INITIAL STUDY/MITIGATED NEGATIVE DECLARATION
LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT
BLUE JAY WELL SITE PROJECT N0. 187
Lake Arrowhead, California
(San Bernardino County)

Prepared for:

LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT
27307 CA-189
Blue Jay, California 92317

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SECTION 1.0 – PROJECT DESCRIPTION AND ENVIRONMENTAL SETTING

1.1 PROJECT BACKGROUND AND PURPOSE

The Lake Arrowhead Community Services District's (District) service area is approximately 30 square miles located in the San Bernardino Mountains, north of the City of San Bernardino. The District performs water distribution, wastewater treatment and disposal, and operation and maintenance activities utilizing a system of water and wastewater treatment plants, water and wastewater pumping stations, reservoir tanks, and pipelines. The District serves approximately 8,300 water customers and 10,500 wastewater customers in the communities surrounding Lake Arrowhead, including Agua Fria, Blue Jay, Cedar Glen, Crest Park-Meadowbrook Woods, Deer Lodge Park, Arrowhead Woods, Rimforest, Skyforest, and Twin Peaks (Figure 1). The Proposed Project is to develop a production well located at the vacant lot adjacent to the District's offices in the unincorporated community of Blue Jay, California. The well would further utilize existing groundwater resources to supplement the District's water supply obligations to the Lake Arrowhead community.

1.2 PROJECT LOCATION AND SITE CHARACTERISTICS

The Proposed Project site is a thin strip of undeveloped, but previously disturbed, District property, approximately 50 feet wide, located immediately adjacent to the District's administration building at 27307 CA-189, Blue Jay, CA 92317 (Figure 1). The land use designation and zoning at this site is General Commercial (GC) and Multiple Residential (MR). The site is located approximately 0.4-miles southwest of Lake Arrowhead's Paradise Cove, in the vicinity of Little Bear Creek, and lies within the Lake Arrowhead Hydrologic Subunit. The property to the west-southwest of this Project site was formerly a mobile home/trailer park that is no longer utilized, and the District has been granted permission to utilize this former RV lot for equipment staging and access. There are water and electrical utilities located nearby that can be utilized during installation; however, the property will require clearing and grading in order to facilitate the installation of a new production well. Facilities needed for connection of a new production well, such as nearby pipelines and pump stations to the District's system are located in the immediate vicinity.

1.3 PROPOSED ACTIVITIES

Construction

Construction of the Proposed Project will include drilling, installation, sampling, development, and testing of the new production well in accordance with federal, State, and local requirements. Drilling and well installation activities will be performed by a well-drilling contractor in possession of a State of California C-57 license. The Proposed Project would include a paved access route to avoid native vegetation within the *Pinus ponderosa – Calocedrus decurrens* Forest Alliance which would begin from the existing center parking lot to the location of the well (Appendix C). Drilling and well construction will comply with California Department of Water Resources (DWR) Well Standards Bulletins 74-90 and 74-81, American Water Works Association (AWWA) guidelines, and San Bernardino County Department of Public Health, Division of Environmental Health Services (DPH EHS) regulations. The drilling contractor will mobilize to the site and stage equipment at the former mobile home/trailer park. Site preparation may include the use of containment tanks.

Preliminary Drilling Activities

Prior to the implementation of drilling activities, all available utility maps will be reviewed. To the extent possible, the well location will be strategically sited within the Proposed Project location to avoid existing utilities. In addition, prior to performing any subsurface activities, the well location will be surveyed for underground utilities using geophysical methods. The utility-locating contractor will employ several methods, including a ground-penetrating radar, a magnetometer, a magnetic gradiometer, and/or electromagnetic imaging. As required by California State law, Underground Service Alert of Southern California (DigAlert) will be notified of the planned drilling activities. DigAlert is a communication center that provides notice to utility owners that may potentially have underground utilities within the Proposed Project site. DigAlert requires notification be made a minimum of 48 hours prior to conducting any underground excavation.

Following map review, geophysical utility locating, and DigAlert clearance, the surface of the ground will be clearly marked where underground utilities are located, and the well location will be moved within the project site accordingly. Prior to the initiation of drilling activities, an air-knife (or hand auger) will be used to safely excavate a pilot hole to approximately five feet below ground surface (bgs), to ensure that no underground utilities or obstructions are present.

Well Construction

The well construction process will consist of the following general steps: (1) install surface casing; (2) advance borehole (i.e. test borehole) to target depth; (3) log and collect cutting samples at discrete intervals to determine subsurface lithology, fracture rock aquifers, and the alluvial bedrock interfaces; (4) collect depth-specific groundwater samples during drilling; (5) prepare final well design (for purposes of housing submersible pump), including depth of well casing and screen, and depth of annular seal; (6) install well casing and screen to specified depths; (7) install cement seal to surface; and (8)conduct well development and testing. Once the drilling and installation of the well is completed, an approximately 4-foot by 4-foot square concrete vault and other accessory structures would remain.

Equipment Mobilization

Equipment required to advance the boring and construct the well will consist of a drill rig, a pipe truck, drill string, drill bits, spare parts and fittings, hoses, a fork lift, a backhoe, hoppers, lighting, a generator, pumps, an air compressor, soil roll-off bins, etc. Plastic sheeting will be placed on the ground to prevent drill rig hydraulic fluid, engine oil, coolant, or drilling fluids from coming into contact with the ground surface. Once the plastic has been placed, the drill rig and drilling fluid system will be positioned on top of the plastic sheeting. The above-mentioned equipment will be mobilized to the site, and staged in preparation for drilling activities.

Well Development

After completing the installation of the production well, well development will be performed to mobilize and remove residual particles of crushed rock and sand from the well and borehole. In general, the order of the development for the production well is as follows: initial well development by swabbing and airlifting, final development by pumping and surging, and aquifer testing.

Treatment Systems

During the construction and testing of the production well, water will likely contain a high volume of sediments from the drilling fluids required for borehole advancement. Water and drilling fluids removed from the well during construction and testing will be conveyed to a temporary treatment system located near the well for processing. A temporary treatment system will typically consist of two closed-top 21,000-gallon temporary holding tank; for settling of solids from underground water prior to discharge to the sewer. Typical dimension are 45' x 8' x 6', high-flow pump; bag filter units; and associated piping, fittings, valves, and flowmeters.

The temporary treatment system process flow is as follows: (1) water will be pumped directly from the well into the settling tanks; (2) water will be pumped through bag filtration for sediment removal; and (3) water processed by the bag filter units will be conveyed to, and discharged into, an identified sewer under regulatory permit. The temporary treatment system will be removed upon completion of construction and testing activities.

A permanent treatment system during groundwater production activities is not anticipated; however, it may be required if water quality testing results indicate a sediment load greater than discharge permit requirements.

Pump Development

After the completion of targeted zone development, a submersible test pump will be installed within the well to a selected depth. The pump will be powered by a portable diesel generator controlled by a variable-frequency drive (VFD) pump controller. The generator will be removed after construction of the well. During this phase, the submersible pump will be operated at a variety of flow rates, and periodically surged to flush impacted fines from the surrounding gravel pack and borehole face, and to consolidate the gravel pack. During pump development, the pumping water level, drawdown, sand content, and water quality parameters (e.g., pH, conductivity, turbidity, dissolved oxygen, temperature, and oxygen reduction potential) will be monitored.

Aquifer Testing

After development pumping has been completed, two separate pumping tests will be performed: a variable-rate pumping test followed by a constant rate pumping test.

Well Pump and Motor Installation Activities

The new submersible pump, drop pipe (i.e., pump column), check valve, motor lead, and polyvinyl chloride (PVC) stilling tube (for pressure transducer) will be installed into the well. All pump equipment will be disinfected as it is placed into the well. Once the pump is installed, the wellhead flange assembly will be connected to the conveyance piping. Final wellhead equipment will be installed, which includes the screened and inverted casing vent, the air vacuum and air release valves, the check valve, and the sampling port. After testing the submersible pump proper rotation, the submersible pump motor leads will be terminated in the control panel, and the pump will be service ready. Next, disinfection will be performed according to the American National Standards Institute (ANSI/AWWA) Standard C654 well disinfection guideline. At the completion of well disinfection, the pump will be turned on, extracted water will be monitored and dechlorinated (as necessary), and discharged to an identified sewer under

regulatory permit. Following well disinfection, bacteriological and water quality testing will be performed per District requirements.

1.3.1 Project Schedule

Construction Schedule

The construction of the Proposed Project is expected to have a duration of approximately six to nine months.

Operation and Maintenance

The Proposed Project is expected to be underway by late 2020, and operational by the year 2021. Routine operation and maintenance activities are anticipated throughout the duration that the production well is active. Operation and maintenance activities are specific to individual systems, and will be developed based on equipment and system components. These activities will involve periodic site visits to inspect the condition and functionality of individual system and equipment components, testing and performance evaluations of system and equipment components, testing of water quality, and site cleanliness and sanitary conditions. All other accessories will be underground.

Figure 1: Project Vicinity Map

1.4 REQUIRED PERMITS AND APPROVALS

Reviewing agencies include those agencies that do not have discretionary powers, but may review the Initial Study/Mitigated Negative Declaration (IS/MND) for adequacy and accuracy. Responsible agencies have discretionary approval authority for a Proposed Project. Below are the responsible agencies for the Proposed Project.

1.4.1 Responsible Agencies

County of San Bernardino – Environment Health Services (EHS) Well Permit

State Water Resources Control Board – Lahontan Region

State Water Resources Control Board, Division of Drinking Water – Water supply permit

SECTION 2.0 – ENVIRONMENTAL DETERMINATION

2.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would potentially be affected by this Proposed Project, involving at least one impact that is a "Potentially Significant Impact," as indicated by the checklists on the following pages. For each of the potentially affected factors, mitigation measures are recommended that would reduce the impacts to less than significant levels.

☐ *Aesthetics*	☐ *Agriculture and Forestry Resources*	☒ *Air Quality*
☒ *Biological Resources*	☒ *Cultural Resources*	☐ *Energy*
☒ *Geology /Soils*	☒ *Greenhouse Gas Emissions*	☒ *Hazards & Hazardous Materials*
☒ *Hydrology /Water Quality*	☐ *Land Use / Planning*	☐ *Mineral Resources*
☒ *Noise*	☐ *Population / Housing*	☐ *Public Services*
☐ *Recreation*	☐ *Transportation*	☒ *Tribal Cultural Resources*
☐ *Utilities /Service Systems*	☐ *Wildfire*	☒ *Mandatory Findings of Significance*

2.2 DETERMINATION

On the basis of this initial evaluation:

1. I find that the project **could not** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared. ☐
2. I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared. ☒
3. I find the proposed project **may have a significant effect** on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required. ☐
4. I find that the proposed project **may have a "potentially significant impact" or "potentially significant unless mitigated impact"** on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed. ☐
5. I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier Environmental Impact Report (EIR) or Negative Declaration pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or Negative Declaration, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required. ☐

Signature — Date: 10/21/2020

Catherine Cerri — General Manager

Name — Title

SECTION 3.0 – EVALUATION OF ENVIRONMENTAL IMPACTS

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

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

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

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

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

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

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

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

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

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

8. The explanation of each issue should identify:

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

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

    *Note: Instructions may be omitted from final document.

SECTION 4.0 – CHECKLIST OF ENVIRONMENTAL ISSUES

4.1 AESTHETICS

1.	AESTHETICS. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
(b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
(c)	Substantially degrade the existing visual character or quality of public views of the site and its surroundings? If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
(d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

4.1.1 Environmental Setting

The aesthetic value of an area is a measure of its visual character and quality, combined with the viewer response to the area. Scenic quality can best be described as the overall impression that an individual viewer retains after driving through, walking through, or flying over an area. Aesthetic resources include scenic resources, which include water forms, trees, rock outcroppings, historic buildings, and scenic highways. Impacts to aesthetic resources include obstruction and destruction of views to or from scenic resources, and/or the degradation of the visual character of the area.

4.1.2 Impact Analysis

a) Would the project have a substantial adverse effect on a scenic vista?

Less than Significant Impact. The Lake Arrowhead Community Plan area is identified as a small-town community that invites tourists and residents to the area due to the climate, available recreational activities, remoteness, and scenic resources. The preservation of natural settings in the community is highly valued by the residents. Under the Lake Arrowhead Community Plan, one of the goals and policies is to preserve the unique features of the Community including native wildlife, vegetation, and scenic vistas. Areas that are recognized as having unique environmental features are:

- Grass Valley Creek Wildlife Corridor (Approximately one mile north from the Proposed Project)
- Strawberry Creek Wildlife Corridor (Approximately 4.5 miles southwest from the Proposed Project)
- Dispersion Corridor – between Lake Arrowhead and Running Springs, and south of Highway 18 (Approximately four miles southeast from the Proposed Project)

While other areas have not been designated as a scenic vista, due to the natural setting of the community, many other areas could be considered a scenic resource by the residents and visitors, such as views of the Lake Arrowhead reservoir, streambeds, historic structures, trails, recreation areas, and parks (County of San Bernardino, 2007a).

The Proposed Project location is a thin strip of undeveloped but previously graded, District property with no standing structures, approximately 50 feet wide, located immediately adjacent to the District's administration building at 27307 CA-189, Blue Jay, CA 92317 (Figure 1). The Proposed Project site is on the east side of a lot that was formerly used as a mobile home/trailer park lot containing various asphalt pads and terraced landings. Much of the Proposed Project site has been previously disturbed, but includes scattered native trees of varying age. The Proposed Project site is approximately 200 feet south of SR 189, with undisturbed native forest located south of the Proposed Project site.

The Proposed Project is not located within the immediate vicinity of the environmental features listed previously. Customers within the commercial buildings along SR-189, and commuters will not have a direct view of the Proposed Project well site because of the placement of the existing trees along SR 189. The Proposed Project well location is not within a wildlife corridor, and the proposed installation of the well would not result in an impact to scenic areas due to the presence of construction equipment because there are no designated scenic vistas within the Proposed Project site. Equipment will be staged at the former mobile home/trailer park lot and will be removed once construction activities are completed. Proposed construction activities include grading, excavation, and vegetation removal. The Proposed Project would not change land uses, or permanently affect scenic vistas. Once the drilling and installation of the well is completed, an approximate 4-foot by 4-foot square concrete vault and other accessory structures would remain. The dimensions of the above-ground vault and accessory structures would not block any potential scenic vistas and would be placed away from direct public view. Furthermore, the vault and accessory structures would be painted to match the existing surroundings. Impacts would be less than significant.

b) *Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?*

Less than Significant Impact. There are no existing, officially-designated State or county scenic highways in the vicinity of the Project site. California State Route 173 (SR-173) is considered an eligible State scenic highway – not officially designated (Caltrans, 2019). Under the Lake Arrowhead Community Plan, streets that have been designated as scenic routes, and are subject to the Open Space Overlay (which are base maps generated by the County of San Bernardino), include: Kuffel Canyon Road, Grass Valley Road, Rim of the World Highway (SR-18), and SR-173 (County of San Bernardino, 2007a). The Proposed Project would not be nearby or adjacent to an eligible, officially-designated, scenic route. There are no historic buildings located within, or in the vicinity of, the Proposed Project well site. The Proposed Project would not result in the removal of trees for the installation of the well casing. Only the stumps of trees will be removed. Because the Proposed Project is not located within a State scenic highway and there are no historic buildings within the area, nor would the Proposed Project result in damaging significant scenic resources, impacts would be less than significant.

c) Would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Less than Significant Impact. The Proposed Project is located along SR 189, west of the Blue Jay Business Center and the associated parking lot. A vacant RV lot and commercial buildings including a gas station, library, and floor and window business are located west from the Proposed Project. The Proposed Project activities will not occur within the designated environmental corridors listed in Section 4.1.2(a). However, the Proposed Project would result in an impact to the existing visual character of the Proposed Project area with the presence of construction vehicles and equipment during drilling, and other ground disturbing activities. Once drilling has been completed, only a small structure would be left onsite, which would contain the well head and other accessory structures. The Proposed Project is not in an area that is easily viewed by the public as it is located south of SR-189, and would be behind the trees along the highway, which provide visual screening. While the presence of construction equipment could result in temporary impacts to the visual character of the site, operation of the Proposed Project would not permanently impact the quality of public views because the Proposed Project would not involve the construction of large structures that would obstruct views from the Blue Jay Business Center toward SR 189 or would be visible from SR 189. Furthermore, the Proposed Project is located within the District's property and is not intended for public use. Although the Proposed Project area is currently undeveloped, it is owned by the District and surrounded by development. The proposed activities would not require a change in zoning and would be consistent to existing land uses. Impacts would be less than significant.

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

Less than Significant Impact. The source of existing lighting near the Proposed Project site is from the Blue Jay Business Center, street lights along SR 189, and lighting from the nearby commercial buildings. There is no existing lighting within the Proposed Project site. Any existing light would be considered spill over from the adjacent business center and parking lot.

During construction, temporary light and glare would be present because of the use of construction equipment and vehicles. Construction activities would be limited within the approved hours under the County's Code, which states "*Temporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays*" (County of San Bernardino, 2007b). Supplemental lighting may be added during construction to illuminate dimly lit areas; however, these light sources are temporary and would be removed once the vaults have been installed. These temporary lights would illuminate the Proposed Project site but would not create additional lighting at the business center or existing commercial facilities. Once operational, the Proposed Project would not install any new lighting that would create new substantial sources of light or glare. Impacts would be less than significant.

4.2 AGRICULTURE & FORESTRY RESOURCES

2.	**AGRICULTURE & 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) 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, 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:**	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(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 nonagricultural 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 nonagricultural use or the conversion of forest land to non-forest use?	☐	☐	☒	☐

4.2.1 Environmental Setting

Agricultural resources include prime farmland, farmland of statewide importance, unique farmland, farmland of local importance, and commercial grazing land as defined in the Guidelines for the Farmland Mapping and Monitoring Program, pursuant to Section 65570 of the Government Code; as well as land in a Williamson Act contract.

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion (7 U.S.C. 4201(c)(1)(A)).

Unique farmland is land other than prime farmland that is used to produce specific, high-value food and fiber crops such as, citrus, tree nuts, olives, cranberries, fruits, and vegetables (7 U.S.C. 4201(c)(1)(B)).

Additional farmland of statewide or local importance is land identified by state or local agencies for agricultural use, but not of national significance (7 U.S.C. 4201(c)(1)(C)).

The California Legislature passed the Williamson Act in 1965 to preserve agricultural and open-space lands by discouraging premature and unnecessary conversion to urban uses. The Act creates an arrangement whereby private landowners contract with counties and cities to voluntarily restrict their land to agricultural and compatible open-space uses.

The Williamson Act is a means to restrict the uses of agricultural and open-space lands to farming and ranching uses during the length of the contract period. The Williamson Act Program was also envisioned as a way for local governments to integrate the protection of open space and agricultural resources into their overall strategies for planning urban growth patterns.

4.2.2 Impact Analysis

a) Would the project 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 nonagricultural use?

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

c) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to nonagricultural use or the conversion of forest land to non-forest use?

a) through c) **No Impact.** The Proposed Project area is zoned General Commercial, and Commercial under the Land Use Map of the County of San Bernardino Land Use Services (County of San Bernardino, 2010b). According to the California Department of Conservation, California Important Farmland Finder, there are no areas within the Lake Arrowhead Community Plan area that are designated for, or contain lands for, farming uses. Additionally, the Proposed Project is not located within lands protected under the Williamson Act (DOC, 2019). The Proposed Project would not include activities that would convert lands from agricultural to non-agricultural uses; thus, no impact would occur.

d) Would the project 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))?

e) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

d) through e) **Less than Significant Impact.** The Proposed Project is located within the San Bernardino mountains, in the Blue Jay community, which is contained within the San Bernardino

National Forest. While the Proposed Project is in an area containing forested land, the Blue Jay community is considered one of the four "nodes" of commercial land uses in the Lake Arrowhead Community Plan area. Most of the commercial land uses are concentrated in these nodes. The nodes are in the community of Blue Jay, one in downtown Lake Arrowhead, the community of Cedar Glen, and in the Rim Forest community. The Proposed Project location is within the maximum build-out potential of the area per the Land Use Policy Map. The Proposed Project is zoned General Commercial (County of San Bernardino, 2007a). The Proposed Project would be consistent with the existing land use. While the proposed activities would not involve tree removal, and would include non-forest uses, the area is not zoned for timberland production. Impacts would be less than significant.

4.3 AIR QUALITY

3.	**AIR QUALITY.** **(Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.)** **Would the project:**	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
(b)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality?	☐	☒	☐	☐
(c)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
(d)	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☒	☐	☐

4.3.1 Environmental Setting

The Proposed Project is located within the community of Blue Jay, in San Bernardino County. The Proposed Project well location is located within the South Coast Air Basin (SCAB), and the air quality regulations are administered by the South Coast Air Quality Management District (SCAQMD). The SCAQMD implements the programs and regulations required by the federal and State Clean Air Acts.

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographical features. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with physical features of the landscape to determine their movement and dispersal and, consequently, their effect on air quality. The combination of topography and inversion layers generally prevents dispersion of air pollutants in the SCAB.

The Proposed Project well site lies within the SCAB, which is managed by the SCAQMD. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) have been established for the following criteria pollutants: carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), inhalable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead. The CAAQS also set standards for sulfates, hydrogen sulfide, and visibility.

Areas are classified under the Federal Clean Air Act as either "attainment" or "nonattainment" areas for each criteria pollutant, based on whether the NAAQS have been achieved or not. Attainment relative to the state standards is determined by the California Air Resources Board (CARB). The SCAB has been designated by the United States Environmental Protection Agency (EPA) as a nonattainment area for O_3 and suspended particulates ($PM_{2.5}$). Currently, the SCAB is in attainment with the ambient air quality standards for CO, SO_2, PM_{10} and NO_2.

The EPA has designated the SCAB as extreme nonattainment for the 8-hour average ozone standard. The 1997 8-hour ozone NAAQS was strengthened from 0.08 ppm to 0.075 ppm, effective May 27, 2008. The 1997 8-hour ozone standard was revoked in implementation rules for the 2008 ozone NAAQS, effective April 6, 2015. On October 1, 2015, the EPA again strengthened the 8-hour ozone NAAQS to 0.070 ppm, effective December 28, 2015, retaining the same form as the previous 1997 and 2008 standards. The 2008 ozone NAAQS is a primary focus of the 2016 Air Quality Management Plan (AQMP).

Additionally, the EPA has designated the SCAB as nonattainment for $PM_{2.5}$. In 1997, the EPA established standards for $PM_{2.5}$ (particles less than 2.5 micrometers), which were not implemented until March 2002. $PM_{2.5}$ is a subset of the PM_{10} emissions whose standards were developed to complement the PM_{10} standards that cover a full range of inhalable particle matter. For the PM_{10} health standards, the annual PM_{10} standard was revoked by the EPA on October 17, 2006, and the 24-hour average PM_{10} nonattainment status was redesignated to attainment (maintenance) on July 26, 2013.

The 2012 AQMP provides measures to reduce $PM_{2.5}$ emissions to within the federal standard by 2015. On January 25, 2013, the CARB approved the 2012 AQMP that was prepared per the Federal Clean Air Act requirements to show attainment of the $PM_{2.5}$ standard by the revised date of 2014. The 2012 AQMP builds upon the approaches taken in the 2007 AQMP utilized to reduce $PM_{2.5}$ emissions in the SCAB. On December 14, 2012 the EPA revised the primary annual $PM_{2.5}$ NAAQS from 15 micrograms per cubic meter ($\mu g/m^3$) to 12 $\mu g/m^3$. The 2016 AQMP includes implementation strategies to meet the revised $PM_{2.5}$ standard.

The SCAB has been designated by CARB as a nonattainment area for O_3, NO_2, PM_{10}, $PM_{2.5}$, and lead. Currently, the SCAB is in attainment with the state ambient air quality standards for CO, SO_2, and sulfates, and is unclassified for visibility-reducing particles and hydrogen sulfide. The 2007, 2012, and 2016 AQMPs provide measures to meet the state standards for O_3, NO_2, PM_{10}, and $PM_{2.5}$.

4.3.2 Impact Analysis

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less than Significant Impact with Mitigation Incorporated. The Proposed Project site is in an area designated for commercial land use. The Proposed Project consists of the installation of a production well within the District's property. Because of the Proposed Project's level of effort for construction and operational activities, and with implementation of mitigation measure AQ-1 it would not conflict or obstruct the 2016 AQMP's goals to achieve reduction of pollutants.

Construction and Operation

Construction of the Proposed Project would generate pollutant emissions from the following activities: site clearing and grading; equipment transport; drilling activities; worker travel; fuel combustion; and hauling supplies. Emissions associated with these activities would temporarily create dust, fumes, equipment exhaust, and other air contaminants.

Table 1: Designations/Classifications for the South Coast Air Basin

Pollutant	Averaging Time Standard	National Standards Attainment Date	California Standards
Ozone (O_3)	1-Hour (1979) (0.12 ppm)	Nonattainment (Extreme) 2/26/2023	Nonattainment
	8-Hour (1997) (0.08 ppm)	Nonattainment (Extreme) 6/15/2024	
	8-Hour (2008) (0.075 ppm)	Nonattainment (Extreme) 7/20/2032	
	8-Hour (2015) (0.07 ppm)	Pending – Expect Nonattainment beyond 2032	Pending
Carbon Monoxide (CO)	1-Hour (35 ppm) 8-Hour (9 ppm)	Attainment (Maintenance) 6/11/2007 (attained)	Maintenance
Nitrogen Dioxide (NO_2)	1-Hour (100 ppb)	Unclassifiable/Attainment Attained	Attainment
	Annual (0.053 ppm)	Attainment (Maintenance) 9/22/1998	
Sulfur Dioxide (SO_2)	1-Hour (75 ppb)	Designation Pending/ Pending	Attainment
	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment 3/19/1979 (attained)	
Particulate Matter (PM_{10})	24-Hour (150 µg/m^3)	Attainment (Maintenance) 7/26/2013	Nonattainment
Particulate Matter ($PM_{2.5}$)	24-Hour (2006) (35 µg/m^3)	Nonattainment 12/14/2014	Nonattainment
	Annual (2012) (12.0 µg/m^3)	Nonattainment 4/5/2015	
	Annual (1997) (15.0 µg/m^3)	Attainment (final determination pending) 4/5/2015 (attained 2013)	Attainment
Lead (Pb)	3-Months Rolling (0.15 µg/m^3)	Nonattainment (Partial) 12/31/2015	Nonattainment

Source: SCAQMD 2018

Once operational, maintenance testing would be the predominant source of long-term air emissions. According to

Table **5**, SCAQMD Air Quality Significance Thresholds below, emissions resulting above the mass daily thresholds during construction and operation would result in a significant impact to air quality (SCAQMD, 2019).

The Proposed Project would not result in a significant and permanent increase in the frequency or severity of air quality violations. The Federal Emergency Management Agency (FEMA) developed a calculation sheet for combustible emissions for typical construction equipment and activities. It provided construction emission estimates for various equipment including but not limited to dump trucks, excavators, trenchers, drill rigs, and dozers. The calculations also include estimated emissions for worker vehicles. The following table outlines the estimated emission calculations for construction equipment and worker vehicles (FEMA 2006).

Table 2: FEMA Calculation Sheet for Construction Equipment

Type of Construction Equipment	Units	Horsepower Rating	Hours/Day	Days/Year	CO lbs/day	NO_x lbs/day	PM_{10} lbs/day
Diesel Dump Truck	2	300	8	90	21.89	58.09	4.33
Diesel Excavator	1	300	8	15	6.93	24.27	1.73
Diesel Hole Trenchers	1	175	8	15	7.47	17.87	1.47
Diesel Bore/Drill Rigs	1	300	8	15	12.13	37.87	2.67
Diesel Tractors/Loaders/Backhoes	2	100	8	90	28.95	25.47	4.82
Diesel Bull Dozers	1	300	8	90	7.29	25.18	1.77
Diesel Front End Loaders	1	300	8	90	8.2	26.44	1.84
Total Emissions (lbs/day)					**92.86**	**215.19**	**18.63**

Table 3: FEMA Calculation Sheet for Construction Worker Personal Vehicle Commute

Pollutants	Passenger Cars gal/mile	Pick-Up Trucks, SUVs gal/mile	Mile/Day	Day/year	Number of Cars	Number of Trucks	Total Emissions Cars lbs/day	Total Emissions Cars lbs /day	Total lbs /day
CO	12.4	15.7	60	240	20	20	32.83	41.5	74.33
NO_x	0.95	1.22	60	240	20	20	2.5	3.25	5.75
PM_{10}	0.0052	0.0065	60	240	20	20	0	0	0

Table 4: Total Construction Equipment and Vehicle Pollutants

Pollutant	Total emissions in lbs/day for worker vehicle and construction equipment
CO	167.19
NO_x	220.94
PM_{10}	18.63

The Proposed Project's construction activities would implement the following mitigation measure to address potential impacts of NO_x during construction. Implementation of this mitigation measure would result in impacts to be less than significant.

MM-AQ-1: During construction, the Project contractor shall implement the following actions to minimize emissions as mobile sources emit the most NO_x. These shall be a combination of the following actions to be implemented during the use of heavy construction equipment and worker vehicles to minimize emissions. Measures may be added or revised based on the conditions of the site during construction.

- Reduce emissions from traditional combustion sources such as diesel operated equipment and back-up generators by using electrified vehicles and equipment where feasible.
- Utilize ultra-low NOx engines.
- Replace older, high-emitting equipment with new lower, or zero emission equipment.
- Off-road diesel equipment would be required to shut down engines if they need to idle for more than 5 minutes.
- Equipment shall comply with SCAQMD Rule 2449 'Control of Oxides of Nitrogen Emissions from Off-Road Diesel Vehicles' and CARB Off-Road Vehicle and Equipment Regulations where applicable.
- If meeting the vehicle requirements are not feasible, the contractor shall obtain trucks that meet the EPA standards for NOx emission requirements.
- Combustion engines and construction engines and equipment shall meet EPA-certified Tier 3 emission standards or higher.
- Where feasible, Best Available Control Technology devices from CARB shall be implemented.
- All equipment must be regularly serviced to minimize exhaust.
- Utilize low sulfur fuel for stationary construction equipment (SCAQMD Rule 431.1 and 431.2).
- Use existing power sources where available to minimize the use of gas or diesel generators.
- Construction equipment fleet shall utilize alternative fuels where possible.
- Contractor shall provide on-site services such as access to repair and fueling, to minimize travel needs throughout the area.

The length of ground disturbances and use of heavy construction equipment would be for no more than 6 to 9 months. There are no proposed amendments to the current land uses, and no anticipated population growth that could conflict with the land use of the proposed well site. Given the size of the Proposed Project, the temporary and localized efforts, and that the Proposed Project would not involve extended construction or operations that would result in permanent and potentially significant emissions, it would not result in significant emissions that would obstruct the goals of the 2016 AQMP with the incorporation of MM-AQ-1 . Operations of the well are not anticipated to result in significant emissions as the well will be maintained by existing employees in the adjacent administration building which is the location of the District's headquarters. The maintenance of the well is scheduled to occur weekly by District employees who currently maintain the existing wells within the District's service area. Maintenance of the Proposed Project would utilize only one vehicle. Therefore, impacts would be less than significant with mitigation incorporated.

Table 5: SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds [a]		
Pollutant	**Construction [b]**	**Operation [c]**
NO_x	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_x	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

a Source: South Coast AQMD CEQA Handbook (South Coast AQMD, 1993)
b Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).
c For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.

b) Would the project violate any air quality standard or result in a cumulatively considerable net increase in an existing or projected air quality violation?

Less than Significant Impact with Mitigation Incorporated. Cumulative projects would include local development and general growth within the air basin. Within the SCAB, mobile sources are one of the greatest sources of emissions. Therefore, from an air quality standpoint, the cumulative analysis would extend beyond any local projects and, when wind patterns are considered, would cover an even larger area. Accordingly, the cumulative analysis for the Proposed Project's air quality must be generic by nature. The SCAQMD is out of attainment for O_3 (NAAQS/CAAQS), PM_{10} (CAAQS), and $PM_{2.5}$ (NAAQS/CAAQS).

The Proposed Project would result in the emission of pollutants during ground disturbing activities with the use of construction equipment. Construction emissions may have the potential to exceed air quality standards within the vicinity of the Proposed Project even if the emissions are not significant enough to create an impact within the basin. To assess local air quality impacts, SCAQMD provided thresholds for construction and operation to assess project-related emissions within the 38 monitoring areas. The mass rate look-up tables list the source receptor area (SRA) which are the monitoring areas within the basin and can be used to determine whether a project may generate significant adverse localized air quality impacts. Key emissions of concern are NO_2, CO, PM_{10}, and $PM_{2.5}$ (SCAQMD, 2009).

The localized significance thresholds (LST) look-up tables provide different thresholds based on the location and size of a project and its distance to the nearest receptors. The tables provide a 1-acre, 2-acre, and 5-acre project sizes, with 1-acre being utilized for the Proposed Project. The Proposed Project is in Air Monitoring 9 which covers the Central San Bernardino Mountains (SCAQMD, 1999).

According to Rule 1470 from AQMD, sensitive receptors mean any residence, including private homes, apartments, living quarters, school, health facilities, nursing homes or other long-term care live-in housing. The nearest sensitive receptors are homes located along Blue Jay Canyon Road which is accessible through a gate along CA-189. The nearest home is approximately 300 feet (91 meters) east from the Proposed Project. The nearest home will utilize a 50-meter threshold for the LST look-up tables (SCAQMD, 2009).

Table 6: Local Thresholds of Significance

Activity	Allowable Emissions (pounds/Day) [1]			
	NOx	CO	PM_{10}	$PM_{2.5}$
Construction	148	1,059	13	5
Operation	148	1,059	3	2

[1] The nearest sensitive receptors are the homes are located approximately 300 feet from the Proposed Project. The 50-meter receptor distance will be used. According to SCAQMD methodology, all receptors closer than 25 meters are based on the 25-meter threshold.

Source: SCAQMD's Mass Rate Look-Up Tables for two acres in Air Monitoring Area 9 found at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/appendix-c-mass-rate-lst-look-up-tables.pdf?sfvrsn=2

Construction of the Proposed Project would create emissions primarily from equipment use and fugitive dust. Construction activities would include site preparation, grading, and excavation. According to the SCAB Fleet Average Emission Factors (for Diesel), a bore/drill rig at 1,000 horsepower would emit approximately 31.9 pounds per hour of NOx (SCAQMD, 2019). However, the length of ground disturbance during construction would be limited to no more than 6 to 9 months, and therefore would not result in emitting significant levels of pollutants within the area that would be above the daily threshold. Diesel operated, and other heavy equipment, is not expected to be in constant use that would exceed the mass daily threshold for CO. (See Table 2 and Table 3.) It would exceed the thresholds for NO_x (refer to Table 4 in the previous response to impact a) for both the local thresholds of significance and SCAQMD's air quality significance thresholds and would exceed the thresholds for PM_{10} for the local thresholds of significance. However, the localized thresholds were estimated assuming residences within 50 meters (or approximately 164 feet) when in fact residences are 300 feet from the Project site. These estimates are based on worst-case scenario.

The Proposed Project would require implementation of MM-AQ-1 and MM-AQ-2 to minimize emissions from the proposed construction. In addition, the Proposed Project will utilize anti-idling devices, or limit vehicles from idling to minimize emissions. Per the California Air Resources Board, construction equipment such as off-road diesel equipment and fleets are to limit idling to 5 minutes unless it is required to perform work (CARB, 2016).

The following table prepared by FEMA estimated the total emissions from heavy duty trucks and delivery supply trucks during a typical construction project with a duration of 240 days.

Table 7: Heavy Duty Trucks/ Delivery Supply Trucks to Construction Site

	Emission Factors		Assumptions				Results by Pollutant		
Pollutants	10,000 - 19,500 lbs delivery truck	33,000 - 60,000 lbs semi trailer rig	Mile/Day	Day/year	# of Trucks	# of Trucks	Total Emissions Cars lbs/day	Total Emissions Trucks lbs/day	Total lbs/day
CO	1.32	3.21	60	240	2	2	0.33	0.833	1.17
NO_x	4.97	12.6	60	240	2	2	1.33	3.33	4.67
PM_{10}	0.12	0.33	60	240	2	2	0	0.083	0.083
SCAQMD Mass Daily Threshold for Construction									
NO_x	100 lbs/day								
CO	550 lbs/day								
PM_{10}	150 lbs/day								

The Proposed Project is anticipated to yield similar amount of trucks and mileage traveled as listed in FEMA's construction emission table for heavy duty trucks in Table 7. Based on the estimated construction travel, the Proposed Project would not result in emitting significant amounts of CO and PM_{10} pollutants during construction travel. However, the Proposed Project would result in exceedance of the NO_x threshold during travel and site construction. During operations, the Proposed Project would utilize one truck on a weekly basis to conduct maintenance of the well. As such, the Proposed Project would comply with the County of San Bernardino General Plan mitigation measures, MM-AQ-1, MM-AQ-2, and SCAQMD Rules 402, 403, and 404 to reduce short-term air pollutants, and to mitigate air quality impacts to a level less than significant during construction efforts on the site:

MM-AQ-2: Development during construction would be subjected to wind hazards (due to increased dust, the removal of wind breaks, and other factors). The District shall require a combination of one or more of the following actions to be implemented during site preparation and ground disturbing activities to minimize emissions and minimize creation of dust. This is not an exhaustive list of the necessary actions to mitigate air quality impacts. Rather, it provides a menu of general activities that may be implemented during construction. Additional measures may be implemented based on the conditions of the site during construction. These measures can be found from the AQMD Rules and Compliances for Dust Control, and CARB for off-road vehicle and equipment regulations.

- Grading Restrictions and Dust Control Measures

- Suspension of grading, clearing, earth moving, or excavation activities during high wind conditions which are instantaneous wind speeds exceeding 25 miles per hour;
- Grading operations where dry conditions are encountered shall include dust control measures to minimize fugitive dust as required under AQMD Rule 403;
- Construction equipment shall meet the off-road vehicle and equipment regulations as required by CARB;
- Limit vehicular speeds on unpaved roads and staging areas to 15 mph;
- Stabilize stockpile materials;
- Application of water to maintain soils in damp condition to minimize fugitive dusts as required under AQMD Rule 403.

c) *Would the project expose sensitive receptors to substantial pollutant concentrations?*

d) *Would the project result in substantial emissions (such as odors or dust) affecting a substantial number of people?*

c and d) **Less than Significant with Mitigation Incorporated.** The Proposed Project would not expose sensitive receptors such as schools and residents to substantial pollutant concentrations and odors during construction, as they are not located within the immediate vicinity of the Project site. The nearest residences are located approximately 300 feet northeast of the Proposed Project site along Blue Jay Canyon Road, east of the Blue Jay Business Center.

The Proposed Project would result in emissions that could produce odors from the use of vehicles and heavy equipment. Diesel equipment used during construction would consist of mobile equipment. The movement of these equipment allows the odors to disperse rapidly and not impact any nearby receptors. The objectionable odors that may be produced during the construction process would be temporary and would not likely be noticeable for extended periods of time beyond the project site's boundaries. The construction odor emissions would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction. Due to the transitory nature of construction odors, a less than significant odor impact would occur and no mitigation would be required. Furthermore, the Proposed Project would comply with Rule 1122 to address the use of solvents and degreasers during the proposed activities. The Proposed Project will expose the District employees located at the adjacent administration building to pollutants during construction. The construction activities are short-term and the use of heavy equipment would be limited to no more than 6 to 9 months. Heavy equipment that generate significant amounts of pollutants would not run for more than 8 hours per day (when feasible). The contract and project personnel will minimize unnecessary idling of equipment. Once operational, the Proposed Project would not require frequent use of construction equipment that would provide continuous and substantial pollutant concentrations to sensitive receptors.

The Proposed Project would implement MM-AQ-1 identified in Section 4.3.2 (b) to minimize exposure to fugitive dust, particulate matter, and other air contaminants during construction.

Additionally, the California Code of Regulations Title 13, Article 4.8, Chapter 9, Section 2449 regulates emissions from off-road diesel equipment in California. This will limit the idling of equipment to no more than five minutes, and includes additional requirements on labeling, annual reporting, and upgrading of the emission Tier level equipment. The Proposed Project would also implement MM-AQ-2 to address NO_x emissions. Normal operation of the well would not result in emitting significant pollutant concentrations and odors as no daily operation will not require heavy equipment. Impacts would be less than significant with mitigation incorporated.

4.4 BIOLOGICAL RESOURCES

4.	BIOLOGICAL RESOURCES. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
(b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
(c)	Have a substantial adverse effect on state or federally protected wetlands as (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?	☐	☐	☒	☐

4.4.1 Environmental Setting

Chambers Group was retained by Tidewater to conduct a literature review and biological assessment for the proposed Blue Jay Well project. For the literature review, the most recent records of the California Natural Diversity Database (CNDDB; CDFW, 2019) and the California Native Plant Society (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI; CNPS, 2019) were reviewed for the following quadrangles containing and surrounding the Proposed Project site: *Lake Arrowhead* and *Harrison Mtn*., California. A reconnaissance survey and tree assessment were conducted

on November 19, 2019. The results of the Biological Assessment are reported below; for a more in-depth explanation of the methods, please refer to the Biological Assessment report (Appendix A).

Vegetation

The vegetation community types within the Proposed Project area are the *Pinus ponderosa – Calocedrus decurrens* Forest Alliance and Ruderal. These vegetation communities identified are shown on Figure 2 of Appendix A with acreages within the Proposed Project site summarized in Table 8 below. Minimal amounts of native vegetation are expected to be impacted by well construction activities. The trees mapped in the Proposed Project site will be left in place and will not be removed as part of this Proposed Project.

Table 8: Vegetation Community Acreages

Vegetation Community	Size in Proposed Project Site (Acres)
Pinus ponderosa – Calocedrus decurrens Forest Alliance	0.137
Ruderal	0.121
Grand Total	**0.258**

Representative site photographs are included as Appendix B of the Biological Assessment (Appendix A of this document). The following sections summarize the principal characteristics of the vegetation communities within the Proposed Project site. A list of plant species that were observed during the surveys is presented as Appendix A of the Biological Assessment (Appendix A of this document).

Vegetation Communities

Pinus ponderosa – Calocedrus decurrens Forest Alliance

The *Pinus ponderosa – Calocedrus decurrens* Forest Alliance is mostly a cismontane alliance occurring on floodplains, low-gradient depositions along streams, and raised benches. It is an upland alliance ranging in elevation from 980 to 6,900 feet above mean sea level (amsl). The shrub layer is open to continuous with a sparse, abundant, or grassy herbaceous layer (Sawyer et al., 2009). Species present within the Proposed Project area associated with this community include Ponderosa pine (*Pinus ponderosa*), young incense cedar (*Calocedrus decurrens*) trees, and scattered black oak (*Quercus kelloggii*) trees. The shrub layer was composed of minimal amounts of woody shrubs including cherry (*Prunus* sp.), gooseberry (*Ribes* sp.), Siberian elm (*Ulmus pumila*), and greater periwinkle (*Vinca major*). The understory was dominated by grasses and small forbs with a thick leaf litter and duff layer.

Ruderal

Areas classified as Ruderal tend to be dominated by pioneering herbaceous species that readily colonize disturbed ground and that are typically found in temporary, often frequently disturbed habitats (Barbour et al., 1999). The soils in Ruderal areas are typically characterized as heavily compacted or frequently disturbed. The vegetation in these areas is adapted to compact soils where water does not readily penetrate the soil. Often, Ruderal areas are dominated by species of the *Centaurea*, *Brassica*,

Malva, *Salsola*, *Eremocarpus, Amaranthus*, and *Atriplex* genera. Areas with Ruderal vegetation were present within the Project area in the open areas between the tree canopy. Species present within the Ruderal areas on site were dominated by non-native cheat grass (*Bromus tectorum*) with lesser amounts of non-native Sahara mustard (*Brassica tournefortii*), garland daisy (*Glebionis coronaria*), prickly lettuce (*Lactuca serriola*), common knotweed (*Polygonum arenastrum*), and wheat (*Triticum aestivicum*). Native plant species identified within this community on site included sticky cinquefoil (*Drymocallis glandulosa*), California cottonweed (*Epilobium ciliatum*), horseweed (*Erigeron canadensis*), gilia (*Gilia* sp.), and threadplant (*Nemacladus* sp.).

Tree Inventory

Table 9: Tree Inventory presents a list of the trees that have a diameter at breast height (DBH), greater or equal to 4 inches, that were found within the Proposed Project site or areas adjacent to the site that have a canopy intersecting the Proposed Project site. *Pinus ponderosa* is commonly known as Ponderosa pine, *Calocedrus decurrens* as California incense cedar, and *Quercus kelloggii* as California black oak. A complete list of scientific and common names for the plant species are in Appendix A of the Biological Assessment.

Table 9: Tree Inventory

Tree ID	Tree Species	Common Name	DBH * (inches)	Approximate Canopy Cover		Height (feet)	Tree Health/ Aesthetic Value**
				Width (feet)	Length (feet)		
1	*Pinus ponderosa*	Ponderosa Pine	41	17	20	115	B
2	*Pinus ponderosa*		38	40	30	110	B
3	*Calocedrus decurrens*	California incense cedar	14	25	19	50	A
4	*Pinus ponderosa*	Ponderosa Pine	51	55	40	150	A
5	*Quercus kelloggii*	California black oak	33	60	45	75	B
6	*Quercus kelloggii*		7	30	28	35	C
7	*Calocedrus decurrens*	California incense cedar	5	12	10	15	D
8	*Calocedrus decurrens*		7	10	15	20	C
9	*Calocedrus decurrens*		6	10	8	12	D
10	*Calocedrus decurrens*		4	6	5	10	C

*** Diameter at breast height as measured at 4.5 feet above grade.**

**** Tree health and aesthetic value correspond to ecological value ratings described in Table 2 of the Biological Assessment (Appendix A).**

Sensitive Plants

The CNDDB and CNPSEI literature reviews resulted in a list of 45 sensitive plant species with a potential to occur on or within the vicinity of the Proposed Project area. Excluding those species that are presumed extinct, are not listed to be protected, or are not on any watchlist, the number of plant species evaluated for their potential to occur was decreased to 29 species. The southern California

legless lizard (Anniella stebbinsi) – SSC and southern rubber boa (Charina umbratica) – ST have low potential to occur as limited habitat is present near the Project site. Please refer to Section 2.2.3 and 3.4.3 of the Biological Assessment (Appendix A) for a list of the absent species, abbreviations, and a detailed explanation on potential for occurrence classification criteria.

Acronyms for listings:

- Federally listed: Endangered (FE)
- State listed; Endangered (SE)
- State Species of Special Concern (SSC)
- State listed; Threatened (ST)
- U.S. Forest Service Sensitive (FSS)

The following plant species are considered **absent** or have a very low potential to occur within the survey area as they typically grow at elevations below the range onsite:

- Nevin's barberry (*Berberis nevinii*) – **FE, SE,** CRPR 1B.1
- smooth tarplant (*Centromadia pungens* subsp. *laevis*) – CRPR 1B.1
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*) – CRPR 1B.1, FSS
- white-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*) –
- CRPR 1B.2, FSS
- California satintail (*Imperata brevifolia*) – CRPR 2B.1, FSS
- Sonoran maiden fern (*Thelypteris puberula* var. *sonorensis*) – CRPR 2B.2, FSS

The following plant species have a **low** potential to occur within the Proposed Project site as marginally suitable lower montane coniferous forest habitat is present as part of the *Pinus ponderosa – Calocedrus decurrens* Forest Alliance on site. These species include:

- Parish's *oxytheca* (*Acanthoscyphus parishii* var. *parishii*) – CRPR 4.2, FSS
- urn-flowered alumroot (*Heuchera caespitosa*) – CRPR 4.3, FSS
- chickweed *oxytheca* (*Sidotheca caryophylloides*) – CRPR 4.3, FSS

Of the 29 special status plant species evaluated for their potential occurrence on the Proposed Project site, three species have low potential to occur and 26 species are considered to be absent from the area due to a lack of suitable habitat. None of the species with a low potential to occur onsite is federally or State listed as threatened or endangered. Although these species are FSS species for the San Bernardino National Forest (Region 5), these species are not afforded otherwise special protection under CEQA.

Wildlife

The following paragraphs describe the wildlife species observed or otherwise detected on or in the vicinity of the Proposed Project area during the reconnaissance-level survey. Wildlife detections or signs included those for birds and mammals. Species observed were mainly observed in the surrounding more densely vegetated areas outside the immediate Proposed Project site.

Birds

Three avian species were observed or otherwise detected during the survey adjacent to the Proposed Project site. These species detected adjacent to the Proposed Project site, which may use the site for foraging, included Steller's jay (*Cyanocitta stelleri*), red-breasted nuthatch (*Sitta canadensis*), and mountain chickadee (*Poecile gambeli*).

Mammals

Ground squirrel (*Otospermophilus beecheyi*) burrows were detected within the Proposed Project site. No other mammal species were observed or otherwise detected during the survey.

Sensitive Wildlife

The CNDDB and literature review resulted in a list of 29 sensitive wildlife species with a potential to occur on or within the vicinity of the Proposed Project site. These species, their current status, and potential for occurrence are summarized in Appendix A.

The following animal species have a **low** potential to occur within the Proposed Project area, as limited habitat is present near the Proposed Project site, and these species have been found within five miles of the Proposed Project site. However, these species require moist soils which are only present outside the Proposed Project limits, and the rock retaining wall present onsite is not proposed to be impacted during construction activities:

- southern California legless lizard (*Anniella stebbinsi*) – **SSC**
- southern rubber boa (*Charina umbratica*) – **ST**

Of the 29 special status wildlife species evaluated for their potential occurrence within the Proposed Project site, two species have a low potential to occur, and 27 species are considered to be absent from the current Proposed Project site. Of those animal species with a low potential for occurrence, only the southern rubber boa is federally or State listed as endangered or threatened (State listed as threatened).

4.4.2 Impact Analysis

(a) Would the project have a substantial adverse effect, either directly or through habitat modification, on any species identified as candidate, sensitive or special status species in local or regional plans, policies or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Less than Significant Impact with Mitigation Incorporated. According to the Biological Assessment, the CNDDB and CNPSEI literature review resulted in 29 plant species and 29 wildlife species with potential to occur within the Proposed Project site. Of the 29 special status plant species evaluated for their potential occurrence on the Proposed Project site, three species have low potential to occur and 26 species are considered to be absent from the area due to a lack of suitable habitat. Due to the disturbed nature of the Proposed Project site, and because the well is proposed to be

constructed within Ruderal areas that do not support sensitive plant species, no impacts to the three species with a potential to occur are anticipated. Furthermore, the proposed access route to the proposed well location is expected to avoid native vegetation within the *Pinus ponderosa – Calocedrus decurrens* Forest Alliance.

Of the 29 sensitive wildlife species evaluated for their potential occurrence on the Proposed Project area, two species were determined to have a low potential of occurrence. The remaining 27 can be considered absent from the current Proposed Project well location due to the level of disturbance present, the fact that the site has been previously graded, and otherwise lack of suitable habitat. Limited suitable habitat for southern California legless lizard and southern rubber boa is found onsite. Suitable habitat includes the leaf litter and the retaining wall located in the southern portion of the Proposed Project site. However, the retaining wall is located outside of the Proposed Project impact area, and no impacts to the retaining wall are anticipated.

Although the likelihood of these wildlife species to occur onsite is low, implementation of MM-BIO-1 would require a biological monitor be present prior to, and during, initial ground disturbing activities to avoid impacts to the southern California legless lizard and southern rubber boa. If the southern California legless lizard or southern rubber boa are observed onsite during construction, the monitor will halt construction until the species has dispersed from the site. If the southern rubber boa is found within the retaining wall, an avoidance buffer will be placed with staking or flagging to protect this species from potential harm. If during well construction activities a trench or hole is needed to be left open onsite, implementation of MM-BIO-2 would require the slope of the opening be constructed to allow for dispersal of trapped wildlife, or that an inclined plane be placed in the hole to allow for escape. Due the low potential for this species to be onsite, the potential to kill ("take") is not anticipated; therefore, a CDFW Incidental Take Permit will not be required. Impacts would be less than significant with mitigation incorporated.

MM-BIO-1: A biological monitor will be present prior to and during initial ground disturbing activities to avoid impacts to the southern California legless lizard and southern rubber boa. The biological monitor shall carefully rake the leaf litter looking for these species and allow for dispersal from the site. If the southern California legless lizard or southern rubber boa are observed onsite during construction, the monitor will halt construction until the species has dispersed from the site. If the southern rubber boa is found within the retaining wall, the biological monitor will create an avoidance buffer with staking or flagging to protect this species from potential harm.

MM-BIO-2: If during well construction activities, a trench or hole is needed to be left open onsite, the slope of the opening shall be constructed to allow for dispersal of trapped wildlife, or an inclined plane shall be placed in the hole to allow for escape.

(b) Would the project 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 Game or U.S. Fish and Wildlife Service?

Less than Significant Impact. The jurisdictional assessment within the Biological Assessment revealed that the Little Bear Creek runs west to east approximately 115 feet north, and south to north approximately 80 feet east at the closest location to the Proposed Project site. The segment that parallels SR 189 north of the Proposed Project site is contained within a concrete-lined channel where an 8-foot wide box structure diverts the flow of water below the District's administration building's parking lot. No waters under State or federal jurisdiction were identified within the Proposed Project site. Further, any construction activities would occur within the selected site, and there are no proposed activities that would involve access or disturbance to a riparian habitat; impacts would be less than significant.

(c) Would the project have a substantial adverse effect on State or federally protected wetlands (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less than Significant Impact. According to the Biological Assessment and the National Wetlands Inventory, there are no wetlands located within, or adjacent to the Proposed Project well site. The Proposed Project would not occur within federally protected wetlands and would not include any dredging activities that could impact wetlands (USFWS, 2019b). No work is anticipated to occur within these areas. Impacts would be less than significant.

(d) Would the project 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?

Less than Significant Impact with Mitigation Incorporated. As stated in Section 4.4.1 (a), there are wildlife and plant species that have potential to occur within a half-mile buffer of the Proposed Project site. Work will be limited to Ruderal areas, eliminating potential impacts to sensitive plant species within the Proposed Project site. The Proposed Project would not result in impacts to migratory fish because there are no proposed activities that would occur or impact a stream or river. However, the Proposed Project could result in the interference with the movement of two wildlife species that have the potential to occur within the Proposed Project site: the southern California legless lizard and southern rubber boa. Though as mentioned in Section 4.4.2 (a), implementation of MM-BIO-1 and MM-BIO-2 would reduce potential impacts to these wildlife species to less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

(e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less than Significant Impact with Mitigation Incorporated. Ten native trees were mapped within, and in proximity to, the Proposed Project site. Only those living trees with a six-inch or greater diameter at DBH are regulated by the County of San Bernardino, and require a tree removal permit according to Section 88.01.070 of the County Development Code Division 8, "Resource Management and Conservation." The removal of any native regulated trees is not anticipated as part of well construction activities. The following mitigation measure would be implemented to protect biological resources including resources related to a tree preservation policy or ordinance and would result in less than significant impacts.

MM-BIO-3: It is anticipated that construction will remain within the current limits of the Proposed Project boundary; thus, impacts would be less than significant with the proposed mitigation incorporated.

In the event that construction exceeds the current scope of the Project or is anticipated to encroach within a 15-foot radius of any regulated tree even if that tree trunk is outside the Proposed Project boundary and even if full removal of the tree is not necessary, prior to continuing work on the Project site, the contractor shall contact a certified arborist to prepare an updated tree inventory and recommend any necessary measures to mitigate for impacts to regulated trees. If tree roots within a 15-foot radius of any regulated tree trunk (considered the Protected Zone) are identified to be impacted during construction, an above-ground temporary fence enclosure shall be erected around the root area encompassing the Protected Zone so as not to disturb the soil. The root locations shall be confirmed by the certified arborist. If the Protected Zone cannot be fenced, a temporary buffer shall be established to protect the roots and will remain in place until construction activities have been completed. The type of material used within the temporary buffer shall be determined during the preparation of the updated tree inventory. Material within the temporary buffer could include, but would not be limited to wood chips, gravel, plywood sheets or steel plates. All impervious material and temporary fencing would be removed upon completion of construction activities. Maintenance activities related to the completed well and associated infrastructure will be limited to established access paths to avoid additional long-term impacts of regulated trees.

(f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservancy Conservation Plan, or other approved local, regional, or State habitat conservation plan?

Less than Significant Impact. According to the County of San Bernardino General Plan, there are no adopted habitat conservation plans, or natural conservation plans within the mountain regions where the Project site is located. The General Plan relies on the development of such plans created by other parties to mitigate adverse effects to biological resources (County of San Bernardino, 2007c). Therefore, impacts would be less than significant.

4.5 CULTURAL RESOURCES

5.	CULTURAL RESOURCES. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☒

(b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
(c)	Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

4.5.1 Environmental Setting

Cultural resources (which are categorized by archaeological and historic resources) consist of prehistoric and historic sites, structures, landscapes or any other physical evidence associated with previous human activity that are considered important to a culture, whether for religious, scientific, or traditional purposes. Paleontological resources are evidences of ancient life forms such as fossils and are discussed in section 4.7.

Under the Cultural and Paleontological Resources Element of the General Plan, San Bernardino County has three main ecological zones which are responsible for the unique prehistoric and historic cultures that have developed over the last approximately 10,000 years within the region.

Chambers Group was contracted by Tidewater to complete a Phase 1 Cultural Resources Report for the Proposed Project, which includes drilling, installation, sampling, development, and testing of the new production well(s) in accordance with federal, State, and local requirements. Chambers Group completed an archaeological literature review, archaeological records search, Native American Sacred Land Files Search along with scoping letters, sent Assembly Bill 52 (AB 52) consultation letters, and conducted a field survey of the approximately 0.26-acre project area. Further discussion regarding tribal consultation is provided in Section 4.18 Tribal Cultural Resources. The Phase I Cultural Resources Report describes the archaeological methods used to assess the potential for significant archaeological resources within the Proposed Project area and the subsequent findings (Appendix B).

4.5.2 Impact Analysis

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

No Impact. Based upon the records search conducted by staff at the South Central Coastal Information Center (SCCIC), 19 cultural resource studies have been completed previously within the 0.25-mile study area radius. Four of the 19 previous studies were within the current Proposed Project area. From these studies one previously documented cultural resource, a historic road, was recorded within the 0.25-mile study area radius. This previously documented resource is not located within the Proposed Project area. Additionally, historic aerial photographs and topographic maps of the Project area, dating to the late 1930s, were reviewed, and indicated that the Proposed Project area did not contain any historic structures or buildings (Appendix B). Furthermore, the Lake Arrowhead Community Plan provides a list of historical sites and structures located within the planning area. While there are various historic sites, structures, and monuments in the area, the Proposed Project would not involve any development on these areas. There are no historic resources located within the Proposed Project's property (County of San Bernardino, 2007a). No impact would occur.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Less than Significant Impact with Mitigation Incorporated. As mentioned, in Section 4.5.2 (a), the records search did not identify any cultural resources within the Proposed Project area. Under the General Plan's analysis for cultural resources, the County of San Bernardino requires a field survey and evaluation for projects located within the mapped cultural resource overlay area. To date, the County of San Bernardino's Cultural Resources Sensitivity Overlay Maps only cover Oak Hills, Phelan, and the Pinon Hills area (County of San Bernardino, 2006). Chambers Group conducted a cultural resource survey and assisted the District to conduct AB 52 consultation with the Tribes. The summary of the consultation can be found in Section 4.18 Tribal Cultural Resources. Results from the record search and survey show that the area has been previously disturbed, yielded no cultural resources, and no previously-recorded archaeological resources were identified (Appendix B).

Because archaeological resources are often buried and are not uncovered or identified unless there are ground disturbing activities, the following mitigation is recommended in the event of an unanticipated discovery:

MM-CUL-1: In the event that cultural resources are discovered during project activities, all work in the immediate vicinity of the find (within a 60-foot buffer) shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period. Additionally, the San Manuel Band of Mission Indians Cultural Resources Department (SMBMI) shall be contacted, as detailed within MM-TCR-1, regarding any pre-contact finds and be provided information after the archaeologist makes his/her initial assessment of the nature of the find, so as to provide Tribal input with regards to significance and treatment.

MM-CUL-2: If significant cultural resources, as defined by CEQA (as amended, 2015), are discovered and avoidance cannot be ensured, the archaeologist shall develop a Monitoring and Treatment Plan (MTP). Should the significant resource be from the pre-contact era, the draft of the MTP shall be provided to SMBMI for review and comment, as detailed within MM-TCR-1. The archaeologist shall monitor the remainder of the project and implement the Plan accordingly.

c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Less than Significant Impact with Mitigation Incorporated. The Proposed Project is located within a developed area of the Lake Arrowhead communities. Due to the nature of disturbance, and with no identified cultural resources or previously recorded archaeological resources, it is expected that no remains or resources onsite would contain contextual value because of previous disturbances (such as grading) that have occurred on the site. In addition, there is no publicly available information indicating that human remains may occur within the Proposed Project area. However, if the

discovery of human remains occurs during ground-disturbing activities, the following mitigation measure shall be implemented should there be unanticipated discovery of human remains.

MM-CUL-3: If human remains or funerary objects are encountered during any activities associated with the project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5, and that code enforced for the duration of the project.

Impacts would be less than significant with mitigation measure MM-CUL-3 incorporated

4.6 ENERGY

6.	ENERGY Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during project construction or operation?	☐	☐	☒	☐
(b)	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

a) Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during project construction or operation?

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

a and b) **Less than Significant Impact.** The Proposed Project is the construction and operation of an approximately 6 to 8 inch well casing adjacent to the District's administration building. The Proposed Project would include activities that would impact energy resources during project construction and operation. Energy resources impacted would include electricity, natural gas, and petroleum fuel.

Lake Arrowhead is being serviced by Southern California Edison and Southern California Gas Company. Construction of the Proposed Project would utilize natural gases and petroleum for the use of construction equipment and vehicles. Electricity would be used to provide temporary lighting during construction.

Once the production well has been installed and is in operation, the Proposed Project would not result in wasteful and inefficient consumption of energy sources. A project would be considered to result in wasteful and inefficient consumption of energy if a project's energy use would impact local and regional energy supplies, would affect peak and base demands, and if it would impact any existing energy conservation standards. The Proposed Project will include installation of a well

pump; however, the energy required to operate the well would be less than the energy needed to construct and operate larger structures such as residential, commercial, or industrial facilities. According to the Energy Information Administration, the average household consumed approximately 21,210 trillion British thermal unit (Btu) of energy, which is approximately 6.2 billion kilowatt hours (EIA 2020). The average well can consume approximately 350 kilowatt hours (kwh) per year but can vary depending on the depth, size, and design (Environmental Equipment 2020). A conceptual well design is included in Appendix D. The well would not require maintenance activities that would require significant amounts of energy resources, as the site would be routinely maintained by District employees. Vendors would be used for rehabilitation or other larger issues.

The County of San Bernardino prepared a Renewable Energy and Conservation Element that provides element's objectives in innovating renewable energy systems within the Valley, Mountain, and Desert regions (County of San Bernardino, 2017). The Proposed Project would not conflict or obstruct a renewable energy, or energy efficiency plan, because the installation of the production well would occur within District property. The Proposed Project would not involve the installation of new energy sources. The Lake Arrowhead Community Plan does not contain any adopted renewable energy or energy efficiency plan. The Proposed Project would not utilize the area to construct solar systems, wind generation, and hydroelectric power. Therefore, impacts would be less than significant regarding energy usage and renewable energy plans.

4.7 GEOLOGY AND SOILS

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

7.	GEOLOGY AND SOILS. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
(e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
(f)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

4.7.1 Environmental Setting

Informed land-use decisions require information about California's geologic and seismic hazards, such as surface rupture, ground failure, landslides, liquefaction, soil erosion, and subsidence. The California Geological Survey (CGS) provides technical information and advice about landslides, erosion, sedimentation, and other geologic hazards to the public, local governments, agencies, and industries that make land-use decisions in California. Surface rupture is the breakage of ground along the surface trace of a fault caused by the intersection of the fault surface area ruptured in an earthquake. Liquefaction is a process by which water-saturated granular soils transform from a solid to a liquid state during strong ground-shaking. A seismically induced landslide is a general term for falling, sliding, or flowing mass of soil, rocks, water, and debris caused by an earthquake. Erosion is displacement of soil, usually by moving water and wind.

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. This State law was a direct result of the 1971 San Fernando Earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. Surface rupture is the most easily avoided seismic hazard. The Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically-induced landslides.

4.7.2 Impact Analysis

a) i) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

a) ii) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

a) i and a) ii **Less Than Significant Impact.** The Blue Jay community of Lake Arrowhead is in the tectonically active San Bernardino Mountains, and the Proposed Project location is approximately two miles north of the Waterman Canyon fault zone (ArcGIS, 2019; USGS, 2019). However, the Proposed Project production well site is not located within an Alquist-Priolo Earthquake Fault Zone or on an active fault (County of San Bernardino, 2009). The proposed well would include a cement grout annular seal that would be installed in the annular space between the borehole wall and the well casing (annulus); one purpose of the annular seal is to ensure structural integrity of the well and conductor casing, and minimize any potential impact associated with an earthquake. Additionally, the Proposed Project would not involve development of habitable structures; therefore, impacts involving the risk of loss, injury, or death associated with seismic activity would be less than significant.

a) iii) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

No Impact. Although the Blue Jay community is in a tectonically-active area, the community is not identified on the County of San Bernardino's General Plan Geologic Hazards map as being an area susceptible to liquefaction (County of San Bernardino, 2009). Additionally, the Proposed Project would not involve development of habitable structures that would increase the risk of liquefication-related loss, injury, or death. No impact would occur.

a) iv) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

a) iv) **Less than Significant Impact.** The Proposed Project's site is in an area with low to moderate susceptibility to seismically-induced landslides (County of San Bernardino, 2009). In addition, the Proposed Project activities do not include any significant grading along hillside areas. Temporary grading and/or clearing would be required at the new production well site. Grading standards would be enforced in compliance with the Lake Arrowhead Community Plan to reduce soil erosion potential at the well site (County of San Bernardino, 2007a). Additionally, the Proposed Project would not involve development that would increase the risk of landslides. This impact would be less than significant

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less than Significant Impact with Mitigation Incorporated. Construction at the Proposed Project new production well site would result in the disturbance of less than 1,100 cubic yards of soil; some excavated soil would be reused onsite. Soils at the Proposed Project site are Cedarpines, Stargazer, and other similar soils. Typical soil profiles are cobbly sandy loam for Cedarpines, and moderately decomposed plant material, sandy, and clay loam for Stargazer soils. The site consists of a well-drained natural drainage class (USDA, 2019).

The Proposed Project would disturb less than one acre (0.09 ac). The Proposed Project will develop an Erosion Control Plan, as identified in MM-GEO-1, and be implemented during construction. During operations, the Proposed Project site will be kept free of weeds and bushes. Given the condition of the Proposed Project site, amount of material that would be handled, the following

mitigation measure would be implemented to ensure that significant and substantial soil erosion or loss of topsoil would not occur during ground disturbing activities. Impacts would be less than significant with mitigation incorporated.

MM-GEO-1 An Erosion Control Plan shall be prepared prior to ground disturbing activities. This plan shall incorporate BMPs that will control soil erosion in all areas disturbed in support of the Proposed Project, and control the loss of topsoil within disturbed areas to a minimum. The plan shall also incorporate BMPs to control sediment loss from any soil stockpiled on- or off-site for future use. BMPs may include silt fence, straw waddles, sand and gravel bags, plastic sheeting, storm drain inlet protection, street cleaning, and other methods appropriate for the site.

c) *Would the project 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?*

Less than Significant Impact. Lateral spreading is the movement of soils caused by earthquake-induced liquefaction. Subsidence is the downward settling of the ground surface. Lateral spreading would not occur within the Proposed Project as it is not located nearby rivers or shorelines that would result in loose and saturated soils. Subsidence is not expected to occur because no significant depletion of groundwater from a deep aquifer is forecasted to occur based on the proposed extraction rate at the Proposed Project well. As discussed above in impact a)iii and a)iv, the proposed new production well is not located in an area prone to landslide or liquefaction (County of San Bernardino, 2009).

Construction and implementation of the Proposed Project would not result in an increased risk for landslide, lateral spreading, subsidence, liquefaction or collapse with the incorporation of project BMPs and compliance with the grading standards of the Lake Arrowhead Community Plan (County of San Bernardino, 2007a). Impacts would be less than significant.

d) *Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?*

Less than Significant Impact. Expansive soils are commonly associated with clay-rich soils that expand when water is added and shrink when they dry out. This continuous change in soil volume can cause structures built on this soil to move unevenly and crack. As discussed previously in Section 4.7.2 (a), the Proposed Project well site is not located within an area prone to geologic hazards, including hazards associated with expansive soils, as the soils at the Proposed Project site are characterized as well-drained (County of San Bernardino, 2009; USDA, 2019). There are no expansive soils within the site proposed for a new production well, and the Proposed Project would not involve development of habitable structures that would create an increased risk to life or property. Impacts would be less than significant.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The Proposed Project would not involve the use of septic tanks or any other alternative wastewater disposal systems. No impact would occur.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact with Mitigation Incorporated. In San Bernardino, there are more than 3,000 paleontological localities that are recorded at the San Bernardino County Museum (County of San Bernardino, 2007c). The Lake Arrowhead communities are in an area underlain by Mesozoic-aged granitic rock (i.e. quartz monzonite). A thin alluvial deposit derived from weathering of the surrounding mountains intermittently overlies the quartz monzonite bedrock around Lake Arrowhead, as well as in the bottom of valley areas. The thickness of the alluvial material is typically 30 feet or less. Based on the potential for young alluvium located at the Proposed Project production well site, the potential for paleontological resources to occur is considered low. However, the Proposed Project area is within undisturbed lands of the District. If resources are discovered during ground disturbing activities, implementation of MM-CUL-1, MM-CUL-2, and GEO-2 would minimize impacts to paleontological resources.

MM-GEO-2: In the event that paleontological resources are encountered during ground disturbing activities, all work would stop in that area. A qualified paleontological monitor would be consulted to evaluate the discovery. Ground-disturbing activities would be temporarily stopped or redirected to allow the monitor to recover any specimens discovered. All specimens/fossils collected would be deposited in a County approved museum or repository for curation and storage.

With mitigation, the Proposed Project would have a less than significant impact on paleontological resources.

4.8 GREENHOUSE GAS EMISSIONS

8.	GREENHOUSE GAS EMISSIONS. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(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?	☐	☐	☒	☐

4.8.1 Environmental Setting

The California Air Resources Board is the State agency charged with monitoring and regulating sources of emissions of greenhouse gases (GHGs) in California that contribute to global warming in order to reduce emissions of GHGs. The CARB Governing Board approved the 1990 GHG emissions level of 427 million tonnes of CO2 equivalent (MtCO2e) on December 6, 2007. Therefore, in 2020, annual emissions in California are required to be at or below 427 MtCO2e. In January 2017, the CARB Board approved the 2017 Climate Change Scoping Plan (Scoping Plan). The Scoping Plan aims to reduce 1990 levels by 40 percent by 2030. The Scoping Plan continues programs and activities that are implemented primarily by State agencies, but also includes actions by local government agencies. Primary strategies addressed in the Scoping Plan include new industrial and emission control technologies; alternative energy generation technologies; advanced energy conservation in lighting, heating, cooling, and ventilation; reduced-carbon fuels; hybrid and electric vehicles; and other methods of improving vehicle mileage. Local government would have a part in implementing some of these strategies. The Scoping Plan also calls for reductions in vehicle associated GHG emissions through smart growth that would result in reductions of vehicle miles traveled (CARB, 2017). The County of San Bernardino prepared a General Plan Amendment and Greenhouse Gas Reduction Plan on May 2014 to address the reduction of GHGs in the unincorporated areas of the County.

4.8.2 Impact Analysis

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

a) and b) **Less Than Significant Impact.** While there may be trace amounts of GHGs found naturally in the air, the primary source of these gases is from fuel combustion activities. The Proposed Project would generate GHGs during construction activities due to site ground disturbances and well installation activities. Operational source of GHG emissions would be associated with the operation and maintenance of the wells.

A Mitigated Negative Declaration was prepared for the District in 2004, and revised in 2016 (2016 MND), that analyzed the potential impacts from the installation of a new lake water collection system and associated water pump systems. The GHG emissions from the construction and operation of that project was estimated to be 202 metric tons of carbon dioxide per year (MT/year) and would not exceed the 10,000-metric ton of carbon dioxide equivalent ($MTCO_2e$) threshold (LACSD 2016). This measure compares the emissions from different greenhouse gases based upon their global warming potential. While the Proposed Project includes the installation of a well, the construction and operational efforts of the Proposed Project would be less than the efforts described in the 2016 MND which included the construction of a lake water collection system, three pumps, removal of existing pipelines, and construction of a booster station building and a restroom. According to the FEMA calculation sheet for construction equipment below, it provides the estimated CO_2 emissions for various equipment including but not limited to dump trucks, excavators, trenchers, drill rigs, and dozers. The calculations also include estimated emissions for

worker vehicles. The following table outlines the estimated CO_2 emissions for construction equipment (FEMA 2006).

Table 10: FEMA Calculation Sheet for CO_2 for Construction Equipment

Type of Construction Equipment	Units	Horsepower Rating	Hours/Day	Days/Year	CO_2 (tons)
Diesel Dump Truck	2	300	8	90	255.17
Diesel Excavator	1	300	8	15	21.276
Diesel Hole Trenchers	1	175	8	15	12.399
Diesel Bore/Drill Rigs	1	300	8	15	21.014
Diesel Tractors/Loaders/Backhoes	2	100	8	90	109.669
Diesel Bull Dozers	1	300	8	90	127.657
Diesel Front End Loaders	1	300	8	90	127.633
Total Emissions (tons/day)					**674.818**

The estimated total CO_2 emissions, which is a key constituent of GHG emissions, is approximately 674.818 tons per day, which is approximately 83.57 metric tons of CO_2 for a 9-month construction schedule.

The Proposed Project would only install one vault and would not include the installation of additional pumps, booster stations, or restroom. SCAQMD proposes that if a project generates GHG emissions above 10,000 $MtCO_2e$ per year under the Tier 3 screening level for stationary sources, further design features and measures must be implemented to address GHG emissions (SCAQMD

2008).The Proposed Project's construction emissions are short-term and are anticipated to be insignificant in comparison to larger development projects. The Proposed Project's estimated CO_2 emissions would not exceed the screening level as indicated by SCAQMD. The operation of the Proposed Project would not create a significant increase in the GHG emissions, as the land uses would remain consistent, and there is no proposed construction of residential, commercial, or industrial facilities that would result in consistent and significant emission of GHGs. As discussed in Section 4.3.2 (b), unnecessary idling would be limited to minimize emissions, and use of equipment would be limited to no more than 6 to 9 months.

The County's General Plan, Goal CO 4, and the California Global Warming Solutions Act section of the General Plan, incorporated goals and objects for GHGs. The goal states that the County would ensure good air quality for its residents, businesses and visitors.

The Proposed Project would comply with the following General Plan policies to improve air quality and reduce GHGs within the region:

Policies:

CO 4.1 Because developments can add to the wind hazard (due to increased dust, the removal of wind breaks, and other factors), the County would require either as mitigation measures in the appropriate environmental analysis required by the County for the development proposal or as conditions of approval if no environmental document is required, that developments in areas identified as susceptible to wind hazards to address site-specific analysis of:

1. Grading restrictions and/or controls on the basis of soil types, topography or season.

    b. Dust-control measures during grading, heavy truck travel, and other dust generating activities.

CO 4.2 Coordinate air quality improvement technologies with the SCAQMD and the Mojave Air Quality Management District (MAQMD) to improve air quality through reductions in pollutants from the region.

CO 4.5 Reduce emissions through reduced energy consumption.

CO 4.8 Replace existing vehicles in the County fleet with the cleanest vehicles commercially available that are cost-effective and meet the vehicle use needs.

CO 4.9 Manage the County's transportation fleet fueling standards to improve the number of alternative fuel vehicles in the County fleet.

CO 4.12 Provide incentives to promote siting or use of clean air technologies (e.g., fuel cell technologies, renewable energy sources, UV coatings, and hydrogen fuel) (County of San Bernardino, 2007c).

With compliance with the County goals, impacts would be less than significant.

4.9 HAZARDS AND HAZARDOUS MATERIALS

9.	HAZARDS AND HAZARDOUS MATERIALS. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
(b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
(c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
(d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
(e)	For a project located within an airport land use plan or, where such a plan had not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
(f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
(g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☒	☒	☐

4.9.1 Environmental Setting

As detailed in the General Plan, hazardous materials are identified as any material that poses a potentially significant present or potential hazard to human health, safety, or the environment if released in the workplace or environment (County of San Bernardino, 2007c).

4.9.2 Impact Analysis

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

a) and b) **Less Than Significant Impact with Mitigation Incorporated.** The Proposed Project would involve temporary transport, use, and disposal of hazardous materials. During the construction, the Proposed Project would use heavy equipment during ground disturbing activities that would emit emissions associated with internal combustion engines, (i.e. diesel and gasoline). During Proposed Project operations, the use and presence of hazardous materials would be limited to maintenance vehicle equipment, cleaning materials, and water testing materials. The Proposed Project would comply with applicable federal, State, and local laws for the handling, storing, and disposing of hazardous materials. Compliance with these procedures would minimize the risks associated with the accidental release of hazardous materials.

The Proposed Project would implement stormwater BMPs and measures provided in an Erosion Control Plan where applicable to reduce runoff from the site. The Proposed Project would implement the following mitigation to reduce the potential of spill hazards.

MM-HAZ-1: Prior to construction, the contractor shall prepare a Spill Prevention Plan to address potential impacts of potentially hazardous, and hazardous materials that could accidentally spill in the Project site. The plan would include availability of spill control and prevention, material storage and handling, vehicle cleaning, access roads features, and equipment and staging area design features.

Impacts would be less than significant with mitigation incorporated.

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Less than Significant Impact. The Proposed Project location is located approximately 0.58 miles west from Arrowhead Ranch Outdoor Science School at 480 Cottage Grove Road, and approximately 0.1 miles south of Rim of the World Unified School District Administration offices at 27315 North Bay Road #1 (Google Maps, 2019). The Proposed Project is not located within a one-quarter mile of a school. The Proposed Project well installation activities would occur within District property. As stated in Section 4.9.2 (a) and (b), the Proposed Project would utilize potentially hazardous materials during construction activities and would cease once the well casing has been installed. Operational materials that would be present onsite that may be potentially hazardous would be from maintenance vehicle equipment, cleaning materials, and water testing materials. The Proposed Project would comply with applicable federal, State, and local laws for handling, storing, and disposing of hazardous materials. The area would be restricted to construction and District staff only, and potentially hazardous materials would be stored in the District offices or designated storage areas. Impacts would be less than significant.

d) Would the project 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?

Less Than Significant Impact. According to the State Water Resources Control Board GeoTracker database, the Proposed Project location is approximately 375 feet east of a formerly leaking

underground storage tank site (case closed as of 2008), and a permitted underground storage tank. The Proposed Project would not be located directly above a hazardous material site, cleanup site, or underground storage tank sites, nor would it include activities that would involve the ground disturbance of these locations (SWRCB, 2019). Impacts would be less than significant.

e) For a project located within an airport land use plan or, where such a plan had not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

No Impact. According to the General Plan Hazard Overlays, the Proposed Project would not be located within an airport safety review area (County of San Bernardino, 2010a). Lake Arrowhead Airport was used as a transportation provider for the resort areas for business, recreation, firefighting, air evacuation, and emergency landing for public agencies. However, the airport has been closed since 2010 and will not reopen until further notice (Lake Arrowhead Airport, 2019). The nearest international airport is Ontario International Airport which is located approximately 26 miles southwest from the community of Lake Arrowhead (Google Maps, 2019). The Proposed Project is not located within an airport land use plan, and would not result in safety hazards or excessive noise for people residing or working within the Proposed Project areas. No impact would occur.

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. SR-189, SR-173, SR-18, Grass Valley Road, Daley Canyon, North Bay, and Peninsula are designated evacuation routes according to the Lake Arrowhead Community Plan. Specific routes would be designated during an emergency depending on the needs and circumstances of the emergency (County of San Bernardino, 2007a). The Proposed Project is located approximately 420 feet southeast from SR-189 which is a designated evacuation route. During construction, SR-189 would be used to access the District's property through the Blue Jay Business Center driveway. All other Proposed Project activities would occur within the District's property. There are no proposed roadway widening, blocking, or expansion activities along SR-189 that would result in an impairment of an evacuation or emergency response, or with the County Emergency Management Plan. Impacts would be less than significant.

g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less Than Significant Impact with Mitigation Incorporated. The proposed well location is within a Very High Fire Hazard Severity Zone (VHFHSZ), according to the California Department of Forestry and Protection (CAL FIRE, 2008). The Proposed Project would not involve development of structures that would introduce new populations to the Proposed Project area that could result in exposure to wildfires. During construction activities, the following safeguards would be implemented to prevent accidental ignition of nearby vegetation.

MM-HAZ-2: During construction, the contractor and other on-site personnel shall keep traffic away from tree root areas, vegetation, or combustible materials. No activities involving hot work would occur during high wind weather (greater

than 30 miles per hour). Workers on-site shall keep any combustible materials away from any fire or ignition sources. Flammable and ignitable materials will be kept away from fire sources, and properly stored and disposed. Fire suppression systems such as fire extinguishers and water pumps would be available on-site.

The Proposed Project would comply with MM-HAZ-2, and the goals and policies identified in the Lake Arrowhead Community Plan Goal LA/S 1, which would provide adequate safety measures to protect residents within the plan area. Measures include compliance with the Fire Safety Overlay, provide adequate fire protection services, and work with local fire councils, the U.S. Forest Service, and other fire agencies within the mountain community (County of San Bernardino, 2007a). Impacts would be less than significant.

4.10 HYDROLOGY AND WATER QUALITY

10.	HYDROLOGY AND WATER QUALITY. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality?	☐	☒	☐	☐
(b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
(c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
	i) Result in a substantial erosion or siltation on- or off-site;	☐	☒	☐	☐
	ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flood on- or off-site;	☐	☒	☐	☐
	iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☒	☐	☐
	iv) Impede or redirect flood flows?	☐	☒	☐	☐
(d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
(e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

4.10.1 Environmental Setting

The Lake Arrowhead area is subdivided into multiple hydrologic subunits, which represent smaller surface water drainage sub-basins within the larger watershed. These subunit boundaries represent

surface water drainage divides and are named according to the major surface water drainage feature within the unit. The five hydrologic subunits are as follows: Lake Arrowhead, Grass Valley, Hooks Creek, Little Bear Creek, and Willow Creek. The Proposed Project site is located within the Lake Arrowhead Hydrologic Subunit. Surface water runoff within the Lake Arrowhead hydrologic subunit flows into Lake Arrowhead (GEOSCIENCE, 2007).

4.10.2 Impact Analysis

a) Would the project violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality?

Less than Significant Impact With Mitigation Incorporated. Because the Proposed Project construction activities involve ground disturbance of less than one acre (0.09 ac), construction and operation is not expected to violate any water quality standards, discharge requirements, or substantially degrade surface or ground water quality. The Proposed Project will include the preparation and implementation of MM-GEO-1 to minimize stormwater runoff and address impacts resulting from earthwork activities that would result in erosion and sedimentation. Erosion controls that would minimize receiving waters include minimizing clearing and grading activities, minimize time of exposure of soil, install silt fences, the application of sediment traps, and other Project specific control measures appropriate to the site to reduce erosion. Additionally, a Spill Prevention Plan will be prepared to reduce spill hazards so as not to introduce large quantities of pollutants that could result in the degradation of surface or ground water quality (MM-HAZ-1). Once operational, the Proposed Project would supplement the District's water supply obligations to the service areas. The Proposed Project site was selected based on its groundwater quality. The Proposed Project operations would not involve activities such as grading or drilling that could result in significant impacts to the water quality. Impacts would be less than significant.

b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less than Significant Impact. Construction and operation of the new production well would not significantly reduce groundwater recharge rates, nor would it substantially decrease groundwater supplies. The Proposed Project production well would service existing users within the District service area. The Proposed Project would not introduce new residential, commercial, or industrial buildings that would result in the significant depletion of groundwater resources by daily use.

Groundwater production is typically controlled by structural features such as fault zones, jointing, and weathering of the granitic rock. Deep drilled wells, such as the well associated with the Proposed Project, are not subject to the seasonal fluctuations in groundwater recharge that shallower wells are. This is because shallower wells are more susceptible to activities and weather conditions closer to the surface. The Proposed Project scope includes drilling a well to approximately 500 feet bgs. The production rate of the well is dictated by the long-term, average groundwater inflow to the well. The San Bernardino Countywide Water Inventory estimated the total precipitation-groundwater in acre feet per year (AFY) (which refers to the average amount of water expected to naturally recharge a groundwater basin) is approximately 383,453 AFY which amounts

to 237,725.50 gallons per minute (County of San Bernardino 2018). No significant depletion of groundwater from a deep aquifer is forecast to occur based on the proposed pump rate of 30 gallons per minute (gpm) at the Proposed Project well. Also, the Proposed Project would reduce the consumption of surface water supplies, which are a source for local groundwater recharge. Additionally, the water extracted due to implementation of the Proposed Project would be required to comply with the Sustainable Groundwater Management Act (SGMA); compliance would avoid any potential overdraft scenarios and require balance between pumping and recharge. Impacts would be less than significant.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i) result in substantial erosion or siltation on- or offsite;

ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources or polluted runoff; or

iv) impede or redirect flood flows?

c) i through c) iv **Less than Significant Impact with Mitigation Incorporated.** The Proposed Project is not located in an area that is susceptible to flood flows. Drainage systems are formed by patterns from streams, rivers, and lakes. The Proposed Project does not have any streams or rivers located in the vicinity of the Proposed Project. The Proposed Project slopes downwards to the north towards SR-189. Storm drains are located along SR 189 and North Bay Road and SR-189 and Blue Jay Canyon Road. Little Bear Creek, a tributary of Deep Creek and the Mojave River are located north along SR-189 and Lakes Edge Road, and east of the Proposed Project site along Blue Jay Canyon Road. The removal of the tree stumps if needed, and the addition of an access road, would alter the drainage pattern of the area because the slope and water absorption of runoff in the area would change.

As discussed, the construction of the Proposed Project production well would result in ground disturbing activities in an area of less than one acre (0.09 ac). During construction, the removal of trees within the area would result in alteration of the existing drainage pattern. Due to the alteration of the land and ground disturbing activities, the Proposed Project will prepare and implement an Erosion Control Plan as identified in MM-GEO-1 that would include BMPs to reduce erosion and runoff. With implementation of MM-GEO-1, the Proposed Project would not exceed the capacity of the existing stormwater drainage systems.

Trees capture, store, and release water (e.g., rain), through evapotranspiration, thereby reducing runoff. The removal of trees could result in an increase in surface runoff and erosion. According to the Biological Assessment prepared for the site, 10 trees were identified to be located within the Proposed Project area, or have canopies intersecting the area. Only 4 trees have trunks within the Proposed Project area and 3 of them would be removed, as confirmed by the site plan. The 3 trunks

have already been cut and what remains are tree stumps (Appendix A). The entire stump and root structure will also be removed. The removal of the stumps would include removal of the root structures. While removing trees may result in surface runoff and erosion, the Proposed Project would only remove 3 existing tree stumps and would not remove all other trees within the Proposed Project or surrounding area. The diameters at breast height (measured 4.5 feet above grade, DBH) of two of the trees was 7 inches and 5 inches with both of these trees having had an aesthetic/health rating of C or D. These two trees were in poor condition and not serving a significant purpose in collecting surface runoff. Although the other tree that has been cut possessed a 14-inch DBH trunk and was in better health condition, it would have been considered a medium tree with only a moderate potential to collect surface runoff. The overall amount of tree stumps removed is not anticipated to cause a significant increase in surface runoff and erosion because no other trees will be removed and the trees remaining in place will absorb the added runoff. The Proposed Project would not result in the significant increase of impervious surfaces that would greatly increase runoff. The Proposed Project would implement MM-GEO-1 to reduce runoff and erosion.

Operation of the new production well would not have an impact on a stormwater drainage system. There are no permanent structures being proposed that would result in a significant increase in runoff such as commercial, residential, or industrial buildings requiring daily water use. The Proposed Project is not expected to result in any significant population growth that would increase water use and wastewater that would impact existing drainage systems. The Proposed Project is not located within a flood zone and would not impede or redirect flood flows. Impacts would, therefore, be less than significant.

d) *Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?*

No Impact. The construction and operation of the Proposed Project new production well would not impact a levee or dam, nor would any part of the Proposed Project be compromised as a result of flooding from the failure of a levee or dam. The Proposed Project area is not located within an area of inundation (County of San Bernardino, 2010a). Additionally, Lake Arrowhead is not located in an area at risk of experiencing a tsunami. No impact would occur.

e) *Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

Less than Significant Impact. As discussed, in Section 4.10 Impact a), the Proposed Project would be compliant with all County, State, and federal regulations, including compliance with the implementation of BMPs. The Proposed Project would involve groundwater extraction. The prepared technical memorandum indicated that the Project site is expected to produce economically feasible and sustainable groundwater for the Proposed Project and in turn, the Proposed Project would not be expected to overdraw the groundwater levels (Tidewater 2019). Additionally, as discussed in Section 4.10 Impact b), the Proposed Project would comply with the SGMA; implementation of the Proposed Project would require sustainable pumping from any of the areas proposed for a new production well, and would avoid any over drafting of the underlying groundwater basin. This impact is less than significant.

4.11 LAND USE AND PLANNING

11.	LAND USE/PLANNING Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Physically divide an established community?	☐	☐	☐	☒
(b)	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

4.11.1 Environmental Setting

The Proposed Project well site is owned by the District, and is immediately adjacent to the District's administration building, located at 27307 CA-189, Blue Jay, CA 92317. The land use and zoning at this site is GC.

4.11.2 Impact Analysis

a) Would the project physically divide an established community?

b) Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

a) and b) **No Impact.** The Proposed Project consists of the installation of a new production well within the District's water service boundaries, and adjacent to existing District facilities. The Proposed Project would not physically divide an established community because there are no proposed Project features that would physically divide, or block residents from accessing public areas or facilities. Land use designations within the potential well site would be consistent. The proposed activities would not require rezoning, or land use amendments for the production well installation. No impact would occur.

4.12 MINERAL RESOURCES

12.	MINERAL RESOURCES Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(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?	☐	☐	☐	☒

4.12.1 Environmental Setting

Mineral resources are commercially viable mineral or aggregate deposits, such as sand, gravel, and other construction aggregate. California is the largest consumer of sand and gravel in the nation; but it is also a major provider, producing approximately one billion dollars' worth of mineral resources annually.

The California Geological Survey provides objective geologic expertise and information about California's diverse, nonfuel mineral resources. Maps, reports, and other data products developed by the staff assist governmental agencies, mining companies, consultants, and the public in recognizing, developing, and protecting important mineral resources. The California Department of Conservation protects mineral resources to ensure adequate supplies for future production. The California Surface Mining and Reclamation Act of 1975 (SMARA) was developed to encourage production and conservation of mineral resources, prevent or minimize adverse effects to the environment, and protect public health and safety.

4.12.2 Impact Analysis

a) Would the project 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) Would the project 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?

a) and b) **No Impact.** According to the Department of Conservation Mineral Land Classification map of Southwestern San Bernardino County, the Blue Jay Community is in an area classified as a Mineral Resource Zone 4 (MRZ-4). MRZ-4 are areas of no known mineral occurrences, and where geologic information does not rule out the presence or absence of significant mineral resources (DOC, 1995). Within a 10-mile radius of the Proposed Project area, there are several active mining claims, as well as established mines for extracting minerals such as feldspar, gold, tin, manganese, tungsten, and mercury. There are no active mining claims within the Blue Jay Community, and the Proposed Project would not include any mining activities or the extraction of any mineral resources (The Diggings, 2019). There are no significant mineral deposits present at the Proposed Project site, per the State of California's Division of Mines and Geology Map. Additionally, there are no past or current mineral recovery sites within the Proposed Project site (DOC, 1995). The Proposed Project would not result in a change in land use that would preclude an area from future mineral exploration. No impact would occur.

4.13 NOISE

13.	NOISE Would the project result in:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
(b)	Generation of excessive ground-borne vibration or ground-borne noise levels?	☐	☐	☒	☐
(c)	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

4.13.1 Environmental Setting

The Proposed Project is in the community of Lake Arrowhead; specifically, in the community of Blue Jay. The Proposed Project well is in areas designated for residential, commercial, institutional, general commercial, and multiple residential land uses.

4.13.2 Impact Analysis

a) *Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

Less than Significant Impact With Mitigation Incorporated. Noise levels are based on equivalent noise levels (Leq) and are expressed as "A" weighted decibels, or dBA. Leq describes sounds levels that vary overtime, and is a single decibel that take the total sound energy over a period of time. A community noise level (CNEL), is the weighted average of a noise level over time, typically a 24-hour average. The Ldn is the day to night average sound level, and is approximately numerically equal to the CNEL for most environmental settings (County of San Bernardino, 2007c). The decibel levels of common outdoor and indoor noises according to the Federal Highway Administration (FHWA) are provided in the table below.

Table 11: Common Outdoor and Indoor Noises

Sound Pressure Level (dB)	Activity
100 - 110	Rock Band at 5 meters / Jet Flyover at 300 meters
90 - 100	Inside New York Subway Train/ Gas Lawn Mower at 1 meter
80 – 90	Diesel Truck at 15 meters/ Food blender 1 meter
70 – 80	Noise Urban Daytime / Garbage Disposal at 1 meter / Shouting at 1 meter
60 – 70	Gas Lawn Mower at 30 meters / Commercial area / Vacuum Cleaner at 3 meters / Normal Speech at 1 meter
50 – 60	Large Business Office
40 – 50	Dishwater next room / Quiet Urban Daytime
30 – 40	Quiet Urban/Suburban Nighttime / Small Theater / Large Conference Room (Background) / Library
20 – 30	Bedroom at night / Concert Hall (Background) / Quiet Rural Nighttime
10 – 20	Broadcast and Recording Studio
0 – 10	Threshold of hearing

Source: Federal Highway Administration; Public Roads; 2003 https://www.fhwa.dot.gov/publications/publicroads/03jul/06.cfm

Most of the homes are located further than 50 feet from the Proposed Project area, and are located at a higher elevation from the Proposed Project area. The nearest homes are located along Blue Jay Canyon Road which is accessible through a gate along CA-189. The nearest home is approximately 300 feet east from the Proposed Project.

The Proposed Project would involve the use of noise generating construction equipment. Even though the Proposed Project is not located within the immediate vicinity of these homes, the Proposed Project would result in increased ambient noise levels during construction activities to the immediate surroundings. According to the U.S. Department of Transportation Federal Highway Administration (FHWA) Construction Noise Handbook, typical sound levels produced by typical construction equipment at a 50 foot distance are described as follows: compactors (82 dBA), loaders (85 dBA), backhoes (80 dBA), scrapers (89 dBA), graders (85 dBA), drill rigs (85 dBA), and pumps (76 dBA) (FHWA, 2006). Noise levels reduces (or drops off) with distance from a project location. Noise drops off approximately 3 dB per doubling of distance for line sources (such as a roadway) and 6 dB per doubling of distance for point sources over an open terrain (FTA 2018). Based on this calculation, the noise level that would be emitted from a typical drill rig at 300 feet is estimated to be approximately 69 dBA or less given that the site contains various obstacles between the residences and the Project site such as the parking lot, buildings and trees that would obstruct sound. The specifications of the equipment are unavailable at this time. However, the anticipated drill rig to be used on-site would be an air/mud rotary combination that would be relatively compact in size that includes a wide range of tasks that would require minimal reconfiguration. Because the nearest homes are beyond the 50-foot range and at higher elevations, it is not expected that the

construction noise would result in the significant and permanent increase of ambient noise within the residential areas located approximately 300 feet northeast from the Proposed Project.

The Proposed Project would comply with Policy N1.5 and N.2.1 of the Noise Element which states the following:

N 1.5 *Limit truck traffic in residential and commercial areas to designated truck routes; limit construction, delivery, and through-truck traffic to designated routes; and distribute maps of approved truck routes to County traffic officers.*

N 2.1 *The County will require appropriate and feasible onsite noise attenuating measures that may include noise walls, enclosure of noise generating equipment, site planning to locate noise sources away from sensitive receptors, and other comparable features.*

Noise levels would be maintained at the appropriate community noise levels indicated in Table IV-K-1: Noise Level Standards of the General Plan Environmental Impact Report, and highlighted below (County of San Bernardino, 2007c):

Table 12: Community Noise Exposure

Land Use Category	Community Noise Exposure (Ldn or CNEL dBA)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Institutional, Schools, Libraries, Churches, Hospitals, Nursing Facilities	50 - 65	60 - 70	70 - 80	80 and above
Open Space, Playgrounds, Parks, Natural Resources Preservation	50 – 65	N/A	63 – 70	68 and above
Commercial Services, Office, Research and Development, Retail Sales, Vehicle Sales	50 -70	68 - 78	75 – 85	N/A
Industrial, Manufacturing, Wholesale, Storage, Utilities, Extractive, Agriculture	50 - 75	70 - 80		

Noise level performance standards for residential or other noise-sensitive receivers are reasonably expected to exceed 55 dB(A) between 7:00 AM to 10:00 PM, and 45 dB(A) between 10:00 PM to 7:00 AM. According to the County's Development Code, noise sources shall be exempt from the regulations for temporary construction, maintenance, repair, or demolition between 7:00 a.m. and 7:00 p.m. except Sundays and Federal holidays.

During well installation and infrastructure construction, the use of machinery and/or tools would produce or emit variable sound levels and intensities that could result in noise impacts to the adjacent commercial and residential buildings. In addition, the Proposed Project may require the drilling of the well to occur for 24 hours not to exceed 6 months. However, leaving construction equipment on-site and allowing drilling for 24-hour periods would reduce overall construction duration and impacts. While the Proposed Project is not immediately adjacent to sensitive receptors, implementing noise controls and mitigation measures would reduce impacts of noise to the surrounding areas, including during 24-hour drilling activities. Noise monitoring and engineering controls would be utilized (as necessary) to comply with County construction noise ordinances. These are identified below for MM-NOI-1 and MM-NOI-2.

MM-NOI-1: The District or Contractor shall implement a Construction Noise Plan to reduce the overall impact of construction noise, including during 24-hour drilling, to the surrounding area. The Construction Noise Plan will include applicable regulations to the site, the proposed schedule, construction hours, identify site specific measures to minimize the impact of construction noise, and outline implementation of the Construction Noise Plan during the Proposed Project. This includes identifying whether notification would be required to inform businesses and homes within the immediate vicinity of the Proposed Project.

MM-NOI-2: Engineering controls shall be implemented including but not limited to utilizing a drill rig floor and sub-floor blankets; sound blankets and rubber mats; mud system, generator, and compressor acoustic panels; temporary, free-standing sound panels; sound attenuated pumps and diesel-powered generators; and other available technologies. All construction equipment shall have intake and exhaust mufflers recommended by the manufacturers to meet required noise limitations if alternative tools are not feasible for use. The effectiveness of the engineering controls shall be confirmed by the contractor (or third-party service) to confirm the existing noise levels by utilizing a noise meter to confirm that noise levels do not exceed the acceptable noise levels thresholds established by the County.

MM-NOI-3: The District or Contractor shall limit nighttime activities when feasible that generate high noise levels. For activities that generate persistent noise levels above 65 dBA, the District or Contractor shall enclose or buffer these activities so that they do not exceed 65 dBA at the nearest sensitive noise receiving location. These shall include a temporary sound wall that surround the well construction site during well drilling activities. A noise meter will be used to confirm the noise levels.

MM-NOI-4: The District shall establish a noise complaint/response program and provide a number for individuals to contact the District for registering noise complaints. All complaints shall be responded to by measuring the noise issue of concern and installing additional noise controls where appropriate such as shifting the schedule activity, or by physically installing noise barriers to reduce noise levels

at these receptor locations to acceptable levels based on County noise standards.

Compliance with these noise mitigation measures would reduce impacts to less than significant during construction. The operation of the Proposed Project would not require the use of heavy machinery that would result in a significant increase of existing noise levels. Most of the noise producing components would be covered by the vault or located below ground. Impacts would be less than significant with mitigation.

b) *Would the project result in generation of excessive ground-borne vibration or ground-borne noise levels?*

Less than Significant Impact. Ground-borne vibration is an oscillatory motion that is often described by the average amplitude of its velocity in inches per second or, more specifically, peak particle velocity. Table 13 shows the peak particle velocities of some common construction equipment at 25 feet. The threshold of perception for humans is approximately 65 VdB, with a vibration level of 85 VdB in a residence as a strong annoyance (FTA, 2018).

Table 13: Typical Construction Equipment Vibration Emissions

Equipment	Peak Particle Velocity (PPV) in inches per second at 25 feet	Vibration Level (L_v) at 25 feet
Pile Driver (sonic)	0.170	93
Clam Shovel Drop	0.202	94
Hydromill		
- in soil	0.008	66
- in rock	0.017	75
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large Bulldozer	0.089	87
Caisson Drill	0.089	87
Loaded truck (off road)	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: Federal Transit Administration 2018.

The equipment with the highest vibration level and PPV according to the Table 13 is a Vibratory Roller, which is estimated to be reduced to 0.002 PPV at approximately 300 feet. This estimate utilized the damage assessment calculation per the FTA manual (FTA 2018). At this level, the vibration at 300 feet, even for large equipment, is not expected to be significant and would not

cause damage to health or property to residents located 300 feet from the project site. The proposed construction activities would be short-term, and there are no residences located within the immediate vicinity of the Proposed Project. In addition, the Proposed Project does not include new uses that would result in an increase in traffic within the Proposed Project such as the addition of new buildings. Noise control monitoring and engineering controls would be implemented to comply with County noise ordinances. Impacts would be less than significant.

c) *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*

No Impact. See response in Section 4.9.2 (e). The Proposed Project would not be located within an airport safety review area (County of San Bernardino, 2010a). There are no functioning public airports within two miles of the Proposed Project well locations. A private airport, Lake Arrowhead Airport, was used as a transportation provider for the resort areas; however, the airport was closed in 2010 and will remain closed until further notice (Lake Arrowhead Airport, 2019). No impact would occur.

4.14 POPULATION AND HOUSING

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

4.14.1 Environmental Setting

Population refers to the occupants of housing projects, population indirectly associated with workers or proposed nonresidential projects, or changes in the amount and distribution of population and employment permitted by adoption or revision to a land use plan. Important areas include changes in the number, characteristics, geographical distribution, and timing of new residents directly or indirectly resulting from a project and the degree to which project-related changes are consistent with County, regional, or other adopted population growth policies. Other issues are the degree to which project-related population is already present in the area under analysis (i.e., already residing or working in the area), or whether they represent immigrants.

Housing impacts may result directly from a project, which includes housing units or indirectly from revisions to the Housing Element in a General Plan, or changes in housing demand associated with new nonresidential development projects.

A project would have a significant adverse impact if it induces substantial population growth in an area, either directly by proposing new homes and businesses or indirectly through the extension of roads or other infrastructure; displace housing units, causing the construction of replacement housing somewhere else; or displace people, causing the construction of replacement housing in another location.

4.14.2 Impact Analysis

a) Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

a) and b) **No Impact.** The Proposed Project would not induce unplanned population growth or displace existing people or housing. The Proposed Project consists of the installation of a production well within the District's service boundaries. There are no new residential units scheduled to be built on the Proposed Project site. The Proposed Project activities would not require residences to be relocated to accommodate the construction of the production well. There are no proposed development of new roads or infrastructure that would introduce new populations to the Proposed Project area, or service new populations. The Proposed Project would serve existing water users within the District's service boundary. Maintenance of the well shall be conducted by District employees and would not require a high influx of new service employees. No impact would occur.

4.15 PUBLIC SERVICES

15.	**PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:**	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a)	Fire Protection?	☐	☒	☐	☐
(b)	Police Protection?	☐	☐	☒	☐
(c)	Schools?	☐	☐	☒	☐
(d)	Parks?	☐	☐	☒	☐
(e)	Other public facilities?	☐	☐	☐	☒

4.15.1 Environmental Setting

Public services include fire, police, schools, parks, and libraries. A project would impact a public service if it would result in an increased demand for that service, or if the project would result in hindering adequate services to the area. The proximity of the Proposed Project to fire, police, school, and park services are provided in Table 14 below:

Table 14: Public Services Proximity

	Proximity from the Proposed Well Site			
Well Location	**Fire**	**Police**	**School**	**Parks**
Blue Jay	San Bernardino County Fire Station 91: 301 CA-173, Lake Arrowhead CA 92352 (1-mile east) San Bernardino County Fire Station 94: 27470 North Bay Road, Lake Arrowhead CA 92352 (1 mile north)	Twin Peaks Sheriff's Station: 26010 CA-189, Twin Peaks, CA 92391 (1.7 miles west)	Rim of the World Unified School District Offices: 27315 N. Bay Rd #1, Blue Jay, CA 92317 (0.1 mile north)	Grass Valley Park: 629 Golf course Road, Lake Arrowhead, CA 92352 (1 mile north)

Source: Google Maps

4.15.2 Impact Analysis

a) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection?*

Less than Significant Impact with Mitigation Incorporated. Because the Proposed Project is located within a VHFHSZ, fire protective measures discussed in Section 4.9 (MMHAZ-2) would be implemented for the Proposed Project during construction. Compliance with the Fire Safety Overlay and coordination with local fire councils, the U.S. Forest Service, and other fire agencies within the mountain community would minimize fire risk. In the event of an emergency during construction and normal operations, the Proposed Project would require the assistance for fire protection. However, unlike a residential, commercial, or industrial development, it is not expected that the Project would require frequent visits by these services. Impacts would be less than significant with mitigation incorporated.

b) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection?*

c) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental*

facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for schools?

d) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for parks?

b) through d) **Less than Significant Impact.** The Proposed Project would not result in substantial adverse physical impacts to fire, police, school, and park services. The Proposed Project would not involve the modification of any of these services or their facilities. The Proposed Project would not invite new populations to the proposed well location that would result in the permanent, and increased need of public services. The Proposed Project would serve existing water users within the District's service boundary. The Proposed Project will be serviced by existing public services provided to the existing business center, where the District's office is located. Operation of the Proposed Project would require maintenance checks of the well. In the event of an emergency, the Proposed Project would require the assistance for police protection. However, unlike a residential, commercial, or industrial development, it is not expected that the Project would require frequent visits for police protection. Furthermore, the Proposed Project would not involve the modification of the services or facilities of the public service properties listed above in Table 14. Impacts would be less than significant.

e) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for other public facilities?

No Impact. The Proposed Project would not impact other public facilities such as libraries or hospitals. The proposed well would be constructed within District property, and would not prevent the public from accessing any other public facilities. The Proposed Project would serve existing water users within the District's service boundary. Service ratios and response times would not be impacted with the development of the production well. No impact would occur.

4.16 RECREATION

16.	RECREATION. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒

(b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

4.16.1 Environmental Setting

Recreational facilities include active and passive facilities. Active recreational facilities include parks, tennis and basketball courts, pools, golf courses, and various other facilities. Passive recreational facilities include plazas and other public places.

Lake Arrowhead and its surrounding communities attract tourists and residents to the area because of its climate, scenic resources, and recreational amenities. The Lake Arrowhead Community Plan area is characterized primarily by residential and recreational uses and contains several campgrounds and hiking trails (County of San Bernardino, 2007a).

A project would result in a significant impact on recreational facilities if it increases the use of existing parks and other recreational facilities. An increased use could result in the substantial physical deterioration, or accelerated deterioration of the facilities if the project included recreational facilities or required construction that might have an adverse physical effect on the environment.

4.16.2 Impact Analysis

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

a) and b) **No Impact.** The installation of a production well at the Proposed Project location would not increase the use of existing neighborhood parks, campgrounds, trails, or other recreational facilities, and would not include the construction or expansion of new recreational facilities. The Proposed Project consists of the installation of a production well within the District water service boundary, and within District property. It would not induce new populations that would result in the substantial physical deterioration of recreational facilities or require new facilities. No impact would occur.

4.17 TRANSPORTATION

17.	TRANSPORTATION. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle lanes and pedestrian facilities?	☐	☐	☒	☐
(b)	Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	☐	☐	☒	☐
(c)	Substantially increase hazards due to a geometric design feature (e. g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
(d)	Result in inadequate emergency access?	☐	☐	☒	☐

4.17.1 Environmental Setting

The existing roadway network in Lake Arrowhead and the surrounding communities consists of a combination of State Highways and local roadways. There is high community interest in maintaining the existing road widths in order to continue the quaint, mountain and alpine character of the area, while providing enough road improvements for safety and efficiency (County of San Bernardino, 2007a).

4.17.2 Impact Analysis

a) Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle lanes and pedestrian facilities?

Less than Significant Impact. The Proposed Project would not change any existing roadways, bicycle lanes, or pedestrian paths, nor would it conflict with the San Bernardino Associated Governments' Congestion Management Plan. The proposed activities would remain within District property. According to the Lake Arrowhead Community Plan, SR-189 between Grass Valley Road and SR-173 had an Average Daily Trip (ADT) of 7,400 trips during normal operations in 2004, with an estimated ADT at 8,700 for the 2030 operating conditions. The 2030 conditions describe this section as being congested but stable traffic conditions (County of San Bernardino, 2007a). The Proposed Project would generate minor increases in traffic associated with short-term construction activities, due to the presence and use of construction equipment and vehicles for transport and hauling equipment. During construction, it is expected that the total daily construction trip counts would not be greater than 10 trips per day which would equal to approximately 2,730 trips during the maximum 9-month construction period. This is significantly lower that the estimated 8,700 ADT during 2030 operating conditions.

This minor increase in traffic would occur because only one main road travels through the entrance to the Project site which is SR 189. There would not be a significant and permanent increase in traffic after the completion of the Proposed Project. Typical maintenance for the well would utilize the existing roads by use of one maintenance vehicle and would occur weekly. However, typical

maintenance would not require a fleet of vehicles that would significantly impact the use of the existing roadways. Furthermore, it is likely that maintenance of the well will be conducted by District employees located at the adjacent administration building. Impacts would be less than significant.

b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

Less than Significant Impact. The Proposed Project would not change the existing land use or zoning designation of the area. The Proposed Project would not result in the increase of new populations that would impact the current circulation system. There are no changes to the land uses, or changes to the existing circulation system including access to public or alternative transit. The Proposed Project consists of the installation of a production well within the District's service boundary, and within District property. The Proposed Project activities may result in temporary impacts to transportation, such as automobile delay, during construction for equipment and employee transport. The delay would be a result from construction and worker vehicles entering the Project site, including vehicles hauling large equipment or transporting construction waste. Once the production well has been constructed, the operation of the Proposed Project would not result in an impact affecting the State Highways or local roadways. During construction and operation, the Proposed Project would not inhibit the use of any of the current roadways. Therefore, the Proposed Project would not result in a significant increase in vehicle miles traveled (VMT) because the well would be adjacent to the District office, thereby limiting the VMT between the District employees' headquarters and the Project site. The maintenance and operation of the well would not be a new service to the area because there are wells constructed throughout the Lake Arrowhead community that are being serviced by the District. Impacts would be less than significant.

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

No Impact. The Proposed Project would not change any design features of the existing roadways, and would not involve any incompatible uses. The proposed access route would be connected to the existing parking lot within the District property and would connect to the well location. The Proposed Project is within the District property and does not have any public roadways. Implementation of the Proposed Project during construction and operation would not result in increased hazards. No impact would occur.

d) Result in inadequate emergency access?

Less than Significant Impact. See response to Section 4.9.2 (f). The Proposed Project would not impact designated evacuation routes because the proposed activities would occur within District property. There are no proposed roadway widenings on State Highways or local roads. While the Proposed Project would result in minor increases in traffic with the transport of equipment and workers to and from the Proposed Project site, the Proposed Project would not include road closures or detours that would prevent emergency vehicles from accessing the communities. The District property would be used during the staging process and would not obstruct traffic along the existing roadways. Impacts would be less than significant.

4.18 TRIBAL CULTURAL RESOURCES

18.	TRIBAL CULTURAL RESOURCES. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	☐	☒	☐	☐
	i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
	ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

4.18.1 Impact Analysis

a) i) Would the project cause a substantial adverse change in a listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

ii) Would the project cause a substantial adverse change in a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1?

a)i) and a)ii)

Less than Significant with Mitigation Incorporated. See responses in Section 4.5.2 (a). There are no listed historic structures located on the Proposed Project site, nor would the proposed activities involve the removal or disturbance of a historic structure (County of San Bernardino, 2007a).

On October 29, 2019, Chambers Group requested that the Native American Heritage Commission (NAHC) conduct a search of its Sacred Lands File to determine if cultural resources significant to Native Americans have been recorded in the proposed Project footprint and/or buffer area. On November 4, 2019, Chambers Group received a response from NAHC stating that the search of its Sacred Lands File was positive for the presence of Native American cultural resources within the

proposed Project area or surrounding vicinity (Appendix B of the Phase 1 Cultural Resources Report [Appendix B of this document]). The NAHC provided their list of Native American tribal governments to contact, to which Chambers Group sent tribal scoping letters via electronic mail, on December 10, 2019. Each of the listed representatives was sent a letter indicating that the NAHC Sacred Land File result was positive and asked for any further information regarding this positive find. Copies of the Tribal scoping letters are provided in the Phase 1 Cultural Resources Report (Appendix B of this document). As of the date of this report, one response has been received:

Jessica Mauck, Cultural Resources Analyst/San Manuel Band of Mission Indians, responded via email on December 11, 2019. Ms. Mauck indicated the Proposed Project area is within a sensitive portion of Serrano ancestral territory; however, the Tribe is not aware of resources within or adjacent to the Proposed Project area. The Phase I Cultural Resources Report was provided to the San Manuel Band of Mission Indians to assist with their review. After review of the Phase 1 Cultural Resources Report, given the level of disturbance, lack of native soil, and low likelihood for subsurface cultural deposits, the San Manual Band of Mission Indians has no concerns with the Proposed Project. The Tribe requested their standard language for inadvertent discovery to be included in the CEQA document. The following mitigation measure provided by the San Manuel Band of Mission Indians shall be incorporated to the Proposed Project to minimize impacts to cultural resources:

MM-TCR-1: The San Manuel Band of Mission Indians Cultural Resources Department (SMBMI) shall be contacted, as detailed in MM-CUL-1, of any pre-contact cultural resources discovered during project implementation, and be provided information regarding the nature of the find, so as to provide Tribal input with regards to significance and treatment. Should the find be deemed significant, as defined by CEQA (as amended, 2015), a cultural resources Monitoring and Treatment Plan shall be created by the archaeologist, in coordination with SMBMI, and all subsequent finds shall be subject to this Plan. This Plan shall allow for a monitor to be present that represents SMBMI for the remainder of the project, should SMBMI elect to place a monitor on-site.

MM-TCR-2: Any and all archaeological/cultural documents created as a part of the project (isolate records, site records, survey reports, testing reports, etc.) shall be supplied to the applicant and Lead Agency for dissemination to SMBMI. The Lead Agency and/or applicant shall, in good faith, consult with SMBMI throughout the life of the project.

Impacts would be less than significant with mitigation incorporated.

4.19 UTILITIES AND SERVICE SYSTEMS

19.	UTILITIES/SERVICE SYSTEMS. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
(b)	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
(c)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
(d)	Generate solid waste in excess of State or local standards or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
(e)	Comply with federal, State, and local management and reduction statutes and regulations related to solid wastes?	☐	☐	☒	☐

4.19.1 Environmental Setting

Utilities and service systems include potable water and wastewater treatment. The quantity of water consumed, and wastewater generated by a Proposed Project, is determined by several factors including the size, type, and characteristics of the Proposed Project area. The need for construction of new or replacement water and wastewater treatment facilities (e.g., reservoirs, storage tanks, water mains, filtration plants, pumps, wells, and other connections or distribution facilities) would depend on the existing capacity and anticipated demand for the Proposed Project area.

4.19.2 Impact Analysis

a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or expansion of which could cause significant environmental effects?

Less than Significant Impact. There are no existing utilities in the Project site. To confirm the conditions, prior to performing any subsurface activities, the Proposed Project well location would be scanned for underground utilities using geophysical methods. The utility-locating contractor would employ several methods, including ground-penetrating radar, magnetometer, magnetic gradiometer, and/or electromagnetic imaging. As required by California State law, DigAlert would be notified of the planned drilling activities. DigAlert is a communication center that provides notice to

utility owners that may potentially have underground utilities within the proposed well sites. DigAlert requires notification a minimum of 48 hours prior to conducting any underground excavation. Following map review, geophysical utility locating, and DigAlert clearance, the surface of the ground would be clearly marked where underground utilities are discovered. The drilling location would be selected to avoid impact to existing utilities.

The Proposed Project is not anticipated to require or involve the relocation or construction of new utilities for wastewater, electrical power, natural gas, stormwater, and telecommunications. The Proposed Project would involve the installation of a production well at the Proposed Project location. The well would connect to existing District pipelines to supplement District's water supply. The Proposed Project would serve existing users within the District service area. The Proposed Project would not include additional construction of residential, commercial, or industrial facilities that would require new or expanded utilities. Impacts would be less than significant.

b) *Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal dry and multiple dry years?*

c) *Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*

b) and c) **Less than Significant Impact.** The Proposed Project area is served primarily by the District. The Proposed Project would not require new construction or significant expansion of facilities that would require additional water supplies. The Proposed Project is not of a large scale and would not include the construction of buildings and other facilities requiring additional utility services, such as wastewater treatment. The Proposed Project would supplement the District's water supply obligations to the Lake Arrowhead community. The installation and operation of the well would allow the District to provide enough water supplies to its existing users. Impacts would be less than significant.

d) *Would the project generate solid waste in excess of State or local standards or in excess of the capacity of local infrastructure?*

e) *Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?*

d) and e) **Less than Significant Impact.** Waste generated during construction of the Proposed Project would include excess well construction materials, vegetation, and other related debris. Because the Proposed Project would disturb less than one-acre, and there are no structures on-site that would need to be demolished and transported, it is not expected that the Proposed Project would generate amounts of solid waste that would significantly impact the capacities of any County and District approved landfill and recycling centers. According to the 2007 County of San Bernardino General Plan, Solid Waste disposal sites are being expanded to delay reaching capacity until 2027 (County of San Bernardino, 2007c). Any solid waste would be diverted to County regional landfills or recycling facilities using County approved franchise haulers. The closest solid waste disposal sites to the Proposed Project area are the Heaps Peak Transfer Station in Lake Arrowhead, CA, and the Mid-

Valley Landfill in Rialto, CA, which are approximately 6 miles and 30 miles from the Proposed Project well site, respectively. Drilling fluids would be disposed at sites that accept hazardous wastes; the closest hazardous waste disposal site being the Rialto City Maintenance Yard, approximately a 30-mile drive from the Proposed Project site in Rialto, CA (County of San Bernardino, 2019). Other wastes, including vegetation, would be disposed of in accordance to County and District approved methods and locations. Once the Proposed Project is completed, the operation and maintenance of the well is not expected to generate significant quantities of solid wastes unless the well and other accessories would require a full replacement. These wastes would be diverted, discarded, or recycled as directed by the manufacturer, and by County and District approved methods and locations. Impacts would be less than significant.

4.20 WILDFIRE

20.	WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
(b)	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☒	☐	☐
(c)	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☒	☐	☐
(d)	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☒	☐	☐

4.20.1 Environmental Setting

The Proposed Project is located within a Very High Fire Hazard Severity Zone (VHFHSZ) according to the California Department of Forestry and Protection (CAL FIRE, 2008). Areas that are within a very high fire hazard zone are likely susceptible to wildfires. Weather conditions such as hot, dry summers, and high wind speeds can elevate the risk of wildfire.

4.20.2 Impact Analysis

a) Would the project impair an adopted emergency response plan or emergency evacuation plan?

Less than Significant Impact. See response to Section 4.9.2 (f). The Proposed Project does not include any modifications of main roads that could be designated as emergency evacuation routes, nor does the Project include construction of facilities that would interfere with an emergency response or evacuation plan. The Proposed Project would utilize the existing roadways for transport

of equipment and would be limited during the construction period. Typical maintenance of the Proposed Project would utilize the existing roadways but would not close the roads, or result in significant delays that would impede the roadways and prevent emergency access or evacuation. Impacts would be less than significant.

b) Would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

c) Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

d) Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability or drainage changes?

b) *through d)* **Less than Significant Impact with Mitigation Incorporated.** The Proposed Project site is located within a VHFHSZ, though as discussed in Section 4.9.2 (g), the Proposed Project proposes the construction of a groundwater production well, and would not involve development of infrastructure that would introduce new populations to significant wildfire risks. The Proposed Project would not include the installation or expansion of associated infrastructures (such as fuel breaks, emergency water sources, or other utilities) that could exacerbate a fire risk. The Proposed Project would comply with the goals and policies identified in the Lake Arrowhead Community Plan to provide adequate safety measures to protect residents within the plan area. Measures include complying with the Fire Safety Overlay and providing adequate fire protection services during construction. Added fire protection measures can include working with local fire councils, the U.S. Forest Service, and other fire agencies within the mountain community. The Proposed Project is in an area with low to moderate susceptibility to landslides and not within a flood zone area. The Proposed Project would not involve development that would increase the risk of landslides. As discussed in Section 4.8 through Section 4.10, the Proposed Project would implement mitigation measures MM-GEO-1 and MM-HAZ-1 to minimize runoff during construction. Impacts would be less than significant with mitigation incorporated.

4.21 MANDATORY FINDINGS OF SIGNIFICANCE

21.	MANDATORY FINDINGS OF SIGNIFICANCE.	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
(b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects?)	☐	☐	☒	☐
(c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

4.21.1 Impact Analysis

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less than Significant Impact with Mitigation Incorporated. The Proposed Project has the potential to degrade the environment for biological resources because the proposed site is located within the San Bernardino National Forest, which supports many species of wildlife, including endangered species. As discussed in Section 4.4, implementation of the following mitigation measures would reduce impacts to less than significant with regard to biological resources:

MM-BIO-1: A biological monitor will be present prior to and during initial ground disturbing activities to avoid impacts to the southern California legless lizard and southern rubber boa. The biological monitor shall carefully rake the leaf litter looking for these species and allow for dispersal from the site. If the southern California legless lizard or southern rubber boa are observed onsite during construction, the monitor will halt construction until the species has dispersed from the site. If the southern rubber boa is found within the retaining wall, the biological

monitor will create an avoidance buffer with staking or flagging to protect this species from potential harm.

MM-BIO-2: If during well construction activities a trench or hole is needed to be left open on site, the slope of the opening shall be constructed to allow for dispersal of trapped wildlife, or an inclined plane shall be placed in the hole to allow for escape.

As discussed in Section 4.5 and 4.18, because archaeological resources and tribal cultural resources are often buried and are not uncovered or identified unless there are ground disturbing activities, the following mitigation would be implemented in the event of unanticipated discoveries:

MM-CUL-1: In the event that cultural resources are discovered during project activities, all work in the immediate vicinity of the find (within a 60-foot buffer) shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period. Additionally, the San Manuel Band of Mission Indians Cultural Resources Department (SMBMI) shall be contacted, as detailed within TCR-1, regarding any pre-contact finds. SMBMI is to be provided information after the archaeologist makes his/her initial assessment of the nature of the find, so as to provide Tribal input with regards to significance and treatment.

MM-CUL-2: If significant cultural resources, as defined by CEQA (as amended, 2015), are discovered, and avoidance cannot be ensured, the archaeologist shall develop a Monitoring and Treatment Plan (MTP). Should the significant resource be from the pre-contact era, the draft of the MTP shall be provided to SMBMI for review and comment, as detailed within TCR-1. The archaeologist shall monitor the remainder of the project and implement the Plan accordingly.

MM-GEO-2: In the event that paleontological resources are encountered, all work will stop in that area. A qualified paleontological monitor will be consulted to evaluate the discovery. Ground-disturbing activities will be temporarily stopped or redirected to allow the monitor to recover any specimens discovered. All specimens/fossils collected will be deposited in a County approved museum or repository for curation and storage.

Implementation of these mitigation measures would result in less than significant impact with regard to resources of major periods of California history or prehistory.

b) *Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects?)*

Less than Significant Impact. The District's Fiscal Years 2018-19 and 2019-20 Budget summarizes potential projects within Lake Arrowhead and its communities, such as Water, Deer Lodge Park, and Wastewater Enterprise Capital Projects, District Wide Capital Projects, Rim Forest Capital Projects, and Equipment Replacements (District, 2018). The Proposed Project would not result in cumulative impacts. While there will be other projects that would occur during the same as the Proposed Project, they will not occur within the same location.

The Proposed Project aligns with the District's goals and objectives in providing adequate water supplies for those within District water service areas. The purpose of the Proposed Project would not result in the disadvantage of long-term goals to achieve short term goals. In fact, providing adequate water supplies to existing users within the water service areas would allow the District to meet existing and future water demands within its service area. Impacts would be less than significant.

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

Less than Significant with Mitigation Incorporated. Effects to human beings are generally associated with air quality, noise, traffic safety, geology/soils, and hazards/hazardous materials. The Proposed Project would result in temporary impacts to air quality, greenhouse gas, and noise during construction activities. Implementation of mitigation measures below would result in impacts to be less than significant to these resource areas.

MM-AQ-1: During construction, that contractor shall implement the following actions to minimize emissions as mobile sources emit the most NO_x. These shall be a combination of the following actions to be implemented during the use of heavy construction equipment and worker vehicles to minimize emissions. Measures may be added or revised based on the conditions of the site during construction.

- Reduce emissions from traditional combustion sources such as diesel operated equipment and back-up generators by using electrified vehicles and equipment where feasible.
- Utilize ultra-low NOx engines
- Replace older, high-emitting equipment with new lower, or zero emission equipment
- Off-road diesel equipment would be required to shut down engines if they need to idle for more than 5 minutes
- Equipment shall comply with SCAQMD Rule 2449 'Control of Oxides of Nitrogen Emissions from Off-Road Diesel Vehicles' and CARB Off-Road Vehicle and Equipment Regulations where applicable
- If meeting the vehicle requirements are not feasible, the contractor shall obtain trucks that meet the EPA standards for NOx emission requirements
- Combustion engines and construction engines and equipment shall meet EPA-certified Tier 3 emission standards or higher

- Where feasible, Best Available Control Technology devices from CARB shall be implemented.
- All equipment must be regularly services to minimize exhaust
- Utilize low sulfur fuel for stationary construction equipment (SCAQMD Rule 431.1 and 431.2)
- Use existing power sources where available to minimize the use of gas or diesel generators.
- Construction equipment fleet shall utilize alternative fuels where possible.
- Contractor shall provide on-site services such as access to repair and fueling, to minimize travel needs throughout the area.

MM-AQ-2: Development during construction would be subjected to wind hazards (due to increased dust, the removal of wind breaks, and other factors). The District shall require a combination of one or more of the following actions to be implemented during site preparation and ground disturbing activities to minimize emissions and minimize creation of dust. This is not an exhaustive list of the necessary actions to mitigate air quality impacts. Rather, it provides a menu of general activities that may be implemented during construction. Additional measures may be implemented based on the conditions of the site during construction. These measures can be found from the AQMD Rules and Compliances for Dust Control, and CARB for off-road vehicle and equipment regulations.

- Grading Restrictions and Dust Control Measures
    - Suspension of grading, clearing, earth moving, or excavation activities during high wind conditions which are instantaneous wind speeds exceeding 25 miles per hour;
    - Grading operations where dry conditions are encountered shall include dust control measures to minimize fugitive dust as required under AQMD Rule 403;
    - Construction equipment shall meet the off-road vehicle and equipment regulations as required by CARB;
    - Limit vehicular speeds on unpaved roads and staging areas to 15 mph;
    - Stabilize stockpile materials;
    - Application of water to maintain soils in damp condition to minimize fugitive dusts as required under AQMD Rule 403.

MM-HAZ-1: Prior to construction, the contractor shall prepare a Spill Prevention Plan to address potential impacts of potentially hazardous, and hazardous materials that could accidentally spill in the Project site. The plan would include availability of spill control and prevention, material storage and handling, vehicle cleaning, access roads features, and equipment and staging area design features.

MM-HAZ-2: During construction, the contractor and other on-site personnel shall keep traffic away from tree root areas, vegetation, or combustible materials. No activities involving hot work would occur during high wind weather (greater than 30 miles per hour). Workers on-site shall keep any combustible materials away from any fire or ignition sources. Flammable and ignitable materials will be kept away from fire sources, and properly stored and disposed. Fire suppression systems such as fire extinguishers and water pumps would be available on-site.

MM-NOI-1: The District or Contractor shall implement a Construction Noise Plan to reduce the overall impact of construction noise, including during 24-hour drilling, to the surrounding area. The Construction Noise Plan will include applicable regulations to the site, the proposed schedule, construction hours, identify site specific measures to minimize the impact of construction noise, and outline implementation of the Construction Noise Plan during the Proposed Project. This includes identifying whether notification would be required to inform businesses and homes within the immediate vicinity of the Proposed Project.

MM-NOI-2: Engineering controls shall be implemented including but not limited to utilizing a drill rig floor and sub-floor blankets; sound blankets and rubber mats; mud system, generator, and compressor acoustic panels; temporary, free-standing sound panels; sound attenuated pumps and diesel-powered generators; and other available technologies. All construction equipment shall have intake and exhaust mufflers recommended by the manufacturers to meet required noise limitations if alternative tools are not feasible for use. The effectiveness of the engineering controls shall be confirmed by the contractor (or third-party service) to confirm the existing noise levels by utilizing a noise meter to confirm that noise levels do not exceed the acceptable noise levels thresholds established by the County.

MM-NOI-3: The District or Contractor shall limit nighttime activities when feasible that generate high noise levels. For activities that generate persistent noise levels above 65 dBA, the District or Contractor shall enclose or buffer these activities so that they do not exceed 65 dBA at the nearest sensitive noise receiving location. These shall include a temporary sound wall that surround the well construction site during well drilling activities. A noise meter will be used to confirm the noise levels.

MM-NOI-4: The District shall establish a noise complaint/response program and provide a number for individuals to contact the District for registering noise complaints. All complaints shall be responded to by measuring the noise issue of concern and installing additional noise controls where appropriate such as shifting the schedule activity, or by physically installing noise barriers to reduce noise levels at these receptor locations to acceptable levels based on County noise standards.

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APPENDIX A – BIOLOGIAL ASSESSMENT

BIOLOGICAL ASSESSMENT
FOR THE BLUE JAY WELL PROJECT, NO. 187
LAKE ARROWHEAD, SAN BERNARDINO, CALIFORNIA

Prepared for:

Lake Arrowhead Community Services District
As part of the On-Call Environmental Consulting Services Contract with Tidewater, Inc.

Prepared by:

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October 2020

SUMMARY OF FINDINGS

These reconnaissance-level surveys and tree inventory were conducted for Lake Arrowhead Community Services District (LACSD) as part of the On-Call Environmental Consulting Services Contract. Chambers Group, Inc. (Chambers Group) is a subcontractor to Tidewater, Inc. on this contract. The biological survey is part of the work referred to as Blue Jay Well (Project). The Project proposes to develop a production well in order to utilize existing groundwater resources to supplement LACSD's water supply obligations to the Lake Arrowhead community. The Project site is a thin strip of undeveloped LACSD property, approximately 50 feet wide, located immediately adjacent to LACSD's administration building in the unincorporated community of Blue Jay, San Bernardino County, California.

Much of the Project site is disturbed from previous grading and ground disturbances with a high percentage of non-native species cover, does not contain any structures, and includes scattered native trees of varying age. The proposed work activities associated with developing a production well will impact portions of an approximately 50-foot wide by 225-foot long strip of *Pinus ponderosa – Calocedrus decurrens* Forest Alliance and Ruderal vegetation types. Three special status plant species have a low potential for occurrence within the southern portions of the Project site. Due to the disturbed nature of the Project site and because the well is proposed to be constructed within Ruderal areas that do not support sensitive plant species, no impacts to the three species with a potential to occur are anticipated.

The potential for sensitive wildlife species was also evaluated. One state listed wildlife species, the southern rubber boa (*Charina umbratica*), and one California Species of Special Concern, the southern California legless lizard (*Anniella stebbinsi*), have a low potential to occur within the Project location. Of those animal species with a potential for occurrence, only the southern rubber boa is federally or state listed as endangered or threatened (state listed as threatened). It is recommended that a biological monitor be present prior to and during initial ground disturbing activities to avoid impacts to the southern California legless lizard and southern rubber boa, and allow for dispersal of any wildlife.

No surface waters of the United States, or waters of the State, are anticipated to be impacted during well construction activities. Access to the proposed well location is via developed areas and across the Project site within Ruderal areas.

No native trees with a diameter at breast height of greater than 6 inches are proposed to be removed during construction activities. If changes to the proposed Project footprint occur, or if the proposed well location needs to be moved, additional surveys may be required.

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ACRONYMS AND ABBREVIATIONS

Term	Definition
amsl	above mean sea level
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNPSEI	California Native Plant Society Electronic Inventory of Rare and Endangered Vascular Plants of California
CRPR	California Rare Plant Rank
DBH	diameter at breast height
FC	Federal Candidate for listing
FE	Federally listed; Endangered
FSS	U.S. Forest Service Sensitive
FT	Federally listed; Threatened
LACSD	Lake Arrowhead Community Services District
NEPA	National Environmental Policy Act
NRCS	Natural Resources Conservation Service
PFO	Potential for Occurrence
SC	State Candidate for listing
SE	State listed; Endangered
SR	State Route
SSC	State Species of Special Concern
ST	State listed; Threatened
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WL	CDFW Watch List

SECTION 1.0 – INTRODUCTION

Chambers Group, Inc. was retained by Tidewater, Inc. (Tidewater) to conduct a literature review and biological assessment for the proposed Blue Jay Well project, as part of an exploratory consistency analysis (Project). This biological assessment has been prepared for Tidewater and LACSD to support the California Environmental Quality Act CEQA) phase of the well construction.

During the assessment, a biologist identified vegetation communities, determined the potential for the occurrence of sensitive species and habitats that could support sensitive wildlife species on site, and recorded all plants and animals observed or detected within the survey boundary. Information contained in this document is in accordance with accepted scientific and technical standards that are consistent with the requirements of United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW).

1.1 PROJECT LOCATION

The Project area is located along California State Route (SR) 189, approximately 0.4 mile southwest of the Lake Arrowhead Reservoir within the unincorporated community of Blue Jay, San Bernardino County, California. The Project is located within the United States Geological Survey (USGS) *Harrison Mountain* 7.5-minute topographic quadrangle within the San Bernardino National Forest. The elevation at the site is an average of 5,200 feet above mean sea level (amsl). The Project site is a thin strip of undeveloped LACSD property, approximately 50 feet wide and 225 feet in length, running north-south, located immediately west of LACSD's administration building and parking lot.

The Project site is on the east side of a lot that was formerly used as a mobile home park containing various asphalt pads and terraced landings. Much of the Project site is disturbed but includes scattered native trees of varying age. The Project site is approximately 200 feet south of SR 189, with undisturbed native forest located south of the Project site. Maps of the Project Location and Project Vicinity are provided in Figure 1.

1.2 SURVEY AREA AND PROJECT DESCRIPTION

The Project proposes to develop a production well in order to utilize existing groundwater resources to supplement LACSD's water supply obligations to the Lake Arrowhead community. Access to the proposed well location will be via the existing developed LACSD parking lot and an undeveloped dirt path through Ruderal areas within the Project site (Figure 2). The existing native trees within the Project site and the surrounding area are not expected to be impacted.

Figure 1: Project Location and Vicinity Map

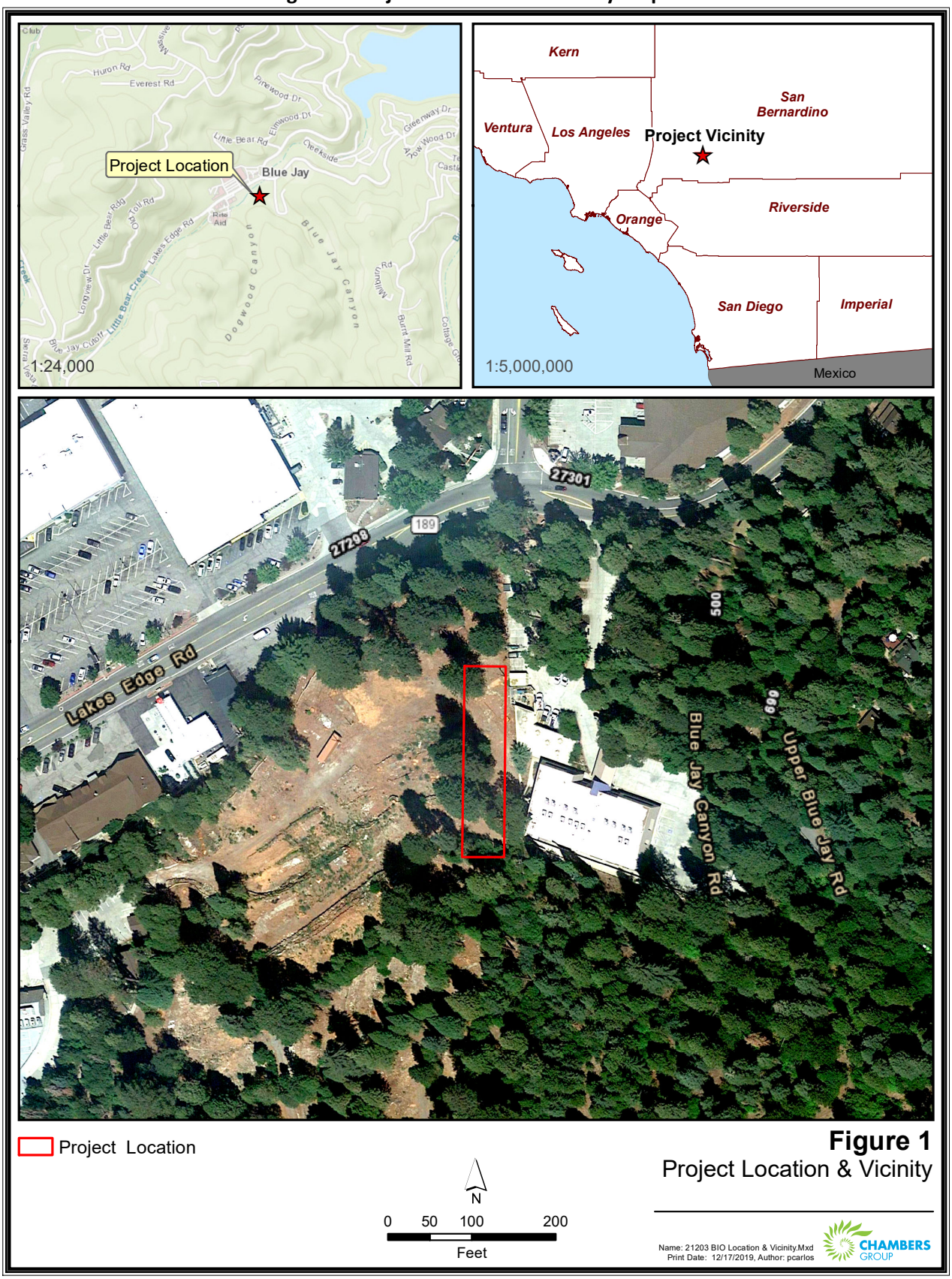
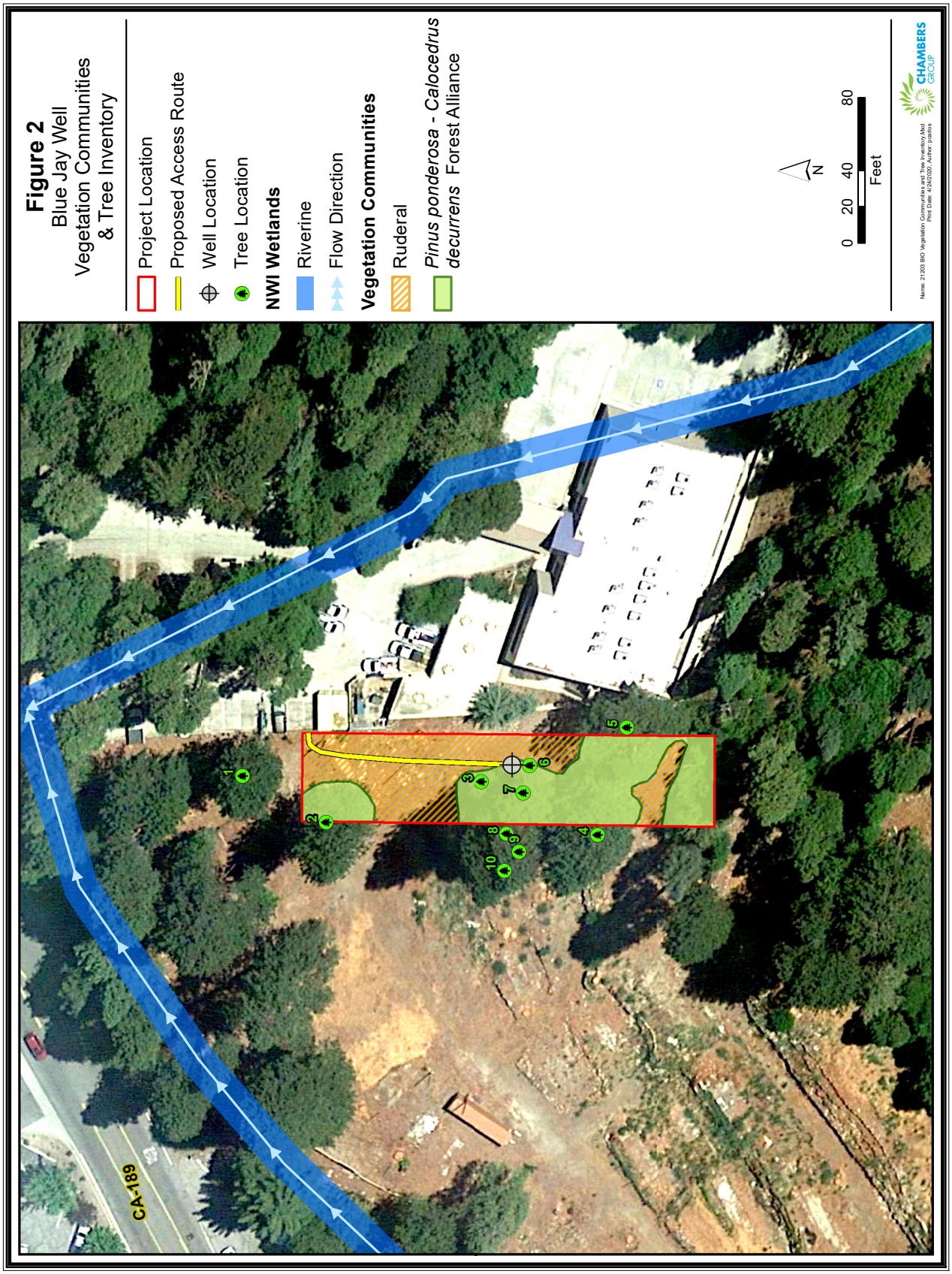


Figure 2: Vegetation Communities and Tree Inventory Map



SECTION 2.0 – METHODS

2.1 LITERATURE REVIEW

Prior to conducting the biological assessment, Chambers Group biologists conducted database searches to determine which species are known to occur within the Project vicinity (a radius of approximately 5 miles). The most recent records of the California Natural Diversity Database (CNDDB; CDFW 2019) and the California Native Plant Society (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI; CNPS 2019) were reviewed for the following quadrangles containing and surrounding the Project site: *Lake Arrowhead* and *Harrison Mtn*., California. These databases contain records of reported occurrences of federally and state listed endangered or threatened, or proposed endangered or threatened, species; California Species of Special Concern (SSC); and otherwise sensitive species or habitats that may occur within or in the immediate vicinity (within 5 miles) of the Project site. A list of sensitive plant and wildlife species potentially occurring within the Project site was developed from the database searches.

2.1.1 Soils

Prior to conducting the surveys, soil maps for San Bernardino County were referenced to determine the types of soil found within the Project area. Soils were determined in accordance with categories set forth by the United States Department of Agriculture (USDA) Soil Conservation Service, and by referencing the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2019).

2.1.2 Preliminary Jurisdictional Assessment

A preliminary desktop jurisdictional assessment revealed that the Little Bear Creek runs west to east approximately 115 feet north, and south to north approximately 80 feet east at the closest location to the Project site. The segment that parallels SR 189 north of the Project site is contained within a concrete-lined channel where an 8-foot-wide box structure diverts the flow of water below the LACSD administration building's parking lot.

2.2 RECONNAISSANCE-LEVEL FIELD SURVEY

Biological resources within the Project area were inventoried; and the potential for occurrence of sensitive plant and wildlife species, including species listed as threatened or endangered, and sensitive habitats were assessed. Qualitative observations were made of habitat types on site, including soil and vegetation types. In addition, a reconnaissance-level jurisdictional waters assessment was conducted. Notes were made on general vegetation types, species observed, and sensitive habitats existing on the property.

2.2.1 Vegetation

Vegetation communities within the Project site were identified and qualitatively described. Vegetation communities were determined in accordance with the categories set forth in Holland (1986), Barbour et al. (1999), or Sawyer et al. (2009). Plants of uncertain identity were collected and subsequently identified from keys, descriptions, and illustrations in Baldwin et al. (2012). Plant nomenclature follows that of *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012). A list of plant species observed during the survey is presented as Appendix A.

2.2.2 Wildlife

The distribution and relative abundance of wildlife, wildlife resources, and wildlife habitats within the Project site were characterized. Wildlife and wildlife sign (including tracks, scat, carcasses, burrows, nests, excavations, and vocalizations) were noted and recorded. Wildlife species observed during the Project site visit are included below (Section 3.3).

2.2.3 Sensitive Species

The following list of abbreviations was used in the identification of biologically sensitive resources potentially occurring within the Project area.

Federal

FE	=	Federally listed; Endangered
FT	=	Federally listed; Threatened
FC	=	Federal Candidate for listing
FSS	=	U.S. Forest Service Sensitive

State

SE	=	State listed; Endangered
ST	=	State listed; Threatened
SC	=	State Candidate for listing
RARE	=	State listed; Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
SSC	=	State Species of Special Concern
WL	=	CDFW Watch List

California Rare Plant Rank (CRPR)

List 1A	=	Plants presumed extinct in California
List 1B	=	Plants rare and endangered in California and throughout their range
List 2	=	Plants rare, threatened, or endangered in California but more common elsewhere in their range
List 3	=	Plants about which we need more information; a review list

CRPR Extensions

0.1	=	Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat)
0.2	=	Fairly endangered in California (20-80 percent occurrences threatened)
0.3	=	Not very endangered in California (less than 20 percent of occurrences threatened)

The potential for occurrence of special status plants and wildlife was evaluated through a literature review and site visit. Sensitive plant and animal species include all federally and state listed endangered and threatened species. A sensitive species was considered a potential inhabitant of the Project area if general habitat requirements of the species were present (such as the presence of roosting, nesting, or foraging

habitat, or a permanent water source), and/or its known geographical distribution encompassed, or was adjacent to, part of the Project area. The proposed well location, proposed access route, and the immediate surrounding area were visited on foot; and the probability for special status plants to occur within the Project site was evaluated.

Factors used to determine the potential for occurrence included the quality of habitat, elevation, and the results of reconnaissance survey. In addition, the location of prior CNDDB records of occurrence were used as additional data; but because the CNDDB is a positive-sighting database, these data were used only in support of the analysis from the previously identified factors. The "potential for occurrence" ranking is based on the criteria in Table 1.

Table 1: Criteria for Evaluating Sensitive Species Potential for Occurrence

PFO*	CRITERIA
Absent:	Species was not observed during focused surveys conducted at an appropriate time for identification of the species, or species is restricted to habitats that do not occur on the project area, or suitable habitat conditions are not present within the project area.
Low:	Habitats needed to support the species are of poor quality within the project area.
Moderate:	Either habitat requirements or environmental conditions associated with the species occur within the project area, or marginal habitat exists within the area and a historical record exists of the species within the project area or immediate vicinity (less than 5 miles) of the project.
High:	Both the habitat requirements and environmental conditions associated with the species occur within the project area, and a historical record exists of the species within the project area or its immediate vicinity (less than 5 miles).
Present:	Species was observed within the project area at the time of the survey.
* PFO: Potential for Occurrence	

Location information on some sensitive species is not available; therefore, for survey purposes, landscape factors associated with species occurrence requirements may be considered sufficient to give a species a positive potential for occurrence.

2.3 TREE INVENTORY

An inventory of trees within the Project site and immediate surrounding area was conducted. Trees mapped included those trees having a diameter at breast height (DBH) of 4 inches or greater, as measured 4.5 feet above grade. Trees within the Project site, or with a canopy that intersected the Project site, were mapped. Points were overlaid onto an aerial photograph and correspond to the tree identification (ID) numbers shown on Figure 2. The DBH of each tree was calculated and recorded. In the case of mature trees with multiple trunks, the total diameter was calculated by summing the individual diameters of all trunks that were equal to or greater than 3 inches in DBH. The tree canopy spread was estimated by averaging the greatest extent of two perpendicular canopy widths.

An overall grade was assigned to each tree based on an evaluation of its health and its aesthetic and ecological value. Table 2 presents the criteria used to establish each grade. The health of the tree includes

such adverse factors as damage caused by various pests including termites, wood-boring beetles, fungus, and hemiparasitic plants (e.g., mistletoe). Other factors affecting tree health include mechanical damage caused by fire or human activities, resulting in soil compaction, undercutting, damaged root systems, or improperly pruned limbs. The structural stability of each tree was also examined. Trees that are unstable (e.g., with root systems undercut or growing on steep slopes subject to slides) are assumed to have a potentially shorter life span.

Table 2: Grading Criteria for Ecological Value

Grade	Criteria
A+	Trees of excellent health (full foliage with good cover, individual leaves are large, tree has small twigs with leaves to the twig's tips, no major bare or broken limbs), superior aesthetic value, exceptional size, and high ecological value.
A	Trees of very good health (full foliage with good cover, individual leaves are large, may have minor damage to secondary branches), superior aesthetic value, and high ecological value.
B	Trees of good health (tree has thinner foliage, has leaves on small twigs, none of the major limbs are bare or broken, although a few smaller branches may be in this condition), average aesthetic value, and high to moderate ecological value.
C	Trees of average health (foliage thinner, leaves on medium limbs with very few or small twigs, up to 20% of tree's major limbs broken or bare), low aesthetic value and moderate ecological value. Trees in this category have often been damaged and are either recovering or declining, or are young or poor specimens.
D	Trees that have been severely damaged or are in extremely poor health. Tree has leaves only on large limbs, 20 to 50 percent of the major limbs are broken or bare, and low ecological value.
F	Standing dead trees with low ecological value. Trees of this category were observed during the Inventory but not recorded due to their fire risk and poor aesthetic grade.

SECTION 3.0 – RESULTS

The reconnaissance survey and tree assessment were conducted on November 19, 2019, by Chambers Group biologist Heather Clayton between the hours of 1045 and 1245. Wind speeds ranged between 1 to 6 miles per hour with temperatures between 61.5 and 64 degrees Fahrenheit. No precipitation occurred during the survey; skies were overcast with cloud cover ranging between 40 and 95 percent.

3.1 SOILS

A USDA NRCS Custom Soil Resource Report (USDA 2019) was generated for the Project area located within the San Bernardino National Forest area (CA777). Based on the results of the report, the only soil type that occurs within the Project area is 'Cedarpines-Stargazer-Urban land complex, 30 to 50 percent slopes.' This soil type is a well-drained sandy loam found on mountains at elevations of 4,350 to 6,980 feet. The parent material is colluvium and/or residuum weathered from granitoid. The water table is typically deeper than 80 inches for this soil type.

3.2 PRELIMINARY JURISDICTIONAL ASSESSMENT

No waters under state or federal jurisdiction were identified within the Project site.

3.3 VEGETATION

The vegetation community types within the Project area are the *Pinus ponderosa – Calocedrus decurrens* Forest Alliance and Ruderal. These vegetation communities identified are shown on Figure 2 with acreages within the Project site summarized in Table 3. Minimal amounts of native vegetation are expected to be impacted by well construction activities. The trees mapped in the Project site will be left in place and not removed as part of this Project.

Table 3: Vegetation Community Acreages

Vegetation Community	Size in Project Site (Acres)
Pinus ponderosa – Calocedrus decurrens Forest Alliance	0.137
Ruderal	0.121
Grand Total	**0.258**

Representative site photographs are included as Appendix B. The following sections summarize the principal characteristics of the vegetation communities within the Project site. A list of plant species that were observed during the surveys is presented as Appendix A.

3.3.1 Vegetation Communities

***Pinus ponderosa – Calocedrus decurrens* Forest Alliance**

The *Pinus ponderosa – Calocedrus decurrens* Forest Alliance is mostly a cismontane alliance occurring on floodplains, low-gradient depositions along streams, and raised benches. It is an upland alliance ranging in elevation from 980 to 6,900 feet amsl. The shrub layer is open to continuous with a sparse, abundant,

or grassy herbaceous layer (Sawyer et al. 2009). Species present within the Project area associated with this community include Ponderosa pine (*Pinus ponderosa*), young incense cedar (*Calocedrus decurrens*) trees, and scattered black oak (*Quercus kelloggii*) trees. The shrub layer was composed of minimal amounts of woody shrubs including cherry (*Prunus* sp.), gooseberry (*Ribes* sp.), Siberian elm (*Ulmus pumila*), and greater periwinkle (*Vinca major*). The understory was dominated by grasses and small forbs with a thick leaf litter and duff layer.

Ruderal

Areas classified as Ruderal tend to be dominated by pioneering herbaceous species that readily colonize disturbed ground, and that are typically found in temporary, often frequently disturbed habitats (Barbour et al. 1999). The soils in ruderal areas are typically characterized as heavily compacted or frequently disturbed. The vegetation in these areas is adapted to compact soils where water does not readily penetrate the soil. Often, Ruderal areas are dominated by species of the *Centaurea*, *Brassica*, *Malva*, *Salsola*, *Eremocarpus, Amaranthus*, and *Atriplex* genera. Areas with Ruderal vegetation were present within the Project area in the open areas between the tree canopy. Species present within the Ruderal areas on site were dominated by non-native cheat grass (*Bromus tectorum*) with lesser amounts of non-native Sahara mustard (*Brassica tournefortii*), garland daisy (*Glebionis coronaria*), prickly lettuce (*Lactuca serriola*), common knotweed (*Polygonum arenastrum*), and wheat (*Triticum aestivicum*). Native plant species identified within this community on site included sticky cinquefoil (*Drymocallis glandulosa*), California cottonweed (*Epilobium ciliatum*), horseweed (*Erigeron canadensis*), gilia (*Gilia* sp.), and threadplant (*Nemacladus* sp.).

3.3.2 Tree Inventory

Table 4 presents a list of the trees that have a DBH greater or equal to 4 inches that were found within the Project site or located adjacent to the site that have a canopy intersecting the Project site. Those trees whose trunk is located within the Project boundary are identified in the last column of Table 4.

Table 4: Tree Inventory

Tree ID	Tree Species	DBH * (inches)	Approximate Canopy Cover		Height (feet)	Tree Health/ Aesthetic Value**	Tree Trunk Located within Project Boundary
			Width (feet)	Length (feet)			
1	*Pinus ponderosa*	41	17	20	115	B	No
2	*Pinus ponderosa*	38	40	30	110	B	[Yes]
3	*Calocedrus decurrens*	14	25	19	50	A	[Yes]
4	*Pinus ponderosa*	51	55	40	150	A	No
5	*Quercus kelloggii*	33	60	45	75	B	No
6	*Quercus kelloggii*	7	30	28	35	C	[Yes]
7	*Calocedrus decurrens*	5	12	10	15	D	[Yes]
8	*Calocedrus decurrens*	7	10	15	20	C	No
9	*Calocedrus decurrens*	6	10	8	12	D	No
10	*Calocedrus decurrens*	4	6	5	10	C	No

*** Diameter at breast height as measured at 4.5 feet above grade.**

**** Tree health and aesthetic value correspond to ecological value ratings described in Table 2.**

3.3.3 Sensitive Plants

The CNDDB and CNPSEI literature reviews resulted in a list of 45 sensitive plant species with a potential to occur on or within the vicinity of the Project area. Excluding those species that are presumed extinct, have been extirpated from the county, and those limited to the CRPR 4 watch list category for which special protection is not afforded through CEQA, and have not been identified as Forest Service Sensitive (FSS) species, the number of plant species evaluated for their potential to occur was decreased to 29 species. Of this total, three are federally and/or state listed as endangered or threatened identified as FE, FT and SE below, but no suitable habitat is present within the survey area for these species.

The following plant species are considered **absent** or have a very low potential to occur within the survey area, as they typically grow at elevations below the range on site:

- Nevin's barberry (*Berberis nevinii*) – **FE, SE,** CRPR 1B.1
- smooth tarplant (*Centromadia pungens* subsp. *laevis*) – CRPR 1B.1
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*) – CRPR 1B.1, FSS
- white-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*) – CRPR 1B.2, FSS
- California satintail (*Imperata brevifolia*) – CRPR 2B.1, FSS
- Sonoran maiden fern (*Thelypteris puberula* var. *sonorensis*) – CRPR 2B.2, FSS

The following plant species are considered **absent** from the survey area due to a lack of suitable habitat or soil types. These species would typically grow in mesic areas such as meadows and seeps and along streambanks:

- Mt. Pinos onion (*Allium howellii* var. *clokeyi*) – CRPR 1B.3, FSS
- Palmer's mariposa-lily (*Calochortus palmeri* var. *palmeri*) – CRPR 1B.2, FSS
- lemon lily (*Lilium parryi*) – CRPR 1B.2, FSS
- Parish's yampah (*Perideridia parishii* subsp. *parishii*) – CRPR 2B.2
- Bear Valley checkerbloom (*Sidalcea malviflora* subsp. *dolosa*) – CRPR 1B.2, FSS
- San Bernardino aster (*Symphyotrichum defoliatum*) – CRPR 1B.2, FSS

The following plant species are considered **absent** from the survey area due to a lack of suitable habitat or soil types. These species would typically grow at higher elevations in upper montane coniferous forest, alpine boulder and rock fields, or pebble (pavement) plain areas.

- San Bernardino Mountains dudleya (*Dudleya abramsii* subsp. *affinis*) – CRPR 1B.2, FSS
- Parish's alumroot (*Heuchera parishii*) – CRPR 1B.3, FSS
- silver-haired ivesia (*Ivesia argyrocoma* var. *argyrocoma*) – CRPR 1B.2, FSS

The following plant species are considered **absent** from the survey area due to a lack of suitable habitat. These species are typically found in Joshua tree woodland, Mojavean desert scrub, or in pinyon and juniper woodland:

- white pygmy-poppy (*Canbya candida*) – CRPR 4.2, FSS
- Mojave paintbrush (*Castilleja plagiotoma*) – CRPR 4.3, FSS
- Booth's evening-primrose (*Eremothera boothii* subsp. *boothii*) – CRPR 2B.3
- Parish's daisy (*Erigeron parishii*) – **FT,** CRPR 1B.1
- short-joint beavertail (*Opuntia basilaris* var. *brachyclada*) – CRPR 1B.2, FSS

- Beaver Dam breadroot (*Pediomelum castoreum*) – CRPR 1B.2

The following plant species are considered **absent** from the survey area due to a lack of suitable habitat. These species are typically found in chaparral, coastal scrub, or grassland areas:

- San Bernardino Mountains owl's-clover (*Castilleja lasiorhyncha*) – CRPR 1B.2, FSS
- Mojave tarplant (*Deinandra mohavensis*) – **SE,** CRPR 1B.3, FSS
- Hall's monardella (*Monardella macrantha* subsp. *hallii*) –CRPR 1B.3, FSS
- southern jewelflower (*Streptanthus campestris*) – CRPR 1B.3, FSS
- salt spring checkerbloom (*Sidalcea neomexicana*) – CRPR 2B.2, FSS

The following plant species have a **low** potential to occur within the Project site as marginally suitable lower montane coniferous forest habitat is present as part of the *Pinus ponderosa – Calocedrus decurrens* Forest Alliance on site. These species include:

- Parish's oxytheca (*Acanthoscyphus parishii* var. *parishii*) – CRPR 4.2, FSS
- urn-flowered alumroot (*Heuchera caespitosa*) – CRPR 4.3, FSS
- chickweed oxytheca (*Sidotheca caryophylloides*) – CRPR 4.3, FSS

Of the 29 special status plant species evaluated for their potential occurrence on the Project site, 3 species have low potential to occur and 26 species are considered to be absent from the area due to a lack of suitable habitat. None of the species with a low potential to occur on site is federally or state listed as threatened or endangered. Although these species are FSS species for the San Bernardino National Forest (Region 5), these species are not afforded otherwise special protection under CEQA.

3.4 WILDLIFE

The following paragraphs describe the wildlife species observed or otherwise detected on or in the vicinity of the Project area during the reconnaissance-level survey. Wildlife detections or signs included those for birds and mammals. Species observed were mainly observed in the surrounding, more densely vegetated areas outside the immediate Project site.

3.4.1 Birds

Three avian species were observed or otherwise detected during the survey adjacent to the Project site. These species detected adjacent to the Project site, which may use the site for foraging, included Steller's jay (*Cyanocitta stelleri*), red-breasted nuthatch (*Sitta canadensis*), and mountain chickadee (*Poecile gambeli*).

3.4.2 Mammals

Ground squirrel (*Otospermophilus beecheyi*) burrows were detected within the Project site. No other mammal species were observed or otherwise detected during the survey.

3.4.3 Sensitive Wildlife

The CNDDB and literature review resulted in a list of 29 sensitive wildlife species with a potential to occur on or within the vicinity of the Project site. These species, their current status, and potential for occurrence are summarized below.

The following animal species are considered **absent** from the Project area due to a lack of suitable habitat. These species would typically live at lower elevations near water sources along streambanks, alluvial, or riparian woodland or in arid, semi-arid, or grassland habitats which were absent from the Project area:

- arroyo toad (*Anaxyrus californicus*) – **FE**, SSC
- western spadefoot (*Spea hammondii*) – SSC
- southwestern willow flycatcher (*Empidonax traillii extimus*) – **FE**, **SE**
- least Bell's vireo (*Vireo bellii pusillus*) – **FE, SE**
- western yellow bat (*Lasiurus xanthinus*) – SSC
- western mastiff bat (*Eumops perotis californicus*) – SSC
- pocketed free-tailed bat (*Nyctinomops femorosaccus*) – SSC
- San Bernardino kangaroo rat (*Dipodomys merriami parvus*) – **FE**, SC, SSC
- coast horned lizard (*Phrynosoma blainvillii*) – SSC
- coastal whiptail (*Aspidoscelis tigris stejnegeri*) – SSC
- California glossy snake (*Arizona elegans occidentalis*) – SSC
- western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) – **FT**, **SE**
- San Bernardino ring-necked snake (*Diadophis punctatus modestus*) – FSS
- Crotch's bumble bee (*Bombus crotchii*) – SC
- Mohave tui chub (*Siphateles bicolor mohavensis*) – **FE**, **SE**
- Santa Ana speckled dace (*Rhinichthys osculus* ssp. *3*) – SSC
- Santa Ana sucker (*Catostomus santaanae*) – **FT**
- California red-legged frog (*Rana draytonii*) – **FT**, SSC
- two-striped gartersnake (*Thamnophis hammondii*) – SSC

The following animal species are considered **absent** from the Project site due to a lack of suitable habitat. These species would typically live in habitat associated with rocky slopes or taluses which were absent from the Project site:

- southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) – WL
- San Gabriel slender salamander (*Bratrachoseps gabreili*) - FSS

The following animal species are considered **absent** from the Project area due to a lack of suitable roosting or den sites present, and the high level of disturbance present within the site:

- American badger (*Taxidea taxus*) – SSC
- bald eagle (*Haliaeetus leucocephalus*) – **SE**
- San Bernardino flying squirrel (*Glaucomys oregonensis californicus*) – SSC
- spotted owl (*Strix occidentalis occidentalis*) – SSC

The following animal species is considered **absent** from the Project area due to a lack of suitable breeding habitat, and due to the concrete-lined intermittent stream that exists to the north of the Project site:

- southern mountain yellow-legged frog (*Rana muscosa*) – **FE, SE**

The following animal species is considered **absent** from the Project site because it has likely been extirpated from the local area:

- white-eared pocket mouse (*Perognathus alticola alticola*) – SSC

The following animal species have a **low** potential to occur within the Project area as limited habitat is present near the Project site. The species below have been found within 5 miles of the Project site; however, these species require moist soils which are only present outside the Project limits, and the rock retaining wall present on site is not proposed to be impacted during construction activities:

- southern California legless lizard (*Anniella stebbinsi*) – SSC
- southern rubber boa (*Charina umbratica*) – **ST**

Of the 29 special status wildlife species evaluated for their potential occurrence within the Project site, 2 species have a low potential to occur, and 27 species are considered to be absent from the current Project site. Of those animal species with a low potential for occurrence, only the southern rubber boa is federally or state listed as endangered or threatened (state listed as threatened).

SECTION 4.0 – CONCLUSIONS AND RECOMMENDATIONS

This section summarizes the findings of the biological assessment and provides recommendations for the Project site.

4.1 TREES

Ten native trees were mapped within, and in close proximity of, the Project site. Only those living trees with a 6 inch or greater DBH are regulated by the County of San Bernardino and require a tree removal permit according to Section 88.01.070 of the County Development Code Division 8, "Resource Management and Conservation." The removal of any native regulated trees is not anticipated as part of well construction activities. Should Project construction activities extend beyond the current limits of the Project site, or require impacts to any regulated tree, an updated tree inventory conducted by a certified arborist may be necessary. Mitigation for any impacts to native regulated trees may also be required, depending on the tree species and overall condition of the tree.

4.2 SENSITIVE PLANTS

The CNDDB and CNPSEI literature review resulted in a list of 45 sensitive plant species that have a potential to occur in the Project area, but not all are afforded special protection through CEQA. Of the 29 sensitive plants that were evaluated for their potential occurrence on site, 3 species have a low potential for occurrence within the southern portions of the Project site. Due to the disturbed nature of the Project site, and because the well is proposed to be constructed within Ruderal areas that do not support sensitive plant species, no impacts to the three species with a potential to occur are anticipated. Furthermore, the proposed access route to the proposed well location is expected to avoid native vegetation within the *Pinus ponderosa – Calocedrus decurrens* Forest Alliance. If work can be limited to Ruderal areas mapped on Figure 2, a potential would no longer remain for any sensitive plant species to occur in the current proposed work areas.

If additional work is proposed for the southern portions of the Project site within areas mapped as *Pinus ponderosa – Calocedrus decurrens* Forest Alliance habitat, focused surveys may be required during the appropriate blooming period for these three sensitive plant species that have a low potential to occur on site.

4.3 SENSITIVE WILDLIFE

Of the 29 sensitive wildlife species evaluated for their potential occurrence on the Project area, 2 species have a low potential. The remaining 27 can be considered absent from the current proposed well location due to the high level of disturbance present and lack of suitable habitat.

Limited suitable habitat for southern California legless lizard and southern rubber boa is found on site. Suitable habitat includes the leaf litter and the retaining wall located in the southern portion of the Project site. However, the retaining wall is located outside of the proposed impact area and no impacts to the retaining wall are anticipated. Although the likelihood of these species to occur on site is low, it is recommended that a biological monitor be present prior to and during initial ground disturbing activities to avoid impacts to the southern California legless lizard and southern rubber boa. The biological monitor should carefully rake the leaf litter looking for these species and allow for dispersal from the site. In addition, the monitor should be able to halt construction until the species has dispersed from the site if

any are observed. If during well construction activities, a trench or hole is needed to be left open on site, it is recommended that the slope of the opening be constructed to allow for dispersal of trapped wildlife, or that an inclined plane be placed in the hole to allow for escape. If the southern rubber boa is found within the retaining wall, an avoidance buffer shall be placed with staking or flagging to protect this species from potential harm. Due to the low potential for this species to be on site, the potential to kill ("take") is not anticipated; therefore, a CDFW Incidental Take Permit will not be required.

4.4 SENSITIVE HABITATS

The Project area does not contain any sensitive habitats as defined by CDFW or USFWS.

No surface waters of the United States, or waters of the State, are located within the Project site; therefore, no impacts to waters are anticipated to occur during well construction activities.

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APPENDIX A – PLANT SPECIES OBSERVED

APPENDIX A: PLANT SPECIES OBSERVED WITHIN THE PROJECT SITE

Scientific Name	Common Name
GYMNOSPERMS	
CUPRESSACEAE	**CYPRESS FAMILY**
Calocedrus decurrens	California incense cedar
PINACEAE	**PINE FAMILY**
Pinus ponderosa	Ponderosa pine
ANGIOSPERMS (EUDICOTS)	
APOCYNACEAE	**DOGBANE FAMILY**
*Vinca major**	greater periwinkle
ASTERACEAE	**SUNFLOWER FAMILY**
Erigeron canadensis	horseweed
*Glebionis coronaria**	garland daisy
*Lactuca serriola**	prickly lettuce
BRASSICACEAE	**MUSTARD FAMILY**
*Brassica tournefortii**	Sahara mustard
CAMPANULACEAE	**BELLFLOWER FAMILY**
Nemacladus sp.	threadplant
FAGACEAE	**OAK FAMILY**
Quercus kelloggii	California black oak
GROSSULARIACEAE	**GOOSEBERRY FAMILY**
Ribes sp.	gooseberry
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Epilobium ciliatum	California cottonweed
POLEMONIACEAE	**PHLOX FAMILY**
Gilia sp.	gilia
POLYGONACEAE	**BUCKWHEAT FAMILY**
*Polygonum arenastrum**	common knotweed
ROSACEAE	**ROSE FAMILY**
Drymocallis glandulosa	sticky cinquefoil
Prunus sp.	cherry
ULMACEAE	**ELM FAMILY**
*Ulmus pumila**	Siberian elm
ANGIOSPERMS (MONOCOTS)	
POACEAE	**GRASS FAMILY**
*Bromus tectorum**	cheat grass
*Triticum aestivum**	wheat

* Non-native species

APPENDIX B – SITE PHOTOGRAPHS

APPENDIX B – SITE PHOTOGRAPHS

Photo 1. Photo taken from southern border of site facing north.

Photo 2. Photo taken from approximate proposed well location facing south, depicting potential southern rubber boa habitat. Right edge of photo represents approximate western edge of Project location.

	**Photo 3.** Photo taken from proposed well location facing southeast, depicting disturbed nature of ruderal vegetation on site. Orange cone depicts approximate western edge of Project location. *Pinus ponderosa – Calocedrus decurrens* Forest Alliance present in background of photo.
	**Photo 4.** Photo taken from proposed access route facing southwest. Ponderosa pine (*Pinus ponderosa*) tree #2 depicted in center. Tree identification numbers correspond to the numbers shown on Figure 2 and in Table 4.

Photo 5. Photo depicting ruderal vegetation including greater periwinkle (*Vinca major*) on the left with prickly lettuce (*Lactuca serriola*) and horseweed (*Erigeron canadensis*) dominating the center of the photo.

Photo 6. (Tree #1) Photo depicting Ponderosa pine located just outside the Project location boundry. No impacts to this tree are anticipated during Project activities.

Photo 7. (From left to right: trees #4, 7, 9, 8, & 10). Photo depicting Ponderosa pine tree #4, incense cedar (*Calocedrus decurrens*) tree #7, incense cedar tree #9, incense cedar tree #8, and incense cedar tree #10. The #7 incense cedar in front of the orange cone (outlined in red) is the only tree in this cluster that is located within the Project location boundry. All other trees in this cluster are outside the Project boundary.

Photo 8. (Tree #5) Photo depicting black oak (*Quercus kelloggii*) tree #5 on the left of the photo, located just outside the Project boundary.

Photo 9. (From left to right, trees #6, 7, & 4). Photo depicting black oak tree #6, incense cedar tree #7, and Ponderosa pine tree #4. Both tree #6 and tree #7 (outlined in red) are located within the Project boundary. Ponderosa pine tree #4 is located just outside the Project boundary and impacts to this tree are not anticipated.

Photo 10. Photo depicts a concrete lined channel with 8-foot wide box culvert and water flowing (east) approximately 100-foot north of site.

Photo 11. Photo depicts a 24-inch corrugated metal storm drain inlet from area north of site into concrete-lined channel.

APPENDIX B – PHASE I CULTURAL RESOURCES REPORT

PHASE 1 CULTURAL RESOURCES REPORT FOR THE LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT BLUE JAY WELL SITE PROJECT, SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for:

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NATIONAL ARCHAEOLOGICAL DATABASE INFORMATION

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Client/Project Proponent: Tidewater Inc.

Report Date: January 22, 2020

Report Title: Phase 1 Cultural Resources Report for the Lake Arrowhead Community Services District Blue Jay Well Project, San Bernardino County, California

Type of Study: Phase 1 Cultural Resources Study

New Sites: None

Updated Sites: None

USGS Quad: Harrison Mountain 7.5-minute quadrangle

Acreage: 0.26

Permit Numbers: N/A

Key Words: County of San Bernardino, City of Blue Jay, Phase 1 Cultural Resources Study, CEQA, Negative Results.

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SECTION 1.0 – INTRODUCTION

Chambers Group, Incorporated (Chambers Group) has been contracted by Tidewater, Inc. (Tidewater) to complete a Phase 1 Cultural Resources Report for the Blue Jay Well Project, which includes drilling, installation, sampling, development, and testing of the new production well(s) in accordance with federal, State, and local requirements. The project area is a thin strip of undeveloped, Lake Arrowhead Community Services District (LACSD) property, approximately 25 feet wide, located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, California, in San Bernardino County.

Chambers Group completed an archaeological literature review, archaeological records search, Native American Sacred Land Files Search along with scoping letters, sent Assembly Bill 52 (AB 52) consultation letters, and conducted a field survey of the approximately 0.26-acre project area. This report outlines the archaeological findings.

1.1 REGULATORY FRAMEWORK

Work for this project was conducted in compliance with the California Environmental Quality Act (CEQA). The regulatory framework as it pertains to cultural resources under CEQA is detailed below.

Under the provisions of CEQA; including the CEQA Statutes (Public Resources Code [PRC] §§ 21083.2 and 21084.1), the CEQA Guidelines (Title 14 California Code of Regulations [CCR], § 15064.5), and PRC § 5024.1 (Title 14 CCR § 4850 et seq.); properties expected to be directly or indirectly affected by a proposed project must be evaluated for their eligible listing in the California Register of Historical Resources (CRHR; PRC § 5024.1).

The purpose of the CRHR is to maintain listings of the State's historical resources, and to indicate which properties are to be protected, to the extent prudent and feasible, from material impairment and substantial adverse change. The term *historical resources* includes a resource currently listed in, or determined to be eligible for listing in, the CRHR; a resource included in a local register of historical resources; and any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant (CCR § 15064.5[a]). The criteria for listing properties in the CRHR were expressly developed in accordance with previously established criteria developed for listing in the National Register of Historic Places (NRHP). The California Office of Historic Preservation (OHP 1995:2) regards "any physical evidence of human activities over 45 years old" as meriting recordation and evaluation.

1.1.1 California Register of Historical Resources

A cultural resource is considered "historically significant" under CEQA if the resource meets one or more of the criteria for listing on the CRHR. The CRHR was designed to be used by State and local agencies, private groups, and citizens, to identify existing cultural resources within the State, and to indicate which of those resources should be protected from substantial adverse change, to the extent prudent and feasible. The following criteria have been established for the CRHR. A resource is considered significant if it:

1. is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. is associated with the lives of persons important in our past;
3. embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values; or

4. has yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting one or more of the above criteria, historical resources eligible for listing in the CRHR must retain enough of their historic character or appearance to be able to convey the reasons for their significance. Such integrity is evaluated in regard to the retention of location, design, setting, materials, workmanship, feeling, and association.

Under CEQA, if an archeological site is not a historical resource, but meets the definition of a "unique archeological resource" as defined in PRC § 21083.2, then it should be treated in accordance with the provisions of that section. A *unique archaeological resource* is defined as follows:

- An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
  - Contains information needed to answer important scientific research questions, and that there is a demonstrable public interest in that information
  - Has a special and particular quality, such as being the oldest of its type or the best available example of its type
  - Is directly associated with a scientifically recognized important prehistoric or historic event or person

Resources that neither meet any of these criteria for listing in the CRHR nor qualify as a "unique archaeological resource" under CEQA PRC § 21083.2 are viewed as not significant. Under CEQA, "a non-unique archaeological resource need be given no further consideration, other than the simple recording of its existence by the lead agency if it so elects" (PRC § 21083.2[h]).

Impacts that adversely alter the significance of a resource listed in, or eligible for listing in, the CRHR are considered a significant effect on the environment. Impacts to historical resources from a proposed project are thus considered significant if the project: (1) physically destroys or damages all or part of a resource; (2) changes the character of the use of the resource or physical feature within the setting of the resource, which contributes to its significance; or (3) introduces visual, atmospheric, or audible elements that diminish the integrity of significant features of the resource.

SECTION 2.0 – PROJECT DESCRIPTION AND LOCATION

2.1 PROJECT DESCRIPTION

Chambers Group has been contracted by Tidewater to complete a Phase 1 Cultural Resources Report for the Blue Jay Well Project (Project), which includes drilling, installation, sampling, development, and testing of the new production well(s) in accordance with federal, State, and local requirements. The purpose of the proposed Project is to develop a production well located at the vacant lot adjacent to the LACSD offices in Blue Jay, California. The well would further utilize existing groundwater resources to supplement the LACSD's water supply obligations to the Lake Arrowhead community. The Project area is located at 27307 CA-189 in Blue Jay, San Bernardino County, California.

The purpose of this investigation is to assess the potential for significant archaeological resources within the proposed Project area.

2.2 PROJECT LOCATION

The proposed Project area is located within the City of Blue Jay, San Bernardino County, California. The Project site is a thin strip of undeveloped, LACSD property, approximately 25 feet wide and totaling approximately 0.26-acres, located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, California 92317. The site is located approximately 0.4-miles southwest of Lake Arrowhead's Paradise Bay, in the vicinity of Little Bear Creek, and is sited in the Lake Arrowhead Hydrologic Subunit. The property to the west-southwest of this potential site was formerly a recreational vehicle (RV) lot that is no longer utilized. Specifically, the proposed Project area is located on the United States Geological Survey (USGS) *Harrison Mountain* 7.5-minute quadrangle (Figure 1).

Regional access to the proposed Project area is provided via California State Route 189, and local access is provided by Blue Jay Canyon Road.

Figure 1: Project Location and Vicinity Map

SECTION 3.0 – BACKGROUND

3.1 GEOLOGY

According to GEOSCIENCE Support Services, Inc. (2005) and Dibblee and Minch (2004), the regional and project vicinity are underlain by Mesozoic-aged granitic rock, mostly quartz monzonite. Quartz monzonite is typically a light colored, coarse-grained granitic rock. A very thin layer of alluvial deposit from erosion and weathering of the surrounding mountains overlies the quartz monzonite bedrock, and is mostly observed in areas surrounding the lake, and in the bottom of valley areas. This proposed Project area is not located near the lake or in a valley area, so the likelihood of encountering alluvium is low.

3.2 PREHISTORY

It is generally believed that human occupation of southern California began at least 10,000 years before present (BP). The archaeological record indicates that between approximately 10,000 and 6,000 years BP, a predominantly hunting and gathering economy existed, characterized by archaeological sites containing numerous projectile points and butchered large animal bones. The most heavily exploited species were those species still alive today, such as deer. Although small animal bones and plant grinding tools are rarely found within archaeological sites of this period, small game and vegetal foods were probably exploited (Wallace, 1978).

The three major periods of prehistory for the greater Los Angeles Basin region have been refined by recent research using radiocarbon dates from archaeological sites in coastal southern California (Koerper and Drover, 1983; Mason and Peterson, 1994):

- Millingstone Period (6,000 to 1,000 B.C., or about 8,000 to 3,000 years ago);
- Intermediate Period (1,000 B.C. to A.D. 650, or 3,000 to 1,350 years ago);
- Late Prehistoric Period (A.D. 650 to about A.D. 1800, or 1,350 to 200 years ago).

Around 6,000 years BP, a shift in focus from hunting toward a greater reliance on vegetal resources occurred. Archaeological evidence of this trend consists of a much greater number of milling tools (e.g., metates and manos) for processing seeds and other vegetable matter (Wallace, 1978). This period, known to archaeologists as the Millingstone Period, was a long period of time characterized by small, mobile groups that likely relied on a seasonal round of settlements that included both inland and coastal residential bases. Seeds from sage and grasses, rather than acorns, provided calories and carbohydrates. Faunal remains from sites dating to this period indicate similar animals were hunted. Inland Millingstone sites are characterized by numerous manos, metates, and hammerstones. Shell middens are common at coastal Millingstone sites. Coarse-grained lithic materials, such as quartzite and rhyolite, are more common than fine-grained materials in flaked stone tools from this time. Projectile points are found in archaeological sites from this period, but they are far fewer in number than from sites dating to before 6,000 years BP. An increase in the size of groups and the stability of settlements is indicated by deep, extensive middens at some sites from this period (Wallace, 1978).

In sites post-dating roughly 3,000 years BP, archaeological evidence indicates the reliance on both plant gathering and hunting continued, but was more specialized and locally adapted to particular environments. Mortars and pestles were added to metates and manos for grinding seeds and other vegetable material. Chipped-stone tools became more refined and specialized, and bone tools were more common. During this period, new peoples from the Great Basin began entering southern California. These immigrants, who spoke a

language of the Uto-Aztecan linguistic stock, seem to have displaced or absorbed the earlier population of Hokan-speaking peoples. The exact time of their entry into the region is not known; however, they were present in southern California during the final phase of prehistory. During this period, population densities were higher than before, and settlement became concentrated in villages and communities along the coast and interior valleys (Erlandson, 1994; McCawley, 1996).

During the Intermediate Period, mortars and pestles appeared, indicating the beginning of acorn exploitation. Use of the acorn – a high-calorie, storable food source – probably allowed greater sedentism and facilitated an increased level of social organization. Large projectile points from archaeological sites of this period indicate that the bow and arrow, a hallmark of the Late Prehistoric Period, had not yet been introduced; and hunting was likely accomplished using the *atlatl* (spear thrower) instead. Settlement patterns during this time are not well understood. The semi-sedentary settlement pattern characteristic of the Late Prehistoric Period may have begun during the Intermediate Period, although territoriality may not yet have developed because of lower population densities. Regional subcultures also started to develop, each with its own geographical territory and language or dialect (Kroeber, 1925; McCawley, 1996; Moratto, 1984). These were most likely the basis for the groups encountered by the first Europeans during the eighteenth century (Wallace, 1978). Despite the regional differences, many material culture traits were shared among groups, indicating a great deal of interaction (Erlandson, 1994). The Late Prehistoric Period is better understood than earlier periods, largely through ethnographic analogy made possible by ethnographic and anthropological research of the descendants of these groups in in the late nineteenth and early twentieth centuries.

3.3 ETHNOGRAPHY AND ARCHAEOLOGY

The proposed Project area was occupied by the Serrano people. Following is a brief ethnographic and archaeological summary of the Serrano.

3.3.1 Serrano

It is nearly impossible to assign boundaries of the Serrano territory due to their sociopolitical organization and lack of reliable data. The Serrano were organized into local lineages occupying favored territories, but rarely claiming any territory far from the lineage's home base (Bean and Smith, 1978). Generally speaking, the Serrano occupied an area in and around the San Bernardino Mountains, extending west to the Cajon Pass, east to Twentynine Palms, north to Victorville and south to Yucaipa Valley. The estimated population of the Serrano before European contact was 1,500 to 2,500. It is difficult to estimate the number of Serrano living in each village; however, it is likely that the villages held only as many Serrano as could be accommodated by water sources (Stickle and Weinman-Roberts, 1980; Kroeber, 1908).

The Serrano relied on hunting and gathering of plants for subsistence, with the occasional fishing. Both large and small mammals were hunted such as deer, antelope, rabbits, small rodents, and various birds like quail. Plant staples included seeds like acorns, pinion nuts and chia, bulbs, blooms, tubers, and roots of various plants like yucca, barrel cactus, various berries and mesquite. It is noted that fire was used as a management tool to increase the yields of certain plants. Herbs were extremely important to the Serrano and were used as traditional medicine (Bean and Smith, 1978; Bean and Vane, 2002).

The Serrano lived in dwellings which were circular, domed structures with tule thatching built over an excavated area. These structures were built with fire pits and primarily served as sleeping areas with tule mats. The majority of the daily norm was conducted outdoors under square ramadas, or in the open.

Ceremonial houses were the only other buildings in the villages, and were normally occupied by the village priest. Subterranean sweathouses were also built, typically outside the villages, near streams or pools. (Stickle and Weinman-Roberts, 1980; Bean and Smith, 1978).

In the Serrano artifact assemblage, it is noted to be similar to that of the neighboring Cahuilla, and includes musical instruments such as rattles and flutes; utensils and ornaments such as fire drills, mortars, metates, pipes, beads, awls, and projectile points from wood, shell, bone, and stone. The Serrano were talented pottery and basket makers. Baskets were often made of juncus sedge, deergrass, and yucca fibers. Their pots were made of coiled clay smoothed out with a paddle and set in the sun to dry before being fired in a pit. The brownware was sometimes decorated with designs of circles and lines of either red or black (Bean and Smith, 1978; Stickle and Weinman-Roberts, 1980).

The Serrano were also known for their petroglyphs. Abstract and geometric designs are often seen with representational figures of sheep, lizards and human beings. Some state that their petroglyphs were records of important events, rough maps, and artistic representations of native life (Stickle and Weinman-Roberts, 1980).

3.4 HISTORY

The first significant European settlement of California began during the Spanish Period (1769 to 1821) when 21 missions and four presidios were established between San Diego and Sonoma. Although located primarily along the coast, the missions dominated economic and political life over the greater California region. The purpose of the missions was primarily for political control and forced assimilation into Spanish society, and Catholicism of the Native American population, along with economic support to the presidios (Castillo, 1978).

In the 1700s, due to pressures from other colonizers (Russians, French, British), New Spain decided that a party should be sent north with the idea of founding both military presidios and religious missions in Alta California, to secure Spain's hold on its lands. The aim of the party was twofold. The first was the establishment of presidios, which would give Spain a military presence within its lands. The second was the establishment of a chain of missions along the coast slightly inland, with the aim of Christianizing the native population. By converting the native Californians, they could be counted as Spanish subjects, thereby bolstering the colonial population within a relatively short time (Lech, 2012).

The party was led by Gaspar de Portolá and consisted of two groups; one would take an overland route, and one would go by sea. All parties were to converge on San Diego, which would be the starting point for the chain of Spanish colonies. What became known as the Portolá Expedition set out on March 24, 1769. Portolá, who was very loyal to the crown and understood the gravity of his charge, arrived in what would become San Diego on July 1, 1769. Here, he immediately founded the presidio of San Diego.

Leaving one group in the southern part of Alta California, Portolá took a smaller group and began heading north to his ultimate destination of Monterey Bay. Continuing up the coast, Portolá established Monterey Bay as a Spanish possession on June 3, 1770, although it would take two expeditions to accomplish this task. Having established the presidios at San Diego and Monterey, Portolá returned to Mexico. During the first four years of Spanish presence in Alta California, Father Junípero Serra, a member of the Portolá expedition and the Catholic leader of the new province, began establishing what would become a chain of 21 coastal missions in California. The first, founded concurrently at San Diego with the presidio, was the launching

point for this group. During this time, four additional missions (San Carlos Borromeo de Carmelo, San Antonio de Padua, San Gabriel Arcángel, and San Luis Obispo de Tolosa) were established (Lech, 2012).

The Mexican Period (1821 to 1848) began with the success of the Mexican Revolution in 1821, but changes to the mission system were slow to follow. When secularization of the missions occurred in the 1830s, their vast land holdings in California were divided into large land grants called ranchos. The Mexican government granted ranchos throughout California to Spanish and Hispanic soldiers and settlers (Castillo, 1978; Cleland, 1941).

In 1848, The Treaty of Guadalupe Hidalgo ended the Mexican-American War and marked the beginning of the American Period (1848 to present). The discovery of gold that same year sparked the 1849 California Gold Rush, bringing thousands of miners and other new immigrants to California from various parts of the United States, most of whom settled in the north. For those settlers who chose to come to southern California, much of their economic prosperity was fueled by cattle ranching rather than by gold. This prosperity, however, came to a halt in the 1860s as a result of severe floods and droughts, as well as legal disputes over land boundaries, which put many ranchos into bankruptcy (Castillo, 1978; Cleland, 1941).

Art and Nora Wixom first established the now unincorporated community of Lake Arrowhead known as Blue Jay, in the early 1900s, when they opened and operated a general store and a handful of rental cabins. Originally, this area was known as Wixom Corner. Around 1934, a man named Stoney DeMent leased the area of Wixom Corner and renamed it Blue Jay, after the local blue colored birds. DeMent owned Blue Jay up until 1978, when he sold the small town to H.R. Kaufman, founder of the great Los Angeles based Pioneer Chicken chain. During Kaufman's ownership, the Ice Castle, a figure skating rink, and a cinema were built. Today, Blue Jay has over 2,000 residents. (Rim of the World History, 2016).

SECTION 4.0 – SOURCES CONSULTED

A records search was conducted on January 7, 2020, by staff at the South Central Coastal Information Center (SCCIC) located at the California State University, Fullerton (Appendix A). The records search provided information on all documented cultural resources, and previous archaeological investigations, within 0.25 miles of the proposed Project area. Resources consulted during the records search included the NRHP, California Historical Landmarks, California Points of Historical Interest, and the California State Historic Resources Inventory. Additionally, historic aerial photographs of the proposed Project area were reviewed in-house to determine the presence of any historic buildings or structures. Results of the records search and additional research are detailed below.

4.1 REPORTS WITHIN THE STUDY AREA

Based upon the records search conducted by staff at the SCCIC, 19 cultural resource studies have been completed previously within the 0.25-mile study area radius. Four of the 19 previous studies were within the current proposed Project area. These studies are shown in italics below. Details of these studies are found in Table 1.

Table 1: Previous Cultural Resource Studies within Study Area

Report Number	Year	Author	Title	Resources
SB-00220	*1974*	*Willie Z. Brock*	*Blue Jay Picnic Area Zone Change, Archaeological Reconnaissance Report for the Blue Jay Picnic Area, San Bernardino National Forest*	*N/A*
SB-02907	*1993*	*Scientific Resource Surveys, Inc.*	*Archaeological Survey and Impact Assessment of the Dogwood-Blue Jay Canyon Improvement Plan: A 120 Acre Parcel in the San Bernardino Mountains, San Bernardino County, California*	*N/A*
SB-03183	*1975*	*Albert N. Hess*	*Blue Jay Resort Inc. Land Exchange*	*N/A*
SB-03397	1998	Patricia Grossman	Grass Valley Parcel	N/A
SB-03398	1997	James Bridges	Little Bear THP	36-003868
SB-03399	1999	Linda Sandlein	THP#3-99-1SBR Preharvest Inspection	N/A
SB-04082	2003	Michael Dice	Cultural Resources Evaluation for Sprint Telecommunication Facility Candidate Sb54xc481e (Blue Jay Cinema), 27315 North Bay Rd, Blue Jay, San Bernardino County, California	N/A
SB-04961	2004	Michael Mirro	Cultural Resources Survey of Highway 189 Between the State Route 18/189 Junction and City of Lake Arrowhead, California (P.M. 0/5.6; 5.6 miles).	36-004034, 36-004731, 36-010862, 36-012768, 36-018087, 36-020297, 36-020298, 36-020300, 36-060193

Report Number	Year	Author	Title	Resources
SB-05002	2005	Michael Mirro	Cultural Resources Survey of 27 Acres on the Blucas Project Area for the Natural Resources Conservation Service	N/A
SB-05013	2005	Michael Mirro	Cultural Resources Survey of Approximately 29 Acres on The Dogwood/Blue Jay Association Project Area for the Natural Resources Conservation Service	N/A
SB-05043	2006	Katherine Pollock and Michael Lerch	Deteriorated Pole Replacement Project Archaeological Survey of Two Pole Locations on The Sundown 12kv And High School 2.4kv Transmission Lines, San Bernardino County, California	N/A
SB-05525	2006	Michael Mirro	Cultural Resources Survey of 27 Acres on the Lakeside Trailer Park Area for the Natural Resources Conservation Service	N/A
SB-05532	*2007*	*Michael Mirro*	*Cultural Resources Survey of 238 Parcels Encompassing 107.07 Acres Within the Uran Large Parcel Rf 209 Project Area for the Natural Resources Conservation Service*	*36-013498, 36-013499*
SB-5534	2007	Michael Mirro	Cultural Resources Survey of Approximately 134.8 Acres in the Dogwood II Project Area for the Natural Resources Conservation Service	36-013507, 36-013508, 36-013509
SB-05646	2007	Michael Mirro	Cultural Resources Survey of Approximately 24.5 Acres in the Lakewood Project Area for the Natural Resources Conservation Service	36-013585
SB-05945	2008	Michael Mirro	Cultural Resources Survey Of 47.4 Acres on the Blucas Fuel Modification Project Area for the National Resource Conservation Service	N/A
SB-06761	2005	Jill K. Gardner, Audry Williams, and Huebert Switalski	A Heritage Resources Inventory for the Hazard Tree Removal Project in the Mountain Top and Front Country Districts of the San Bernardino National Forest on Behalf of Southern California Edison Company.	36-000930, 36-003802, 36-004291, 36-004293, 36-004887, 36-005580, 36-010265, 36-010266, 36-012137, 36-012138, 36-012139, 36-012140, 36-012141, 36-012142, 36-012143, 36-012144, 36-012145, 36-012261, 36-020554

Report Number	Year	Author	Title	Resources
SB-07096	2010	Peter L. Feller	A Confidential Archaeological Letter for the Mtn. Heli Pineview Fuel Modification Project for the County of San Bernardino, San Bernardino County, California	N/A
SB-07098	2011	Tim Morin	Operational Site Plan, Mountain Heli Fuel Modification Project, San Bernardino County	N/A

4.2 PREVIOUSLY RECORDED CULTURAL RESOURCES WITHIN THE STUDY AREA

Based upon the records search conducted by staff at the SCCIC, one previously documented cultural resource was recorded within the 0.25-mile study area radius, as shown in Table 2. This previously documented resource is not located within the proposed Project area. Additionally, historic aerial photographs and topographic maps of the Project area, dating to the late 1930s, were reviewed, and indicated that the proposed Project area did not contained any historic structures or buildings.

Table 2: Previously Recorded Cultural Resources within the Study Area

Primary Number	Trinomial	Resource Name	Site Description
P-36-003868	CA-SBR-3868H	Daley Road; USFS - FS 05-12-51-0074	Historic site; historic road

4.3 NATIVE AMERICAN HERITAGE COMMISSION SACRED LAND FILE SEARCH

On October 29, 2019, Chambers Group requested that the Native American Heritage Commission (NAHC) conduct a search of its Sacred Lands File to determine if cultural resources significant to Native Americans have been recorded in the proposed Project footprint and/or buffer area. On November 4, 2019, Chambers Group received a response from NAHC stating that the search of its Sacred Lands File was positive for the presence of Native American cultural resources within the proposed Project area or surrounding vicinity (Appendix B). The NAHC provided their list of Native American tribal governments to contact, to which Chambers Group sent tribal scoping letters via electronic mail, on December 10, 2019. Each of the listed representatives was sent a letter indicating that the NAHC Sacred Land File result was positive, and asked for any further information regarding this positive find. Copies of the Tribal scoping letters are provided in Appendix C. As of the date of this report, one response has been received:

- Jessica Mauck, Cultural Resources Analyst/San Manuel Band of Mission Indians, responded via email on December 11, 2019. Ms. Mauck indicated the proposed Project area is within a sensitive portion of Serrano ancestral territory; however, the Tribe is not aware of resources within or adjacent to the proposed Project area. Ms. Mauck indicated the Tribe's level of concern and recommended actions will be better defined after information is provided by the Lead Agency during AB 52 consultation.

SECTION 5.0 – AB 52 CONSULTATION SUPPORT

The NAHC provided their list of Native American tribal governments to contact, which included representatives from four tribes. The four Native American tribes identified include the Morongo Band of Mission Indians, San Fernando Band of Mission Indians, San Manuel Band of Mission Indians, and the Serrano Nation of Mission Indians. Because LACSD is leading the AB 52 consultation process, Chambers Group assisted LACSD with preparing and sending consultation letters to the affiliated tribes. All consultation letters were sent via United States Postal Service (USPS) Certified Mail on November 15, 2019. A copy of the NAHC Sacred Land Files Search and contact list is included in Appendix B. Copies of the AB 52 letters are provided in Appendix C. As of the date of this report, LACSD received one request for consultation:

- Jessica Mauck, Cultural Resources Analyst/San Manuel Band of Mission Indians, responded via email on December 17, 2019. Ms. Mauck indicated the project area is within a sensitive portion of Serrano ancestral territory and is requesting consultation. Ms. Mauck also requested additional documentation such as any geotechnical reports and the cultural resources report. Consultation is ongoing.

SECTION 6.0 – FIELD METHODS

Chambers Group survey teams are trained in established field methods for cultural resources deemed appropriate for each project. Cultural materials encountered may include prehistoric artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools), historic-period artifacts (e.g., metal, glass, ceramics), sediment discoloration that might indicate the presence of a cultural midden, as well as depressions and other features indicative of the former presence of structures or buildings (e.g., post holes, foundations).

On December 17, 2019, Chambers Group archaeologist Lauren DeOliveira completed a pedestrian-level survey of the vacant proposed Project site. The pedestrian level survey was completed using transects spaced at no more than three meters apart. The archaeologist examined exposed ground surface for artifacts (e.g., flaked stone tools, tool-making debris, milling tools, ceramics), ecofacts (e.g., marine shell and bone), soil discoloration that might indicate the presence of a cultural midden, and features indicative of the former presence of structures or buildings (e.g., standing exterior walls, postholes, foundations), or historic debris (e.g., metal, glass, ceramics). Ground disturbances such as burrows were visually inspected for cultural resources.

SECTION 7.0 – RESULTS OF ARCHAEOLOGICAL INVESTIGATION

The proposed Project area is located within the unincorporated community of Blue Jay, San Bernardino County, California. The approximate 0.26-acre proposed Project area is located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, California, and northeast of graded terraces with retaining walls. The proposed Project area appears to have been used as an access road at some point as the proposed Project area appears graded, and degrading asphalt, road base, and coarse construction sands are visible on the surface. A small layer of duff and snow were within the Project area, although the duff and snow were easily moved by a small boot scrape. Overall, ground visibility was moderate (70 to 80%). Native soils did not appear to be present within the proposed Project area; only asphalt, road base, coarse construction sand, concrete, and wood were observed within the disturbed proposed Project area.

No historic or prehistoric resources were identified as a result of the field survey.

SECTION 8.0 – STUDY FINDINGS AND RECOMMENDATIONS

Chambers Group completed an archaeological literature review, records search, Native American Sacred Land Files Search, assistance with AB 52 notification, and a field survey of the 0.26-acre proposed Project location. The work was performed under Chambers Group's contract with Tidewater. The main goal of this archaeological investigation was to gather and analyze information needed to determine if the proposed Project could impact cultural resources.

The NAHC Sacred Lands File search did identify sacred sites or tribal cultural resources within the Project area or search radius. The cultural record search identified four previous cultural resource studies within the proposed Project area. Additionally, no previously-recorded archaeological resources were identified within the proposed Project area. Lastly, as a result of the record search and survey, the proposed Project area has been identified as being previously disturbed, and yielded and no cultural resources.

No cultural resources were identified within the proposed Project area as a result of the record search or the pedestrian survey. Since the geology of the area primarily consists of Mesozoic-aged granitic rock, and there are previous disturbance noted within the Project area, no impacts are expected to occur as part of the proposed Project. No further work for cultural resources is recommended.

In the event of an unanticipated cultural resource(s) discovery, the following guidelines are recommended:

In the event that unanticipated cultural resources are encountered during ground-disturbing activities, a qualified archaeologist shall be contacted to assess the significance of the Find. In the case that previously undiscovered resources are identified during construction activities, excavations within 50 feet of the Find shall be temporarily halted or diverted. If the qualified archaeologist determines the Find to be significant, construction activities can resume after the Find is assessed and mitigated accordingly. It is also recommended that further recordation and documentation of this proposed Project and the initial findings be completed prior to any ground-disturbing construction activities.

In the event that the discovery of human remains occurs during ground-disturbing activities, the following regulations must be followed. California State law (California Health and Safety Code 7050.5) require a defined protocol if human remains are discovered in the State of California, regardless if the remains are modern or archaeological. Upon discovery of human remains, all work within a minimum of 200 feet of the remains must cease immediately, and the County Coroner must be notified. The appropriate land manager/owner of the site shall also be notified of the discovery. If the remains are located on federal lands, the federal land manager(s), federal law enforcement, and/or federal archaeologist should also be notified.

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Figure 2: Overview of project area. Looking northeast. Cones indicate width of proposed Project area. Length extends from cones east to wall.

Figure 3: Overview of proposed Project area. Looking southeast.

Figure 4: Overview of proposed Project area. Looking southeast.

Figure 5: Overview of proposed Project area. Looking south.

Figure 6: Overview of proposed Project area. Looking east.

Figure 7: Boot scrape showing asphalt, gravels, and construction sands.

SECTION 9.0 – REFERENCES

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Wallace, William
1978 Post Pleistocene Archaeology, 9000 to 2000 B.C. In *Handbook of North American Indians Volume 8*:26-36. Smithsonian Institution, Washington, D.C.

APPENDIX A – RECORD SEARCH RESULTS SUMMARY

South Central Coastal Information Center
California State University, Fullerton
Department of Anthropology MH-426
800 North State College Boulevard
Fullerton, CA 92834-6846
657.278.5395 / FAX 657.278.5542
sccic@fullerton.edu
California Historical Resources Information System
Orange, Los Angeles, and Ventura Counties

1/7/2020 Records Search File No.: 20906.6949

Lauren De Oliveira
Chambers Group
600 West Broadway, Suite 250
Glendale, CA 91204

Re: Record Search Results for 21203 LACSD Blue Jay Wells

The South Central Coastal Information Center received your records search request for the project area referenced above, located on the Harrison Mountain, CA USGS 7.5' quadrangle. The following reflects the results of the records search for the project area and a ¼-mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☒ custom GIS maps ☐ shape files ☐ hand-drawn maps

Resources within project area: 0	None
Resources within ¼-mile radius: 1	SEE ATTACHED MAP or LIST
Resources listed in the 2012 OHP Historic Properties Directory within project area: 0	None
Resources listed in the 2012 OHP Historic Properties Directory within ¼-mile radius: 0	None
Reports within project area: 4	SB-00220, SB-02907, SB-03183, SB-05532
Reports within ¼-mile radius: 15	SEE ATTACHED MAP or LIST

Resource Database Printout (list):	☐ enclosed	☒ not requested	☐ nothing listed
Resource Database Printout (details):	☐ enclosed	☒ not requested	☐ nothing listed
Resource Digital Database (spreadsheet):	☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (list):	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (details):	☐ enclosed	☒ not requested	☐ nothing listed
Report Digital Database (spreadsheet):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Record Copies:	☒ enclosed	☐ not requested	☐ nothing listed
Report Copies:	☐ enclosed	☒ not requested	☐ nothing listed
OHP Historic Properties Directory 2012:	☐ enclosed	☐ not requested	☒ nothing listed

Archaeo Determinations of Eligibility 2012: ☐ enclosed ☐ not requested ☒ nothing listed
Los Angeles Historic-Cultural Monuments ☐ enclosed ☐ not requested ☒ nothing listed
Historical Maps: ☒ enclosed ☐ not requested ☐ nothing listed
Ethnographic Information: ☒ not available at SCCIC
Historical Literature: ☒ not available at SCCIC
GLO and/or Rancho Plat Maps: ☒ not available at SCCIC
Caltrans Bridge Survey: ☒ not available at SCCIC; please go to http://www.dot.ca.gov/hq/structur/strmaint/historic.htm
Shipwreck Inventory: ☒ not available at SCCIC; please go to http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp
Soil Survey Maps: (see below) ☒ not available at SCCIC; please go to http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System,

Isabela Kott
GIS Technician/Staff Researcher

Enclosures:

(X) Custom Maps – 3 pages

(X) Resource Digital Database (spreadsheet) – 1 line

(X) Report Digital Database (spreadsheet) – 19 lines

(X) Resource Record Copies – (all) 50 pages

(X) Historical Maps – 3 pages

APPENDIX B – NAHC SACRED LAND FILES SEARCH

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691 Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov

November 4, 2019

Kyle Knabb
Chambers Group, Inc.

VIA Email to: kknabb@chambersgroupinc.com

RE: 21203 ~~Coachillin Anaerobic Digestor Project~~ Blue Jay Wells Project, San Bernardino County

Dear Mr. Knabb:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were positive. Please contact the San Manuel Band of Mission Indians on the attached list for more information. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Staff Services Analyst

Attachment

Native American Heritage Commission
Native American Contact List
San Bernardino County
11/4/2019

Morongo Band of Mission Indians
Denisa Torres, Cultural Resources Manager
12700 Pumarra Rroad — Cahuilla
Banning, CA, 92220 — Serrano
Phone: (951) 849 - 8807
Fax: (951) 922-8146
dtorres@morongo-nsn.gov

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Rroad — Cahuilla
Banning, CA, 92220 — Serrano
Phone: (951) 849 - 8807
Fax: (951) 922-8146
dtorres@morongo-nsn.gov

San Fernando Band of Mission Indians
Donna Yocum, Chairperson
P.O. Box 221838 — Kitanemuk
Newhall, CA, 91322 — Vanyume
Phone: (503) 539 - 0933 — Tataviam
Fax: (503) 574-3308
ddyocum@comcast.net

San Manuel Band of Mission Indians
Lee Clauss, Director of Cultural Resources
26569 Community Center Drive — Serrano
Highland, CA, 92346
Phone: (909) 864 - 8933
Fax: (909) 864-3370
lclauss@sanmanuel-nsn.gov

Serrano Nation of Mission Indians
Wayne Walker, Co-Chairperson
P. O. Box 343 — Serrano
Patton, CA, 92369
Phone: (253) 370 - 0167
serranonation1@gmail.com

Serrano Nation of Mission Indians
Mark Cochrane, Co-Chairperson
P. O. Box 343 — Serrano
Patton, CA, 92369
Phone: (909) 528 - 9032
serranonation1@gmail.com

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed 21203 Coachillin Anaerobic Digestor Project, San Bernardino County.

APPENDIX C – AB 52 AND TRIBAL SCOPING LETTERS

November 15, 2019

San Manuel Band of Mission Indians
Lee Clauss, Director of Cultural Resources
26569 Community Center Drive
Highland, CA 92346

Dear Ms. Clauss,

The Lake Arrowhead Community Services District (LACSD) is conducting its AB-52 consultation process for the LACSD Blue Jay Well Project No. 187 (Project). The proposed project is to develop a domestic water production well located at the LACSD offices property in Blue Jay, California. The well would further utilize existing groundwater resources to supplement the LACSD's water supply obligations to the Lake Arrowhead community. The Project site is a thin strip of undeveloped, LACSD property, approximately 25 feet wide, located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, CA 92317.

Construction of the Project will include drilling, installation, sampling, development, and testing of the new production well in accordance with federal, State, and local requirements. Drilling and well installation activities will be performed by a State of California C-57 licensed well-drilling contractor. Drilling and well construction will comply with California Department of Water Resources (DWR) Well Standards Bulletins 74-90 and 74-81, American Water Works Association (AWWA) guidelines, and San Bernardino County Department of Public Health, Division of Environmental Health Services (DPH EHS) regulations. The drilling contractor will mobilize to the site and stage equipment at the proposed well location. Site preparation may include the excavation of a mud pit that will contain mud used as drilling fluid during borehole advancement, or the use of containment tanks, which are closed systems.

A records search from the California Historical Resources Information System (CHRIS) Data Center has been requested and Phase I Archaeological survey will commence following the receipt of the records search results. A Sacred Lands File search was completed by the Native American Heritage Commission (NAHC) that yielded positive results. In that letter, the NAHC indicated that the District should contact the San Manuel Band of Mission Indians for more information.

Please consider this letter of notification and preliminary project information as the initiation of the California Environmental Quality Act, specifically Public Resources Code 21080.3.1 and Chapter 532 Statutes of 2014 (i.e., AB 52). Pursuant to PRC 21080.3.1(d), your organization has 30 days upon receipt of this letter to provide a request for consultation on the Project.

Your comments are important to the Lake Arrowhead community as we move forward with this project. In your response, please identify a primary point of contact for the Tribe should consultation be desired. If you have any questions, or require additional information, please contact me at your earliest convenience. My contact information is in my signature below.

Sincerely,

Aida Hercules-Dodaro, District Engineer
Lake Arrowhead Community Services District
PO Box 700
Lake Arrowhead, CA 92352
ahercules @lakearrowheadcsd.com
(909) 336-7155

Attachments: Project Area Map

November 15, 2019

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Road
Banning, CA, 92220

Dear Mr. Martin:

The Lake Arrowhead Community Services District (LACSD) is conducting its AB-52 consultation process for the LACSD Blue Jay Well Project No. 187 (Project). The proposed project is to develop a domestic water production well located at the LACSD offices property in Blue Jay, California. The well would further utilize existing groundwater resources to supplement the LACSD's water supply obligations to the Lake Arrowhead community. The Project site is a thin strip of undeveloped, LACSD property, approximately 25 feet wide, located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, CA 92317.

Construction of the Project will include drilling, installation, sampling, development, and testing of the new production well in accordance with federal, State, and local requirements. Drilling and well installation activities will be performed by a State of California C-57 licensed well-drilling contractor. Drilling and well construction will comply with California Department of Water Resources (DWR) Well Standards Bulletins 74-90 and 74-81, American Water Works Association (AWWA) guidelines, and San Bernardino County Department of Public Health, Division of Environmental Health Services (DPH EHS) regulations. The drilling contractor will mobilize to the site and stage equipment at the proposed well location. Site preparation may include the excavation of a mud pit that will contain mud used as drilling fluid during borehole advancement, or the use of containment tanks, which are closed systems.

A records search from the California Historical Resources Information System (CHRIS) Data Center has been requested and Phase I Archaeological survey will commence following the receipt of the records search results. A Sacred Lands File search was completed by the Native American Heritage Commission that yielded positive results.

Please consider this letter of notification and preliminary project information as the initiation of the California Environmental Quality Act, specifically Public Resources Code 21080.3.1 and Chapter 532 Statutes of 2014 (i.e., AB 52). Pursuant to PRC 21080.3.1(d), your organization has 30 days upon receipt of this letter to provide a request for consultation on the Project.

Your comments are important to the Lake Arrowhead community as we move forward with this project. In your response, please identify a primary point of contact for the Tribe should consultation be desired. If you have any questions, or require additional information, please contact me at your earliest convenience. My contact information is in my signature below.

Sincerely,

Aida Hercules-Dodaro, District Engineer
Lake Arrowhead Community Services District
PO Box 700
Lake Arrowhead, CA 92352
ahercules @lakearrowheadcsd.com
(909) 336-7155

Attachments: Project Area Map

November 15, 2019

Morongo Band of Mission Indians
Denisa Torres, Cultural Resources Manager
12700 Pumarra Road
Banning, CA, 92220

Dear Ms. Torres:

The Lake Arrowhead Community Services District (LACSD) is conducting its AB-52 consultation process for the LACSD Blue Jay Well Project No. 187 (Project). The proposed project is to develop a domestic water production well located at the LACSD offices property in Blue Jay, California. The well would further utilize existing groundwater resources to supplement the LACSD's water supply obligations to the Lake Arrowhead community. The Project site is a thin strip of undeveloped, LACSD property, approximately 25 feet wide, located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, CA 92317.

Construction of the Project will include drilling, installation, sampling, development, and testing of the new production well in accordance with federal, State, and local requirements. Drilling and well installation activities will be performed by a State of California C-57 licensed well-drilling contractor. Drilling and well construction will comply with California Department of Water Resources (DWR) Well Standards Bulletins 74-90 and 74-81, American Water Works Association (AWWA) guidelines, and San Bernardino County Department of Public Health, Division of Environmental Health Services (DPH EHS) regulations. The drilling contractor will mobilize to the site and stage equipment at the proposed well location. Site preparation may include the excavation of a mud pit that will contain mud used as drilling fluid during borehole advancement, or the use of containment tanks, which are closed systems.

A records search from the California Historical Resources Information System (CHRIS) Data Center has been requested and Phase I Archaeological survey will commence following the receipt of the records search results. A Sacred Lands File search was completed by the Native American Heritage Commission that yielded positive results.

Please consider this letter of notification and preliminary project information as the initiation of the California Environmental Quality Act, specifically Public Resources Code 21080.3.1 and Chapter 532 Statutes of 2014 (i.e., AB 52). Pursuant to PRC 21080.3.1(d), your organization has 30 days upon receipt of this letter to provide a request for consultation on the Project.

Your comments are important to the Lake Arrowhead community as we move forward with this project. In your response, please identify a primary point of contact for the Tribe should consultation be desired. If you have any questions, or require additional information, please contact me at your earliest convenience. My contact information is in my signature below.

Sincerely,

Aida Hercules-Dodaro, District Engineer
Lake Arrowhead Community Services District
PO Box 700
Lake Arrowhead, CA 92352
ahercules @lakearrowheadcsd.com
(909) 336-7155

Attachments: Project Area Map

November 15, 2019

San Fernando Band of Mission Indians
Donna Yocum, Chairperson
P.O. Box 221838
Newhall, CA, 91322

Dear Ms. Yocum:

The Lake Arrowhead Community Services District (LACSD) is conducting its AB-52 consultation process for the LACSD Blue Jay Well Project No. 187 (Project). The proposed project is to develop a domestic water production well located at the LACSD offices property in Blue Jay, California. The well would further utilize existing groundwater resources to supplement the LACSD's water supply obligations to the Lake Arrowhead community. The Project site is a thin strip of undeveloped, LACSD property, approximately 25 feet wide, located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, CA 92317.

Construction of the Project will include drilling, installation, sampling, development, and testing of the new production well in accordance with federal, State, and local requirements. Drilling and well installation activities will be performed by a State of California C-57 licensed well-drilling contractor. Drilling and well construction will comply with California Department of Water Resources (DWR) Well Standards Bulletins 74-90 and 74-81, American Water Works Association (AWWA) guidelines, and San Bernardino County Department of Public Health, Division of Environmental Health Services (DPH EHS) regulations. The drilling contractor will mobilize to the site and stage equipment at the proposed well location. Site preparation may include the excavation of a mud pit that will contain mud used as drilling fluid during borehole advancement, or the use of containment tanks, which are closed systems.

A records search from the California Historical Resources Information System (CHRIS) Data Center has been requested and Phase I Archaeological survey will commence following the receipt of the records search results. A Sacred Lands File search was completed by the Native American Heritage Commission that yielded positive results.

Please consider this letter of notification and preliminary project information as the initiation of the California Environmental Quality Act, specifically Public Resources Code 21080.3.1 and Chapter 532 Statutes of 2014 (i.e., AB 52). Pursuant to PRC 21080.3.1(d), your organization has 30 days upon receipt of this letter to provide a request for consultation on the Project.

Your comments are important to the Lake Arrowhead community as we move forward with this project. In your response, please identify a primary point of contact for the Tribe should consultation be desired. If you have any questions, or require additional information, please contact me at your earliest convenience. My contact information is in my signature below.

Sincerely,

Aida Hercules-Dodaro, District Engineer
Lake Arrowhead Community Services District
PO Box 700
Lake Arrowhead, CA 92352
ahercules @lakearrowheadcsd.com
(909) 336-7155

Attachments: Project Area Map

November 15, 2019

Serrano Nation of Mission Indians
Wayne Walker, Co-Chairperson
P.O. Box 343
Patton, CA, 92369

Dear Mr. Walker:

The Lake Arrowhead Community Services District (LACSD) is conducting its AB-52 consultation process for the LACSD Blue Jay Well Project No. 187 (Project). The proposed project is to develop a domestic water production well located at the LACSD offices property in Blue Jay, California. The well would further utilize existing groundwater resources to supplement the LACSD's water supply obligations to the Lake Arrowhead community. The Project site is a thin strip of undeveloped, LACSD property, approximately 25 feet wide, located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, CA 92317.

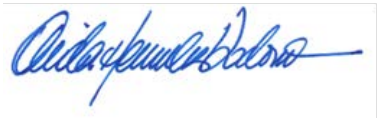
Construction of the Project will include drilling, installation, sampling, development, and testing of the new production well in accordance with federal, State, and local requirements. Drilling and well installation activities will be performed by a State of California C-57 licensed well-drilling contractor. Drilling and well construction will comply with California Department of Water Resources (DWR) Well Standards Bulletins 74-90 and 74-81, American Water Works Association (AWWA) guidelines, and San Bernardino County Department of Public Health, Division of Environmental Health Services (DPH EHS) regulations. The drilling contractor will mobilize to the site and stage equipment at the proposed well location. Site preparation may include the excavation of a mud pit that will contain mud used as drilling fluid during borehole advancement, or the use of containment tanks, which are closed systems.

A records search from the California Historical Resources Information System (CHRIS) Data Center has been requested and Phase I Archaeological survey will commence following the receipt of the records search results. A Sacred Lands File search was completed by the Native American Heritage Commission that yielded positive results.

Please consider this letter of notification and preliminary project information as the initiation of the California Environmental Quality Act, specifically Public Resources Code 21080.3.1 and Chapter 532 Statutes of 2014 (i.e., AB 52). Pursuant to PRC 21080.3.1(d), your organization has 30 days upon receipt of this letter to provide a request for consultation on the Project.

Your comments are important to the Lake Arrowhead community as we move forward with this project. In your response, please identify a primary point of contact for the Tribe should consultation be desired. If you have any questions, or require additional information, please contact me at your earliest convenience. My contact information is in my signature below.

Sincerely,



Aida Hercules-Dodaro, District Engineer
Lake Arrowhead Community Services District
PO Box 700
Lake Arrowhead, CA 92352
ahercules @lakearrowheadcsd.com
(909) 336-7155

Attachments: Project Area Map

November 15, 2019

Serrano Nation of Mission Indians
Mark Cochrane, Co-Chairperson
P.O. Box 343
Patton, CA, 92369

Dear Mr. Cochrane:

The Lake Arrowhead Community Services District (LACSD) is conducting its AB-52 consultation process for the LACSD Blue Jay Well Project No. 187 (Project). The proposed project is to develop a domestic water production well located at the LACSD offices property in Blue Jay, California. The well would further utilize existing groundwater resources to supplement the LACSD's water supply obligations to the Lake Arrowhead community. The Project site is a thin strip of undeveloped, LACSD property, approximately 25 feet wide, located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, CA 92317.

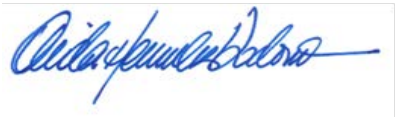
Construction of the Project will include drilling, installation, sampling, development, and testing of the new production well in accordance with federal, State, and local requirements. Drilling and well installation activities will be performed by a State of California C-57 licensed well-drilling contractor. Drilling and well construction will comply with California Department of Water Resources (DWR) Well Standards Bulletins 74-90 and 74-81, American Water Works Association (AWWA) guidelines, and San Bernardino County Department of Public Health, Division of Environmental Health Services (DPH EHS) regulations. The drilling contractor will mobilize to the site and stage equipment at the proposed well location. Site preparation may include the excavation of a mud pit that will contain mud used as drilling fluid during borehole advancement, or the use of containment tanks, which are closed systems.

A records search from the California Historical Resources Information System (CHRIS) Data Center has been requested and Phase I Archaeological survey will commence following the receipt of the records search results. A Sacred Lands File search was completed by the Native American Heritage Commission that yielded positive results.

Please consider this letter of notification and preliminary project information as the initiation of the California Environmental Quality Act, specifically Public Resources Code 21080.3.1 and Chapter 532 Statutes of 2014 (i.e., AB 52). Pursuant to PRC 21080.3.1(d), your organization has 30 days upon receipt of this letter to provide a request for consultation on the Project.

Your comments are important to the Lake Arrowhead community as we move forward with this project. In your response, please identify a primary point of contact for the Tribe should consultation be desired. If you have any questions, or require additional information, please contact me at your earliest convenience. My contact information is in my signature below.

Sincerely,



Aida Hercules-Dodaro, District Engineer
Lake Arrowhead Community Services District
PO Box 700
Lake Arrowhead, CA 92352
ahercules @lakearrowheadcsd.com
(909) 336-7155

Attachments: Project Area Map

December 10, 2019
Project # 21203

Director of Cultural Resources Lee Clauss
San Manuel Band of Mission Indians
26569 Community Center Drive
Highland, CA, 92346

Subject: **Lake Arrowhead Community Services District Blue Jay Well Project**

Dear Director of Cultural Resources Lee Clauss:

Chambers Group, Inc. is preparing a Phase I Cultural Resources Report for the 21202 Lake Arrowhead Community Services District (LACSD) Blue Jay Well Project (Project). which includes drilling, installation, sampling, development, and testing of the new production well(s) in accordance with federal, State, and local requirements. The purposed of the proposed Project is to develop a production well located at the vacant lot adjacent to the LACSD offices in Blue Jay, California. The well would further utilize existing groundwater resources to supplement the LACSD's water supply obligations to the Lake Arrowhead community. The project area is located at 27307 CA-189 in Blue Jay, San Bernardino County, California. The project area is located within the City of Blue Jay, San Bernardino County, California. The Project site is a thin strip of undeveloped, LACSD property, approximately 25 feet wide, located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, CA 92317. The site is located approximately 0.4-miles southwest of Lake Arrowhead's Paradise Bay, in the vicinity of Little Bear Creek, and is sited in the Lake Arrowhead Hydrologic Subunit. The property to the west-southwest of this potential site was formerly a recreational vehicle (RV) lot that is no longer utilized. Specifically, the project area is located on the U.S. Geological Survey (USGS) *Harrison Mountain* 7.5-minute quadrangle.

A cultural record search request was submitted on October 22, 2019 to the South Central Coastal Information Center. The record search included the project area plus a 0.5-mile search radius. As of the date of this letter, no record search results have been received. A pedestrian survey of the project area will commence once the record search results have been received.

Additionally, the Native American Heritage Commission Sacred Land File search, dated November 4, 2019 resulted in positive findings. The Native American Heritage Commission requested we contact all Native American tribes listed by the NAHC for additional information regarding the positive result. This letter is being sent for preliminary background research and information gathering only.

If you have knowledge of sensitive resources in or near the proposed project location or other concerns, we would appreciate any information you can provide. If you have any questions or concerns regarding this request please contact me at ldeoliveira@chambersgroupinc.com or (213) 623-1859 ext. 7286. Additionally, my mailing address is: 600 West Broadway, Suite 250, Glendale, CA, 91204.

Sincerely,

Lauren DeOliveira

CHAMBERS GROUP, INC.
Lauren DeOliveira, M.S., RPA
Cultural Resources Specialist/Project Manager

Attachments: Exhibit A - Location Map

Legend

Project Location

N

0 100 200 400

Feet

Figure 1

LACSD Blue Jay Well
Project Vicinity and Location

Name: 21203 PLAN Fig 1 Project Location & Vicinity Map.Mxd
Print Date: 11/7/2019, Author: pcarlos

CHAMBERS GROUP

December 10, 2019
Project # 21203

Co-Chairperson Mark Cochrane
Serrano Nation of Mission Indians
P.O. Box 343
Patton, CA, 92369

Subject: **Lake Arrowhead Community Services District Blue Jay Well Project**

Dear Co-Chairperson Mark Cochrane:

Chambers Group, Inc. is preparing a Phase I Cultural Resources Report for the 21202 Lake Arrowhead Community Services District (LACSD) Blue Jay Well Project (Project). which includes drilling, installation, sampling, development, and testing of the new production well(s) in accordance with federal, State, and local requirements. The purposed of the proposed Project is to develop a production well located at the vacant lot adjacent to the LACSD offices in Blue Jay, California. The well would further utilize existing groundwater resources to supplement the LACSD's water supply obligations to the Lake Arrowhead community. The project area is located at 27307 CA-189 in Blue Jay, San Bernardino County, California. The project area is located within the City of Blue Jay, San Bernardino County, California. The Project site is a thin strip of undeveloped, LACSD property, approximately 25 feet wide, located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, CA 92317. The site is located approximately 0.4-miles southwest of Lake Arrowhead's Paradise Bay, in the vicinity of Little Bear Creek, and is sited in the Lake Arrowhead Hydrologic Subunit. The property to the west-southwest of this potential site was formerly a recreational vehicle (RV) lot that is no longer utilized. Specifically, the project area is located on the U.S. Geological Survey (USGS) *Harrison Mountain* 7.5-minute quadrangle.

A cultural record search request was submitted on October 22, 2019 to the South Central Coastal Information Center. The record search included the project area plus a 0.5-mile search radius. As of the date of this letter, no record search results have been received. A pedestrian survey of the project area will commence once the record search results have been received.

Additionally, the Native American Heritage Commission Sacred Land File search, dated November 4, 2019 resulted in positive findings. The Native American Heritage Commission requested we contact all Native American tribes listed by the NAHC for additional information regarding the positive result. This letter is being sent for preliminary background research and information gathering only.

If you have knowledge of sensitive resources in or near the proposed project location or other concerns, we would appreciate any information you can provide. If you have any questions or concerns regarding this request please contact me at ldeoliveira@chambersgroupinc.com or (213) 623-1859 ext. 7286. Additionally, my mailing address is: 600 West Broadway, Suite 250, Glendale, CA, 91204.

Sincerely,

Lauren DeOliveira

CHAMBERS GROUP, INC.
Lauren DeOliveira, M.S., RPA
Cultural Resources Specialist/Project Manager

Attachments: Exhibit A - Location Map

Legend

Project Location

N

0 100 200 400

Feet

Figure 1

LACSD Blue Jay Well
Project Vicinity and Location

Name: 21203 PLAN Fig 1 Project Location & Vicinity Map.Mxd
Print Date: 11/7/2019, Author: pcarlos

CHAMBERS GROUP

December 10, 2019
Project # 21203

Chairperson Robert Martin
Morongo Band of Mission Indians
12700 Pumarra Road
Banning, CA, 92220

Subject: **Lake Arrowhead Community Services District Blue Jay Well Project**

Dear Chairperson Robert Martin:

Chambers Group, Inc. is preparing a Phase I Cultural Resources Report for the 21202 Lake Arrowhead Community Services District (LACSD) Blue Jay Well Project (Project). which includes drilling, installation, sampling, development, and testing of the new production well(s) in accordance with federal, State, and local requirements. The purposed of the proposed Project is to develop a production well located at the vacant lot adjacent to the LACSD offices in Blue Jay, California. The well would further utilize existing groundwater resources to supplement the LACSD's water supply obligations to the Lake Arrowhead community. The project area is located at 27307 CA-189 in Blue Jay, San Bernardino County, California. The project area is located within the City of Blue Jay, San Bernardino County, California. The Project site is a thin strip of undeveloped, LACSD property, approximately 25 feet wide, located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, CA 92317. The site is located approximately 0.4-miles southwest of Lake Arrowhead's Paradise Bay, in the vicinity of Little Bear Creek, and is sited in the Lake Arrowhead Hydrologic Subunit. The property to the west-southwest of this potential site was formerly a recreational vehicle (RV) lot that is no longer utilized. Specifically, the project area is located on the U.S. Geological Survey (USGS) *Harrison Mountain* 7.5-minute quadrangle.

A cultural record search request was submitted on October 22, 2019 to the South Central Coastal Information Center. The record search included the project area plus a 0.5-mile search radius. As of the date of this letter, no record search results have been received. A pedestrian survey of the project area will commence once the record search results have been received.

Additionally, the Native American Heritage Commission Sacred Land File search, dated November 4, 2019 resulted in positive findings. The Native American Heritage Commission requested we contact all Native American tribes listed by the NAHC for additional information regarding the positive result. This letter is being sent for preliminary background research and information gathering only.

If you have knowledge of sensitive resources in or near the proposed project location or other concerns, we would appreciate any information you can provide. If you have any questions or concerns regarding this request please contact me at ldeoliveira@chambersgroupinc.com or (213) 623-1859 ext. 7286. Additionally, my mailing address is: 600 West Broadway, Suite 250, Glendale, CA, 91204.

Sincerely,

Lauren DeOliveira

CHAMBERS GROUP, INC.
Lauren DeOliveira, M.S., RPA
Cultural Resources Specialist/Project Manager

Attachments: Exhibit A - Location Map

Legend

Project Location

N

0 100 200 400

Feet

Figure 1

LACSD Blue Jay Well
Project Vicinity and Location

Name: 21203 PLAN Fig 1 Project Location & Vicinity Map.Mxd
Print Date: 11/7/2019, Author: pcarlos

CHAMBERS GROUP

December 10, 2019
Project # 21203

Cultural Resources Manager Denisa Torres
Morongo Band of Mission Indians
12700 Pumarra Road
Banning, CA, 92220

Subject: Lake Arrowhead Community Services District Blue Jay Well Project

Dear Cultural Resources Manager Denisa Torres:

Chambers Group, Inc. is preparing a Phase I Cultural Resources Report for the 21202 Lake Arrowhead Community Services District (LACSD) Blue Jay Well Project (Project). which includes drilling, installation, sampling, development, and testing of the new production well(s) in accordance with federal, State, and local requirements. The purposed of the proposed Project is to develop a production well located at the vacant lot adjacent to the LACSD offices in Blue Jay, California. The well would further utilize existing groundwater resources to supplement the LACSD's water supply obligations to the Lake Arrowhead community. The project area is located at 27307 CA-189 in Blue Jay, San Bernardino County, California. The project area is located within the City of Blue Jay, San Bernardino County, California. The Project site is a thin strip of undeveloped, LACSD property, approximately 25 feet wide, located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, CA 92317. The site is located approximately 0.4-miles southwest of Lake Arrowhead's Paradise Bay, in the vicinity of Little Bear Creek, and is sited in the Lake Arrowhead Hydrologic Subunit. The property to the west-southwest of this potential site was formerly a recreational vehicle (RV) lot that is no longer utilized. Specifically, the project area is located on the U.S. Geological Survey (USGS) *Harrison Mountain* 7.5-minute quadrangle.

A cultural record search request was submitted on October 22, 2019 to the South Central Coastal Information Center. The record search included the project area plus a 0.5-mile search radius. As of the date of this letter, no record search results have been received. A pedestrian survey of the project area will commence once the record search results have been received.

Additionally, the Native American Heritage Commission Sacred Land File search, dated November 4, 2019 resulted in positive findings. The Native American Heritage Commission requested we contact all Native American tribes listed by the NAHC for additional information regarding the positive result. This letter is being sent for preliminary background research and information gathering only.

If you have knowledge of sensitive resources in or near the proposed project location or other concerns, we would appreciate any information you can provide. If you have any questions or concerns regarding this request please contact me at ldeoliveira@chambersgroupinc.com or (213) 623-1859 ext. 7286. Additionally, my mailing address is: 600 West Broadway, Suite 250, Glendale, CA, 91204.

Sincerely,

Lauren DeOliveira

CHAMBERS GROUP, INC.
Lauren DeOliveira, M.S., RPA
Cultural Resources Specialist/Project Manager

Attachments: Exhibit A - Location Map

Legend

Project Location

N

0 100 200 400

Feet

Figure 1

LACSD Blue Jay Well
Project Vicinity and Location

Name: 21203 PLAN Fig 1 Project Location & Vicinity Map.Mxd
Print Date: 11/7/2019, Author: pcarlos

CHAMBERS GROUP

December 10, 2019
Project # 21203

Co-Chairperson Wayne Walker
Serrano Nation of Mission Indians
P.O. Box 343
Patton, CA, 92369

Subject: Lake Arrowhead Community Services District Blue Jay Well Project

Dear Co-Chairperson Wayne Walker:

Chambers Group, Inc. is preparing a Phase I Cultural Resources Report for the 21202 Lake Arrowhead Community Services District (LACSD) Blue Jay Well Project (Project). which includes drilling, installation, sampling, development, and testing of the new production well(s) in accordance with federal, State, and local requirements. The purposed of the proposed Project is to develop a production well located at the vacant lot adjacent to the LACSD offices in Blue Jay, California. The well would further utilize existing groundwater resources to supplement the LACSD's water supply obligations to the Lake Arrowhead community. The project area is located at 27307 CA-189 in Blue Jay, San Bernardino County, California. The project area is located within the City of Blue Jay, San Bernardino County, California. The Project site is a thin strip of undeveloped, LACSD property, approximately 25 feet wide, located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, CA 92317. The site is located approximately 0.4-miles southwest of Lake Arrowhead's Paradise Bay, in the vicinity of Little Bear Creek, and is sited in the Lake Arrowhead Hydrologic Subunit. The property to the west-southwest of this potential site was formerly a recreational vehicle (RV) lot that is no longer utilized. Specifically, the project area is located on the U.S. Geological Survey (USGS) *Harrison Mountain* 7.5-minute quadrangle.

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Additionally, the Native American Heritage Commission Sacred Land File search, dated November 4, 2019 resulted in positive findings. The Native American Heritage Commission requested we contact all Native American tribes listed by the NAHC for additional information regarding the positive result. This letter is being sent for preliminary background research and information gathering only.

If you have knowledge of sensitive resources in or near the proposed project location or other concerns, we would appreciate any information you can provide. If you have any questions or concerns regarding this request please contact me at ldeoliveira@chambersgroupinc.com or (213) 623-1859 ext. 7286. Additionally, my mailing address is: 600 West Broadway, Suite 250, Glendale, CA, 91204.

Sincerely,

Lauren DeOliveira

CHAMBERS GROUP, INC.
Lauren DeOliveira, M.S., RPA
Cultural Resources Specialist/Project Manager

Attachments: Exhibit A - Location Map

Legend

Project Location

N

0 100 200 400

Feet

Figure 1

LACSD Blue Jay Well
Project Vicinity and Location

Name: 21203 PLAN Fig 1 Project Location & Vicinity Map.Mxd
Print Date: 11/7/2019, Author: pcarlos

CHAMBERS GROUP

December 10, 2019
Project # 21203

Chairperson Donna Yocum
San Fernando Band of Mission Indians
P.O. Box 221838
Newhall, CA, 91322

Subject: Lake Arrowhead Community Services District Blue Jay Well Project

Dear Chairperson Donna Yocum:

Chambers Group, Inc. is preparing a Phase I Cultural Resources Report for the 21202 Lake Arrowhead Community Services District (LACSD) Blue Jay Well Project (Project). which includes drilling, installation, sampling, development, and testing of the new production well(s) in accordance with federal, State, and local requirements. The purposed of the proposed Project is to develop a production well located at the vacant lot adjacent to the LACSD offices in Blue Jay, California. The well would further utilize existing groundwater resources to supplement the LACSD's water supply obligations to the Lake Arrowhead community. The project area is located at 27307 CA-189 in Blue Jay, San Bernardino County, California. The project area is located within the City of Blue Jay, San Bernardino County, California. The Project site is a thin strip of undeveloped, LACSD property, approximately 25 feet wide, located immediately adjacent to the LACSD's administration building at 27307 CA-189, Blue Jay, CA 92317. The site is located approximately 0.4-miles southwest of Lake Arrowhead's Paradise Bay, in the vicinity of Little Bear Creek, and is sited in the Lake Arrowhead Hydrologic Subunit. The property to the west-southwest of this potential site was formerly a recreational vehicle (RV) lot that is no longer utilized. Specifically, the project area is located on the U.S. Geological Survey (USGS) *Harrison Mountain* 7.5-minute quadrangle.

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If you have knowledge of sensitive resources in or near the proposed project location or other concerns, we would appreciate any information you can provide. If you have any questions or concerns regarding this request please contact me at ldeoliveira@chambersgroupinc.com or (213) 623-1859 ext. 7286. Additionally, my mailing address is: 600 West Broadway, Suite 250, Glendale, CA, 91204.

Sincerely,

Lauren DeOliveira

CHAMBERS GROUP, INC.
Lauren DeOliveira, M.S., RPA
Cultural Resources Specialist/Project Manager

Attachments: Exhibit A - Location Map

Legend

Project Location

N

0 100 200 400

Feet

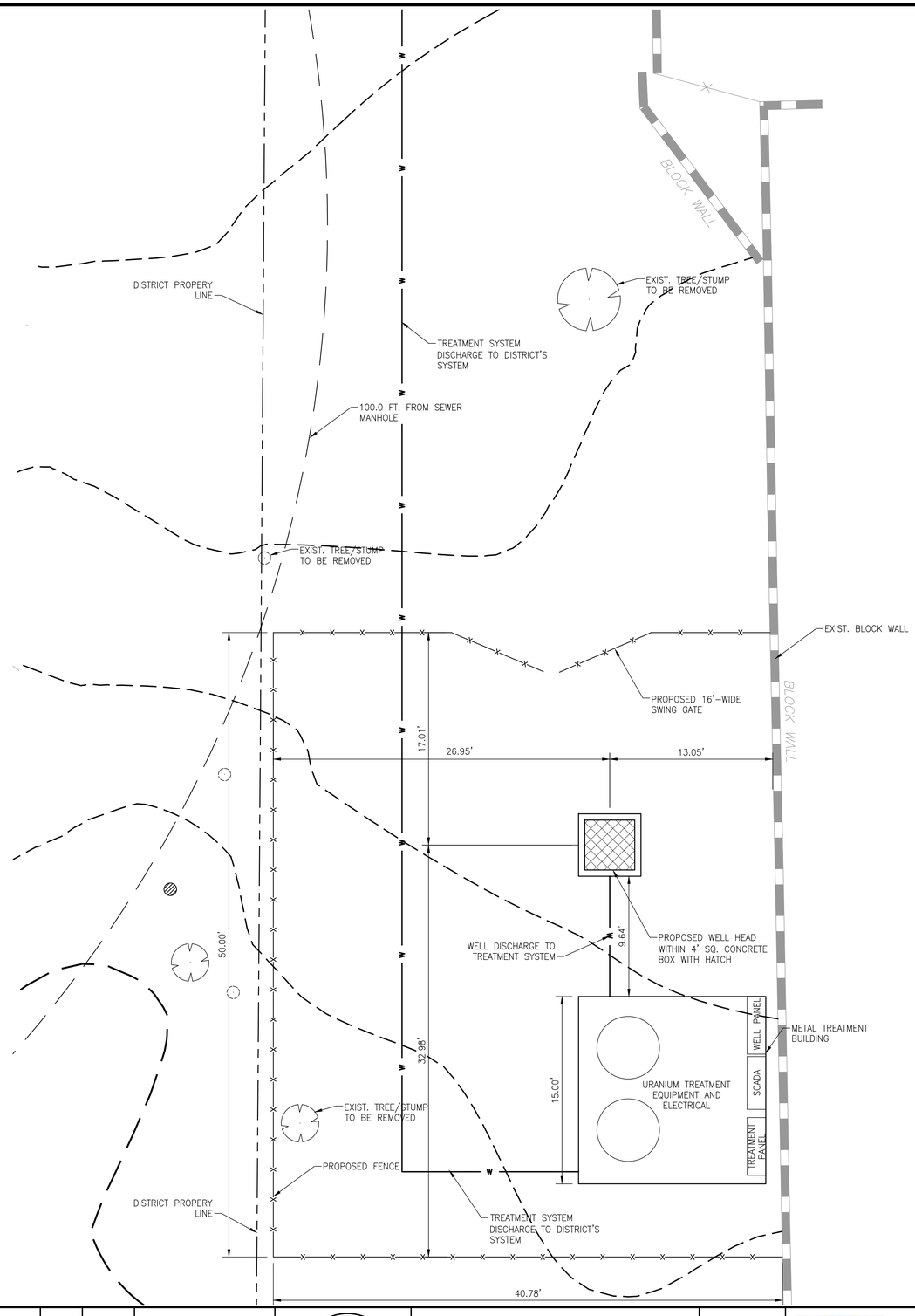
Figure 1

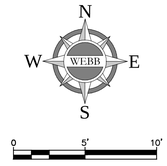
LACSD Blue Jay Well
Project Vicinity and Location

Name: 21203 PLAN Fig 1 Project Location & Vicinity Map.Mxd
Print Date: 11/7/2019, Author: pcarlos

CHAMBERS GROUP

APPENDIX C – WELL NO. 187 SITE PLAN





ALBERT A. WEBB ASSOCIATES

ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070

811 Know what's below. Call 811 before you dig.

REV.	REVISION DESCRIPTION	BY	DATE

DESIGNED BY: SLB
DRAWN BY: CY
CHECKED BY: SLB

REGISTERED PROFESSIONAL ENGINEER — SHAE L. BLOODWORTH — NO. C77455 — CIVIL — STATE OF CALIFORNIA

APPROVED BY:

DISTRICT ENGINEER DATE

SCALE: AS SHOWN

LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT
P.O. BOX 700
LAKE ARROWHEAD, CA 92352
909-336-7100

BLUE JAY WELL NO. 187

PRELIMINARY SITE PLAN

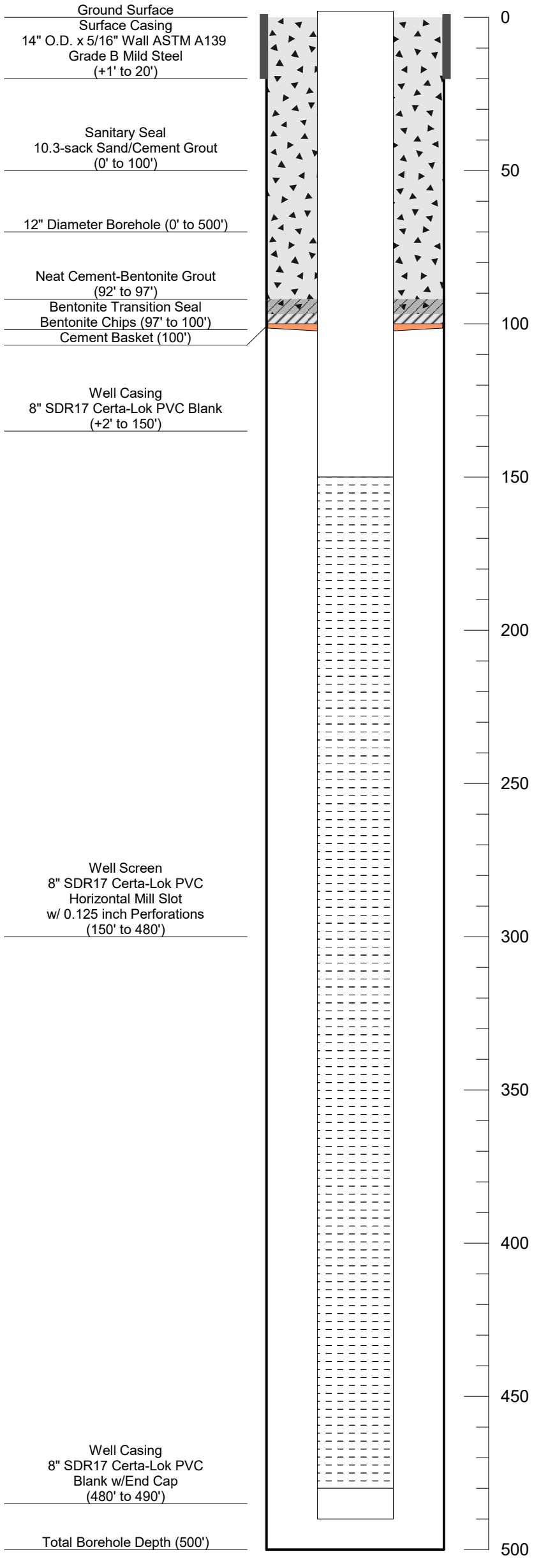
SHEET 3 OF X

DRAWING NO. C-1

H:\2019\19-0246\DRAWINGS\PLAN SHEETS\19-0246-01-G AND C-SHEET.DWG

APPENDIX D – CONCEPTUAL WELL DESIGN

Conceptual Well Design Profile



CONCEPTUAL WELL DESIGN PROFILE

LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT BLUE JAY WELL PROJECT NO. 187 BLUE JAY, CALIFORNIA MAY 2020	BOREHOLE DIAMETERS (in): 12 BOREHOLE DEPTHS (ft): 500 SCREEN INTERVALS (ft): 150-480 CASING DEPTHS (ft): +2-150	*Notes: RSN: 16-in normal RLN: 64-in normal DRAWN BY: K.MAKAR APPROVED BY: R.KYLE	KYLE Groundwater **PROJECT NO.** 3016.001	**DRAWING** 3 OF 3

APPENDIX E – TECHNICAL MEMORANDUM FOR FEASIBILITY EVALUATION OF POTENTIAL WELL SITES

Introduction

Tidewater Incorporated (Tidewater) prepared this technical memorandum for the Lake Arrowhead Community Services District (LACSD) to evaluate the feasibility of installing one or more new production wells at several identified locations in, and surrounding, the LACSD water service boundary (Figures 1 and 2). Any new production wells installed would further utilize existing groundwater resources to supplement the LACSD's water supply obligations to the Lake Arrowhead community. The four locations identified as potential new production well sites (Figures 3 through 6) are as follows:

- Blue Jay: This potential location is located immediately adjacent to the LACSD's administration building, located at 27307 CA-189, Blue Jay, CA 92317. The parcel of land where the well would be sited is located to the south-southwest of the building.
- Lake Arrowhead Country Club (LACC): This potential location is located approximately 0.75 miles west of Lake Arrowhead, and consists of approximately 125 acres. Currently, the LACSD owns and manages five production wells located on the LACC property, and has the rights to install additional production wells on the property.
- Deer Park Lodge: This potential location is located approximately 0.75 miles northwest of Lake Arrowhead, and consists of five individual parcels of LACSD-owned property within a residential community.
- The Flats: This potential location is located approximately 0.4 miles east-northeast of Lake Arrowhead, and consists of a large, graded area used by the LACSD for storage, and operations and maintenance activities. This property was previously graded for use in construction of the dam located east of Papoose Lake.

Tidewater utilized data collected from historical documents and site reconnaissance to evaluate the feasibility of each well site with respect to effectiveness (e.g., anticipated well yield, faulting, water quality, depth to groundwater, environmental issues), implementability (e.g., access for drilling equipment, proximity to existing infrastructure, proximity to homeowners, property ownership), and cost (e.g., well installation, infrastructure, water treatment [if required]). Tidewater performed two site visits to view the four, potential locations; one on January 29, 2019 and one on May 16, 2019. These two site visits allowed Tidewater representatives to view the locations, and collect information regarding the evaluation criteria described above.

Background

The sections below provide information regarding the area surrounding Lake Arrowhead, and historical studies performed in the area.

Topography. Lake Arrowhead is located in the San Bernardino Mountains of Southern California at an elevation of approximately 5,100 feet above mean sea level (amsl). The highest elevations in the mountains surrounding Lake Arrowhead exceed 6,000 feet amsl (GEOSCIENCE, 2007).

Hydrologic Subunits. The Lake Arrowhead area is subdivided into multiple hydrologic subunits (Figure 2), which represent smaller surface water drainage subbasins within the larger watershed. These subunit boundaries represent surface water drainage divides, and are named according to the major surface water drainage feature within the unit. The five hydrologic subunits are as follows: Lake Arrowhead, Grass Valley, Hooks Creek, Little Bear Creek, and Willow Creek. Surface water runoff within the Lake Arrowhead hydrologic subunit flows into Lake Arrowhead, while surface water within the other four subunits flows north towards the Mojave River drainage system (GEOSCIENCE, 2007).

Geology. Lake Arrowhead is located in the tectonically-active San Bernardino Mountains, and the area is underlain by Mesozoic-aged granitic rock (i.e. quartz monzonite). A thin alluvial deposit derived from weathering of the surrounding mountains intermittently overlies the quartz monzonite bedrock around Lake Arrowhead, as well as in the bottom of valley areas. The thickness of the alluvial material is typically 30 feet or less. Large scale faulting does not exist in the immediate area; however, numerous fracture systems related to local and regional faults are present

in the subsurface. Previous work performed in the area (BCI Geonetics, 1993) indicate two major fracture systems trending approximately north-northwest and north-northeast, respectively (GEOSCIENCE, 2007).

Geohydrology. Groundwater in the Lake Arrowhead vicinity primarily occurs in the secondary porosity features of the fractured granitic bedrock. The quantity of groundwater storage capacity in a fractured bedrock system is difficult to determine due to the heterogeneous nature of fractures. The interconnection between fractures is very difficult to determine because wells located nearby may intersect a differing number of water-bearing fractures, thus, potentially producing differing quantities of groundwater than the well intersecting only one fracture (GEOSCIENCE, 2007).

As noted above, groundwater in the Lake Arrowhead area occurs primarily in the secondary porosity features of the fractured granitic bedrock, and the aquifers are semi-confined to confined. Existing wells located in nearby Grass Valley were determined to be flowing artesian, and numerous springs exist where fractures and the shallow ground water table intersect the ground surface (GEOSCIENCE, 2007).

Groundwater recharge into the local aquifer systems occurs through infiltration and percolation of rainfall and surface runoff. Ground water recharge rates are generally highest during spring runoff when soils are saturated, temperatures are low, and evapotranspiration is low. Groundwater discharge from the local aquifer systems occurs from production well utilization, underflow outflow, evapotranspiration, and surface water discharge out of the area (GEOSCIENCE, 2007).

Previous Studies. A number of studies have been conducted to identify potential ground water production well sites in the LACSD area. Test drilling performed in the early 1990s resulted in the construction of one well to a total depth of 280 feet below ground surface (bgs; Blue Jay Bay), which was demonstrated to sustain a pumping rate of 60 gallons per minute (gpm). This well has not been utilized for municipal supply due to its construction failing to meet California Department of Health Services requirements A second well was installed in Orchard Creek; however, little data is available (GEOSCIENCE, 2007).

In 1993, a study performed by BCI Geonetics (1993) identified seven areas throughout the LACSD service area for further groundwater exploration: central Grass Valley; southern Grass Valley; north of Lake Arrowhead adjacent to Highway 173; Willow Creek; Orchard Creek; Fleming Creek; and Hooks Creek. The Grass Valley locations were given the highest priority for further groundwater exploration, and subsequently five production wells were constructed in Grass Valley in 2003 and 2004 (Figures 2 and 4). Production wells No. 1 through 5 were screened to total depths ranging from 340 to 800 feet bgs. Pumping tests performed on these wells indicated maximum production rates ranging from approximately 15 gpm (Production Well No. 4) to 150 gpm (Production Well No. 5).

In 2004, a study performed by Integrated Water Resources (IWR, 2004) identified 18 potential well site locations throughout the LACSD service area; ten of which were located within the original seven areas defined by BCI Geonetics above, and six of which were identified based on recently-updated photo lineament maps. As a result of this study, sites in Grass Valley were ranked highest, and sites in the Willow Creek area, located east of Grass Valley, were ranked as having the highest production potential in the area.

Concurrently in 2004, a study performed by GEOSCIENCE Support Services (GEOSCIENCE, 2005) subdivided the Lake Arrowhead area into five hydrologic subunits (delineated based on topographic drainage divides; Figure 2), and assessed the perennial yield of these hydrologic subunits within the LACSD service area. The perennial yield estimates assigned to each subunit are as follows: Grass Valley (300 to 800 acre-feet per year); Lake Arrowhead (300 to 700 acre-feet per year); Hooks Creek (100 to 300 acre-feet per year); Little Bear Creek (50 to 100 acre-feet per year); and Willow Creek (200 to 500 acre-feet per year).

In 2006 and 2007, a study performed by GEOSCIENCE (2007) evaluated 18 prospective well sites located throughout the five hydrologic subunits in the Lake Arrowhead vicinity. The 18 locations were evaluated and ranked using several criteria, including geology, presence of existing production wells in the area, relationship to topography and drainage, land ownership, drilling equipment access, proximity to LACSD infrastructure, and relative potential for

environmental issues. The evaluation concluded that the top ranking, near-term, prospective sites were located adjacent to the southern edge of Lake Arrowhead, within the Lake Arrowhead hydrologic subunit. Other higher-ranking, prospective sites considered for potential long-term or geohydrological use are located in the western, eastern, and southeastern vicinity of Lake Arrowhead, within the Grass Valley, Little Bear Creek, and Hooks Creek hydrologic subunits, respectively. The evaluation also included the development of planning-level cost estimates for the drilling and construction of new wells, which ranged from $355,000 to $540,000 per well.

Description of Potential Well Sites

Based on the previous studies and availability of properties for well installation, LACSD identified four potential well sites for further evaluation. These sites include Blue Jay, LACC, Deer Park Lodge, and The Flats.

Blue Jay. This potential production well site is located immediately adjacent, in the south-southwestern direction, to the LACSD's administration building at 27307 CA-189, Blue Jay, CA 92317 (Exhibit 1; Figure 3). This parcel of land is a thin strip of undeveloped, LACSD property, approximately 25 feet wide. The land is located approximately 0.4 miles southwest of Lake Arrowhead's Paradise Bay, and is located in the Lake Arrowhead Hydrologic Subunit. This site is located in the vicinity of Little Bear Creek.

The property to the west-southwest of this potential site was formerly a recreational vehicle (RV) lot that is no longer utilized, and the LACSD has been granted permission to utilize this former RV lot for equipment staging and access. There are utilities located nearby that can be utilized during installation; however, the property would require clearing and grading in order to facilitate the installation of a new production well. The presence of intersecting northeast and northwest-trending fractures systems have been identified in the area, indicating that bedrock fracturing and groundwater storage capacity may be significant at this location. Facilities needed for connection of a new production well to the LACSD system are located in the immediate vicinity (IWR, 2004).

Exhibit 1. Topographic Maps and Photos Depicting the Blue Jay Site Location.

Lake Arrowhead Country Club. This potential production well site is located approximately 0.75 miles west of Lake Arrowhead, and consists of approximately 125 acres (Exhibit 2; Figures 3 and 4). The LACC is located at 250 Golf Course Road, Lake Arrowhead, CA 92352, and offers an 18-hole golf course and associated facilities, tennis facilities, dining facilities, and special events. The LACC property sits immediately south of Grass Valley Lake, and is bounded to the east and west by north-south trending mountain ridges, within the Grass Valley Hydrologic Subunit.

The LACSD has leased the water rights beneath the property from LACC, and currently owns and operates five production wells located within LACC's boundaries (Figures 3 and 4). There are utilities located nearby that can be utilized during installation, and the property is relatively feasible to access with drilling equipment and supplies. Depending on the chosen location of a production well, some areas provide more area than others to accommodate the space required for equipment and supply needs. Some clearing and grading may be necessary in order to facilitate the installation of a new production well.

Multiple structural lineaments have been identified at this location, suggesting the presence of transmissive fracture systems and multiple groundwater source areas (IWR, 2004; GEOSCIENCE, 2007). Groundwater production data for LACSD wells 1, 2, 5, and 6, collected from 2010 to 2018, show average water production ranging from 21.68 to 54.65 acre-feet per year. Facilities needed for connection of a new production well to the LACSD system are located in the immediate vicinity (Figure 4).

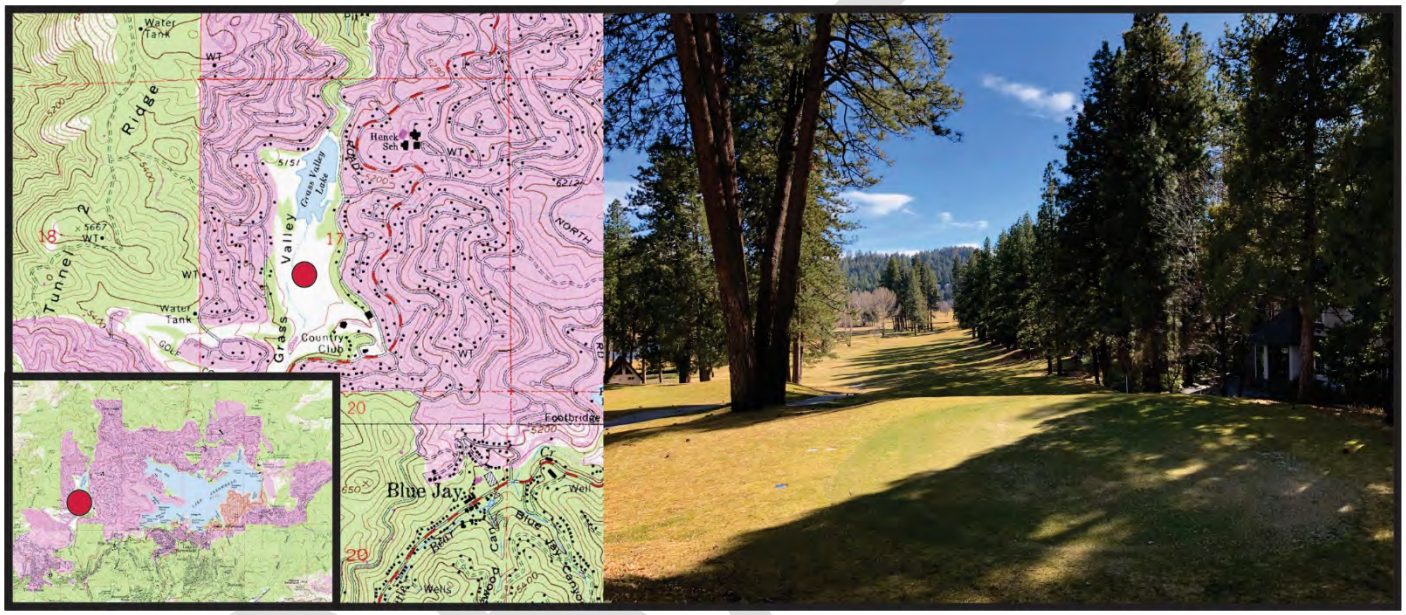


Exhibit 2. Topographic Maps and Photos Depicting the Lake Arrowhead Country Club Site Location.

Deer Lodge Park: This potential location is located approximately 0.75 miles northwest of Lake Arrowhead, and consists of five individual parcels of LACSD-owned property within a residential community (Exhibit 3; Figures 3 and 5). Two of the five parcels currently have storage tanks and associated infrastructure located on the property. The five Deer Park Lodge properties are located within the Willow Creek Hydrologic Subunit.

The five Deer Lodge Park parcels are primarily undeveloped land (aside from the storage tanks and associated infrastructure), and clearing and grading will be necessary in order to facilitate the installation of a new production well. The parcel sizes are small, and may or may not provide adequate area to accommodate the space required for equipment and supply needs. Accessibility for drilling equipment and supplies may prove difficult due to limited space, narrow roads, overhead obstructions, and steep terrain. Utilities in the area may not be immediately accessible.

One structural lineament trending northeast has been identified in the vicinity of the five parcels at Deer Lodge Park (Figure 5; GEOSCIENCE, 2007). The nearest production wells to this site are located northwest of the five Deer Lodge Park parcels (DLP Wells 1 and 2; Figures 2 and 3); however, these two wells are located in a separate hydrologic subunit (Grass Valley). A geohydrologic evaluation of the perennial groundwater yield from the five hydrologic subunits (GEOSCIENCE, 2005) indicated that the Willow Creek Hydrologic Subunit is estimated to produce an average perennial yield of 340 to 445 acre-feet per year. This estimated perennial yield would be influenced by annual precipitation, groundwater production from other wells in the subunit, and development of land. Facilities needed for connection of a new production well to the LACSD system may not be readily available.

Exhibit 3. Topographic Maps and Photos Depicting the Deer Park Lodge Site Locations.

The Flats: This potential location is located approximately 0.4 miles east-northeast of Lake Arrowhead, and consists of a large, graded area used by the LACSD for storage, and operations and maintenance activities (Exhibit 4; Figures 3 and 6). This property was previously graded for use in construction of the dam located east of Papoose Lake, and, therefore, is a large, flat, open-spaced property. This property is located within the Little Bear Creek Hydrologic Subunit.

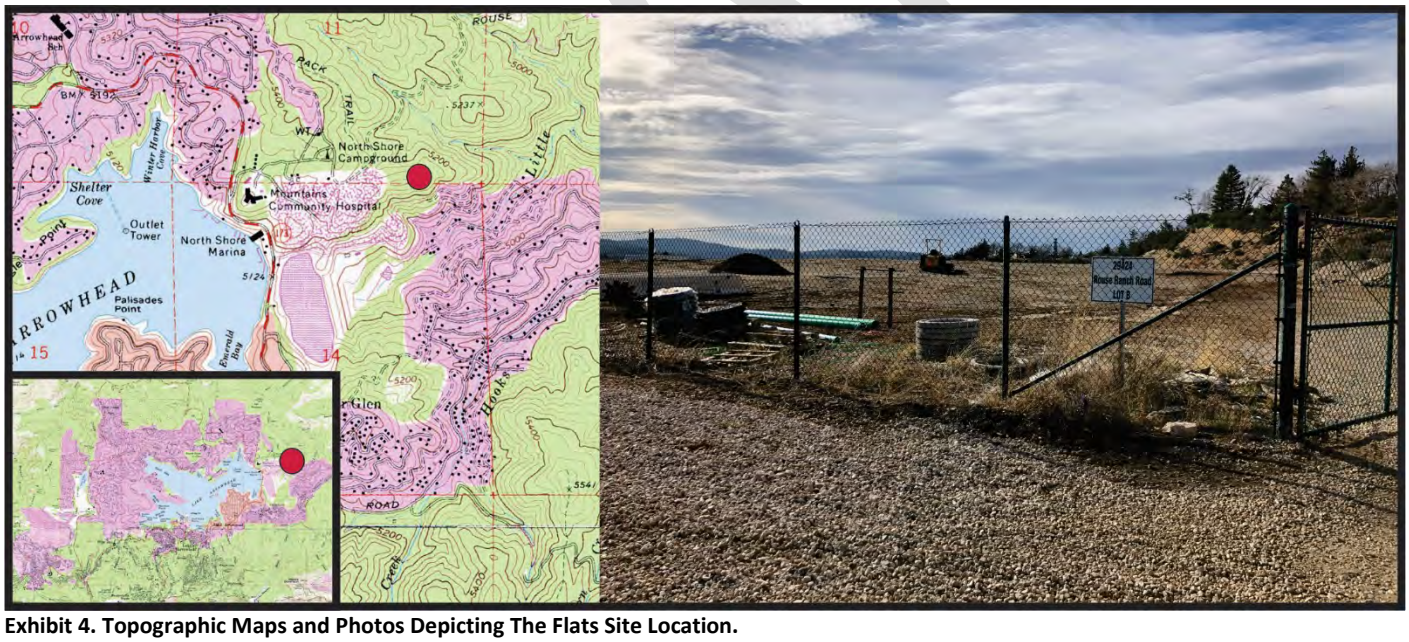


Exhibit 4. Topographic Maps and Photos Depicting The Flats Site Location.

The LACSD owns this property, and there are utilities located nearby that can be utilized during production well installation activities. The property is feasible to access with drilling equipment and supplies, and can easily accommodate the space required for equipment and supply needs. Some aggregate and equipment clearing may be required, but grading is not necessary in order to facilitate the installation of a new production well.

One structural lineament trending northeast has been identified in the vicinity of this property (Figure 6; GEOSCIENCE, 2007), and the site is located north of Little Bear Creek, which is the main drainage of this basin nearly

year-round. There are no LACSD production wells located in this hydrologic unit to indicate groundwater production yields. A geohydrologic evaluation of the perennial groundwater yield from the five hydrologic subunits (GEOSCIENCE, 2005) indicated that the Little Bear Creek Hydrologic Subunit is estimated to produce an average perennial yield of 85 to 100 acre-feet per year. This estimated volume was the least estimated volume from the five hydrologic subunits, and would be influenced by annual precipitation, groundwater production from other wells in the subunit, and development of land. Facilities needed for connection of a new production well to the LACSD system are not readily available.

Analysis and Ranking of Potential Well Sites

Each of the four potential well sites were evaluated with respect to effectiveness, implementability, and cost. For the purposes of this evaluation, the five parcels located at Deer Park Lodge were evaluated as a whole, and not individually evaluated. The effectiveness of each well site was evaluated by considering parameters such as anticipated well yield, bedrock fracturing, water quality, depth to groundwater, and environmental issues. The implementability of each well site was evaluated by considering parameters such as access for drilling equipment, whether clearing and grading would be required, the area footprint available at the site, proximity to existing infrastructure, proximity to homeowners, and property ownership. The relative cost to construct and manage a new production well at each site was evaluated by considering parameters such as well installation costs, infrastructure costs, and water treatment, if required.

Anticipated Well Yield. Each site was evaluated for the anticipated well yield by reviewing available, historical documents and production data provided by LACSD. Initial groundwater pump testing for LACSD Wells 1, 2, and 5 (Figure 4), located at the LACC, reported sustainable production rates ranging from 50 to 150 gpm. Based on reported groundwater volumes produced from LACSD Wells 1, 2, and 5 during a nine-year period (2010 to 2018), and assuming these production wells were continually producing groundwater for six months during each year, groundwater production averaged from 30 to 68 gallons per minute. The average, actual production of the three LACSD production wells was approximately 50 percent (%) of the initial production determined during well construction activities.

Assuming a new production well in any hydrologic subunit will produce 50% of the initial pump testing results, the four site locations were evaluated, where applicable (Table 1 below). Those site locations with estimated groundwater production potential greater than 60 gpm were assigned a value of 10. Those site locations with estimated groundwater production potential ranging from 30 to 60 gpm were assigned a value of 5, and those site locations that are unknown were assigned a value of 0.

Table 1. Pump Test and Production Data for Select Locations.

Evaluated Location	Hydrologic Subunit	Existing Well Identification	Initial Pump Test (gpm)	Estimated Pump Rate* (gpm)	Actual Pump Rate Based on Collected Data** (gpm)
Blue Jay	Lake Arrowhead	Blue Jay Well	60	30	NA
Lake Arrowhead Country Club	Grass Valley	Well 1	50	25	33
		Well 2	96	48	30
		Well 5	150	75	68
Deer Lodge Park	Willow Creek	NA	NA	NA	NA
The Flats	Little Bear Creek	NA	NA	NA	NA

Notes: gpm = gallons per minute
* Estimated using 50% of initial pump test results.
** Calculated using data provided by LACSD. Assumes production wells are continually pumping for six months.

Bedrock Fracturing. Bedrock fracturing in the vicinity of each site was evaluated utilizing previous work which identified and discussed photo lineaments in the Lake Arrowhead vicinity (BCI Geonetics, 1993; IWR, 2004; GEOSCIENCE, 2007). These photo lineaments suggest the presence of groundwater and groundwater migration pathways, via potential fracture zones in the area. This is beneficial in evaluating a site's relative potential for water conveyance and storage. Those site locations that had at least two or more intersecting photo lineaments in its vicinity were assigned a value of 10. Site locations with one or zero photo lineaments were assigned a value of 5 and 0, respectively.

Water Quality. Each site was evaluated for the anticipated water quality produced from the groundwater aquifer, as indicated by available historical document review. Those site locations expected to produce groundwater with minimal to no treatment required were assigned a value of 10. Those site locations expected to produce groundwater that required economically-feasible water treatment were assigned a value of 5, and those site locations in which groundwater treatment was unknown were assigned a value of 0, as it was unsure whether treatment, if necessary, would be economically-feasible.

Depth to Groundwater. Each site was evaluated for the anticipated drilling depths required to produce groundwater at an economically-feasible and sustainable rate, as indicated by available historical document review. Those site locations expected to produce economically-feasible and sustainable groundwater at depths less than 500 feet below ground surface were assigned a value of 10. Those site locations expected to produce economically-feasible and sustainable groundwater at depths greater than 500 feet below ground surface, or if the depth to groundwater is unknown, were assigned a value of 5.

Environmental Issues. Each site location was evaluated for its potential environmental issues. Site locations previously developed or disturbed were assigned a value of 10, and site locations not previously developed or disturbed were assigned a value of 0.

Access for Drilling Equipment. Each site location was evaluated for its relative feasibility to access the site with drilling equipment, support vehicles, and supplies. Access was evaluated via site reconnaissance performed on January 29 and May 16, 2019. Those site locations with wide access roads, short distances from the access roads, relatively straight and/or level grade access were assigned a value of 10. Those site locations with narrow, curvy, and/or steep access roads, or no access roads, were assigned a value of 0. Site locations with both types of access were assigned a value of 5.

Clearing and Grading Requirements. Each site location was evaluated for the need to clear vegetation and grade the site level, to accommodate production well requirements. The need for clearing and grading was evaluated via site reconnaissance performed on January 29 and May 16, 2019. Those site locations requiring zero vegetation clearing (trees, shrubs, etc.) or level grading were assigned a value of 10. Those site locations requiring either vegetation clearing or level grading, or both, were assigned a value of 5 or 0, respectively.

Area Footprint. Each site location was evaluated for its area size, and availability to support drilling equipment, support vehicles, supplies, and drilling infrastructure. Each site's area footprint was evaluated via site reconnaissance performed on January 29 and May 16, 2019. Those site locations with at least 5,000 square feet were assigned a value of 10. Those site locations with approximately 2,500 square feet or less were assigned a value of 0, and those with widely variable area footprints were assigned a value of 5.

Proximity to Existing Infrastructure. Each site was evaluated for its proximity to existing infrastructure, including LACSD drinking water conveyance piping and/or treatment systems, and power supply, as indicated by available historical document review. Those site locations within approximately 500 feet or less of both existing LACSD drinking water infrastructure and power were assigned a value of 10. Those site locations within approximately 500 feet or less of either existing LACSD drinking water infrastructure or power were assigned a value of 5. Those site locations greater than approximately 500 feet of existing infrastructure were assigned a value of 0.

Proximity to Homeowners. Each site location was evaluated for its relative proximity to surrounding homes. Each site's proximity to neighboring homes was evaluated via site reconnaissance performed on January 29 and May 16, 2019, and map review. Those site locations at least 1,000 feet from a neighboring home were assigned a value of 10. Those site locations less than 1,000 feet of neighboring homes were assigned a value of 0.

Property Ownership. Each site location was evaluated for its property ownership. Site locations owned by the LACSD were assigned a value of 10. Regarding the four site locations evaluated in this document, three of the four site locations are owned by the LACSD (Blue Jay, Deer Park Lodge, and The Flats). The LACSD has leased the water rights from the property owners of the fourth location (the LACC), so for the purposes of this evaluation, the LACC was assigned a value of 10.

Well Installation Cost. Each site was evaluated for anticipated well installation costs in a relative manner. For the purpose of this evaluation, well installation costs were assumed to be directly related to the following parameters above:

- **Depth to Groundwater:** Drilling costs will increase with drilling depths required to produce groundwater at an economically-feasible and sustainable rate. Those site locations expected to produce economically-feasible and sustainable groundwater at depths less than 500 feet below ground surface were assigned a value of 10. Those site locations expected to produce economically-feasible and sustainable groundwater at depths greater than 500 feet below ground surface, or if the depth to groundwater is unknown, were assigned a value of 5.
- **Clearing and Grading Requirements.** Drilling costs will increase with the need to clear vegetation and grade the site level, to accommodate production well requirements. Those site locations requiring zero vegetation clearing (trees, shrubs, etc.) or level grading were assigned a value of 10. Those site locations requiring either vegetation clearing or level grading, or both, were assigned a value of 5 or 0, respectively.
- **Environmental Issues.** Drilling costs will increase with potential environmental issues. Site locations previously developed or disturbed were assigned a value of 10, and site locations not previously developed or disturbed were assigned a value of 0.
- **Proximity to Homeowners.** Drilling costs will increase with a site's relative proximity to surrounding homes, due to costs incurred to mitigate noise to neighbors during well installation activities (ambient sound survey, acoustic panels, etc.). Those site locations at least 1,000 feet from a neighboring home were assigned a value of 10. Those site locations less than 1,000 feet of neighboring homes were assigned a value of 0.

The best and worst-case scenarios when utilizing the four parameters above are a score of 35 and 5, respectively. Therefore, those site locations with total scores of 30 and above were assigned a value of 10. Those site locations with a total score ranging from 20 to 29 were assigned a value of 5, and those sites with a total score below 20 were assigned a value of 0.

Infrastructure Cost. Each site was evaluated for anticipated infrastructure costs in a relative manner. For the purpose of this evaluation, infrastructure costs were assumed to be directly related to a new production well's proximity to existing LACSD drinking water infrastructure. Therefore, the evaluation criteria utilized above in the "Proximity to Drinking Water Infrastructure" parameter was retained. Those site locations within approximately 500 feet or less of existing infrastructure were assigned a value of 10, and those site locations greater than approximately 500 feet were assigned a value of 0.

Water Treatment. Each site was evaluated for anticipated water treatment costs in a relative manner. For the purpose of this evaluation, water treatment costs were assumed to be directly related to the anticipated water quality produced from the groundwater aquifer. Therefore, the evaluation criteria utilized above in the "Water Quality" parameter was retained. Those site locations expected to produce groundwater with minimal to no treatment required were assigned a value of 10. Those site locations expected to produce groundwater that required

economically-feasible water treatment were assigned a value of 5, and those site locations in which groundwater treatment was unknown were assigned a value of 0, as it was unsure whether treatment, if necessary, would be economically-feasible.

Based on the criteria detailed above, Table 2 below shows the raw scores for each of the four, potential production well siting locations:

Table 2. Evaluation Parameters and Raw Scores for Potential Well Siting Locations.

Evaluation Category	Evaluation Parameter	Potential Well Siting Location			
		Blue Jay	Lake Arrowhead Country Club	Deer Lodge Park	The Flats
Effectiveness	Anticipated Well Yield	5	10	0	0
	Bedrock Fracturing	10	10	5	5
	Water Quality	5	5	0	0
	Depth to Groundwater	10	10	5	5
	Environmental Issues	10	10	0	10
	Subtotal:	**40**	**45**	**10**	**20**
Implementability	Access for Drilling Equipment	10	5	0	10
	Clearing and Grading Requirements	0	5	0	10
	Area Footprint	10	5	0	10
	Proximity to Existing Infrastructure	10	10	5	5
	Proximity to Homeowners	10	0	0	10
	Property Ownership	10	10	10	10
	Subtotal:	**50**	**35**	**15**	**55**
Cost	Well Installation Cost	10	5	0	10
	Infrastructure Cost	10	10	0	0
	Water Treatment	5	5	0	0
	Subtotal:	**25**	**20**	**0**	**10**
Total Score:		**115**	**100**	**25**	**85**

Conclusions and Recommendations

Conclusions. The following conclusions have been determined regarding the potential well siting locations for LACSD groundwater production:

- Four well siting locations were evaluated for potential production well use: Blue Jay, LACC, Deer Park Lodge, and The Flats.
- Of the four well siting locations evaluated, the two highest ranking sites overall for groundwater production well construction, based on available information regarding 14 parameters, are Blue Jay and the LACC (Figures 3 and 4). LACC is the highest-ranking site in terms or effectiveness. The Flats is the highest-ranking site in terms of implementability. Blue Jay is the highest-ranking site in terms of cost.
- The Flats location ranked third, partly due to lower scores in some parameter categories due to unavailable information regarding the effectiveness of water production.

Recommendations. Below are recommendations for consideration when evaluating and selecting a path forward:

- Due to the high implementability scores associated with The Flats and Blue Jay locations, consider installing exploration wells at the Blue Jay and The Flats locations to collect data demonstrating the viability of these two locations for economically-feasible groundwater production.
- The LACC location is currently considered the most promising location for new wells based on proven groundwater yields, access to the potential well sites in this area are relatively feasible, the site requires minimal grading, and new wells would be located in close proximity to LACSD infrastructure. This consideration may be modified pending the results of the first recommendation above.
- Based on conversations with LACSD representatives on May 16, 2019, the LACSD has experienced well interference during groundwater production well operations for Wells 4 and 8 at the northern end of the LACC property. The well interference has resulted in the discontinued groundwater production from Well 4, so that groundwater production from Well 8 is not negatively influenced. It is recommended that any data collected which demonstrates well interference between Wells 4 and 8 be re-evaluated to confirm conclusions. If analysis of the well interference data is inconclusive, it is recommended to conduct a multi-day, constant rate pumping test at LACSD's Well 8, and Well 4 would be utilized as an observation well to assess potential interference effects. This would require the installation of pressure transducers in both wells for approximately one week to record background, pumping test, and recovery data.

  Based on the results of a second pumping test, consider installing an exploratory hole to the west or southwest of Well 8 to conduct a multi-day pumping test at Well 8, and utilize Well 4 and the exploratory boring as observation wells to assess potential well interference effects. If no well interference effects are observed at the exploratory boring, consider converting the boring into a production well.
- Based on the discussion in the bullet above, one concern about another well at the LACC location is the potential for interference between other existing wells. Interference is a concern because a new well could negatively impact (i.e., lower) production rates of other existing wells. In order to determine if a new production well would experience interference from existing wells, it is recommended that a multi-day, constant rate pumping test at LACSD's Well 5 (the well reporting the highest production rates) be performed. It is recommended that the pumping test utilize Wells 2, 3, and 6 as observation wells to assess potential interference effects. This would require installation of pressure transducers in all four wells for approximately one week to record background, pumping test, and recovery data.

References

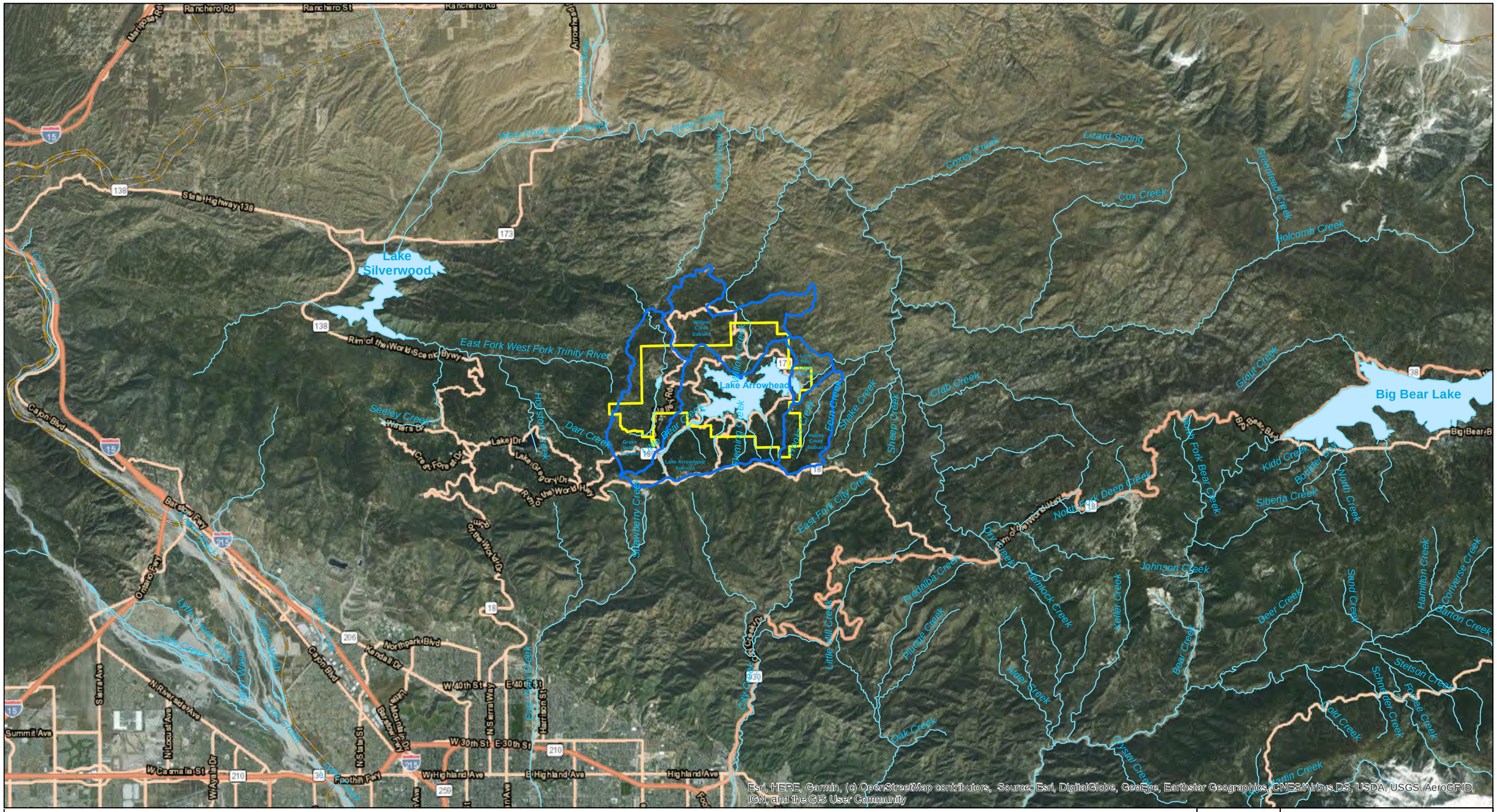
BCI Geonetics, Incorporated, 1993. *Exploration for Bedrock Groundwater Resources, Phase I. A Letter Report for the Lake Arrowhead Community Services District*, January.

GEOSCIENCE Support Services, Incorporated, 2005. *Geohydrologic Evaluation of Maximum Perennial Yield for the Ground Water Basin in the Lake Arrowhead Area*. Prepared for Lake Arrowhead Community Services District, January 4.

GEOSCIENCE Support Services, Incorporated, 2007. *Evaluation of Potential Near-Term Ground Water Production Well Sites*. Prepared for RMC Water and Environment and Lake Arrowhead Community Services District, April 24.

Integrated Water Resources, 2004. *Evaluation of Potential Groundwater Production Targets in the Lake Arrowhead Area*. Prepared for Lake Arrowhead Community Services District, December 30.

FIGURES



Legend

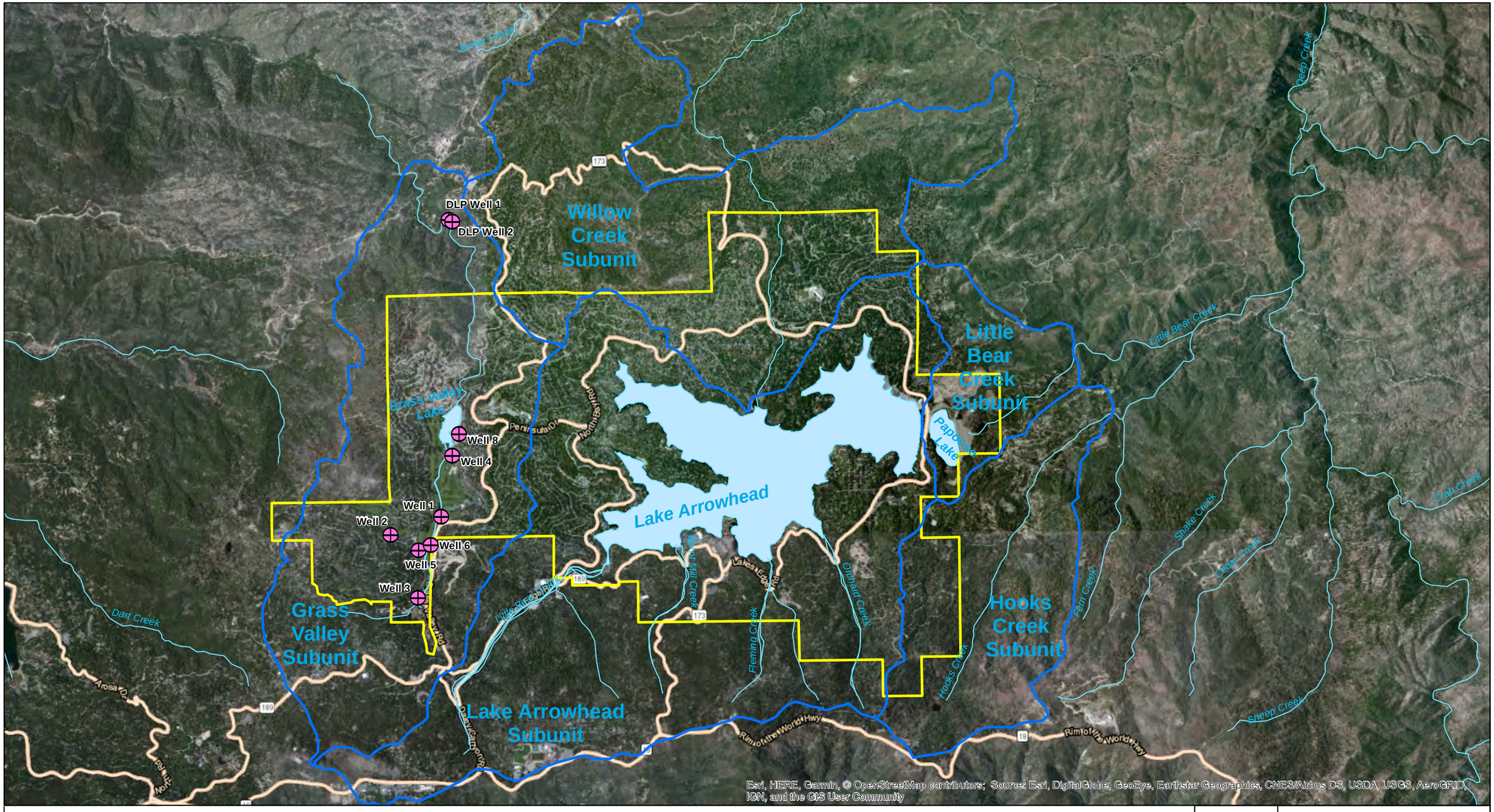
- Rivers and Streams
- Hydrologic Subunit Boundary and Designation
- Lake Arrowhead Community Services District Water Service Boundary
- Lakes

N

0 1 2 3 4 Miles

Figure 1
Site Vicinity Map

LACSD, 27307 State Hwy. 189,
Blue Jay, CA 92317



Legend

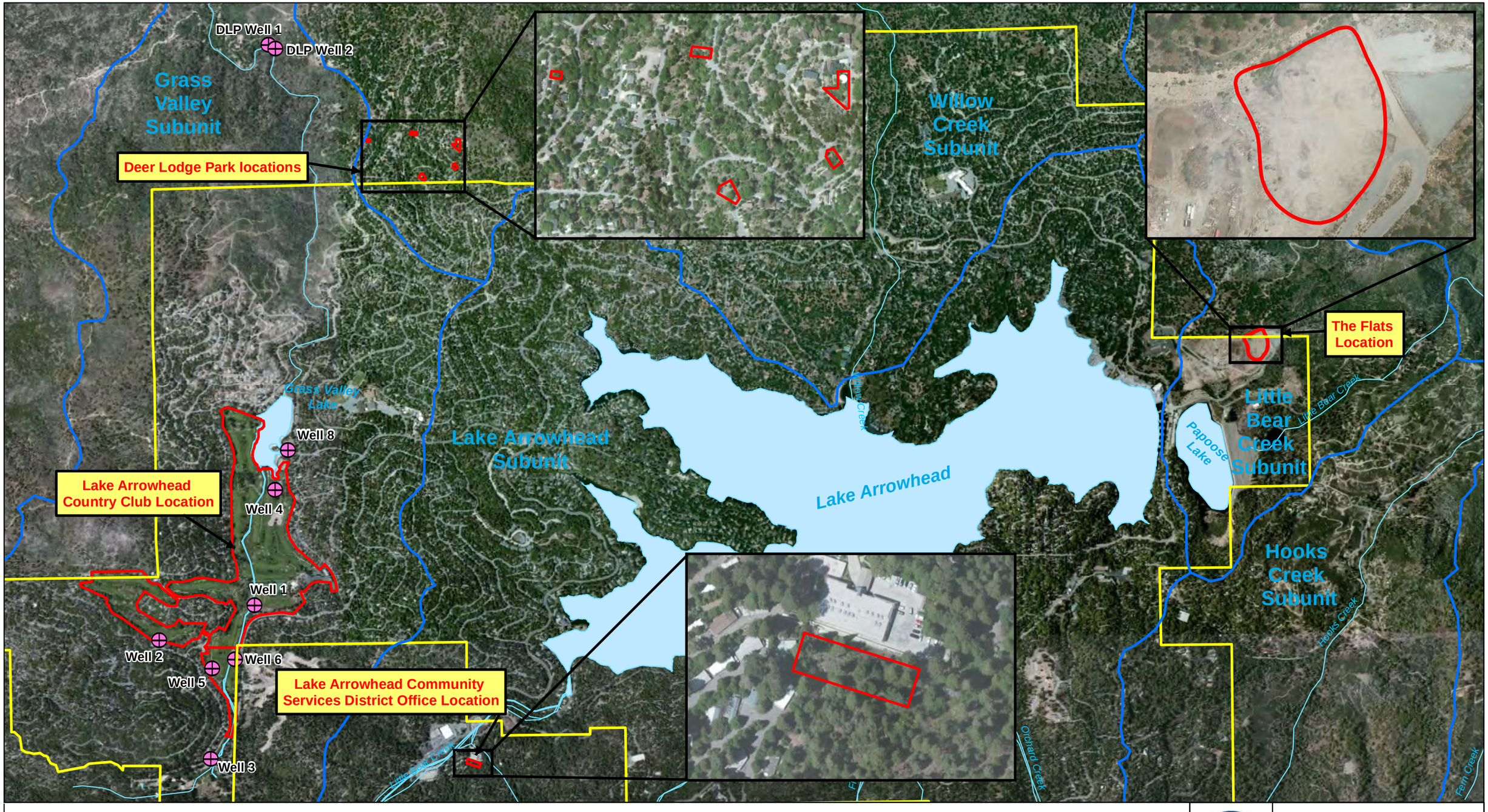
- Existing Lake Arrowhead Community Service District Wells
- Hydrologic Subunit Boundary and Designation
- Rivers and Streams
- Lake Arrowhead Community Services District Water Service Boundary
- Lakes

N

0 1,800 3,600 5,400 7,200 Feet

Figure 2
Site Location Map

LACSD, 27307 State Hwy. 189,
Blue Jay, CA 92317



Legend

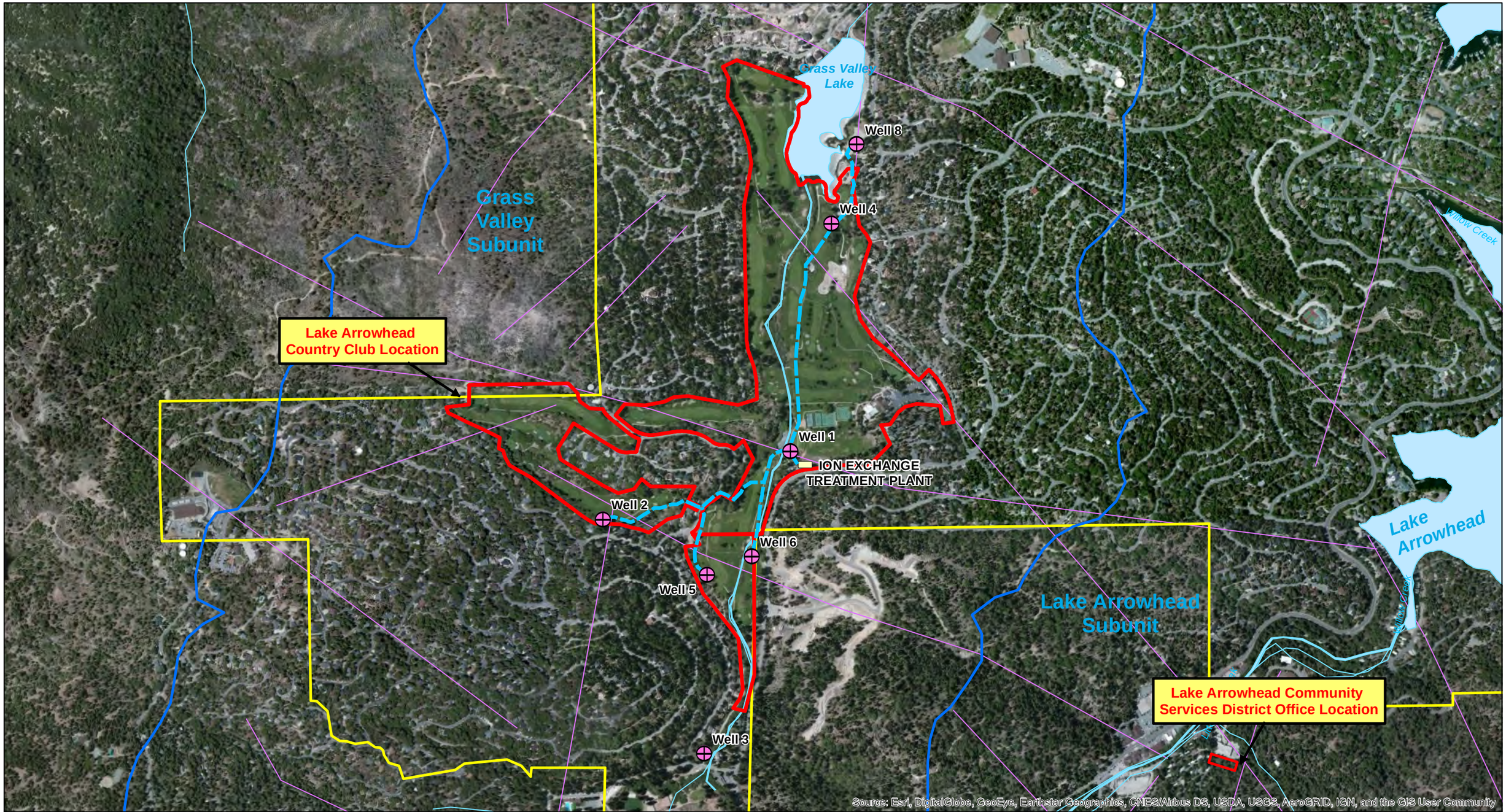
- Existing Lake Arrowhead Community Service District Wells
- Hydrologic Subunit Boundary and Designation
- Rivers and Streams
- Potential Well Siting Locations
- Lake Arrowhead Community Services District Water Service Boundary
- Lakes

N

0 900 1,800 2,700 3,600 Feet

Figure 3
Site Location Map Showing Potential Well Siting Locations

LACSD, 27307 State Hwy. 189, Blue Jay, CA 92317



Legend

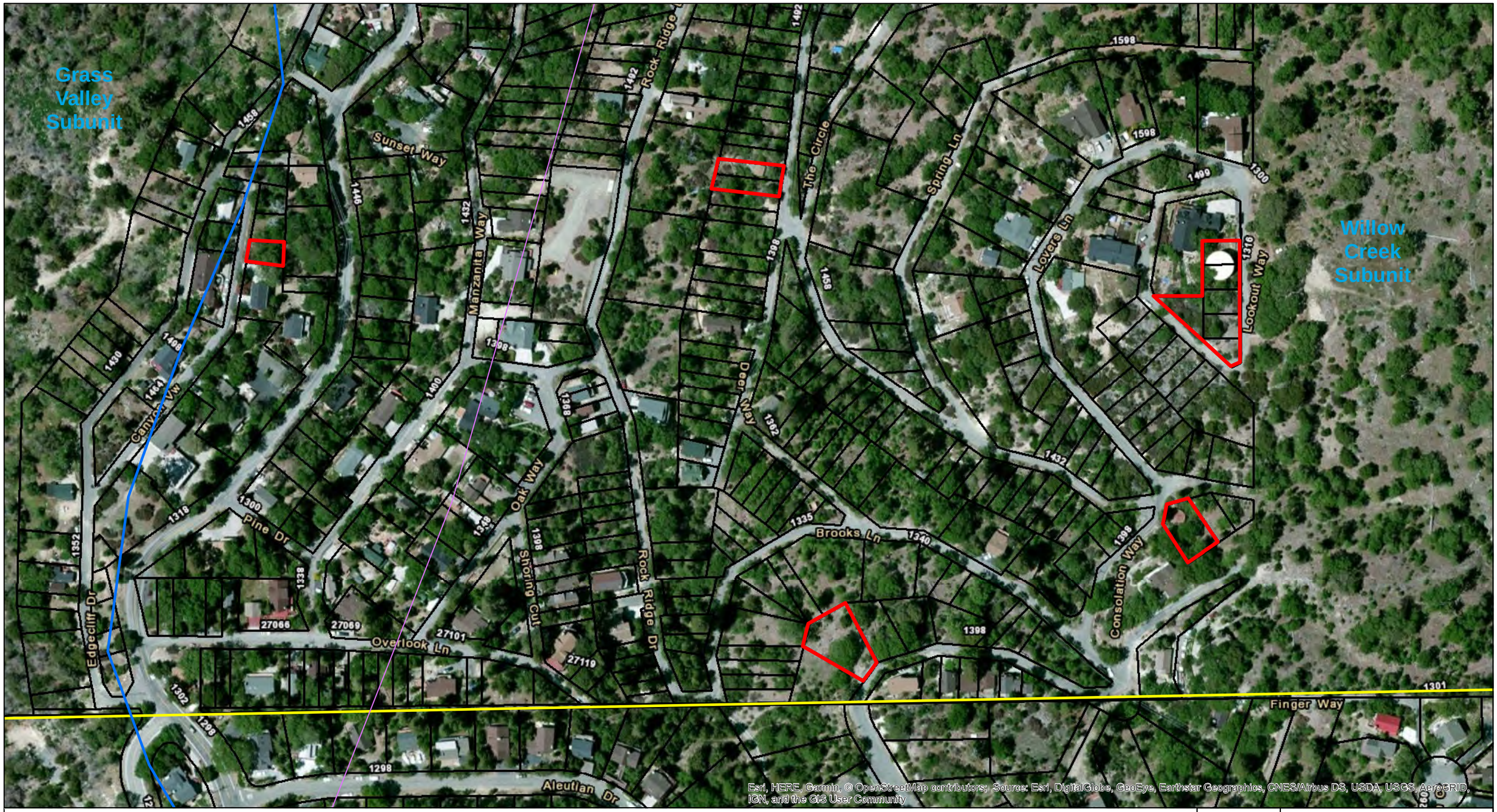
- Existing Lake Arrowhead Community Service District Wells
- Existing LACSD Drinking Water Conveyance Piping
- Hydrologic Subunit Boundary and Designation
- Rivers and Streams
- Photo Lineament
- Potential Well Siting Locations
- Lake Arrowhead Community Services District Water Service Boundary
- Lakes

N

0 400 800 1,200 1,600 Feet

Figure 4
Lake Arrowhead Country Club Location

LACSD, 27307 State Hwy. 189, Blue Jay, CA 92317



Legend

- Potential Well Siting Locations
- Property Parcels
- Lake Arrowhead Community Services District Water Service Boundary
- Hydrologic Subunit Boundary and Designation
- Photo Lineament

N

0 75 150 225 300 Feet

Figure 5
Deer Lodge Park Location

LACSD, 27307 State Hwy. 189,
Blue Jay, CA 92317

Legend

- Potential Well Siting Locations
- Lake Arrowhead Community Services District Water Service Boundary
- Hydrologic Subunit Boundary and Designation
- Rivers and Streams
- Photo Lineament

N

0 75 150 225 300 Feet

Figure 6
The Flats Location

LACSD, 27307 State Hwy. 189,
Blue Jay, CA 92317