
**APPENDIX H: ENVIRONMENTAL CHECKLIST/SUBSTITUTE
ENVIRONMENTAL DOCUMENT - Southern Lost Hills Oilfield Beneficial Use
Evaluation**

ENVIRONMENTAL CHECKLIST

The Central Valley Regional Water Quality Control Board (Central Valley Water Board or Board), as a Lead Agency under the California Environmental Quality Act (CEQA), is responsible for evaluating all the potential environmental impacts that may occur because of changes made to the Water Quality Control Plan for the Tulare Lake Basin (Basin Plan) (Public Resources Code, Section 21000 et seq.). The Secretary of Resources has determined that the Central Valley Water Board’s Basin Planning Process qualifies as a certified regulatory program pursuant to Public Resources Code Section 21080.5 and California Code of Regulation, Title 14, Section 15251(g). This determination means that the Central Valley Water Board’s Basin Planning process needs only to comply with abbreviated CEQA requirements. The Staff Report and this Checklist satisfy the requirements of State Water Board’s Regulations for Implementation of CEQA, Exempt Regulatory Programs, which are found at California Code of Regulations, Title 23, Section 3775 et seq.

PROJECT INFORMATION

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| 1. Project Title | De-designate Municipal and Domestic Supply (MUN) and Agricultural Supply (AGR) Beneficial Uses in Groundwater Contained Beneath a Portion of the Southern Lost Hills Oil Field |
| 2. Lead Agency Name and Address: | Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, #200, Rancho Cordova, CA 95670 |
| 3. Contact Person and Phone Number: | Glenn Meeks, Senior Engineering Geologist (916) 464-4701 |
| 4. Project Location | The Lower Tulare Member and Etchegoin Formation beneath Sections 14, 15, 22, 23, 26, and 27, Township 27S, Range 12E, Mount Diablo Baseline and Meridian, southern Lost Hills Oil Field, Kern County, California - See Attached Figures 1-1 and 1-2 |
| 5. Project Sponsor’s Name and Address: | Seneca Resources Company, LLC
1800 Corporate Ct., Bakersfield, California, 93311 |
| 6. General Plan Designation: | Agriculture (93.2%), and Resource (6.8%) |
| 7. Zoning: | Exclusive Agriculture (99.7%), and Limited Agriculture (0.3%) |
| 8. Description of Project | De-designate MUN and AGR Beneficial Uses in groundwater contained in the Lower Tulare Member and Etchegoin Formation underlying six sections in the southern Lost Hills Oil Field. |

This Environmental Checklist is intended to provide supporting environmental review documentation for a proposed amendment to the Basin Plan to de-designate the MUN and AGR beneficial uses from groundwater within the Lower Tulare Member and Etchegoin Formation (Project Zone) underlying six sections of land located in the southern Lost Hills Oil Field (Project Area).

BACKGROUND:

The proposed amendment is related to and consistent with a larger effort by the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) stakeholder initiative to develop a comprehensive Salt and Nitrate Management Plan (SNMP) for the Central Valley. As part of its work on the SNMP, CV-SALTS is reviewing the Basin Plan’s beneficial use designations to determine whether these beneficial use designations were appropriately made and, if so, whether the Basin Plan’s implementation programs provide an appropriate level of protection for the waterbodies that support these beneficial uses. Where appropriate, CV-SALTS is proposing that the California Regional Water Quality Control Board, Central

Valley Region (Central Valley Water Board or Board) modify the Basin Plan’s MUN and/or AGR beneficial use designations and programs of implementation to encourage reuse and recycling, to give regulated entities more flexibility in managing limited water supplies, and to identify potential salt management areas that would help salt to be moved out of sensitive areas.

CV-SALTS reviewed the Basin Plan Amendment and supporting Technical Report and found that the proposal was consistent with the technical approach used to support the de-designation of AGR and MUN from a delineated portion of the groundwater underlying the Tulare Lakebed approved the Regional and State Water Boards. CV SALTS also found the proposed de-designation to be consistent with the goals and plans of the CV-SALTS program.

The Central Valley Water Board has incorporated the Sources of Drinking Water Policy, State Water Board Resolution No. 88-63 (Sources of Drinking Water Policy) into the Basin Plans and has designated all surface and groundwater bodies in the Central Valley regional as supporting the MN beneficial use unless a particular water body is specifically designated as not supporting the MUN beneficial use in the Basin Plan. The Sources of Drinking Water Policy identifies exceptions to the MUN beneficial use that can apply to certain water bodies, including an exception that applies to water bodies where the total dissolved solids (TDS) exceed 3,000 milligrams per liter (mg/l) [or 5,000 microsiemens per centimeter (µS/cm) as electrical conductivity (EC)], provided that the water body is not expected to supply a public water system. The Sources of Drinking Water Policy also provides an exception for water bodies that do not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day. However, these exceptions are not self-implementing – the Central Valley Water Board is required to protect the MUN beneficial use even in water bodies that meet the exception criteria unless and until a Basin Plan amendment is adopted that specifically de-designates the MUN use in such water bodies.

With regard to the AGR beneficial use, the Basin Plan states that unless otherwise designated by the Central Valley Water Board, “all ground waters in the region are considered suitable or potentially suitable, at a minimum, for agricultural supply (AGR)....” Agricultural supply includes the use of groundwater for irrigation, livestock watering, and support of vegetation for range grazing. The water quality objective to protect AGR is the narrative water quality objective that requires waters contain chemical constituents in concentrations that adversely affect beneficial uses. Narrative water quality objectives are interpreted by the Central Valley Water Board using the best available scientific criteria in combination with the following six factors:

Past, present, and probably future beneficial uses.

Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.

Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.

Economic considerations.

The need for developing housing within the region.

The need to develop and use recycled water (Water Code, § 13241).

The Central Valley Water Board has utilized salinity guidelines identified in Ayers and Westcot (1985) to interpret the Basin Plan's narrative objective and has previously considered irrigation water supply with EC at 700 $\mu\text{S}/\text{cm}$ (TDS at 470 mg/l) to be protective of all crops at all times. The CV-SALTS conducted a review of literature related to salinity impacts on both irrigation and stock watering and found that the literature concurred with the Ayers and Westcot finding that only the most salt tolerant crops may be sustainably irrigated with water with EC exceeding 3,000 $\mu\text{S}/\text{cm}$ (TDS over 2,000 mg/l) (CV-SALTS, 2013). As part of the literature review, CV-SALTS also identified a range of acceptable salt levels for livestock watering. Regional Board staff have selected a salinity threshold value of 5,000 mg/L Total Dissolved Solids (TDS) to interpret the narrative objective and evaluate whether the groundwater in the Project Area/Zone supports AGR beneficial use. This threshold is from the National Research Committee of the National Academy of Science (NRC, 1974) for an acceptable level of salinity for livestock watering.

Seneca Resources Company, LLC (Seneca) injects produced water using four Underground Injection Control (UIC)-permitted disposal wells in the southern part of the Lost Hills Oil Field. The wells inject water into aquifers within the Lower Member of the Tulare Formation (Lower Tulare Member) and the Etchegoin Formation, which are classified non-underground sources of drinking water (non-USDW) under the federal Safe Drinking Water Act (SDWA) because TDS levels are greater than 10,000 mg/l. The Basin Plan currently applies blanket MUN beneficial use designation to these aquifers. Seneca proposed a Basin Plan Amendment to de-designate MUN and AGR beneficial uses from these aquifers. A Technical Report was prepared that defined the Project Area and Project Zone, based on local hydrogeology and containment of modeled 100-year injection plumes, as the Lower Tulare Member and the Etchegoin Formation aquifers that are stratigraphically confined beneath six sections of land that are within the administrative boundary of the Lost Hills Oil Field. The Study concluded that de-designation of MUN was appropriate under exception 1a of the Sources of Drinking Water Policy (TDS > 3,000 mg/l), and of AGR because TDS exceeds narrative water quality objectives for agricultural purposes. There are no domestic, municipal, or agricultural uses for the groundwater, and local agricultural concerns rely 100% on imported surface water and have no interest in or use for the groundwater because of its poor quality.

The technical and regulatory information developed in support of this beneficial use evaluation is compiled in the *Technical Report in Support of Petition for Beneficial Use De-Designation and Basin Plan Amendment, South Lost Hills Oilfield, Lower Tulare, and Etchegoin Formations*, prepared by Seneca Resources and Updated 16 April 2018 (Technical Report).

Stakeholders identified the following four project alternatives pertaining to the MUN beneficial use designations for a portion of the Lower Tulare Member and the Etchegoin Formation in the southern Lost Hills Oilfield:

No Action

De-designate MUN Beneficial Use within the six-section footprint of the Project Area from the surface down, with no vertical de-designation boundary.

De-designate MUN within a portion of the Lower Tulare Member and the Etchegoin Formation Based on Application of the Sources of Drinking Water Policy Exception 1a and the non-USDW quality of the groundwater for MUN (See Figure 1-11 and Figures 4-1 and 4-2).

Development of MUN Site-Specific Salinity Objectives within the Proposed MUN De-designation Boundary.

Stakeholders also identified the following four project alternatives pertaining to the AGR beneficial use designations for a portion of the Lower Tulare Member and the Etchegoin Formation in the southern Lost Hills Oilfield:

No Action

De-designate AGR Irrigation Supply and Livestock Watering Beneficial Uses within the Proposed Horizontal Boundary and No Vertical Boundaries Based on a salinity Groundwater Quality Threshold of 5,000 mg/L TDS.

De-designate AGR Irrigation Supply and Livestock Watering Beneficial Uses within Proposed Horizontal Boundary and Vertical Boundaries (Project Zone) Based on a salinity Groundwater Quality Threshold of 5,000 mg/L TDS. (See Figure 1-11 and Figures 4-1 and 4-2)

Development of AGR Site-Specific Salinity Objectives within the Proposed AGR De-designation Boundaries (Project Zone) for Irrigation Supply and Livestock Watering.

Under the No Action Alternative, Seneca Resources would retain an undue responsibility under the Basin Plan to protect groundwater that is already considered non-USDW under the federal Sources of Drinking Water Act and is not being used or feasible for municipal or agricultural purposes.

Regarding the preferred alternatives, Alternative 3 for MUN and Alternative 3 for AGR, there is sufficient evidence that the Lower Tulare Member is a confined aquifer. Therefore, de-designation of the MUN beneficial use from groundwater of the Upper Member of the Tulare Formation, although warranted by the high TDS concentrations, is unnecessary for the purposes of this project.

Also, under Alternative 3 regarding MUN and Alternative 3 regarding AGR designation, the current MUN and AGR beneficial use designations in the described Project Zone would be removed in recognition of the fact that these designations are not appropriate given the quality of groundwater in the two formations. Injection of produced water to these formations through the four injection wells would continue according to the UIC permits and regulations. In addition, Seneca would be relieved of the existing responsibility under the Basin Plan to protect groundwater that, because of its low quality, is already considered non-USDW under the federal Safe Drinking Water Act and does not meet the definitions of MUN and AGR use.

PROPOSED ACTION:

The proposed action (implementation of MUN Alternative 3 and AGR Alternative 3, as described in the Basin Plan Amendment Staff Report) includes the following:

De-designate MUN as a beneficial use (based on Exception Criterion 1a of the Sources of Drinking Water Policy, TDS exceeding 3,000 mg/l) from groundwater in the Lower Tulare and Etchegoin Formations beneath Sections 14, 15, 22, 23, 26, and 27, Township 27S, Range 12E, Mount Diablo Baseline and Meridian, southern Lost Hills Oil Field, Kern County, California (Figure 1-11 and Figures 4-1 and 4-2).

De-designate AGR as a beneficial use (based on groundwater TDS exceeding 5,000 mg/l as a narrative water quality objective) from groundwater in the Lower Tulare Member and the Etchegoin Formation

beneath Sections 14, 15, 22, 23, 26, and 27, Township 27S, Range 12E, Mount Diablo Baseline and Meridian, southern Lost Hills Oil Field, Kern County, California (Figure 1-11 and Figures 4-1 and 4-2).

Proposed Program of Implementation

Implementation of this Basin Plan Amendment is an administrative control that would result in no change to existing oil field operations and no change at the ground surface, the shallow formation, or the de-designated formations. Seneca would continue to inject produced water into the confined aquifers as is currently underway and would be relieved of responsibility to protect MUN and AGR beneficial uses which do not exist due to poor groundwater quality within the proposed de-designation zone. Injected produced waters would remain contained within the deep formations and the six sections that comprise the Project Area/Project Zone as demonstrated by the model in the Technical Report. The SB 4 monitoring program will continue.

Groundwater Quality Monitoring

Groundwater quality in the area is currently being monitored, and will continue to be monitored, under the SB 4 monitoring program. In addition, implementation will rely on general monitoring under other regulatory programs, such as the irrigated lands program.

WQO Compliance Point for Proposed Actions

The de-designation boundary associated with the two preferred alternatives (MUN Alternative 3 and AGR Alternative 3) is a three-dimensional (3D) space. The upper boundary between the Lower and Upper Members of the Tulare Formation is formed by an impermeable layer, the Mid-Tulare Shale, which produces a confining barrier to the upward migration of groundwater. According to the Technical Report, the thickness of these layers is variable. Vertically, the point of compliance at which groundwater is required to be consistent with natural background water quality conditions (established by the SB 4 monitoring program outside the de-designated area) is at the top of the Mid-Tulare Shale or bottom of the Upper Tulare Member. The horizontal boundaries of the six de-designated sections establish the compliance point outside of which groundwater quality must be consistent with natural background, which as reflected in the Technical Report is of lower quality than the standards for MUN and AGR beneficial uses.

Direct and Indirect Physical Environmental Effects

Implementation of the proposed action would result in de-designation of MUN and AGR (agricultural irrigation and livestock watering) beneficial uses within the Lower Tulare Member and the Etchegoin formation (the vertical boundaries) within the defined horizontal boundaries indicated on Figure 1-11 and Figures 4-1 and 4-2. Because the preferred MUN and AGR alternatives use the same beneficial use de-designation boundary (i.e., the boundaries shown on Figure 1-11 and Figures 4-1 and 4-2 are identical for both de-designations), as there exists only a single 3D space in which both beneficial uses would be de-designated.

The salinity thresholds used as a basis for de-designation are very high for municipal and agricultural uses. Salinity levels of the ambient groundwater within the proposed de-designation boundary exceed 10,000 mg/L TDS. As discussed in the Technical Report and the Technical Memorandum of June 25, 2021, groundwater has not been used and is not considered a viable source of municipal or irrigation water in

the Proposed De-designation Area. There is no evidence of historical grazing and related use of groundwater for stock watering in the Proposed De-designation Area, and such use is not anticipated in the future. Any future ground crop use in the Proposed De-Designation Area would have to rely on surface water or treated wastewater. Therefore, no known groundwater use (within the horizontal boundary and vertical boundary [Project Zone], which is the vertical area within the Lower Tulare Member and the Etchegoin Formation) for municipal or agricultural uses is occurring. No disadvantaged communities and municipalities surrounding the proposed horizontal boundary currently use the groundwater within the defined horizontal and variable vertical boundaries for municipal and domestic purposes and there is no foreseeable potential for any such communities and municipalities to use or treat this groundwater in the future.¹ Because the groundwater is not currently used or proposed for use for these beneficial uses within the vertical bounds of the two aquifers that would be affected, de-designation of the MUN and AGR beneficial uses within the vertical boundaries of the two formations and within the horizontal boundary would not result in a known or substantive change in the water use. Therefore, no direct or indirect physical substantial environmental effect would be expected as a result of the proposed action. Any new projects would be subject to a separate environmental evaluation under CEQA.

Public Comments Received

The Central Valley Regional Water Quality Control Board held a public scoping meeting on 30 November 2020. Stakeholders and interested parties were notified of the 30 November 2020 scoping meeting through announcements sent on [29 October 2020] by the Basin Planning and CV-SALTS electronic email lists. Tribal notifications of the scoping meeting were sent by regular U.S. mail on [6 March 2020, and no tribes requested consultation on the project]. The public comment period for the scoping meeting ended at 12 PM on 30 April 2015 when the meeting concluded. No comment letters were received, and no public comments were made during the public scoping meeting, except for questions as to where additional information, such as technical reports, could be found. Individuals requesting this information were directed to where they could obtain copies of the reports.

- 9. Surrounding Land Uses: Oil and gas exploration and production operations cover most of the Project Area and surrounding to the north and northwest. Agricultural uses (orchards) are located on Sections 14, 23, and 27 of the Project Area, and to the east and south of the Project Area.
- 10. Other public agencies whose approval is required: (e.g., permits, financing approval, or participation agreement) This is a Basin Plan amendment that will require approval by the State Water Resources Control Board and the Office of Administrative Law before going into effect. California Department of Fish and Wildlife Null Impact Decision is also required.

¹ The Lost Hills Utility District, which provides water to the Lost Hills community, confirmed that local groundwater at Lost Hills is of poor quality and is not suitable either for municipal or agricultural use, and the District has no plans to install wells locally. (Reese, A., personal communication, 7/22/2021).

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

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

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|---|---|---|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture and Forest Resources | <input type="checkbox"/> Geology / Soils |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Hydrology / Water Quality |
| <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Hazards & Hazardous Materials | <input type="checkbox"/> Noise |
| <input type="checkbox"/> Land Use / Planning | <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Population / Housing | <input type="checkbox"/> Public Services | <input type="checkbox"/> Mandatory Findings of Significance |
| <input type="checkbox"/> Transportation / Traffic | <input type="checkbox"/> Utilities / Service Systems | <input type="checkbox"/> None With Mitigation |
| | <input type="checkbox"/> Air Quality | |

EVALUATION OF THE ENVIRONMENTAL IMPACTS IN THE CHECKLIST

1. The Board must complete an environmental checklist prior to the adoption of plans or policies for the Basin/208 Planning program as certified by the Secretary for Natural Resources. The checklist becomes a part of the Substitute Environmental Documentation (SED).
2. For each environmental category in the checklist, the Board must determine whether the project will cause any adverse impact. If there are potential impacts that are not included in the sample checklist, those impacts should be added to the checklist.
3. If the Board determines that a particular adverse impact may occur as a result of the project, then the checklist boxes must indicate whether the impact is {Potentially Significant,” “Less than Significant with Mitigation Incorporated,” or “Less than Significant.”
 - a. “Potentially Significant Impact” applies if there is substantial evidence that an impact may be significant. If there are one or more “Potentially significant Impact” entries on the checklist, the SED must include an examination of the feasible alternatives and mitigation measures for each such impact, similar to the requirements for preparing an environmental impact report.
 - b. “Less than Significant with Mitigation Incorporated” applies if the Board or another agency incorporates mitigation measures in the SED that will reduce an impact that is “Potentially Significant” to a “Less than Significant Impact.” If the Board does not require the specific mitigation measures itself, then the Board must be certain that the other agency will in fact incorporate those measures.

- c. “Less than Significant” applies if the impact will not be significant, and mitigation is therefore not required.
 - d. If there will be no impact, check the box under “No Impact.”
4. The Board must provide a brief explanation for each “Potentially Significant,” “Less than Significant with Mitigation Incorporated,” “Less than Significant,” or “No Impact” determination in the checklist. The explanation may be included in the written report described in section 3777(a)(1) or in the checklist itself. The explanation of each issue should identify” a) the significance criteria or threshold, if any, used to evaluate each question: and(b) the specific mitigation measure(s) identified, if any, to reduce the impact to less than significant. The Board may determine the significance of the impact by considering factual evidence, agency standards, or thresholds. If the “No Impact” box is checked, the Board should briefly provide the basis for that answer. If there are types of impacts that are not listed in the checklist, those impacts should be added to the checklist.
5. The Board must include mandatory findings of significance if required by CEQA Guidelines section 14054.
6. The Board should provide references used to identify potential impacts, including a list of information sources and individuals contacted.

1 AESTHETICS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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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 building within a state scenic highway?
- c) Substantially degrade the existing visual character or quality of the site and its surroundings?
- d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

1.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial uses from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field.

Implementation of the proposed action will not result in any physical changes at the ground surface. No residences exist within the Project Area, and the groundwater in the subject aquifers is not used for municipal or agricultural uses. The action will not require any ground disturbance, vegetation removal, development of structures/facilities, or any other physical effect that would be visible. Project operation would not include any new sources of light or nighttime glare, nor would implementation affect the integrity of any State Scenic Highway. The project would result in **no impact**.

2 AGRICULTURE AND FOREST RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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II. AGRICULTURE AND FOREST RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997), as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, and are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

Would the project:

- a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?
- b) Conflict with existing zoning for agricultural use or a Williamson Act contract?
- c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?
- d) Result in the loss of forest land or conversion of forest land to non-forest use?
- e) Involve other changes in the existing environment, 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?

2.1.1 Discussion

No forest land exists at the ground surface above the Project Area. Because the Project Area does not contain forest lands, the proposed action would have **no impact** on forest land.

The Project Area does not contain any towns or communities. The closest town is Lost Hills, California, located 2 miles north of the Project Area. The groundwater at the affected vertical depths for AGR currently contains very high levels of TDS such that groundwater at these depths is not used for irrigation or livestock watering. Implementation of the proposed action would de-designate the AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. Because groundwater for these depths, and the shallower depths, within the Project

Area is not currently used for irrigation purposes, and because surface water could be conveyed from outside the de-designation boundary as is currently practiced, the proposed project would not adversely affect current agricultural operations and would not convert important farmland to a non-agricultural use. The proposed action would also not conflict with a Williamson Act contract. The proposed action would result in no impact to agricultural resources.

3 AIR QUALITY

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

3.1.1 Discussion

The Project Area is located in Kern County. The Project Area is located within the area regulated for air quality standards attainment by the San Joaquin Valley Air Pollution Control District (SJVAPCD). SJVAPCD is considered an attainment area for the federal 8-hour Carbon Monoxide (CO) standard and an extreme ozone nonattainment area for the federal 8-hour ozone standard.

As previously discussed, the proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. No residences exist within the Project Area and the groundwater at the affected depths is not currently used for municipal or agricultural uses. Current irrigation practices, relying on other water sources, would continue.

Implementation and operation of the proposed action would not involve any new or changed activities that would produce air pollutants. Local air quality plans established by SCVAPCD would not be affected nor would any sensitive receptors in the Project Area experience an increase in concentrations of air pollutants. There would be **no impact**.

4 BIOLOGICAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES				
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?				
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?				
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, 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?				
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?				

4.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. Implementation of the proposed action would not require any ground disturbance, vegetation removal, or development/operation of structures or facilities, or any other physical effect that could negatively impact biological resources. The removal of MUN and AGR as beneficial groundwater uses would not produce a physical change that would conflict with any Habitat Conservation Plans, Natural Community Conservation Plans, or local policies designed to protect biological resources. No adverse impacts would

occur to federally- or State-listed species as a result of project implementation, nor would the proposed action deplete biodiversity in aquatic and riparian habitats. There would be **no impact**.

5 CULTURAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES				
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as define in Section 15064.5?				
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?				
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				
d) Disturb any human remains, including hose interred outside of formal cemeteries?				

5.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. There are no residences in the Project Area and the groundwater within the subject aquifers is not currently used for municipal or agricultural uses. There is always the possibility of archaeological, paleontological, and cultural artifacts that might be found in the Project Area. If previously undiscovered cultural resources are found, these resources would be evaluated and mitigation would be required that would result in the recording, protecting, and/or preservation of these resources. There would be **no impact**.

6 GEOLOGY AND SOILS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS				
Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)				
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, as updated), creating substantial 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?				

6.1.1 Discussion

The 2002 Alquist-Priolo Earthquake Fault Zoning Map shows that the Project Area is not located within any Earthquake Fault Zones; Landslide and Liquefaction Zones; or Fault Zones, Landslide and Liquefaction Zones (California Department of Conservation 2002). The Project Area is located in Kern County, inland of the San Andreas Fault. The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. There are no residences in the Project Area and groundwater in the Project Zone is not used for municipal or agricultural purposes. The proposed project would not result in changes to rates of groundwater extraction; therefore, no impacts related to ground subsidence would result. Implementation of the proposed action would not require any ground disturbance, vegetation removal, or development/operation of structures or facilities, or any other physical change that would expose

people or structures to seismic activity or unstable soils. The use of septic tanks or additional wastewater disposal systems is not a component of the proposed action. The Project Area does not contain any locations subject to potential strong seismic shaking, landslides, or liquefaction; therefore, there is **no impact**.

7 GREENHOUSE GAS EMISSIONS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. 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 an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				

7.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. There are no residences in the Project Area and groundwater in the Project Zone is not used for municipal or agricultural purposes.

Implementation and operation of the proposed action would not involve activities that would produce GHG emissions. There would be **no impact**.

8 HAZARDS AND HAZARDOUS MATERIALS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS				
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or 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 on-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 for people residing or working in the project area?				
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				

8.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. There are no residences in the Project Area and groundwater in the Project Zone is not used for municipal or agricultural purposes. Implementation of the proposed action would not require any ground disturbance, vegetation removal, or development/operation of structures or facilities, or any other

physical effects that would generate or require the handling of hazardous materials. There would be **no impact**.

9 HYDROLOGY AND WATER QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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IX. HYDROLOGY AND WATER QUALITY

Would the project:

- a) Violate any water quality standards or waste discharge requirements?
- b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?
- c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on or offsite erosion or siltation?
- d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or offsite flooding?
- e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
- f) Otherwise substantially degrade water quality?
- g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?
- i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?
- j) Result in inundation by seiche, tsunami, or mudflow?

9.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. There are no

residences in the Project Area and groundwater in the Project Zone is not used for municipal or agricultural purposes. Implementation of the proposed action would not require any ground disturbance, vegetation removal, or development/operation of structures or facilities, or any other physical effects on water quality or hydrology.

The proposed action does not include the alteration or adjustment of salinity levels in the Project Area.

The de-designation of MUN and AGR uses would not create a physical impact on water quality and supply, as such uses are already non-existent in the Project Area.

Hydrogeologic data and modelling presented in the Technical Report show that the deep aquifers that comprise the Project Zone are stratigraphically confined beneath the shallow aquifer, and that injected waters will remain horizontally contained within the Project Area for at least 100 years.

Water supply for agriculture within the project area is currently provided by surface water supplied by the Belridge Water Storage District De-designation would not alter this use or these supply sources. There would be **no impact**.

10 LAND USE AND PLANNING

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

10.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. There are no residences in the Project Area and groundwater in the Project Zone is not used for municipal or agricultural purposes. Implementation of the proposed action would not require any ground disturbance, vegetation removal, or development/operation of structures or facilities, or any other physical change that would divide an established community, or conflict with a Habitat conservation Plan, Natural Community Conservation Plan, or policy adopted to mitigate an environmental effect. The proposed action will not require current land uses to be modified. The proposed action would not result in any land use changes; therefore, there is **no impact**.

11 MINERAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. MINERAL RESOURCES				
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				
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?				

11.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. While oil and gas resources exist in the Lost Hills Oil Field, the de-designation of MUN and AFR beneficial uses would not affect the availability or accessibility of these mineral resources. Therefore, implementation of the proposed action would not require any ground disturbance, vegetation removal, or development/operation of structures or facilities, or any other physical change that would affect mineral resources. Project completion would not alter the availability of any known mineral resources or conflict with a mineral resource recovery site. There would be **no impact**.

12 NOISE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. NOISE				
Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?				
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?				
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?				
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				

12.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. There are no residences in the Project Area and groundwater in the Project Zone is not used for municipal or agricultural purposes.

The proposed project would not generate increased noise. There would be **no impact**.

13 POPULATION AND HOUSING

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

13.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. There are no residences in the Project Area and groundwater in the Project Zone is not used for municipal or agricultural purposes. Implementation of the proposed action would not require any ground disturbance, vegetation removal, or development/operation of structures or facilities. The proposed action would not result in addition or removal of any homes and therefore, would not result in an increase in population or in the displacement of people or homes. There would be **no impact** on population and housing.

14 PUBLIC SERVICES

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

14.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. The Project Area is non-residential and there are no parks or schools. There are no plans to put any parks or schools in the Project Area. Police and fire protection are provided by the County and changing the designated beneficial uses of groundwater will not change or increase the need for fire or police protection. The de-designation of MUN and AGR as beneficial water uses would not create a physical effect that would cause an environmental impact or result in the obstruction of service-designated routes or roadways. Therefore, implementation of the proposed action would not require any ground disturbance, or development/operation of additional structures or facilities for the purpose of maintaining public services. There would be **no impact**.

15 RECREATION

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. RECREATION				
Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				

15.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. There are no residences in the Project Area and groundwater in the Project Zone is not used for municipal or agricultural purposes. Therefore, implementation of the proposed action would not require any ground disturbance, or development/operation of recreational structures or facilities. Project implementation would no result in an increase in recreational activities or increase demand for new recreational facilities. There would be **no impact**.

16 TRANSPORTATION/TRAFFIC

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC				
Would the project:				
a) Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				
b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?				
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				
e) Result in inadequate emergency access?				
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				

16.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. There are no residences in the Project Area and groundwater in the Project Zone is not used for municipal or agricultural purposes. Therefore, implementation of the proposed action would not require any ground disturbance, or development/operation of structures or facilities, or any other physical effect that could adversely impact transportation. The de-designation of MUN and AGR beneficial uses would not create an increase in traffic flow, or conflict with any traffic-related plans or policies. Project completion would have no effect on air traffic. There would be **no impact**.

17 UTILITIES AND SERVICE SYSTEMS

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

17.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. There are no residences in the Project Area and groundwater in the Project Zone is not used for municipal or agricultural purposes. Therefore, implementation of the proposed action would not require any ground disturbance, or development/operation of structures or facilities for the purpose of increased utility usage. Project activities would not include the construction of supplementary facilities or additions to existing facilities. Water supply for irrigation is already provided by alternative sources, and de-designation would not alter this use. Project implementation would not generate solid waste; therefore, there would be no conflict with federal, state, and local policies regarding solid waste. There would be **no impact**.

18 MANDATORY FINDINGS OF SIGNIFICANCE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
Would the project result in:				
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, reduce the number or restrict the range of an endangered, rare, or threatened 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 project, the effects of other current projects, and the effects of probable future projects.)				
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?				
Authority: Public Resources Code Section 21083, 21083.5.				
Reference: Government Code Sections 65088.4.				
Public Resources Code Sections 21080, 21083.5, 21095; <i>Eureka Citizens for Responsible Govt. v. City of Eureka</i> (2007) 147 Cal.App.4th 357; <i>Protect the Historic Amador Waterways v. Amador Water Agency</i> (2004) 116 Cal.App.4th at 1109; <i>San Franciscans Upholding the Downtown Plan v. City and County of San Francisco</i> (2002) 102 Cal.App.4th 656.				

18.1.1 Discussion

The proposed action includes de-designation of MUN and AGR beneficial use from deep aquifers beneath six sections of land within the administrative boundary of the Lost Hills Oil field. There are no residences in the Project Area and groundwater in the Project Zone is not used for municipal or agricultural purposes. Implementation of the proposed action would not require any ground disturbance, or development/operation of structures or facilitates. The abovementioned activities do not require the physical alteration of existing structures or habitats and would not result in the loss of an endangered, threatened, or listed species, or any historically significant resources. There would be no cumulative considerable adverse effects. The project will have no environmental effects that will cause substantial adverse effects on human beings either directly or indirectly. Implementation of the proposed action would not affect water quality of the Project Area. There would be **no impact** on fish or wildlife species, cultural resources, or humans.

19 REFERENCES

[Kern County, California, Department of Planning and Development Services, Zoning Map 52,](https://kernpublicworks.com/maps/zone-maps/)
(<https://kernpublicworks.com/maps/zone-maps/>), accessed 1 June 2020.

[Kern County, California, General Plan Land Use for Western Kern County,](https://databasin.org/datasets/a8cb1605018c4e23bdfd189e9c4ae6aa)
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Seneca Resources Corporation, 2017, Technical Report in Support of Petition for Beneficial Use De-
Designation and Basin Plan Amendment, South Lost Hills Oilfield, Lower Tulare and Etchegoin
Formations, revised April 16, 2017.

[California Department of Conservation, 2002, Earthquake Zones of Required Investigation,](https://maps.conservation.ca.gov/cgs/EQZApp/app/)
(<https://maps.conservation.ca.gov/cgs/EQZApp/app/>), accessed 2 June 2020.

FIGURES



