FINAL
Initial Study/Mitigated Negative Declaration

Smith Reservoir Replacement Project

March 2024

194-0200-0033

Prepared for

Serrano Water District
18021 Lincoln Street
Villa Park, CA 92861

Prepared by

TETRA TECH
17885 Von Karman Avenue, Suite 500
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Acronyms and Abbreviations

AQMP	Air Quality Management Plan
Basin	South Coast Air Basin
CEQA	California Environmental Quality Act
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
District	Serrano Water District
GHG	greenhouse gas
MG	million gallon
Project	Smith Reservoir Replacement Project
RCPG	Regional Comprehensive Plan and Guide
REL	Reference Exposure Level
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
TAC	toxic air contaminant
Tetra Tech	Tetra Tech, Inc.

1.0 INITIAL STUDY/MITIGATED NEGATIVE DECLARATION PUBLIC REVIEW

In accordance with the California Environmental Quality Act (CEQA) Section 21091 and State CEQA Guidelines Section 15073, the Initial Study/Mitigated Negative Declaration (IS/MND) for the Smith Reservoir and Pump Station Project (Project) was circulated for a 30-day public review and comment period from December 12, 2023 to January 10, 2024. The subject of this IS/MND is a project to replace the existing 6-million-gallon (MG) Smith Reservoir and Pump Station in Orange County, California. The replacement will include a below grade cast-in-place concrete reservoir that will provide storage capacity to meet operational, fire, and emergency water demands for the Serrano Water District (hereafter referred to as the District).

1.1 Availability of Initial Study/Mitigated Negative Declaration

The draft IS/MND was available for review at the following locations:

- Serrano Water District, 18021 Lincoln Street, Villa Park, California, 92861
- Serrano Water District website, https://serranowater.org/
- Villa Park Public Library, 17865 Santiago Blvd, Villa Park, CA 92861
- State Clearinghouse CEQAnet Web Portal, https://ceqanet.opr.ca.gov/2023120317

1.2 Project Description

The District's Smith Reservoir and Pump Station is located approximately southwest of the intersection of Taft Avenue and Sycamore Street, in the City of Villa Park in north Orange County. The Project site is in the east-central side of Villa Park, with site access from Taft Avenue on the northern end of the site or Sycamore Street on the eastern end of the site. The site is surrounded by small estate residential zoning, with four large houses directly adjacent to the site on the west and south sides. In addition, a valve vault and connection into existing City of Orange system will be constructed in Cannon Street at the intersection of Taft Avenue and Cannon Street. The valve vault site is also surrounded by small estate residential zoning.

The District was established in 1876 and provides potable water to the city of Villa Park and a small portion of the city of Orange. The District receives its water supply from local surface water that is stored in Irvine Lake and groundwater from three wells located within the city of Villa Park. The District provides water for a population of 6,500 covering approximately 4.7 square miles, serving primarily large lot single family homes and one shopping center. The District has 43 miles of pipeline, three wells, a treatment plant, and two reservoirs. All of the District's water is treated at the Walter E. Howiler, Jr. Water Filtration Plant, which has an average production rate of 2.2 MG per day (Serrano Water District 2023).

Half of the existing Smith Reservoir and the Pump Station were built in 1970. The reservoir comprises two below-grade concrete tanks (east and west) having a total capacity of 6.0 MG, according to the Existing Site Plan. The 3.0 MG west tank was built first in 1970 and the east tank was built in 1985 to provide an additional 3.0 MG of capacity to the reservoir. The east and west tanks have an approximate finished floor elevation of 371 feet and high-water level of 390 feet. The pump station consists of three 1,000 gallons-per-minute vertical turbine pumps, each equipped with 125

horsepower (HP) motors for the upper zone and three 1,650 gallons-per-minute vertical turbine pumps with two 100 HP motors and one 125 HP motor for the lower zone.

In 2015 and 2016, the District evaluated the Smith Reservoir through two studies: the Smith Reservoir Structural Evaluation (Carollo Engineers 2015) and the Smith Reservoir Bypass Preliminary Design – East Tank Operation Report (Carollo Engineers 2016). The structural evaluation identified numerous seismic vulnerabilities and deficient conditions that would warrant either a retrofit/rehabilitation or complete replacement of the reservoir. The west tank has concrete spalling, cracking, and corroded columns, while the east tank has some cracks in the walls. Through these studies, it was determined that the structural deficiencies observed in the east tank are relatively minor compared to those in the west tank.

In 2021, an evaluation (Brown and Caldwell 2021) concluded that the Smith Reservoir is reaching the end of its useful life and that the pump station experienced damage from a recent surge event causing yard piping to rupture at the reservoir site. The site is essential to the supply of reliable water through the District system. Therefore, replacement of the reservoir and pump station is required to be done in a timely manner while continuing to stay in operation to supply this need.

The proposed Project includes the following primary components:

- Construction, occurring in two phases: Phase 1 involves the East Tank and pump station; Phase 2 involves the West Tank. See **Section 2.2.3**.
- Demolition of portions of the existing below ground reservoir tanks and foundation. Existing west reservoir walls will be left in place to provide shoring.
- Two belowground (2.0 MG and 3.0 MG) cast-in-place concrete reservoirs with an high water level of 390 feet and associated pipelines including separate inlet and outlet pipelines, an overflow, a drain pipeline, bypass piping and associated valving.
- A replacement pump station equipped with four vertical-turbine, constant speed pumps for the Upper Zone and three vertical-turbine variable-frequency drive pumps for the Lower Zone.
- Construction of a valve vault and connection into existing City of Orange system in Cannon Street, at intersection of Taft Avenue and Cannon Street.
- An emergency diesel generator.
- Site electrical service, controls, and telemetry improvements.

The 1.7-acre site will be completely enclosed by the existing 8-foot-high block wall on the east and north side and the proposed 10-foot-high block wall on the west and south sides. Secure access points to the site consist of the existing rolling gates along Sycamore Street, in addition to the proposed manual rolling gate at the northwest corner of the site on Taft Avenue. Although security cameras will not be installed as part of this project, conduits will be supplied at critical surveillance points for future installation.

1.3 Final Initial Study/Mitigated Negative Declaration

The final IS/MND consists of:

- The draft IS/MND (incorporated into this final IS/MND by reference);
- Two public comment letters that were received during the public review period. An additional email was received after the comment review period. Responses to these letters are included in **Section 2** and the full comment letters are provided in Appendix A;
- Clarifications and modifications to the draft IS/MND (see **Section 3**);
- Project Impacts and Mitigation Measures (see **Section 4**); and
- The Mitigation Monitoring and Reporting Plan (see Appendix B).

These contents constitute the final IS/MND, to be presented to the District for certification and approval.

2.0 RESPONSE TO COMMENTS

2.1 Overview

During the public review period for this project, two comment letters were received: one from the City of Orange and another from the South Coast Air Quality Management District (SCAQMD). However, none of the recommendations provided in these letters identify any basis for new significant impacts, nor do they provide any "significant new information" that would require recirculation of the IS/MND or preparation of an Environmental Impact Report.

2.2 List of Commenters

The comment letters received on the draft IS/MND were signed by the individuals identified below:

- Robert Garcia, Senior Planner, City of Orange
- Sam Wang, Program Supervisor, CEQA, IGR, Planning, Rule Development & Implementation, SCAQMD

A comment email was received on the draft IS/MND by the individual identified below:

- Yen Tran, P.E., Associate Sanitary Engineer, Division of Drinking Water, State Water Resources Control Board

2.3 List of Commenters

This section excerpts those comments received that specifically pertain to the scope and content of the IS/MND. Copies of the comment letters are included in Appendix A.

2.3.1 Comment Letter 1

Robert Garcia, Senior Planner, City of Orange

Comment 1-1

The City is currently in the engineering/environmental phase for the Cannon Street Widening Project with construction anticipated to start mid to late 2025. Construction is expected to have a duration of approximately eight months.

The Cannon Street Widening Project proposes to widen portions of Cannon Street between Santiago Canyon Road and Serrano Avenue in the City of Orange. The proposed project will widen the roadway to accommodate a third northbound lane from approximately 500-feet north of Santiago Canyon Road to Serrano Avenue where it will join the existing dedicated right-turn lane to eastbound Serrano Avenue. On the west side of the street, a sidewalk runs from the Santiago Creek Bridge north to Taft Avenue. North of Santiago Creek, the roadway will be widened to the west by approximately 6-8 feet.

Based on **Figure 2-13**, Orange Flow Control Valve Vault Site Location, there is a potential for a conflict between the two projects which may require coordination. For your convenience, we are providing a copy of the preliminary 65% drawing of the area in question for your records. Please feel free to mark up the corresponding area of the drawing where the intended connection will be made and where the

new water line along Taft will be located. Please contact Youichi Nakagawa, Senior Civil Engineer, ynakagawa@cityoforange.org, for coordination between projects in an effort to avoid any potential conflicts.

For any work done in the City of Orange right-of-way an Encroachment Permit will be required. Please contact the City's Development Services Division in the Public Works Department.

Response 1-1

The District will for coordinate with the City of Orange an effort to avoid any potential conflicts between projects.

2.3.2 Comment Letter 2

Sam Wang, Program Supervisor, CEQA, IGR, Planning, Rule Development & Implementation, SCAQMD

Comment 2-1

Staff reviewed the MND and notes that construction Phase 1 includes:

- installation of a new emergency standby generator (diesel fueled) and
- construction of a generator room that is in a different location than the existing generator building (see **Figure 2-6** from MND).

Staff also notes that construction Phase 2 includes:

- removal and disposal of the existing emergency standby generator (diesel fueled) and
- removal and disposal of the existing generator building.

For the Proposed Project location, South Coast AQMD records show a facility ID # of 107461. Under this ID # is an active South Coast AQMD air permit (permit #F79108) for one internal combustion engine of 764 brake horsepower (BHP), diesel fueled, and driving an emergency generator. The Lead Agency states in the MND that a South Coast AQMD construction permit will be required. From information provided in the MND, however, Staff is unable to determine what type of South Coast AQMD air permit application will be required for the new emergency standby generator proposed to be installed during construction Phase 1 (e.g. application for a new permit to operate, application for a permit modification, application for a change of conditions, etc.).

If implementation of the Proposed Project would require the use of new stationary sources, including but not limited to emergency generators, fire water pumps, boilers, etc., air permits from South Coast AQMD will be required and the role of South Coast AQMD would change from a Commenting Agency to a Responsible Agency under CEQA. In addition, if South Coast AQMD is identified as a Responsible Agency, per CEQA Guidelines Section 15086, the Lead Agency is required to consult with South Coast AQMD. Furthermore, CEQA Guidelines Section 15096 sets forth specific procedures for a Responsible Agency, including making a decision on the adequacy of the CEQA document for use as part of evaluating the applications for air permits. For these reasons, the Final MND should include a

discussion about any new stationary equipment requiring South Coast AQMD air permits and identify South Coast AQMD as a Responsible Agency for the Proposed Project.

The Final MND should also include calculations and analyses for construction and operation emissions for any new stationary sources, as this information will also be relied upon as the basis for the permit conditions and emission limits for the air permit(s). Please contact South Coast AQMD's Engineering and Permitting staff at (909) 396-3385 for questions regarding what types of equipment would require applications for new air permits. For more general information on permits, please visit South Coast AQMD's webpage at: http://www.aqmd.gov/home/permits.

The Lead Agency is recommended to revise the CEQA analysis to address the aforementioned comments and provide the necessary evidence to sufficiently support the conclusions reached. If the requested information and analysis are not included in the final CEQA document, either the Final MND or other type of CEQA document, the Lead Agency should provide reasons for not doing so. Pursuant to California Public Resources Code Section 21092.5(b) and CEQA Guidelines Section 15074, prior to approving the Proposed Project, the Lead Agency shall consider the MND for adoption together with any comments received during the public review process and notify each public agency when any public hearings are scheduled. Please provide South Coast AQMD with written responses to all comments contained herein prior to the adoption of the Final MND. When responding to issues raised in the comments, detailed reasons supported by substantial evidence in the record to explain why specific comments and suggestions are not accepted must be provided. In addition, if the Lead Agency decides to adopt the Final MND, please provide South Coast AQMD with a notice of any scheduled public hearing(s).

Response 2-1

The Project involves the replacement of the existing 500 kilowatt (kW) generator with a proposed 800 kW emergency generator for operations. The new generator will be subject to SCAQMD Rule 118.1 (Public Safety Provisions for Stationary Emergency Standby Engines), Regulation II (Permits), and Regulation 13 (New Source Review). The emergency generator will limit the size and operating hours to remain below the Rule 3001 Title V applicability threshold of 100,000 tons per year CO_2e and 100 tons per year of greenhouse gasses on a mass basis. The project will require air permits for construction and for operation of the replacement emergency generator. Edits will be made as indicated in **Section 3**.

The Project is a replacement project and operational emissions from the proposed project would largely remain the same as existing operations. Analysis will be added to the Final IS/MND for clarification purposes as to the operational emissions associated with the replacement emergency generator, see **Section 3**.

2.3.3 Comment Letter 3

Yen Tran, P.E., Associate Sanitary Engineer, Division of Drinking Water, State Water Resources Control Board

Comment 3-1

This project is subject to be permitted by us prior to be placed in operation. Since the project includes 2 phases (Phase 1 for a replacement of 3.0 East tank and pump station with a new 2.0 MG and a pump station starting 4th qtr of 2024 and last 14 months; Phase 2 for a replacement of 3.0 West tank with a new 3.0 MG starting 4th qtr of 2025 and last 12 months). Our plan is to issue one single permit amendment for this project just before the East Tank is placed in service. This permit amendment will include permit provisions for the West Tank. Attached are a permit amendment application form, reservoir data sheet template, disinfection data sheet template, and pump data sheet template.

Response 3-1

Comment noted.

Comment 3-1

This project is subject to be permitted by us prior to be placed in operation. Since the project includes 2 phases (Phase 1 for a replacement of 3.0 East tank and pump station with a new 2.0 MG and a pump station starting 4th qtr of 2024 and last 14 months; Phase 2 for a replacement of 3.0 West tank with a new 3.0 MG starting 4th qtr of 2025 and last 12 months). Our plan is to issue one single permit amendment for this project just before the East Tank is placed in service. This permit amendment will include permit provisions for the West Tank. Attached are a permit amendment application form, reservoir data sheet template, disinfection data sheet template, and pump data sheet template.

Response 3-1

Comment noted.

Comment 3-2

Please be sure that the project comply with California water works standards, specifically, NSF 61 certified for concrete used to construct the reservoirs. **Concrete used to construct the concrete reservoir must be ANSI/NSF Standard 61 certified (you can submit to us a waiver request for the concrete mix if the cement and admixtures used in the concrete mix for the proposed reservoir are ANSI/NSF Standard 61 certified. Please be aware that a waiver request and supporting documents must be submitted to us for review and approval prior to pouring concrete to construct the reservoirs.)**

Response 3-2

Comment noted. The Project will comply with California water works standards.

Comment 3-3

Please provide us with a copy of 90% design plan and then 100% design plan for this project when they are available.

Response 3-3

Comment noted. The District will provide the Division of Drinking Water with a copy of 90% design plan and then 100% design plan for the Project when they are available.

Comment 3-4

Currently, volume of water stored in Smith Reservoir (3.0 MG West Tank and 3.0 MG East Tank) with baffling factor of 0.2 is used in CT calculation for the WEHWFP. During the construction, water stored in the 3.0 West Tank (during Phase 1 construction) or the 2.0 East tank (during phase 2 construction) will be used in CT calculation (this means the CT received from the Sith reservoir during construction period is a half or less than a half of CT currently obtained from the existing Smith Reservoir). We understand that it is not a problem if the WEHWFP is on ozone. This may be an issue during a transition period from ozone to chlorine if there is an ozone failure at anytime during the construction period. Please works on your CT calculation during transition from ozone to chlorine using some water levels in the new 2.0 East Tank to determine what are the minimum water level and minimum chloramine residual in the 2.0 MG East Tank must be remained to meet the CT required.

Response 3-4

Comment noted.

Comment 3-5

Along with the permit amendment application, please also provide us with your proposed operation of the East Tank and West Tank (in parallel or series or either way), your predicted baffling factor, locations where chlorine residuals are sampled and how their CT are calculated.

Response 3-5

Comment noted. The District will provide the Division of Drinking Water with the proposed operation of the East Tank and West Tank (in parallel or series or either way), the predicted baffling factor, and the locations where chlorine residuals are sampled and how their CT are calculated.

3.0 CLARIFICATIONS AND MODIFICATIONS TO THE IS/MND

The following clarifications and modifications are intended to update the draft IS/MND in response to the comments received during the public review period. These modifications clarify, amplify, or make insignificant changes to the IS/MND. These revisions to the IS/MND have not resulted in new significant impacts or mitigation measures or increased the severity of an impact. None of the criteria for recirculation set forth in the CEQA Guidelines section 15088(a) have been met, and recirculation of the IS/MND or preparation of an Environmental Impact Report is not required.

The changes to the draft IS/MND are listed by section and page number. Text to be removed is shown in this chapter with a strikethrough line, while text to be added is shown with bold and italics.

Acronyms within quoted sections are not defined, as they were not defined at this location within the quoted text. All acronyms included within quoted sections can be found in this document's Acronyms and Abbreviations list.

Section	**2.3. Other Public Agencies Whose Approval is Required**
Page	**Clarification/Revision**
2-8	1st bullet - South Coast Air Quality Management District (SCAQMD) – construction permit***, permit to operate replacement emergency generator***.

Section	**3.4.3 Air Quality**
Page	**Clarification/Revision**
3-11	2nd paragraph - The Project will be consistent with the AQMP, which is primarily concerned with long-term influence on air quality in the Basin. Neither the implementation of the Project nor its operation would result in long-term regional impacts. The Project will comply with SCAQMD Rules 402 (Nuisance) and 403 (fugitive dust), which would implement all feasible best available dust control measures required controls for PM_{10} and $PM_{2.5}$. ***The proposed 800 kW emergency generator for operations will replace the existing 500 kW generator. The new generator will be subject to SCAQMD Rule 118.1 (Public Safety Provisions for Stationary Emergency Standby Engines), Regulation II (Permits), and Regulation 13 (New Source Review). The emergency generator will limit the size and operating hours to remain below the Rule 3001 Title V applicability threshold of 100,000 tons per year CO_2e and 100 tons per year (tpy) GHGs on a mass basis. The Project will be required to obtain an air permit for the generator.*** In addition, because the proposed Project would not result in a change in dwelling units or occupants or activities (and therefore not alter RCPG projections), it is not in conflict with the AQMP restrictions relative to land use and transportation. The Project's long-term influence would also be consistent with the goals and policies of the AQMP and the RCPG and is, therefore, considered consistent with the SCAQMD's and SCAG's plans.

Section **3.4.3 Air Quality**

Page **Clarification/Revision**

3-11 4th paragraph - Operational emissions would result from workers visiting the site for maintenance, outdoor water usage, energy consumption for lighting, HVAC, operational equipment, and ~~stationary sources~~ ***an emergency generator***. However, this is a replacement project and ***the only change in*** operational emissions from the ~~proposed design would largely remain the same as~~ existing operations ***are from the larger emergency generator.*** Therefore, operational emissions from the Project were considered negligible. The CalEEMod model runs, which estimate the construction ~~and operational~~ emissions in detail, are presented in Appendix A ***of the Draft IS/MND***. ***Emissions for the emergency generator are provided in Appendix C of the Final IS/MND***.

Section **3.4.3 Air Quality**

Page **Clarification/Revision**

3-12 Table 3-3

Table 3-3. Regional Significance Analysis[1/]

	ROG	NO_X	CO	SO_X	PM_{10}[2/]	$PM_{2.5}$ [2/]
	Maximum Daily Regional Emissions (lbs/day)					
Construction						
Phase 1	1.96	17.04	23.67	0.06	3.28	0.95
Phase 2	1.61	14.20	19.82	0.04	3.38	0.92
SCAQMD Regional Significance Threshold (lbs/day)	75	100	550	150	150	55
Exceeds Regional Significance Threshold?	*No*	*No*	*No*	*No*	*No*	*No*
Operation						
Area, Energy, Offroad, Stationary and Mobile	~~0~~ *0.13*	~~0~~ *16.03*	~~0~~ *1.15*	~~0~~ *0.01*	~~0~~ *0.10*	~~0~~ *0.10*
SCAQMD Regional Significance Threshold (lbs/day)	55	55	550	150	150	55
Exceeds Regional Significance Threshold?	*No*	*No*	*No*	*No*	*No*	*No*

Section **3.4.3 Air Quality**

Page **Clarification/Revision**

3-12 3rd paragraph - SCAQMD also identifies significance thresholds for toxic air contaminants (TAC) that are based on localized impacts. These include a maximum incremental lifetime cancer risk of 10 in a million or more, a cancer burden (i.e., estimated potential increase in cancer diagnoses) of 0.5 or more, and a chronic and acute hazard index (i.e., ratio of concentrations to Reference Exposure Levels [RELs]) of one or more. The primary TAC emitted from construction activities is diesel PM; however, because emissions of TACs from diesel-powered construction equipment are expected to be minimal,

intermittent, in compliance with all CARB heavy-duty construction equipment rules and of short duration, the Project is not expected to substantially increase ambient concentrations of TACs regionally or locally. ***The emergency generator for operations will have a newer certified engine compared to the one currently operating at the site. Diesel particulate matter from the new emergency generator will be lower than the current emergency generator operating at the site.*** Therefore, the Project would not expose sensitive receptors to substantial pollutant concentrations. As such, localized impacts to off-site sensitive receptors would be less than significant.

Section **3.4.3 Air Quality**

Page **Clarification/Revision**

3-13 Table 3-4

Table 3-4. Localized Significance Analysis[/1]

	ROG	NO_X	CO	SO_X	PM_{10}[2/]	$PM_{2.5}$ [2/]
	Maximum Daily Localized Emissions (lbs/day)					
Construction (*On-site Emissions*)						
Phase 1	2.37	19.66	27.11	0.05	2.98	0.32
Phase 2	2.23	17.94	27.01	0.05	3.00	0.34
SCAQMD Localized Significance Threshold (lbs/day)[3/]	--	81	485	--	4	3
Exceeds Localized Significance Threshold?	*No*	*No*	*No*	*No*	*No*	*No*
Operation						
Area, Energy, Offroad, Stationary and Mobile	~~0~~ *0.13*	~~0~~ *16.03*	~~0~~ *1.15*	~~0~~ *0.01*	~~0~~ *0.10*	~~0~~ *0.10*
SCAQMD Localized Significance Threshold (lbs/day)[3/]	--	81	485	--	1	1
Exceeds Regional Significance Threshold?	*No*	*No*	*No*	*No*	*No*	*No*

1/ Compiled using the CalEEMod emissions inventory model, provided in Appendix A.

2/ PM_{10} and $PM_{2.5}$ emissions estimates are based on compliance with SCAQMD Rule 403 requirements for fugitive dust suppression.

3/ Source: SCAQMD 2008

4.0 PROJECT IMPACTS AND MITIGATION MEASURES

4.1 Project Impacts

The IS has been prepared to assess the proposed Project's potential impacts on the environment and the significance of those impacts and is incorporated in the MND. Based on this IS, it has been determined that the proposed Project would not have any significant impacts on the environment once all proposed mitigation measures have been implemented. This conclusion is supported by the following findings:

- There was no potential for adverse impacts on agricultural and forest resources, mineral resources, population and housing, public services, or recreation associated with the proposed Project.
- Potential adverse impacts resulting from the proposed Project were found to be less than significant in the following areas: aesthetics, air quality, energy, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, transportation, utilities and service systems, and wildfire.
- Full implementation of the proposed mitigation measures included in this MND would reduce potential Project-related adverse impact on biological resources, cultural resources, geology and soils, and tribal cultural resources to a less than significant level.

4.2 Mitigation Measures

The following mitigation measures have been incorporated into the scope of work for the proposed Project and will be fully implemented by the District to avoid or minimize adverse environmental impacts identified in this IS/MND. These mitigation measures will be included in the Mitigation Monitoring and Reporting Plan prepared for this Project (included as Appendix B).

BIO-1: Nesting Birds – Project activities that will remove or disturb potential nest sites will be scheduled outside the breeding bird season. The breeding bird nesting season typically extends from February 15 through September 15.

If Project activities cannot be avoided during February 15 through September 15, a qualified biologist will conduct a pre-construction breeding bird survey for breeding birds and active nests or potential nesting sites within the limits of Project disturbance. The survey will be conducted at least seven days prior to the onset of scheduled activities, such as mobilization and staging. It will end no more than three days prior to vegetation, substrate, and structure removal and/or disturbance.

If no breeding birds or active nests are observed during the pre-construction survey or they are observed and will not be impacted, Project activities may begin and no further mitigation will be required.

If a breeding bird territory or an active bird nest is located during the pre-construction survey and will potentially be impacted, the site will be mapped on engineering drawings and a no-activity buffer zone will be marked (fencing, stakes, flagging, orange snow fencing, etc.) a minimum of 100 feet in all directions or 500 feet in all directions for listed bird species and all raptors. The biologist will determine the appropriate buffer size based on the type of activities planned near the nest and the

type of bird that created the nest. Some bird species are more tolerant than others of noise and activities occurring near their nest. This no-activity buffer zone will not be disturbed until a qualified biologist has determined that the nest is inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, or the young will no longer be impacted by Project activities. Periodic monitoring by a biologist will be performed to determine when nesting is complete. Once the nesting cycle has finished, Project activities may begin within the buffer zone.

If listed bird species are observed within the Project site during the pre-construction survey, the biologist will immediately map the area and notify the appropriate resource agency in order to consult with them on suitable protection measures and/or mitigation measures and to determine if additional surveys or focused protocol surveys are necessary. Project activities may begin within the area only when concurrence is received from the appropriate resource agency.

Birds or their active nests will not be disturbed, captured, handled, or moved. Active nests cannot be removed or disturbed; however, nests can be removed or disturbed if determined inactive by a qualified biologist.

CUL-1: Environmental Training – Prior to construction of the Project, a qualified archaeologist will provide a cultural resource briefing that includes all applicable laws and penalties pertaining to disturbing cultural resources, a brief discussion of the prehistoric and historic regional context and archaeological sensitivity of the area, types of cultural resources found in the area, and instruction that Project workers will halt construction if a cultural resource is inadvertently discovered during construction. If requested, a local tribal representative(s) shall be invited to participate in the environmental training to discuss or provide text from a tribal cultural perspective regarding the cultural resources within the region.

CUL-2: Inadvertent Discovery of Archaeological Resources During Construction – During Project-level construction, should subsurface archaeological resources be discovered, all activity within 50 feet of a "find" shall stop and a qualified archaeologist shall be contacted to assess the significance of the find according to CEQA Guidelines Section 15064.5 and/or National Register of Historic Places criteria (as applicable). The archaeologist shall have the authority to halt any Project-related construction activities that could impact potentially significant resources. If any find is determined to be significant, the archaeologist shall determine, in consultation with the implementing agencies and any local Native American groups expressing interest, appropriate avoidance measures or other appropriate mitigation. Ground-disturbing activities shall not continue until the discovery has been assessed by the archaeologist. The archaeologist shall be afforded the necessary time to assess the find. With monitoring, construction activities may continue on other areas of the Project site during evaluation and treatment of historic or unique archaeological resources. Under CEQA Guidelines Section 15126.4(b)(3), preservation in place is the preferred means to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, (i) Project re-route or re-design, (ii) Project cancellation, or (iii) identification of protection measures such as capping or fencing. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and any local Native American representatives expressing interest in prehistoric

or tribal resources. If an archaeological site does not qualify as a historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.

GEO-1: Inadvertent Discoveries of Paleontological Resources — If the construction staff or others observe previously unidentified paleontological resources during ground disturbing activities, they will halt work within a 200-foot radius of the find(s), delineate the area of the find with flagging tape or rope (may also include dirt spoils from the find area), and immediately notify a qualified paleontologist. Construction will halt within the flagged or roped-off area. The Paleontologist will assess the resource as soon as possible and determine appropriate next steps in coordination with the District. Such finds will be formally recorded and evaluated. The resource will be protected from further disturbance or looting pending evaluation.

APPENDIX A: PUBLIC COMMENTS

CITY OF ORANGE

COMMUNITY DEVELOPMENT DEPARTMENT www.cityoforange.org

ADMINISTRATION (714) 744-7240 | PLANNING DIVISION (714) 744-7220 | BUILDING DIVISION (714) 744-7200 | CODE ENFORCEMENT DIVISION (714) 744-7244

January 9, 2024

VIA ELECTRONIC MAIL:
info@serranowater.org

Serrano Water District
Attn: Jerry Vilander
General Manager
18021 Lincoln Street
Villa Park, CA 92861

SUBJECT: Proposed Mitigated Negative Declaration and Notice of Intent to Adopt the Proposed Mitigated Negative Declaration for the Smith Reservoir Replacement Project

Dear Mr. Vilander

The City of Orange appreciates the opportunity to review and comment on the proposed Mitigated Negative Declaration (MND) for the Smith Reservoir Replacement Project (Project").

The City is currently in the engineering/environmental phase for the Cannon Street Widening Project with construction anticipated to start mid to late 2025. Construction is expected to have a duration of approximately eight months.

The Cannon Street Widening Project proposes to widen portions of Cannon Street between Santiago Canyon Road and Serrano Avenue in the City of Orange. The proposed project will widen the roadway to accommodate a third northbound lane from approximately 500-feet north of Santiago Canyon Road to Serrano Avenue where it will join the existing dedicated right-turn lane to eastbound Serrano Avenue. On the west side of the street, a sidewalk runs from the Santiago Creek Bridge north to Taft Avenue. North of Santiago Creek, the roadway will be widened to the west by approximately 6-8 feet.

Based on Figure 2-13, Orange Flow Control Valve Vault Site Location, there is a potential for a conflict between the two projects which may require coordination. For your convenience, we are providing a copy of the preliminary 65% drawing of the area in question for your records. Please feel free to mark up the corresponding area of the drawing where the intended connection will be made and where the new water line along Taft will be located. Please contact Youichi Nakagawa, Senior Civil Engineer, ynakagawa@cityoforange.org, for coordination between projects in an effort to avoid any potential conflicts.

For any work done in the City of Orange right-of-way an Encroachment Permit will be required. Please contact the City's Development Services Division in the Public Works Department.

Thank you for the opportunity to provide input on the Smith Reservoir Replacement Project. Please contact me at (714) 744-7231 or rgarcia@cityoforange.org should you have any questions or if I may be of assistance.

Regards,

Robert Garcia
Senior Planner

Attachment:
Figure 2-13, Orange Flow Control Valve Vault Site Location
Sheet 6, SP-4178 Cannon Street Widening

Cc:
Youichi Nakagawa, Senior Civil Engineer
Randy Nguyen, Principal Civil Engineer
Chad Ortlieb, Principal Planner

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SENT VIA E-MAIL:
info@serranowater.org
Jerry Vilander, General Manager
Serrano Water District
18021 Lincoln Street
Villa Park, CA 92861

January 9, 2024

Mitigated Negative Declaration (MND) for the Proposed Smith Reservoir Replacement Project (Proposed Project)

South Coast Air Quality Management District (South Coast AQMD) staff appreciates the opportunity to review the above-mentioned document. Serrano Water District is the California Environmental Quality Act (CEQA) Lead Agency for the Proposed Project. To provide context, South Coast AQMD staff (Staff) has provided a brief summary of the project information and prepared the following comment.

South Coast AQMD Staff's Summary of Project Information in the MND

Based on information provided in the MND, the Proposed Project consists of construction and operation of a replacement 6-million-gallon (MG) reservoir and pump station on an approximately 1.7-acre site.[1,2] The new reservoir and pump station will replace the existing reservoir and pump station (known as Smith Reservoir) located near the southwest corner of Taft Ave and Sycamore St in the City of Villa Park, CA 92861.[3] The Lead Agency evaluated several studies on the existing Smith Reservoir. These studies identified numerous seismic weaknesses and other inadequate structural conditions. Ultimately it was decided that the existing Smith Reservoir is near the end of its useful life and the reservoir and pump station must be replaced.[4] Of interest to the South Coast AQMD is that the Proposed Project will be equipped with a new emergency standby generator (diesel fueled) and new generator room.[5] The replacement pump station will also have an increased maximum capacity from 7,400 gallons per minute (gpm) to 8,400 gpm.[6] The Proposed Project is situated in a residential zone and is adjacent to single-family homes.[7] Construction of the Proposed Project is anticipated to occur in two phases for a total duration of approximately 28 months,[8] commence in the fourth quarter 2024,[9] and be completed by the third quarter of 2026.[10]

South Coast AQMD Staff's Comments on the MND

South Coast AQMD Air Permits and Role as a Responsible Agency

Staff reviewed the MND and notes that construction Phase 1 includes:

[1] Draft Initial Study/Mitigated Negative Declaration for the Smith Reservoir Replacement Project (IS/MND). Page 1-1.
[2] IS/MND. Page 2-3.
[3] *Ibid.* Figure 2-2. Project Location.
[4] *Ibid.* Page 2-2 – 2-3.
[5] *Ibid.* Page 2-5.
[6] *Ibid.* PDF Page 2.
[7] *Ibid.* Page 2-2.
[8] *Ibid.* Page 3-11.
[9] *Ibid.* PDF Page 184.
[10] *Ibid.* PDF Page 282.

- installation of a new emergency standby generator (diesel fueled) and[11,12]
- construction of a generator room that is in a different location than the existing generator building (see Figure 2-6 below from MND).[13,14]

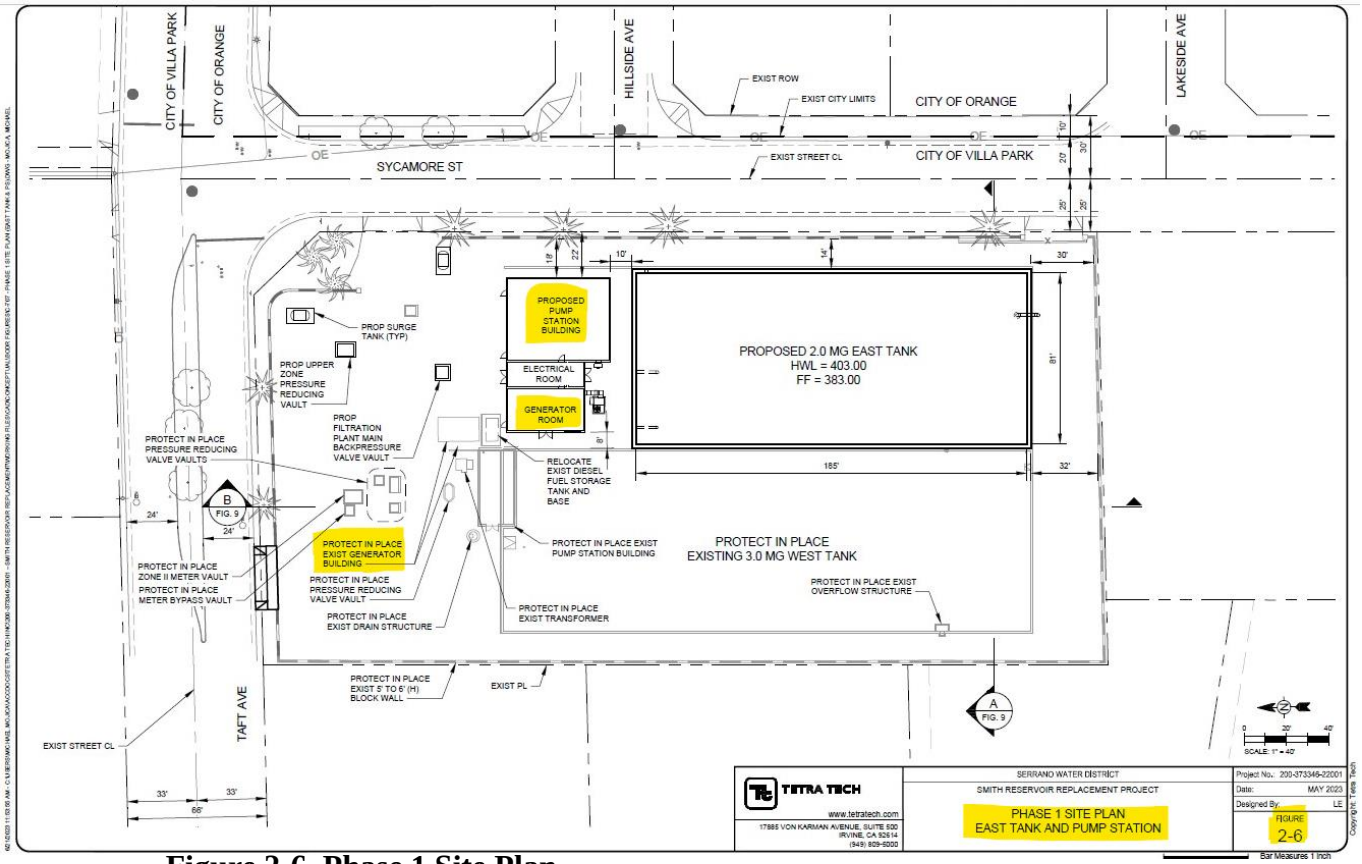

Figure 2-6. Phase 1 Site Plan

Staff also notes that construction Phase 2 includes:

- removal and disposal of the existing emergency standby generator (diesel fueled) and[15,16]
- removal and disposal of the existing generator building.[17,18]

For the Proposed Project location, South Coast AQMD records show a facility ID # of 107461. Under this ID # is an active South Coast AQMD air permit (permit #F79108) for one internal combustion engine of 764 brake horsepower (BHP), diesel fueled, and driving an emergency generator. The Lead Agency states in the MND that a South Coast AQMD construction permit will be required.[19] From information provided in the MND, however, Staff is unable to determine what type of South Coast AQMD air permit application will be required for the new emergency standby generator proposed to be installed during

[11] IS/MND. Page 2-3.
[12] *Ibid.* Page 2-5.
[13] *Ibid*. Page 2-5.
[14] *Ibid.* Figure 2-6. Phase 1 Site Plan East Tank and Pump Station.
[15] *Ibid*. Page 2-5.
[16] *Ibid.* Figure 2-5. Phase 2 Site Demolition Plan.
[17] *Ibid.* Page 2-5.
[18] *Ibid*. Figure 2-5. Phase 2 Site Demolition Plan.
[19] *Ibid.* Page 2-8.

construction Phase 1 (e.g. application for a new permit to operate, application for a permit modification, application for a change of conditions, etc.).

If implementation of the Proposed Project would require the use of new stationary sources, including but not limited to emergency generators, fire water pumps, boilers, etc., air permits from South Coast AQMD will be required and the role of South Coast AQMD would change from a Commenting Agency to a Responsible Agency under CEQA. In addition, if South Coast AQMD is identified as a Responsible Agency, per CEQA Guidelines Section 15086, the Lead Agency is required to consult with South Coast AQMD. Furthermore, CEQA Guidelines Section 15096 sets forth specific procedures for a Responsible Agency, including making a decision on the adequacy of the CEQA document for use as part of evaluating the applications for air permits. For these reasons, the Final MND should include a discussion about any new stationary equipment requiring South Coast AQMD air permits and identify South Coast AQMD as a Responsible Agency for the Proposed Project.

The Final MND should also include calculations and analyses for construction and operation emissions for any new stationary sources, as this information will also be relied upon as the basis for the permit conditions and emission limits for the air permit(s). Please contact South Coast AQMD's Engineering and Permitting staff at (909) 396-3385 for questions regarding what types of equipment would require applications for new air permits. For more general information on permits, please visit South Coast AQMD's webpage at: http://www.aqmd.gov/home/permits.

Conclusion

The Lead Agency is recommended to revise the CEQA analysis to address the aforementioned comments and provide the necessary evidence to sufficiently support the conclusions reached. If the requested information and analysis are not included in the final CEQA document, either the Final MND or other type of CEQA document, the Lead Agency should provide reasons for not doing so. Pursuant to California Public Resources Code Section 21092.5(b) and CEQA Guidelines Section 15074, prior to approving the Proposed Project, the Lead Agency shall consider the MND for adoption together with any comments received during the public review process and notify each public agency when any public hearings are scheduled. Please provide South Coast AQMD with written responses to all comments contained herein prior to the adoption of the Final MND. When responding to issues raised in the comments, detailed reasons supported by substantial evidence in the record to explain why specific comments and suggestions are not accepted must be provided. In addition, if the Lead Agency decides to adopt the Final MND, please provide South Coast AQMD with a notice of any scheduled public hearing(s).

Thank you for the opportunity to provide comments. South Coast AQMD staff is available to work with the Lead Agency to address any air quality questions that may arise from this comment letter. Please contact Evelyn Aguilar, Air Quality Specialist, at eaguilar@aqmd.gov should you have any questions.

Sincerely,

Sam Wang

Sam Wang
Program Supervisor, CEQA IGR
Planning, Rule Development & Implementation

SW:EA
ORC231213-01
Control Number

From:	Jerry Vilander
To:	Esguerra, Laurence; Mojica, Michael; Fell, Paula; Modica, Lysa
Subject:	FW: Smith Reservoir replacement project
Date:	Thursday, January 18, 2024 11:54:06 AM
Attachments:	(2X)-App. L-Booster Station Data Sheet.doc (3H)-App. L-Reservoir Data Sheet.xls PermitApplication_SA DO.pdf (2Z)-App. L-Chloramination Data Sheet.doc

CAUTION: This email originated from an external sender. Verify the source before opening links or attachments.

Folks, this email came in Tuesday. This is from DDW.

Jerry Vilander
General Manager

Phone: 714-538-0079
Email: jerryv@serranowater.org

18021 Lincoln Street
Villa Park, California 92861

www.serranowater.org

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From: Tran, Yen T.@Waterboards <Yen.Tran@waterboards.ca.gov>
Sent: Tuesday, January 16, 2024 4:30 PM
To: Jerry Vilander <JerryV@serranowater.org>
Cc: Mike Mastin <mike@serranowater.org>; Pacifico, Oliver@Waterboards <Oliver.Pacifico@waterboards.ca.gov>
Subject: Smith Reservoir replacement project

Hi Jerry,
Our Division of Financial Assistance-Special Project Review Unit recently reviewed your Smith Reservoir Replacement project's CEQA document and provided our office with a copy of documents submitted to them. Based on our review of the submitted documents, we would like to provide you with our initial thoughts:

1. This project is subject to be permitted by us prior to be placed in operation. Since the project includes 2 phases (Phase 1 for a replacement of 3.0 East tank and pump station with a new 2.0 MG and a pump station starting 4th qtr of 2024 and last 14 months; Phase 2 for a replacement of 3.0 West tank with a new 3.0 MG starting 4th qtr of 2025 and last 12 months). Our plan is to issue one single permit amendment for this project just before the East Tank is placed in service. This permit amendment will include permit provisions for the

West Tank. Attached are a permit amendment application form, reservoir data sheet template, disinfection data sheet template, and pump data sheet template.

2. Please be sure that the project comply with California water works standards, specifically, NSF 61 certified for concrete used to construct the reservoirs. **Concrete used to construct the concrete reservoir must be ANSI/NSF Standard 61 certified (you can submit to us a waiver request for the concrete mix if the cement and admixtures used in the concrete mix for the proposed reservoir are ANSI/NSF Standard 61 certified. Please be aware that a waiver request and supporting documents must be submitted to us for review and approval prior to pouring concrete to construct the reservoirs.)**
3. Please provide us with a copy of 90% design plan and then 100% design plan for this project when they are available.
4. Currently, volume of water stored in Smith Reservoir (3.0 MG West Tank and 3.0 MG East Tank) with baffling factor of 0.2 is used in CT calculation for the WEHWFP. During the construction, water stored in the 3.0 West Tank(during Phase 1 construction) or the 2.0 East tank (during phase 2 construction) will be used in CT calculation (this means the CT received from the Sith reservoir during construction period is a half or less than a half of CT currently obtained from the existing Smith Reservoir). We understand that it is not a problem if the WEHWFP is on ozone. This may be an issue during a transition period from ozone to chlorine if there is an ozone failure at anytime during the construction period. Please works on your CT calculation during transition from ozone to chlorine using some water levels in the new 2.0 East Tank to determine what are the minimum water level and minimum chloramine residual in the 2.0 MG East Tank must be remained to meet the CT required.
5. Along with the permit amendment application, please also provide us with your proposed operation of the East Tank and West Tank (in parallel or series or either way), your predicted baffling factor, locations where chlorine residuals are sampled and how their CT are calculated.

Best Regards,

Yen Tran, P.E.
Associate Sanitary Engineer
Division of Drinking Water
State Water Resources Control Board
2 MacArthur Place
Suite 150
Santa Ana, CA 92707
Direct Phone: 714-558-4707
Main Office Phone: 714-558-4410
Fax: 714-800-1220
E-mail: yen.tran@waterboards.ca.gov

APPENDIX B: MITIGATION MONITORING AND REPORTING PLAN

Serrano Water District
Smith Reservoir Replacement Project

MITIGATION MONITORING AND REPORTING PROGRAM

Prepared For:

Serrano Water District
18021 Lincoln Street
Villa Park, California 92861

MITIGATION MONITORING AND REPORTING PROGRAM

Public Resources Code, Section 21081.6 (Assembly Bill 3180) requires that mitigation measures identified in environmental review documents prepared in accordance with California Environmental Quality Act (CEQA) are implemented after a project is approved. Therefore, this Mitigation Monitoring and Reporting Program (MMRP) has been prepared to ensure compliance with the adopted mitigation measures during the Smith Reservoir Replacement Project (Project). The Serrano Water District is the agency responsible for implementation of the mitigation measures identified in the Initial Study/Mitigated Negative Declaration.

This MMRP provides the Serrano Water District with a convenient mechanism for quickly reviewing all the mitigation measures including the ability to focus on select information such as timing. The MMRP includes the following information for each mitigation measure:

- The phase of the project during which the required mitigation measure must be implemented;
- The phase of the project during which the required mitigation measure must be monitored; and
- The monitoring agency.

The MMRP includes a checklist to be used during the mitigation monitoring period. The checklist will verify the name of the monitor, the date of the monitoring activity, and any related remarks for each mitigation measure.

MITIGATION MONITORING AND REPORTING PROGRAM					
Mitigation Measure	**Implementation Phase**	**Monitoring Phase**	**Monitoring Agency**	**Compliance Verification**	
				Initial	**Date**
BIO-1: Nesting Birds – Project activities that will remove or disturb potential nest sites will be scheduled outside the breeding bird season. The breeding bird nesting season typically extends from February 15 through September 15. If Project activities cannot be avoided during February 15 through September 15, a qualified biologist will conduct a pre-construction breeding bird survey for breeding birds and active nests or potential nesting sites within the limits of Project disturbance. The survey will be conducted at least seven days prior to the onset of scheduled activities, such as mobilization and staging. It will end no more than three days prior to vegetation, substrate, and structure removal and/or disturbance. If no breeding birds or active nests are observed during the pre-construction survey or they are observed and will not be impacted, Project activities may begin and no further mitigation will be required.	Pre-Construction; Construction	Pre-Construction; Construction	Serrano Water District		

MITIGATION MONITORING AND REPORTING PROGRAM					
Mitigation Measure	**Implementation Phase**	**Monitoring Phase**	**Monitoring Agency**	**Compliance Verification**	
				Initial	**Date**
If a breeding bird territory or an active bird nest is located during the pre-construction survey and will potentially be impacted, the site will be mapped on engineering drawings and a no-activity buffer zone will be marked (fencing, stakes, flagging, orange snow fencing, etc.) a minimum of 100 feet in all directions or 500 feet in all directions for listed bird species and all raptors. The biologist will determine the appropriate buffer size based on the type of activities planned near the nest and the type of bird that created the nest. Some bird species are more tolerant than others of noise and activities occurring near their nest. This no-activity buffer zone will not be disturbed until a qualified biologist has determined that the nest is inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, or the young will no longer be impacted by Project activities. Periodic monitoring by a biologist will be performed to determine when nesting is complete. Once the nesting cycle has finished, Project activities may begin within the buffer zone. If listed bird species are observed within the Project site during the pre-construction survey, the biologist will immediately map the area and notify the appropriate resource agency in order to consult with them on suitable protection measures and/or mitigation measures and to determine if additional surveys or focused protocol surveys are necessary. Project activities may begin within the area only when concurrence is received from the appropriate resource agency. Birds or their active nests will not be disturbed, captured, handled or moved. Active nests cannot be removed or disturbed; however, nests can be removed or disturbed if determined inactive by a qualified biologist.					
CUL-1: Environmental Training: Prior to construction of the Project, a qualified archaeologist will provide a cultural resource briefing that includes all applicable laws and penalties pertaining to disturbing cultural resources, a brief discussion of the prehistoric and historic regional context and archaeological sensitivity of the area, types of cultural resources found in the area, instruction that Project workers will halt construction if a cultural resource is inadvertently discovered during construction. If requested, a local tribal representative(s) shall be invited to participate in the environmental training to discuss	Pre-Construction; Construction	Pre-Construction; Construction	Serrano Water District		

MITIGATION MONITORING AND REPORTING PROGRAM					
Mitigation Measure	**Implementation Phase**	**Monitoring Phase**	**Monitoring Agency**	**Compliance Verification**	
				Initial	**Date**
or provide text from a tribal cultural perspective regarding the cultural resources within the region.					
CUL-2: Inadvertent Discovery of Archaeological Resources During Construction – During Project-level construction, should subsurface archaeological resources be discovered, all activity within 50 feet of a "find" shall stop and a qualified archaeologist shall be contacted to assess the significance of the find according to CEQA Guidelines Section 15064.5 and/or NRHP criteria (as applicable). The archaeologist (shall have the authority to halt any Project-related construction activities that could impact potentially significant resources. If any find is determined to be significant, the archaeologist shall determine, in consultation with the implementing agencies and any local Native American groups expressing interest, appropriate avoidance measures or other appropriate mitigation. Ground-disturbing activities shall not continue until the discovery has been assessed by the archaeologist. The archaeologist shall be afforded the necessary time to assess the find. With monitoring, construction activities may continue on other areas of the Project site during evaluation and treatment of historic or unique archaeological resources. Under CEQA Guidelines Section 15126.4(b)(3), preservation in place is the preferred means to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, (i) Project re-route or re-design, (ii) Project cancellation, or (iii) identification of protection measures such as capping or fencing. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.	Construction	Construction	Serrano Water District		
GEO-1: **Inadvertent Discoveries of Paleontological Resources –** If the construction staff or others observe previously unidentified paleontological resources during ground	Construction	Construction	Serrano Water District		

MITIGATION MONITORING AND REPORTING PROGRAM					
Mitigation Measure	**Implementation Phase**	**Monitoring Phase**	**Monitoring Agency**	**Compliance Verification**	
				Initial	**Date**
disturbing activities, they will halt work within a 200-foot radius of the find(s), delineate the area of the find with flagging tape or rope (may also include dirt spoils from the find area), and immediately notify a qualified Paleontologist. Construction will halt within the flagged or roped-off area. The Paleontologist will assess the resource as soon as possible and determine appropriate next steps in coordination with the District. Such finds will be formally recorded and evaluated. The resource will be protected from further disturbance or looting pending evaluation.					

APPENDIX C: AIR QUALITY AND GAS EMISSIONS

Serrano Water District Caterpillar Emergency Engine Emissions

Engine Fuel Type	Diesel	
Engine Make	Caterpillar	
Engine Model	D800	
Rated Power	800	Kw
Rated Power	1,190	bhp
Diesel Heat Content	140,000	Btu/gal
Engine Heat Input	7.78	MMBtu/hr
Max. Fuel Consumption	55.6	gal/hr
	11,120	gal/yr/engine @ 150 hrs
Operating Hours	200	hr/yr
No. of Engines	1	engine

Emission Factors				Engine Potential Emissions			
Criteria Pollutant	**g/hp-hr**	**lb/hp-hr**	**kg/mmbtu**	**lb/day[5]**	**PTE TPY (mass basis)[6]**	**PTE TPY (CO_2e basis)**	**PTE MT/yr (CO_2e basis)**
NOx [1]	6.11	1.35E-02	-	16.03	1.60		
SO_2 [2]	-	1.21E-05	-	0.01	0.001		
PM [1]	0.04	8.82E-05	-	0.10	0.01		
CO [1]	0.44	9.70E-04	-	1.15	0.12		
HC [1]	0.05	1.10E-04	-	0.13	0.01		
CO_2 [3]	498.40	-	-	1307.53	130.75	130.75	117.68
N_2O [3]	-	-	6.00E-04	0.01	1.03E-03	3.08E-01	0.28
CH_4 [3]	-	-	3.00E-03	0.05	5.16E-03	1.29E-01	0.12
CO_2e [4]		-	-	1307.59	130.75	131.19	118.07

Notes:

[1] Emissions (g/hp-hr and lb/hr) from Caterpillar Vendor Performance Data
(lb/hp-hr) is based on

[3] Emission factors (kg/MMBtu) based on 40 CFR Subchapter C Part 98 Table C-1 and C-2

[4] Global Warming Potentials from 40 CFR Subchapter C Part 98 Table A-1

[5] Pound/day emissions assume the emergency genetrator is operated one hour per day for testing and maintenance.

[6] Ton per year emissions are based on 150 hours per year.

Caterpillar Engine
Emissions and Specifications