C0186	OUTSIDE CREEK	0.15 MI S OF AVE 224	5. Bridge not eligible for NRHP	1950	
46C0187	SAND CREEK	.25 MI E OF SR 63	5. Bridge not eligible for NRHP	1938	
46C0188	SAND CREEK	.15 MI S OF FRE CO LINE	5. Bridge not eligible for NRHP	1947	
46C0189	MURRAY CREEK	.25 MI N OF SR245	5. Bridge not eligible for NRHP	1938	
46C0190	SAND CREEK	0.19 MI S OF A456	5. Bridge not eligible for NRHP	1950	
46C0191	MIDDLE FORK TULE RIVER	0.1 MI SE SR 190	5. Bridge not eligible for NRHP	1967	
46C0192	DRY CREEK	0.5 MI FROM RD SD 243	5. Bridge not eligible for NRHP	1940	
46C0193	PACKWOOD CANAL	.67 MI NE OF R180	5. Bridge not eligible for NRHP	1956	
46C0194	KETCHUM DITCH	.18 MI W OF R196	5. Bridge not eligible for NRHP	1958	
46C0195	SOUTH FORK KAWEAH RIVER	11.1 MI SE OF ROAD M347	5. Bridge not eligible for NRHP	1952	
46C0196	EAST FORK KAWEAH RIVER	6.68 MI E OF SR 198	2. Bridge is eligible for NRHP	1923	
46C0197	SOUTH FORK KAWEAH RIVER	1.34 MI SE OF RD M347	5. Bridge not eligible for NRHP	1956	
46C0198	SOUTH FORK KAWEAH RIVER	1.42 MI SE OF M347	5. Bridge not eligible for NRHP	1934	1965
46C0199	SOUTH FORK KAWEAH RIVER	4.1 MI SE CO RD M347	5. Bridge not eligible for NRHP	1959	
46C0200	DEER CREEK	2.23 MI SE OF M120	5. Bridge not eligible for NRHP	1956	1959
46C0201	DEER CREEK	5.11 MI SE/O M120	5. Bridge not eligible for NRHP	1967	
46C0202	DEER CREEK	5.86 MI SE OF M120	5. Bridge not eligible for NRHP	1939	
46C0203	DEER CREEK	13.9 MI SE OF M120	5. Bridge not eligible for NRHP	1930	
46C0204	TYLER CREEK	0.3 MI N OF M56	5. Bridge not eligible for NRHP	1952	
46C0205	DEER CREEK	16.4 MI E M109	5. Bridge not eligible for NRHP	1937	
46C0206	SALMON CREEK	11.94 MI SE OF M50	5. Bridge not eligible for NRHP	1967	
46C0207	BRUSH CREEK	4.81 MI SE OF MSO	5. Bridge not eligible for NRHP	1940	1974
46C0208	COTTONWOOD CREEK	0.2 MI W SR 245	5. Bridge not eligible for NRHP	1961	
46C0210	CAMERON CREEK	0.1 MI E OF RD 168	5. Bridge not eligible for NRHP	1951	1981
46C0211	TULARE IRRIGATION DISTRICT CANAL	0.2 MI E OF RD 156	5. Bridge not eligible for NRHP	1948	1981
46C0215	HOMELAND CANAL	1.0 MI N OF AVENUE 56	5. Bridge not eligible for NRHP	1942	

Attachment I

Visual Impact Assessment Survey

Questionnaire to Determine Visual Impact Assessment (VIA) Level

Use the following questions and subsequent score as a guide to help determine the appropriate level of VIA documentation. This questionnaire assists the VIA preparer (i.e. Landscape Architect) in estimating the probable visual impacts of a proposed project on the environment and in understanding the degree and breadth of the possible visual issues. The goal is to develop a suitable document strategy that is thorough, concise and defensible.

Enter the project name and consider each of the ten questions below. Select the response that most closely applies to the proposed project and corresponding number on the right side of the table. Points are automatically computed at the bottom of the table and the total score should be matched to one of the five groups of scores at the end of the questionnaire that include recommended levels of VIA study and associated annotated outlines (i.e., minor, moderate, advanced/complex).

This scoring system should be used as a preliminary guide and should not be used as a substitute for objective analysis on the part of the preparer. Although the total score may recommend a certain level of VIA document, circumstances associated with any one of the ten question-areas may indicate the need to elevate the VIA to a greater level of detail. For projects done by others on the State Highway System, the District Landscape Architect should be consulted when scoping the VIA level and provide concurrence on the level of analysis used.

Calculate VIA Level Score

PROJECT NAME: Mineral King Bridge Project	
CHANGE TO VISUAL ENVIRONMENT	
1. Will the project result in a noticeable change in the physical characteristics of the existing environment? *Consider all project components and construction impacts - both permanent and temporary, including landform changes, structures, noise barriers, vegetation removal, railing, signage, and contractor activities.*	High Level of Change (3 points) ▼
2. Will the project complement or contrast with the visual character desired by the community? Evaluate the scale and extent of the project features compared to the surrounding scale of the community. Is the project likely to give an urban appearance to an existing rural or suburban community? Do you anticipate that the change will be viewed by the public as positive or negative? Research planning documents, or talk with local planners and community representatives to understand the type of visual environment local residents envision for their community.	Moderate Compatibility (2 points) ▼
3. What level of local concern is there for the types of project features (e.g., bridge structures, large excavations, sound barriers, or median planting removal) and construction impacts that are proposed? Certain project improvements can be of special interest	High Concern (3 points) ▼

to local citizens, causing a heightened level of public concern, and requiring a more focused visual analysis.	
4. Will the project require redesign or realignment to minimize adverse change or will mitigation, such as landscape or architectural treatment, likely be necessary? Consider the type of changes caused by the project, i.e., can undesirable views be screened or will desirable views be permanently obscured so a redesign should be considered?	Extensive Mitigation Likely (2 points) ▼
5. Will this project, when seen collectively with other projects, result in an aggregate adverse change (cumulative impacts) in overall visual quality or character? Identify any projects (both Caltrans and local) in the area that have been constructed in recent years and those currently planned for future construction. The window of time and the extent of area applicable to possible cumulative impacts should be based on a reasonable anticipation of the viewing public's perception.	Cumulative Impacts Likely to Occur Within 6-10 Years (2 points) ▼

VIEWER SENSITIVITY

1. What is the potential that the project proposal will be controversial within the community, or opposed by any organized group? This can be researched initially by talking with Caltrans and local agency management and staff familiar with the affected community's sentiments as evidenced by past projects and/or current information.	High Potential (3 points) ▼
2. How sensitive are potential viewer-groups likely to be regarding visible changes proposed by the project? Consider among other factors the number of viewers within the group, probable viewer expectations, activities, viewing duration, and orientation. The expected viewer sensitivity level may be scoped by applying professional judgment, and by soliciting information from other Caltrans staff, local agencies and community representatives familiar with the affected community's sentiments and demonstrated concerns.	High Sensitivity (3 points) ▼
3. To what degree does the project's aesthetic approach appear to be consistent with applicable laws, ordinances, regulations, policies or standards? Although the State is not always required to comply with local planning ordinances, these documents are critical in understanding the importance that	

communities place on aesthetic issues. The Caltrans Environmental Planning branch may have copies of the planning documents that pertain to the project. If not, this information can be obtained by contacting the local planning department. Also, many local and state planning documents can be found online at the California Land Use Planning Network.	High Compatibility (1 point) ▼
4. Are permits going to be required by outside regulatory agencies (i.e., Federal, State, or local)? Permit requirements can have an unintended consequence on the visual environment. Anticipated permits, as well as specific permit requirements - which are defined by the permitted, may be determined by talking with the project Environmental Planner and Project Engineer. Note: coordinate with the Caltrans representative responsible for obtaining the permit prior to communicating directly with any permitting agency.	Yes (3 points) ▼
5. Will the project sponsor or public benefit from a more detailed visual analysis in order to help reach consensus on a course of action to address potential visual impacts? Consider the proposed project features, possible visual impacts, and probable mitigation recommendations.	Yes (3 points) ▼

Calculate Total

It is recommended that you print a copy of these calculations for the project file.

PROJECT SCORE: 25

Select An Outline Based Upon Project Score

The total score will indicate the recommended VIA level for the project. In addition to considering circumstances relating to any one of the ten questions-areas that would justify elevating the VIA level, also consider any other project factors that would have an effect on level selection.

SCORE 6-9

No noticeable visual changes to the environment are proposed and no further analysis is required. Print out a copy of this completed questionnaire for your project file or Preliminary Environmental Study (PES).

SCORE 10-14

Negligible visual changes to the environment are proposed. A brief **Memorandum** (see sample) addressing visual issues providing a rationale why a technical study is not required.

SCORE 15-19

Noticeable visual changes to the environment are proposed. An abbreviated VIA is appropriate in this case. The assessment would briefly describe project features, impacts and any avoidance and minimization measures. Visual simulations would be optional. Go to the **Directions** for using and accessing the Minor VIA Annotated Outline.

SCORE 20-24

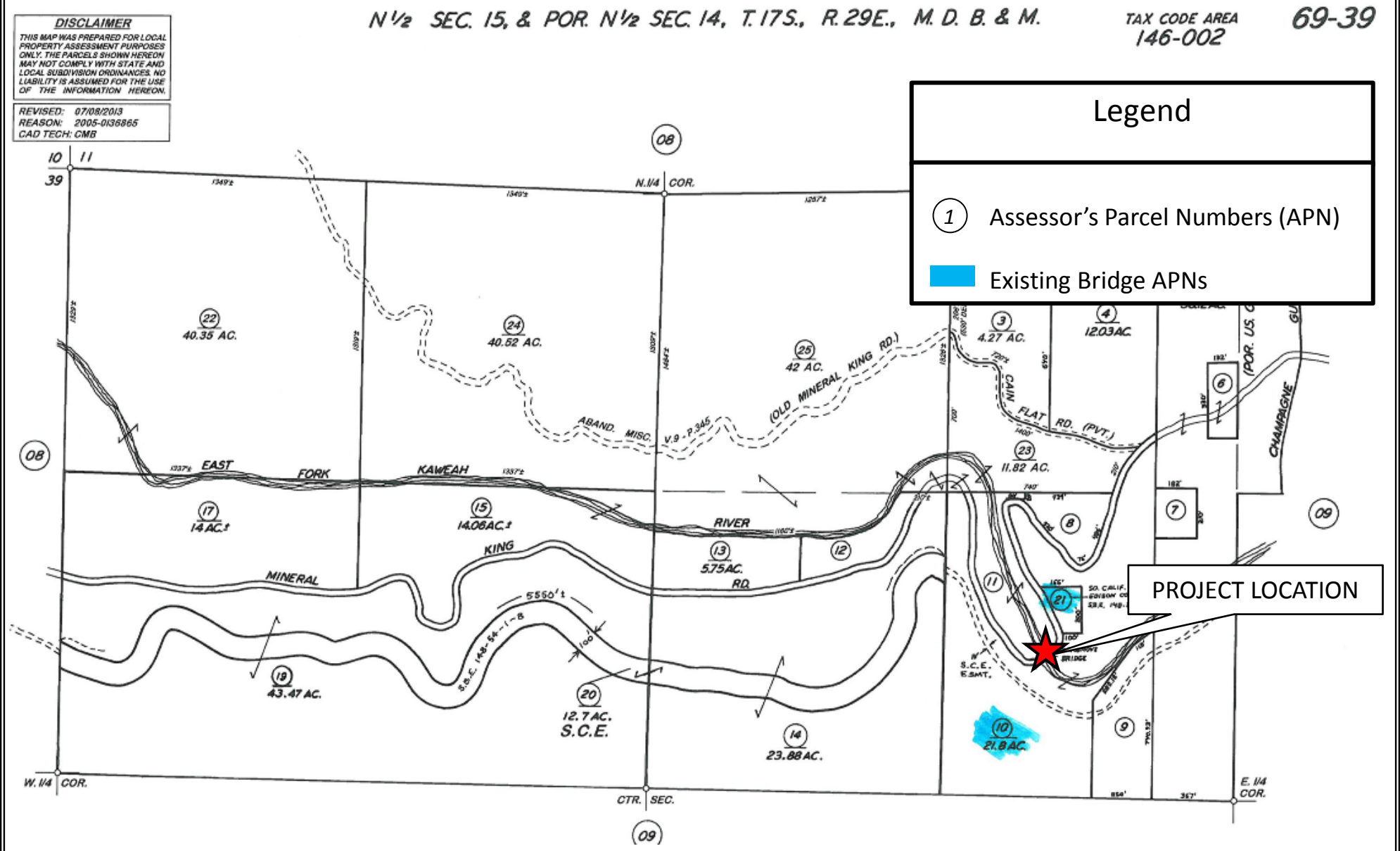
Noticeable visual changes to the environment are proposed. A fully developed VIA is appropriate. This technical study will likely receive public review. Go to the **Directions** for using and accessing the Moderate VIA Annotated Outline.

SCORE 25-30

Noticeable visual changes to the environment are proposed. A fully developed VIA is appropriate that includes photo simulations. It is appropriate to alert the Project Development Team to the potential for highly adverse impacts and to consider project alternatives to avoid those impacts. Go to the **Directions** for using and accessing the Advanced/Complex VIA Annotated Outline.

Attachment J

Parcel Map



Source: CSEG, 2015

No Scale

PARCEL MAP
Mineral King Road Bridge Project

Attachment K

FTIP Listing

2010/11-2015/16 Highway Bridge Program

See the appropriate FTIP/FSTIP for current funding commitments. This listing provides the backup project information to support the lump sum amounts programmed in the FTIP.

District: 06 County: Tulare

Responsible Agency	HBP-ID	Project Description
Tulare County	3589	BRIDGE NO. 46C0196, M375A MNRL KING RD OVER EAST FORK KAWEAH RIVER, 6.68 MI E OF SR 198. Replace Two Lane Bridge with Two Lane Bridge 8/29/2010: Toll Credits programmed for PE & CON.

Project #: 5946(106)

Phase Summary:	Prior	10/11	11/12	12/13	13/14	14/15	15/16	Beyond	Total
PE				752,004					752,004
R/W									
CON								2,506,680	2,506,680
Total				752,004				2,506,680	3,258,684

Fund Source Summary:	Prior	10/11	11/12	12/13	13/14	14/15	15/16	Beyond	Total
Fed $				752,004				2,506,680	3,258,684
Local Match									
LSSRP Bond									
Local AC									
Total				752,004				2,506,680	3,258,684

PE Summary:	Prior	10/11	11/12	12/13	13/14	14/15	15/16	Beyond	Total
Fed $				752,004					752,004
Local Match									
LSSRP Bond									
Local AC									
Total				752,004					752,004

CON Summary:	Prior	10/11	11/12	12/13	13/14	14/15	15/16	Beyond	Total
Fed $								2,506,680	2,506,680
Local Match									
LSSRP Bond									
Local AC									
Total								2,506,680	2,506,680