

DRAFT

**INITIAL STUDY
MITIGATED NEGATIVE DECLARATION**

**Armstrong Redwoods State Natural Reserve
Water System Improvements Project**



December 2013



State of California
Department of Parks and Recreation

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MITIGATED NEGATIVE DECLARATION

PROJECT: **Water System Improvement Project
Armstrong Redwoods State Natural Reserve**

LEAD AGENCY: California Department of Parks and Recreation

AVAILABILITY OF DOCUMENTS: The Initial Study for this Mitigated Negative Declaration is available for review at:

- Russian River District Headquarters
25381 Steelhead Blvd
Duncans Mills, California 95430
- Armstrong Redwoods State Natural Reserve
17000 Armstrong Woods Road
Guerneville California 95446
- Northern Service Center
One Capital Mall, Suite 410
Sacramento, California 95814
- Guerneville Library
14107 Armstrong Woods Road
Guerneville, California 95446
- Internet Address: [www.parks.ca.gov/CEQA Notices](http://www.parks.ca.gov/CEQA%20Notices)

PROJECT DESCRIPTION:

The Department of Parks and Recreation proposes to replace the existing 4" waterline with an 8" (required by the State Fire Marshall for fire suppression) C900 waterline from the front of the park near the kiosk to the existing 50,000-gallon water tank near the administration building at the back of the Park. Work would use Horizontal Directional Drilling (HDD) as the primary method of installation and would use open trenching at connection points or short distances where HDD would not be practical or cost effective.

A copy of the Initial Study is integrated in to this document. Questions or comments regarding this Initial Study/Mitigated Negative Declaration may be addressed to:

Patricia DuMont
California State Parks
Northern Service Center
One Capitol Mall, Ste. 410
Email: CEQANSC@parks.ca.gov Subject Line: Armstrong Redwoods
Fax: 916-445-8883

Submissions must be in writing and postmarked or received by fax or email no later than January 24, 2014. The originals of any faxed document must be received by regular mail

within ten working days following the deadline for comments, along with proof of successful fax transmission. Email or fax submissions must include full name and address. All comments will be included in the final environmental document for this project and will become part of the public record.

Pursuant to Section 21082.1 of the California Environmental Quality Act, the California Department of Parks and Recreation (DPR or California State Parks) has independently reviewed and analyzed the Initial Study and Draft Mitigated Negative Declaration for the proposed project and finds that these documents reflect the independent judgment of DPR. DPR, as lead agency, also confirms that the project mitigation measures detailed in these documents are feasible and will be implemented as stated in the Mitigated Negative Declaration.

Kathy Amann
Deputy Director
Acquisition and Development

Date

Patricia DuMont
Environmental Coordinator
Northern Service Center

Date

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CHAPTER 1 INTRODUCTION

1.1 INTRODUCTION AND REGULATORY GUIDANCE

The Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared by the California Department of Parks and Recreation (DPR) to evaluate the potential environmental effects of the proposed Water System Improvements Project at Armstrong Redwoods State Natural Reserve, Sonoma County, California. This document has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code §21000 *et seq.*, and the State CEQA Guidelines, California Code of Regulations (CCR) §15000 *et seq.*

An Initial Study is conducted by a lead agency to determine if a project may have a significant effect on the environment [CEQA Guidelines §15063(a)]. If there is substantial evidence that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) must be prepared, in accordance with CEQA Guidelines §15064(a). However, if the lead agency determines that revisions in the project plans or proposals made by or agreed to by the applicant mitigate the potentially significant effects to a less-than-significant level, a Mitigated Negative Declaration may be prepared instead of an EIR [CEQA Guidelines §15070(b)]. The lead agency prepares a written statement describing the reasons a proposed project would not have a significant effect on the environment and, therefore, why an EIR need not be prepared. This IS/MND conforms to the content requirements under CEQA Guidelines §15071.

1.2 LEAD AGENCY

The lead agency is the public agency with primary approval authority over the proposed project. In accordance with CEQA Guidelines §15051(b)(1), "the lead agency will normally be an agency with general governmental powers, such as a city or county, rather than an agency with a single or limited purpose." The lead agency for the proposed project is DPR. The contact person for the lead agency regarding specific project information is:

Mike Brown
Project Manager
Northern Service Center
One Capitol Mall, Suite 410
Sacramento, California 95814
916.445.8687
Mike.Brown@parks.ca.gov

Questions or comments regarding this Initial Study/Mitigated Negative Declaration should be submitted to:

Patricia DuMont
Northern Service Center
One Capitol Mall, Suite 410
Sacramento, California 95814
Email: CEQANSC@parks.ca.gov Subject Line: Armstrong Redwoods
Fax: 916-445-8883

Submissions must be in writing and postmarked or received by fax or email no later than January 24, 2014. The originals of any faxed document must be received by regular mail within ten working days following the deadline for comments, along with proof of successful fax transmission. Email or fax submissions must include full name and address. All comments will be included in the final environmental document for this project and become part of the public record.

1.3 PURPOSE AND DOCUMENT ORGANIZATION

The purpose of this document is to evaluate the potential environmental effects of the proposed Water System Improvements Project at Armstrong Redwoods State Natural Reserve. Mitigation measures have been incorporated into the project to eliminate any potentially significant impacts or reduce them to a less-than-significant level.

This document is organized as follows:

- Chapter 1 - Introduction.
This chapter provides an introduction to the project and describes the purpose and organization of this document.
- Chapter 2 - Project Description.
This chapter describes the reasons for the project, scope of the project, project objectives and project requirements.
- Chapter 3 - Environmental Setting, Impacts, and Mitigation Measures.
This chapter identifies the significance of potential environmental impacts, explains the environmental setting for each environmental issue, and evaluates the potential impacts identified in the CEQA Environmental (Initial Study) Checklist. Mitigation measures are incorporated, where appropriate, to reduce potentially significant impacts to a less than significant level.
- Chapter 4 - Mandatory Findings of Significance.
This chapter identifies and summarizes the overall significance of any potential impacts to natural and cultural resources, cumulative impacts, and impact to humans, as identified in the Initial Study.
- Chapter 5 - Summary of Project Requirements and Mitigation Measures.

This chapter summarizes the mitigation measures incorporated into the project as a result of the Initial Study.

- Chapter 6 - References.
This chapter identifies the references and sources used in the preparation of this IS/MND.
- Chapter 7 - Report Preparation
This chapter provides a list of those involved in the preparation of this document.

1.4 SUMMARY OF FINDINGS

Chapter 3 of this document contains the Environmental (Initial Study) Checklist that identifies the potential environmental impacts (by environmental issue) and a brief discussion of each impact resulting from implementation of the proposed project.

Based on the IS and supporting environmental analysis provided in this document, the proposed Water System Improvements Project would result in less than significant impacts for the following issues: aesthetics, agricultural resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation/traffic, and utilities and service systems.

In accordance with §15064(f) of the CEQA Guidelines, a MND shall be prepared if the proposed project will not have a significant effect on the environment after the inclusion of mitigation measures in the project. Based on the available project information and the environmental analysis presented in this document, there is no substantial evidence that, after the incorporation of mitigation measures, the proposed project would have a significant effect on the environment.

CHAPTER 2 PROJECT DESCRIPTION

2.1 INTRODUCTION

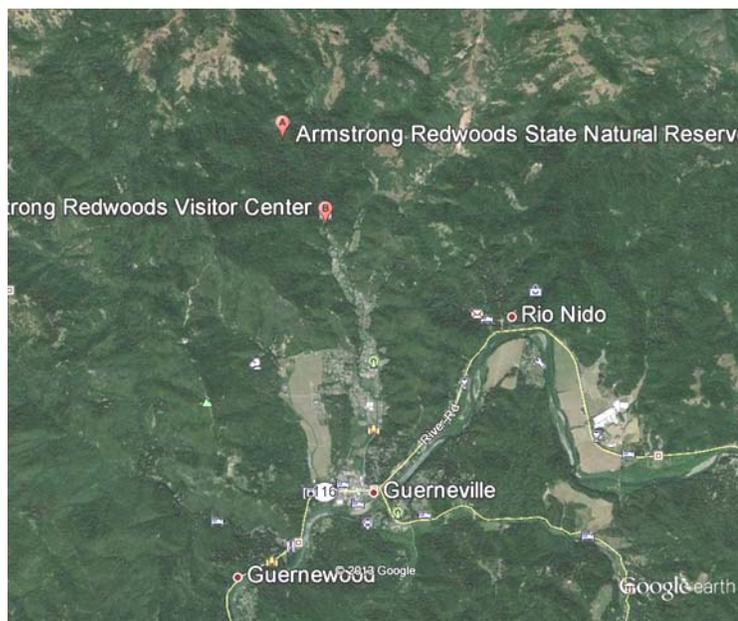
This Initial Study/Mitigated Negative Declaration (IS/ND) has been prepared by the California Department of Parks and Recreation (DPR) to evaluate the potential environmental effects of the proposed Water System Improvements Project at Armstrong Redwoods State Natural Reserve (ARSNR), located north of the City of Guerneville, Sonoma County, California. The proposed project would upgrade and improve the existing water system at the Park to comply with current Health and Safety Codes

2.2 PROJECT LOCATION

The reserve is located three miles north of Guerneville on Armstrong Woods Road (38°32'17"N 123°0'36"W).

Similar to a community park, the local population use ARSNR extensively for hikes, leisurely walks, running and horseback riding. During peak vacation season, visitors use the park for various recreational opportunities.

The waterline project extends from the front of the park near the visitor center to the water tank at the back of the park.



2.3 BACKGROUND AND NEED FOR THE PROJECT

During the 1870s the area was set aside as a natural park and botanical garden by Colonel James Armstrong. After his death, Armstrong's daughter and the Le Baron family mounted an energetic campaign involving public meetings, rallies, and car-caravans to direct public attention to the need to preserve this last remnant of the once mighty redwood forest. Their efforts were successful, and in 1917 the County of Sonoma passed an initiative to purchase the property for \$80,000.

Sonoma County operated the grove until 1934. In 1936, when the state of California took over, the grove was opened to the public as Armstrong Redwoods State Park. The grove's status was changed to a natural reserve in 1964 when a greater understanding of its ecological significance prompted a more protective management of the resource.

The existing water system has exceeded its life expectancy and entered into a state of extreme disrepair due to a lack of consistent, ongoing maintenance. Consequently, the condition of the system no longer meets current Health and Safety codes.

Without this project the water system will continue to deteriorate, creating a leaking system that does not adequately serve park visitors, requires additional maintenance time and budget and continues to violate current Health and Safety codes that could result in fines from regulatory agencies.

2.4 PROJECT OBJECTIVES

The mission of California State Parks is to provide for the health, inspiration and education of the people of California by helping to preserve the State's extraordinary biological diversity, protecting its most valued natural and cultural resources and creating opportunities for high-quality outdoor recreation. The goal of this project is to improve the water system at ARSNR to continue to provide high-quality recreation while continuing to protect the natural and cultural resources at the Park. To meet this highly attainable goal, DPR proposes to use horizontal drilling to avoid all impacts to resources, provide monitoring specialist to ensure that all resources are correctly protected during construction and appropriate scheduling to quickly improve the water system to continue to provide recreational opportunities to visitors.

2.5 PROJECT DESCRIPTION

The Department of Parks and Recreation proposes to replace the existing 4" waterline with an 8" (required by the State Fire Marshall for fire suppression) C900 waterline from the front of the park near the kiosk to the existing 50,000-gallon water tank near the administration building at the back of the Park. Work would use Horizontal Directional Drilling (HDD) as the primary method of installation and would use open trenching at connection points or short distances where HDD would not be practical or cost effective.

2.6 PROJECT REQUIREMENTS

Under CEQA, the Department of Parks and Recreation has the distinction of being considered a Lead agency, a Responsible agency and a Trustee agency. A lead agency is a public agency that has the primary responsibility for carrying out or approving a project and for implementing CEQA; a Responsible agency is a public agency other than the lead agency that has responsibility for carrying out or approving a project and for complying with CEQA; and a Trustee agency is a state agency having jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California. With this distinction comes the responsibility to ensure that actions that protect both cultural and natural resources are always taken on all projects. Therefore, DPR maintains a list of Project Requirements that are included in project design to reduce impacts to resources.

DPR has developed a list of Standard Project Requirements that are actions that have been standardized statewide for the use of avoiding significant project-related impacts to the environment in park units. From this list, standard project requirements are

assigned, as appropriate to all projects. For example, projects that include ground-disturbing activities, such as trenching; would always include standard project requirements addressing the inadvertent discovery of archaeological artifacts. However, for a project that replaces a roof on an historic structure, ground disturbance would not be necessary; therefore standard project requirements for ground disturbance would not be applicable and would not be assigned to the project.

DPR also makes use of specific project requirements. These are project requirements developed to address project impacts for projects that have unique issues; they would not typically be standardized for projects statewide.

Standard and Specific Project Requirements	
Issue	Requirement
Standard Biological 1: Sensitive Natural Communities	<ul style="list-style-type: none"> • A DPR-approved Environmental Scientist will develop a resource protection plan, in collaboration with project management, that produces the least resource impacts during project implementation • No trees greater than 15 inches in diameter at breast height (dbh) will be removed • All trenching will occur outside of the root health zone (5 times dbh) of any native tree with a dbh of 12 inches or greater unless approved by a DPR-approved Environmental Scientist. • A DPR-approved Environmental Scientist will monitor all trenching and all vegetation removal operations.
Standard Biological 2: Nesting Raptors and Migratory Birds	<p>On-site construction activities will be scheduled during the non-breeding season, September 1-February 28. If on-site construction activities must be scheduled during the bird breeding season, March 1-August 31, a DPR-approved biologist will conduct surveys for nesting bird presence within 7 days prior to the start of on-site construction under the following conditions:</p> <ul style="list-style-type: none"> • Raptors: If nesting raptors are found, no construction shall occur within a 250 radius of the nest tree between March 1 and August 31, or until the young have fledged and the young would no longer be impacted by project activities,(as determined by the DPR-approved biologist). • Migratory Birds: If active nests are located, no construction shall occur within a 100 foot radius of the nest tree between March 1 and August 31, or until the young have fledged and the young will no longer be impacted by project activities, as determined by the DPR-approved biologist.
Standard Biological 3: Sudden Oak Death	<ul style="list-style-type: none"> • All project activities and proper that could spread <i>Phytophthora ramorum</i> to new locations will be subject to Best Management Practices (including proper sanitation measures) developed by the California Oak Mortality Task Force and available online at http://www.suddenoakdeath.org/index.html.
Standard Cultural 1: Inadvertent	<ul style="list-style-type: none"> • In the event that previously unknown cultural resources (including but not limited to dark soil containing shellfish, bone, flake stone, groundstone, or deposits of historic trash) are encountered during project work by anyone, the state representative will put work on

Discovery	<p>hold at that specific location and contractors will be redirected to other areas (tasks). A DPR-qualified archaeologist will record and evaluate the find and work with the state representative to implement avoidance, preservation, or recovery measures as appropriate to any work resuming at that specific location.</p> <ul style="list-style-type: none"> In the event that significant cultural resources are found in the project location, a qualified historian and/or archaeologist will monitor all subsurface work including trenching, grading, and excavations in that area from that point forward to ensure avoidance of significant cultural material.
Standard Cultural 2: Human Remains	<ul style="list-style-type: none"> In the event that human remains are discovered, work will cease immediately in the area of the find and the project manager will notify the appropriate DPR personnel. Any human remains and/or funerary objects will be left in place or returned to the point of discovery and covered with soil. The DPR Sector Superintendent (or authorized representative) will notify the County Coroner, in accordance with §7050.5 of the California Health and Safety Code, and the Native American Heritage Commission (or Tribal Representative). If a Native American monitor is on-site at the time of the discovery, the monitor will be responsible for notifying the appropriate Native American Authorities.
Specific Cultural 1	<ul style="list-style-type: none"> a DPR archaeologist will monitor ground-disturbing activities in areas identified with a higher degree of archaeological sensitivity. These locations will be coordinated with the project and construction managers. Other archaeological needs are at the discretion of the DPR archaeologist.
Specific Cultural 2	<ul style="list-style-type: none"> a DPR archaeologist will attend the transition meeting to identify archaeological concerns and conditions as they relate to the project.
Specific Cultural 3	<ul style="list-style-type: none"> a DPR archaeologist will attend the preconstruction meeting.
Specific Cultural 4	<ul style="list-style-type: none"> a DPR archaeologist will review all BMPs and SWSLPP developed for the project.
Specific Cultural 5	<ul style="list-style-type: none"> during construction, a DPR archaeologist must review and approve all change orders/RFIs that include ground disturbing activities or changes in location
Specific Cultural 6	<ul style="list-style-type: none"> unless a DPR archaeologist reviews and approves disposal areas within the park, spoils generated from the project will be disposed of outside of the park.
Specific Cultural 7	<ul style="list-style-type: none"> a DPR archaeologist will approve all staging locations for materials and equipment.
Standard Geology 1: Post-Earthquake Inspection	<ul style="list-style-type: none"> DPR will inspect the new water system components (pipes and valves) after large-magnitude earthquakes in the vicinity and maintain the system to prevent excessive leakage.
Standard Hazard 1 Spill Prevention and Response	<ul style="list-style-type: none"> Prior to the start of construction, all equipment will be cleaned before entering the project site. During the project, equipment will be cleaned and repaired (other than emergency repairs) outside the project site boundaries. All contaminated spill residue, or other hazardous compounds will be contained and disposed of outside the boundaries of the site at a lawfully permitted or authorized destination.

	<ul style="list-style-type: none"> • Prior to the start of construction, all equipment will be inspected for leaks and regularly inspected thereafter until removed from the project site. • Prior to the start of construction, a Spill Prevention and Response Plan (SPRP) will be prepared to provide protection to on-site workers, the public, and the environment from accidental leaks or spills of vehicle fluids or other potential contaminants. This plan will include but not be limited to the following: <ul style="list-style-type: none"> ▪ A map that delineates construction staging areas, and where refueling, lubrication, and maintenance of equipment will occur. ▪ A list of items required in an on-site spill kit that will be maintained throughout the life of the project. ▪ Procedures for the proper storage, use, and disposal of any solvents or other chemicals used during the project. ▪ Identification of lawfully permitted or authorized disposal destinations.
Standard Hazard 2: Emergency Response Planning	Prior to the start of construction, DPR and/or its Contractor will prepare an Emergency Response Plan
Standard Hazard 3: Fire Safety	<ul style="list-style-type: none"> • A Fire Safety Plan will be developed by a DPR approved forester, prior to the start of construction. • Spark arrestors or turbo-charging (which eliminates sparks in exhaust) and fire extinguishers will be required for all heavy equipment. • Construction crews will be required to park vehicles away from flammable material, such as dry grass or brush. At the end of each workday, heavy equipment will be parked over asphalt, or concrete to reduce the chance of fire.
Standard Hydrology 1: Erosion and, Sediment Control / Pollution Prevention Plan	Prior to the start of construction, DPR and/or its Contractor will prepare a Stormwater Soil Loss Pollution Prevention Plan (SWSLPPP) to cover soil loss resulting from storm water run-off and/or wind erosion, sedimentation and/or of dust/particulate matter air pollution during clearing, grading, excavation, stockpiling and reconstruction of existing facilities involving removal and replacement. BMPs include, but are not limited to: construction activity scheduling, erosion and sediment control to protect slopes and drainage courses, mulching or hydroseeding to stabilize disturbed soils, dust control, stockpile management and management of washout areas.
Standard Noise 1	<ul style="list-style-type: none"> • Project related activities will generally be limited to the daylight hours, Monday through Friday. However, weekend work will be implemented to accelerate construction or address emergency or unforeseen circumstances. If weekend work is necessary, no work will occur before 8:00 a.m. or after 6:00 p.m. • Internal combustion engines used for any purpose in the project areas will be equipped with a muffler of a type recommended by the manufacturer. Equipment and trucks used for project related activities will utilize the best available noise control techniques (e.g., engine enclosures, acoustically attenuating shields or shrouds, intake silencers, ducts, etc.) whenever feasible and

	<p>necessary.</p> <ul style="list-style-type: none"> Stationary noise sources and staging areas will be located as far from visitors as possible. If they must be located near visitors, stationary noise sources will be muffled to the extent feasible, and/or where practicable, enclosed within temporary sheds.
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2.7 PROJECT IMPLEMENTATION

Construction would start in Spring 2014, or soon thereafter, and continue for approximately 3-5 months. Work would occur only during daylight hours and would be scheduled to incur the least amount of impact to visitors; however, weekend work could be implemented to accelerate construction or address emergency or unforeseen circumstances. During construction, partial closures of the day use areas would be required for the safety of visitors and staff. Directional drilling would cause the majority of ground-disturbing activity; however, some areas would require the use of hand-tools.

Heavy equipment, such as backhoe, excavator, grader, bulldozer, compressor, and dump truck would be used during construction. Most equipment would be transported to the site and remain until associated work is completed. Transport vehicles for material or equipment delivery trucks, and crew vehicles would also be present intermittently at the site. Staging areas for equipment would be confined to the existing parking areas and open spaces.

Best Management Practices (BMPs) would be incorporated into this project design to ensure that the natural and cultural resources in and around the project area are adequately protected during and after construction. The BMPs discussed in this document and used in the implementation of this project were obtained from the *California Stormwater Quality Association (CSQA), Stormwater Best Management Practices Construction Handbook*. Temporary BMPs would be used to keep sediment on-site throughout the duration of the project; during construction, BMPs would be checked daily, maintained, and modified as needed. BMPs would be used after construction to stabilize the site and minimize erosion.

The Department of Parks and Recreation has consistently referenced CSQA BMPs and has identified them as an acceptable standard for use in all State Parks. During construction, partial closures of the day use areas would be required

2.8 VISITATION TO ARMSTRONG REDWOODS STATE NATURAL RESERVE

This project would improve an existing water system; does not increase facilities and is not expected to increase visitation to ARSNR.

Fiscal Year	Paid Day Use	Free Day Use	Total
2000/2001	79,753	472,957	552,710
2001/2002	70,460	921,162	991,622
2002/2003	66,576	966,406	1,032,982
2003/2004	66,643	1,069,454	1,136,097
2004/2005	59,325	1,083,962	1,143,287
2005/2006	47,599	917,150	964,749

2006/2007	50,137	763,274	813,411
2007/2008	50,787	774,173	824,960
2008/2009	47,936	674,134	722,070
2009/2010	40,187	628,381	668,568
2010/2011	36,962	568,793	605,755
2011/2012	45,056	702,531	747,587
2012/2013	49,585	733,660	783,245
Total Attendance :	711006	10,276,037	10987043
Average Attendance :	54,693	790,464	845157

2.9 CONSISTENCY WITH LOCAL PLANS AND POLICIES

The project is consistent with the DPR mission and its management directives aimed at preserving the state’s extraordinary biological diversity and protecting valued natural and cultural resources. The proposed project is consistent with local plans and policies currently in effect.

2.10 DISCRETIONARY APPROVALS

The project could require approval from California Department of Fish and Wildlife for potential project activities over Fife Creek. Additional internal document reviews include compliance with Public Resources Code § 5024. DPR will acquire all necessary reviews and permits prior to implementing any project components requiring regulatory review.

2.11 RELATED PROJECTS

DPR often has other smaller maintenance programs, minor restoration, and interpretive projects planned for a park unit. Any projects proposed in areas that have not been previously discussed would occur under a separate CEQA document.

**CHAPTER 3
ENVIRONMENTAL CHECKLIST**

PROJECT INFORMATION

1. Project Title: Water System Improvements
2. Lead Agency Name & Address: California Department of Parks and Recreation
3. Contact Person & Phone Number: Mike Brown, 916.445.8687
4. Project Location: Armstrong Redwoods State Natural Reserve
5. Project Sponsor Name & Address: California Department of Parks and Recreation
Russian River District
25381 Steelhead Blvd
Duncans Mills, California
95430
6. General Plan Designation: Recreation
7. Zoning: Open Space
8. Description of Project: The Department of Parks and Recreation proposes to replace the existing 4" waterline with an 8" (required by the State Fire Marshall for fire suppression) C900 waterline from the front of the park near the kiosk to the 50,000 gallon water tank near the administration building. Work would use Horizontal Directional Drilling (HDD) as the primary method of installation; would use open trenching at connections, or short distances where HDD would not be practical or cost effective.
9. Surrounding Land Uses & Setting: Refer to Chapter 3 of this document (Section IX, Land Use Planning)
10. Approval Required from Other Public Agencies: Refer to Chapter 2, Section 2.9

1. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

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

- | | | |
|--|---|---|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agricultural Resources | <input type="checkbox"/> Air Quality |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology/Soils |
| <input type="checkbox"/> Hazards & Hazardous Materials | <input type="checkbox"/> Hydrology/Water Quality | <input type="checkbox"/> Land Use/Planning |
| <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Noise | <input type="checkbox"/> Population/Housing |
| <input type="checkbox"/> Public Services | <input type="checkbox"/> Recreation | <input type="checkbox"/> Transportation/Traffic |
| <input type="checkbox"/> Utilities/Service Systems | <input type="checkbox"/> Mandatory Findings of Significance | <input type="checkbox"/> Climate Change |
| <input checked="" type="checkbox"/> None | | |

DETERMINATION

On the basis of this initial evaluation:

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

I find that, although the original scope of the proposed project **COULD** have had a significant effect on the environment, there **WILL NOT** be a significant effect because revisions/mitigations to the project have been made by or agreed to by the applicant. A **MITIGATED NEGATIVE DECLARATION** will be prepared.

I find that the proposed project **MAY** have a significant effect on the environment and an **ENVIRONMENTAL IMPACT REPORT** or its functional equivalent will be prepared.

I find that the proposed project **MAY** have a "potentially significant impact" or "potentially significant unless mitigated impact" on the environment. However, at least one impact has been adequately analyzed in an earlier document, pursuant to applicable legal standards, and has been addressed by mitigation measures based on the earlier analysis, as described in the report's attachments. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the impacts not sufficiently addressed in previous documents.

I find that, although the proposed project could have had a significant effect on the environment, because all potentially significant effects have been adequately analyzed in an earlier EIR or Negative Declaration, pursuant to applicable standards, and have been avoided or mitigated, pursuant to an earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, all impacts have been avoided or mitigated to a less-than-significant level and no further action is required.

Patricia DuMont
Environmental Coordinator

Date

ENVIRONMENTAL ISSUES

I. AESTHETICS

ENVIRONMENTAL SETTING

Armstrong Redwoods State Natural Reserve (SNR) is comprised of approximately 805 acres in the coastal mountains of Sonoma County. The park unit is known for containing the largest contiguous stand of old growth coast redwoods in Sonoma County (DPR 2012). Visitors access the Visitor Center and the numerous day use facilities via Armstrong Woods Road (DPR 2012).



The proposed Water System Improvements Project is located approximately three miles north of the town of Guerneville (Google Maps 2012) in a densely wooded location. The existing water supply source is a 55,000-gallon tank situated upslope from the Parks' Maintenance Area, located at the north end of Armstrong Redwoods SNR. Water descends by gravity from this water storage tank through a water supply pipe located alongside Armstrong Woods Road for approximately 6850 total feet. Facilities for visitor use are located throughout the project site. The water tank is not visible from Armstrong Woods Road because it is situated on a flat level clearing, upslope of, and approximately 210 feet away from, the Maintenance Area and adjoining day use parking lot. The topography, along with trees near the road and parking lot shield the view of the tank. Majestic redwood trees towering overhead envelop visitors throughout the overall project site.

WOULD THE PROJECT:	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Create a new source of substantial light or glare	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

which would adversely affect day or nighttime views in the area?

CRITERIA FOR DETERMINING SIGNIFICANCE

The analysis of determining the significance of impacts of the Proposed Action to Aesthetics is based on criteria **I a – d**, described in the environmental checklist above.

DISCUSSION

- a) As described in the Environmental Setting above, the overall site of the proposed project is located in the densely wooded area of Armstrong Redwoods SNR. No designated park scenic vistas that could be temporarily impaired by construction activities and vehicles / equipment are located in the area. Construction activities, such as trenching / directional drilling, would require excavation of soil and removal of a limited amount of vegetation, primarily consisting of small trees/saplings and low-growing plants. These activities would change the close-range scenery at the project sites. Excavated materials would be replaced back into trenches or removed from the site and both of these impacts would be considered temporary and therefore, less than significant.
- b) The proposed project site is located entirely within Armstrong Redwoods State Natural Reserve. The closest road, Armstrong Woods Road at the Reserve entrance, is not eligible for listing as a California State Scenic Highway (CalTrans 2012). Dense vegetation at the project site would shield visitors using Armstrong Woods Road from viewing most construction activities, staging/storage of equipment and vehicles by dense vegetation at the project site, short term construction activities, such as directional drilling to install the supply pipe under Armstrong Woods Road and the transportation of equipment and materials to different locations within the overall project area would be visible, but considered temporary and less than significant. The water supply pipe would not be visible from the roadway once installation is complete. Less than significant impact.
- c) As described in Discussion (a) above, construction activities would require excavation of soil and removal of a limited amount of vegetation within the project site. As with any construction project, a temporary decrease in the visual appeal of the areas immediately affected by the work being performed would occur; however, work would occur outside of the peak summer visitation season, and construction-related activities would be temporary. In addition, excavated materials would be replaced back into excavation trenches or removed from the site, thus returning the site to pre-construction conditions. No impact.
- d) Lighting is not an element of this project, all work will be conducted during daylight hours, and no permanent new light sources will be introduced into the landscape. Any visible above-ground water system equipment is not expected to produce metallic shine or glare. No impact.

II. AGRICULTURAL AND FOREST RESOURCES.

ENVIRONMENTAL SETTING

Important farmland soils are located throughout the County but are concentrated primarily in the Sonoma Valley, west Sebastopol, west Santa Rosa, Alexander Valley, and Dry Creek Valley regions. Soil, climate, topography and water combine to make these lands highly productive agricultural areas.

Important timberland soils are located primarily in the northwest County and Russian River area. Approximately 513,000 acres (about 50% of the County land area) in Sonoma County are devoted to forest and woodlands. These include 72,000 acres (7%) of conifer forest, 284,000 acres (28%) of hardwoods, and 157,000 (15%) acres of conifer mixed with hardwoods. These areas are often interspersed with grasslands, shrublands or agricultural lands and residences. In 2000, a total of 24,157,000 board feet of lumber valued at roughly 19.5 million dollars was harvested in Sonoma County. This amount was roughly 1.2% of the timber harvested in the State during that year

In Sonoma County, "timberlands" are generally considered to be those lands that are capable of and available for growing a commercial species of timber such as Redwoods and Douglas Fir; these lands are predominantly in the northwest part of the County. There are approximately 232,000 acres of timberland in Sonoma County.

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments which are lower than normal because they are based upon farming and open space uses as opposed to full market value of the property (CDC 2011). Sonoma County has about 2,500 parcels under Williamson Act contracts, comprising approximately 295,000 acres or approximately 31 percent of the County's land area.

State Natural Reserves [PRC § 5019.65 (a)] consist of areas selected and managed for the purpose of preserving their native ecological associations, unique faunal or floral characteristics, geological features, and scenic qualities in a condition of undisturbed integrity. Living and nonliving resources contained within State Natural Reserves shall not be disturbed or removed for other than scientific or management purposes. (DPR 2004) Armstrong Redwoods SNR not support nor is it zoned for timber production

WOULD THE PROJECT*:	<u>LESS THAN POTENTIALLY SIGNIFICANT IMPACT</u>	<u>SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Resources Agency, to non-agricultural use?

- | | | | | |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| b) Conflict with existing zoning for agricultural use or a Williamson Act contract? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code §4526), or timberland zoned Timberland Production (as defined by government Code § 51104(g))? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Result in the loss of forest land or conversion of forest land to non-forest use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

* 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 for use in assessing impacts on agricultural and farmland.

CRITERIA FOR DETERMINING SIGNIFICANCE

The analysis of determining the significance of impacts of the Proposed Action to Agricultural Resources is based on criteria **II a – e**, described in the environmental checklist above.

DISCUSSION

a - e) **No impact** - All work proposed as part of this project would be confined within park boundaries. Therefore, this project will have no impact on any category of California Farmland, conflict with any existing zoning for agricultural use or Williamson Act contract, or result in the conversion of farmland to non-agricultural use or forest land to non-forest land.

III. AIR QUALITY

ENVIRONMENTAL SETTING

Armstrong Redwoods State Natural Reserve (ARSNR) is located in the North Coast Air Basin (NCAB) that comprises Del Norte, Humboldt, Trinity, Mendocino and northern Sonoma Counties, under jurisdiction of the Northern Sonoma County Air Pollution Control District (NSCAPCD) and United States Environmental Protection Agency (USEPA) Region IX. Sonoma County is located within the southern portion of the NCAB.

Climate

Climate has a strong influence on both natural resources and recreational opportunities on the project site. Sonoma County has a Mediterranean climate with moderate temperatures, wet winters and typically dry summers. The area around ARSNR has cool, wet winters and warm, dry summers, a climate typical of northern coastal California. Although rainfall is rare during the summer months, fog often comes up the river from the Pacific Ocean, producing enough condensation to create "fog drip", which sustains the numerous redwood trees, ferns, and other vegetation.

The National Weather Service reports that Guerneville (the closest reporting station) has an average annual rainfall of 49.15 inches (1,248 mm). Measurable precipitation occurs on an average of 73 days each year. The wettest year was 1970 with 70.20 inches (1,783 mm) and the driest year was 1949 with 31.34 inches (796 mm). The most rainfall in one month was 29.08 in January 1970. The most rainfall in 24 hours was 8.40 inches (213 mm) on February 8, 1960.

Prevailing summer winds are from the northwest, averaging 10 to 15 miles per hour, with gusts as high as 50 to 60 miles per hour. Winter storms often batter the coastline with strong, moisture-laden, southerly winds. These winter storms, from November through April, account for nearly all the average annual rainfall that varies between 30 and 38 inches. Winter temperatures are moderate, with averages ranging from highs in the 50's to lows in the 40's. (DPR, 2008)

Air Quality Designations

The California Air Board makes state area designations for ten criteria pollutants (an air pollutant for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set): ozone, suspended particulate matter (PM₁₀), fine particulate matter (PM_{2.5}), carbon monoxide, nitrogen dioxide, sulfur dioxide, sulfates, lead, hydrogen sulfide, and visibility reducing particles (VRPs). At the State level, ozone is designated as non-attainment/transitional; PM₁₀ is designated in attainment; PM_{2.5}, carbon monoxide, hydrogen sulfide, and visibility reducing particles are designated unclassified; and nitrogen dioxide, sulfur dioxide, sulfates, and lead are designated in attainment.

If a pollutant concentration is lower than the standard, the area is classified as "attainment" for that pollutant. If an area exceeds the standard, the area is classified as "non-attainment" for that pollutant. If there are not enough data available to determine whether the standard is exceeded in an area, the area is designated "unclassified". Non-attainment/transitional is a

subcategory of the non-attainment designation; an area is designated non-attainment/transitional to signify that the area is close to attaining the standard for that pollutant.

In contrast to the State area designations, the USEPA makes National area designations for five criteria pollutants: ozone (8 hour standard; the National 1-hour standard was revoked in June 2005), particulate matter (PM), carbon monoxide, nitrogen dioxide, and sulfur dioxide. At the National level: ozone, carbon monoxide, PM_{2.5}, and nitrogen dioxide are designated unclassified/attainment; PM₁₀ and sulfur dioxide are designated unclassified.

If an area does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant, it is designated as non-attainment. If an area meets the national primary or secondary ambient air quality standard for the pollutant, it is designated in attainment. An area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant is designated unclassifiable (USEPA, 2008).

The following table illustrates the criteria pollutant designations at both the State and federal levels.

Figure Error! No text of specified style in document.:1 State / Federal Designated Pollutants

Criteria Pollutant	State	Federal
Ozone	Non-Attainment	Unclassified / Attainment
Suspended Particulates (PM10)	Attainment	Unclassified
Fine Particulates (PM2.5)	Unclassified	Unclassified / Attainment
Carbon Monoxide	Unclassified	Unclassified / Attainment
Nitrogen Dioxide	Attainment	Unclassified / Attainment
Sulfur Dioxide	Attainment	Unclassified
Sulfates	Attainment	No Federal Standard
Lead (particulate)	Attainment	No Federal Standard
Hydrogen Sulfate	Unclassified	No Federal Standard
Visibility reducing particles	Unclassified	No Federal Standard

State designations were updated July 2007; National designations were current as of September 2006

Source: California Air Resources Board

Sources

During personal and business activities, Californians release thousands of tons of pollutants into the air every day. Although each of us may only produce a small amount of air pollution, the combined pollution from the 33 million Californians adds up to problems. Some air pollutants are formed and released during the combustion (burning) of petroleum-based products and other fuels such as wood. Examples include gasoline and diesel-powered vehicles and fireplaces, respectively. Many tons of pollutants also enter the air through

evaporation, such as fuel from gasoline storage and dispensing facilities, and car and truck gasoline tanks, and gasoline storage containers (CARB, 2008).

On hot, sunny days, pollutants emitted by vehicles, industry, and many products (nitrogen oxides and volatile organic compounds) react with each other to form ozone, the main ingredient of smog. During the winter, temperature inversions can trap tiny particles of smoke and exhaust from cars, trucks, fireplaces, and anything else that burns fuel. This keeps the pollution close to the ground - at the level where people are breathing (CARB).

Sonoma County experiences a combination of rural-type pollution (dust and smoke) and pollution transport. Such problems stem from the county's agricultural economy that necessitates land cultivation and agricultural waste burning, and the prevailing wind patterns that transport pollutants from the San Francisco Bay Area Air Basin to the North Coast Air Basin. Sparsely populated on the coast, where prevailing winds blow clean air in from the Pacific Ocean, this basin enjoys some of the best air quality in California.

Air Monitoring Stations

The monitoring stations in the state are operated by the California Air Resources Board (CARB), by local Air Pollution Control Districts (APCD) or Air Quality Management Districts (AQMD), by private contractors, and by the National Park Service (NPS). These entities operate more than 250 air monitoring stations in California. The ARB operates air monitoring stations throughout the State. Most of the local districts operate air monitoring stations within their jurisdictions. In some portions of the State, private contractors operate monitoring stations under contract with businesses that are required by permit conditions to conduct monitoring. The National Park Service also operates a number of air monitoring stations in the National Parks and National Monuments throughout California (CARB, 2008). Six monitoring stations are located in Sonoma County: Cloverdale, Guerneville- 1st & Church, Healdsburg- Limmerick Lane, Healdsburg- Matheson, Healdsburg- Municipal Airport, and Santa Rosa. The Cloverdale, Guerneville- 1st & Church, Healdsburg- Limmerick Lane, Healdsburg- Matheson stations monitor PM₁₀. The Healdsburg- Municipal Airport station monitors O₃. The Santa Rosa station monitors CO, NO₂, O₃, PM₁₀, PM_{2.5}, Toxics, Outdoor Temperature, Wind Direction, and Horizontal Wind Speed, and Solar Radiation (CARB).

Health Hazards

Ozone and particulate matter are the most common air pollutants in California. Ozone, also known as smog, can irritate the respiratory system, causing coughing, irritation in the throat or a burning sensation in the airways. It can reduce lung function, resulting in feelings of chest tightness, wheezing, or shortness of breath. Particle pollution, also known as particulate matter, is composed of microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. When exposed to these small particles, people with heart or lung diseases and older adults are more at risk of hospital and emergency room visits or, in some cases, even death from heart or lung disease. Carbon monoxide can cause harmful health effects by reducing oxygen delivery to the body's organs (like the heart and brain) and tissues. Sulfur dioxide causes a wide variety of health and environmental impacts because of the way it reacts with other substances in the air. Impacts include; respiratory effects, visibility impairments, acid rain, plant and water damage, and aesthetic damage (building decay). People, animals, and fish are mainly exposed to lead by

breathing and ingesting it in food, water, soil, or dust. Lead accumulates in the blood, bones, muscles, and fat. Nitrogen dioxide contributes to ozone; causes respiratory problems; contributes to the formation of acid rain; contributes to nutrient overload, which deteriorates water quality; contribute to atmospheric particles causing visibility impairment; reacts to from toxic chemicals; and contributes to global warming (USEPA).

Sensitive Receptors

Sensitive receptors include individuals as well as groups relating to specific land uses. Some individuals are considered to be more “sensitive” than others to air pollutants. The reasons for greater sensitivity than average include health problems, proximity to the emission source, or duration of exposure to air pollutants. Land uses such as primary and secondary schools, hospitals, and convalescent homes are considered to be sensitive receptors to poor air quality because the very young, the old and the infirm are more susceptible to respiratory infections and other air quality related health problems than the general public. Residential uses are considered sensitive receptors because people in residential areas are often at home for extended periods of time, so they can be exposed to pollutants for extended periods. Recreational areas are considered moderately sensitive to poor air quality because vigorous exercise associated with recreation places a high demand on the human respiratory function.

Sensitive receptors in the vicinity of the proposed project area are limited to recreational users. During construction, the project site would not be open to public use.

	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
WOULD THE PROJECT*:				
a) Conflict with or obstruct implementation of the applicable air quality plan or regulation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations (e.g., children, the elderly, individuals with compromised respiratory or immune systems)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

* Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make these determinations.

DISCUSSION

- a) The NSCAPCD has not been required by U.S. Environmental Protection Agency (USEPA) to develop a regional air quality plan. There is no State Implementation Plan or Clean Air Plan for the District. Therefore, the Project would not conflict with the implementation of any applicable air quality management plans.
- b) Potential to violate or substantially contribute to violation of air quality standards (Potentially Significant Impact). The air emissions potentially associated with the Project would be temporary emission of fugitive dust and exhaust from equipment and vehicles used during Project construction. No long-term sources of emissions from the project would result.

As stated above, the Project is located within the NSCAPCD, which is currently designated as in attainment for state and federal ambient air quality standards, except the state standard for ozone. Exhaust emissions generated during Project construction would incrementally increase the release of air pollutants, which could contribute to the formation of ozone. In addition, Project activities would result in temporary emissions of PM10, PM2.5, oxides of nitrogen (NOX) and sulfur (SOX), and diesel exhaust. To reduce the impact of these emissions during construction and operations, the Project will implement feasible and standard emission control measures as recommended by the Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines (supported by NSCAPCD).

- c) Although the Project would result in the emission of ozone-precursor compounds, the emissions would be from mobile sources (i.e., construction equipment and vehicles). Due to the expected construction duration and the expected small number of internal combustion engines, it is unlikely that the project construction would exceed the thresholds set by the NSCAPCD.
- d) Sensitive receptors relative to air quality conditions are generally considered populations that have a greater-than-average sensitivity to adverse health effects related to air pollutants. Typical sensitive receptors include schools, hospitals, and nursing care facilities. Residences or residential areas can also be considered sensitive receptors if subjected to relatively long duration of exposure to emissions from specific sources.

The Project Site is located within a sparsely populated area of west-central Sonoma County. In general, Project activities would not be located adjacent to any known sensitive receptors. The closest sensitive receptor (with the exception of individual residences) to the Project Site is the Guerneville School, located approximately 1.5 miles south of the southern boundary of the Site. The closest existing residence is less than 200 feet to the Project Site boundary.

Due to their distance from site operations, it is unlikely that on-site construction activities would adversely affect sensitive receptors. However, emissions related to vehicle trips transporting people, equipment and products to and from the Site (i.e., fugitive dust, vehicle emissions, and diesel particulates) could adversely affect the health of sensitive receptors along the Site access roads and living at the site.

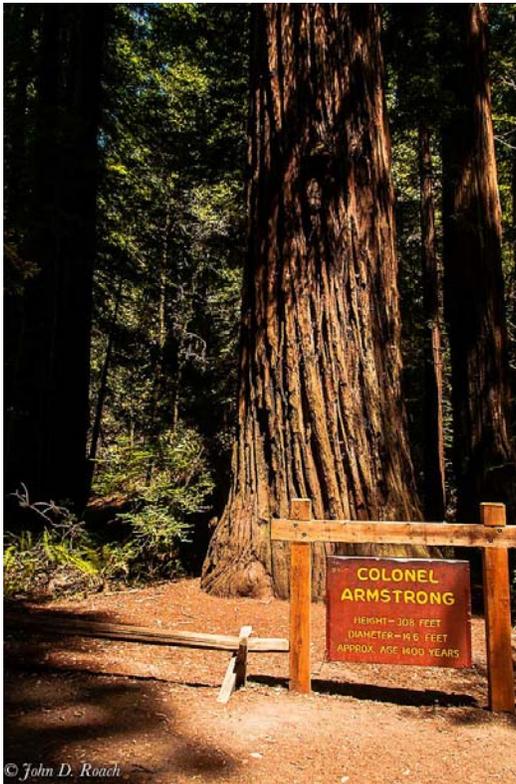
- e) The Project would not result in the creation of objectionable odors during the construction or post construction period. The Project entails excavation of entrance pits and receiving holes and use of bentonite as a drilling fluid. Objectionable odors will likely be limited only to those associated with diesel emissions. Work will occur during the park's off-season further limiting the objectionable odors on park visitors.

IV. BIOLOGICAL RESOURCES

ENVIRONMENTAL SETTING

Armstrong Redwoods State Natural Reserve (ARSNR) is an 805-acre park unit that protects one of the few remaining old growth redwood forests in Sonoma County. The park entrance is located 2 miles north of the town of Guerneville. Fife Creek flows north to south through the eastern portion ARSNR and empties into the Russian river in the town of Guerneville.

Vegetation within the project area primarily consists of *Sequoia sempervirens* Forest Alliance, as defined in Sawyer et al (2009), which conforms to the National Vegetation Classification Standard adopted by the federal government (USGS 2010). *Pseudotsuga menziesii*-



Lithocarpus densiflorus Forest Alliance and *Quercus garryana* Woodland Alliance replaces *Sequoia sempervirens* Forest Alliance in drier locations, including the Maintenance Yard, Group Campground, and water tanks.

Redwood (*Sequoia sempervirens*) dominates the canopy of the *Sequoia sempervirens* Alliance, which also includes tanbark oak (*Lithocarpus densiflorus*), Douglas-fir (*Pseudotsuga menziesii*), big leaf maple (*Acer macrophyllum*), and California bay laurel (*Umbellularia californica*). Common shrub and herbaceous species include western sword fern (*Polystichum munitum*), California hazelnut (*Corylus cornuta* var. *californica*), redwood sorrel (*Oxalis oregona*), trail plant (*Adenocaulon bicolor*), wild ginger (*Asarum caudatum*), and poison oak (*Toxicodendron diversilobum*).

Douglas-fir and tanbark oak dominate the canopy of the *Pseudotsuga menziesii*- *Lithocarpus densiflorus* Forest Alliance. Scattered Oregon white oak (*Quercus garryana* var. *garryana*) occur where this vegetation type

borders the *Quercus garryana* Woodland Alliance type.

SPECIAL-STATUS SPECIES

Sensitive biological resources that occur or potentially occur in or near the proposed project site are discussed in this section. Special-status species (sensitive species) are defined as plants and animals that are legally protected or that are considered sensitive by federal, state, or local resource conservation agencies and organizations. Specifically, this includes species listed as state or federally Threatened or Endangered, those considered as candidates for listing as Threatened or Endangered, species identified by the US Fish and Wildlife Service (USFWS) and/or California Department of Fish and Game (CDFG) as Species of Special Concern (SSC), animals identified by CDFG as Fully Protected or Protected (FP, P), and plants considered by the California Native Plant Society (CNPS) to be rare, threatened, or

endangered. Also included are habitats that are considered critical for the survival of a listed species or have special value for wildlife species and plant communities that are unique or of limited distribution.

All special-status species and their habitats were evaluated for potential impacts from the proposed Armstrong Redwoods Replace Water System Project. Existing available data were collected and reviewed to determine the proximity of special status plants, animals, and their habitats to the project area. Queries of the California Department of Fish Game's California Natural Diversity Database (DFG 2012), the California Native Plant Society's On-line Inventory, Eighth Edition (CNPS 2010), and the U.S. Fish and Wildlife Service (USFWS 2012) were conducted for special-status species and habitats within the Cazadero and eight surrounding 7½ -minute United States Geological Society (USGS) quadrangle maps (Fort Ross, Tombs Creek, Arched Rock, Duncans Mills, Camp Meeker, Guerneville, Geyserville, and Warm Springs Dam).

Special-status plant and animal species are described below along with their potential to occur within the project area and the impacts this project could cause to these species.

WILDLIFE SPECIES

Wildlife in Armstrong Redwoods Natural Reserve includes common porcupine (*Erethizon dorsatum*), Pacific wren (*Troglodytes pacificus*), Stellar's jay (*Cyanocitta stelleri*) Pacific banana slug (*Ariolimax columbianus*), ensatina (*Ensatina eschscholtzii*), California slender salamander (*Batrachoseps attenuates*) and foothill yellow-legged frog (*Rana boylei*) (iNaturalist.org 2013).

The proposed Water System Repair Project occurs in and around a heavily used public recreation site in an old growth redwood forest setting. The results of a search of the California Natural Diversity Database (CNDDDB) for special-status wildlife species that have been documented in ARSNR or could potentially occur in or near the project area are described below.



California Freshwater Shrimp (*Syncaris pacifica*) This federal and state listed endangered species is found in low elevation, low gradient, streams where riparian cover is moderate to heavy (CNDDDB 2013). This species prefers shallow pools away from the main stream flow; in winter it prefers undercut banks with exposed roots and in summer near leafy branches touching the water (CNDDDB 2013). This species is known to occur in Austin Creek; no records from Fife Creek.

Foothill Yellow-legged Frog (*Rana boylei*). This California Species of Special Concern occurs in clear rivers and creeks with gravel or rock substrate and sunny banks in forest or woodland habitats (Jennings and Hayes 1994). Foothill yellow-legged frogs have been documented in nearby Austin Creek State Recreation Area, and in several Sonoma County streams. Suitable habitat for this highly aquatic frog occurs in Fife Creek adjacent to the project area. Project

activities will not impact water quantity or quality in Fife Creek or impact the aquatic habitat. No impacts.

Sonoma Tree Vole (California Red Tree Mouse) (*Arborimus pomo*). This California Species of Special Concern occurs in old growth and other forests, mainly Douglas fir, redwood and montane hardwood-conifer habitats. Although there is only one occurrence of this species in the general area listed on the CNDDDB, (east Austin Creek near Old Cazadero / Fort Ross Rd crossing over east Austin Creek) there is habitat in the project area (CNDDDB 2013). Sonoma tree voles are active all year, mostly nocturnal outside of the nest, but feed throughout the day on needles stored in the nest and has a range that encompasses one to several fir trees. Sonoma tree voles breed year-round, but mostly February through September. Needles and twigs are gathered primarily during the night so project activities should not adversely affect this species (CDFW 1990). No impact.

Nesting Raptors and Migratory Birds are protected by the federal Migratory Bird Treaty Act (16 U.S.C. 703-712), and by the state Department of Fish and Game Code (Sections §3503, §3503.5, and §3513). Under these laws, all raptors and migratory birds and their nests are protected. A wide variety of migratory birds and several raptor species potentially occur in the project area and construction activities, especially vegetation manipulation, could impact nesting birds if conducted during the breeding season.

Steelhead, Central California Coast DPS (*Oncorhynchus mykiss irideus*). This federal threatened species occurs in Austin Creek. Best Management Practices and project specific measures will be in place to prevent any sediments or contaminants from entering the watershed and affecting aquatic environments. Project activities will not impact water quantity or quality in Austin Creek or the downstream Russian River. No impacts.

California Red-legged Frog (*Rana draytonii*). This Federally Threatened frog is found mainly near ponds in humid forests, woodlands, grasslands, coastal scrub, and streamsides with plant cover, and is frequently found in woods adjacent to streams. Breeding habitat is in permanent or ephemeral water sources: lakes, ponds, reservoirs, slow streams, marshes, bogs and swamps. California red-legged frogs hybridize with Northern red-legged frogs in portions of Sonoma County. Suitable breeding locations occur within the park but not in the project area. Although this species can be found far from suitable breeding locations, project activities will not impact dense vegetation which could potentially provide cover. Best Management Practices and project specific measures will be in place to prevent any sediments or contaminants from entering Fife Creek, or any known breeding ponds, and affecting aquatic environments. No impacts are expected.

SENSITIVE NATURAL COMMUNITIES

Sensitive plant communities are those that are regionally uncommon or unique, unusually diverse, or of special concern to local, state, and federal agencies. Removal or substantial degradation of these plant communities constitutes a significant adverse impact under CEQA. The California Department of Fish Game's California Natural Diversity Database (CNDDDB) maintains a list of the state's plant communities (also known as alliances) and identifies those of high inventory priority due to their rarity and threat. These are considered sensitive natural communities by regulatory agencies.

The CDFG classifies the *Sequoia sempervirens* Forest Alliance as a sensitive natural community. This community constitutes the majority of the project area's vegetation.

WETLANDS AND WATERS OF THE UNITED STATES

The federal Clean Water Act (CWA) defines wetlands as lands that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The U.S. Army Corps of Engineers (USACE) has jurisdictional authority of wetlands under provisions found in Section 404 of the CWA. Typically, USACE-jurisdictional wetlands meet three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology.

Waters of the U.S. (aka Other Waters) are regulated by the USACE under Section 404 of the CWA. These are defined as all waters used in interstate or foreign commerce, waters subject to the ebb and flow of the tide, all interstate waters including interstate wetlands and all other waters such as: intrastate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds. Based on this definition Fife Creek, which flows through a portion of the project area, constitutes a Water of the U.S.

	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
WOULD THE PROJECT:				
a) Have a substantial adverse effect, either directly or through habitat modification, on any species identified as a sensitive, candidate, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands, as defined by §404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- 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?

CRITERIA FOR DETERMINING SIGNIFICANCE

The analysis of determining the significance of impacts of the Proposed Action to Agricultural Resources is based on criteria **IV a – f**, described in the environmental checklist above.

DISCUSSION

- a) Suitable to marginally suitable habitat occurs within the project area for three special status plant species, Napa false indigo, North Coast semaphore grass, and white-flowered rein orchid. No populations of Napa false indigo or North Coast semaphore grass were located in areas of proposed ground disturbance during surveys conducted in 2013; while white-flowered rein orchid is unlikely to occur.

Although California red-legged frog can be found far from suitable breeding locations, project activities will not impact dense vegetation which could potentially provide cover. Integration of Best Management Practices and Standard Project Requirements (Hydro-, Hydro-, Haz-1) would prevent any sediments or contaminants, including drilling muds, from entering Fife Creek, or any known breeding ponds, and affecting aquatic environments and reduce project impacts to a less than significant level. These measures would also reduce project impacts to a less than significant level for foothill yellow-legged frog and steelhead.

The Sonoma Tree Vole gathers needles and twigs primarily during the night so project activities would not adversely affect this species.

A wide variety of migratory birds and several raptor species potentially occur in the project area and construction activities, especially vegetation manipulation, could impact nesting birds if conducted during the breeding season. Integration of **Standard Project Requirement Bio-1: Nesting Raptors and Migratory Birds** would reduce project impacts to a less than significant level.

- b) The *Sequoia sempervirens* Alliance within the project area is considered a sensitive natural community since it contains mature forest components, especially mature redwood trees that provide valuable habitat for both common and special status wildlife species. This project proposes to employ horizontal directional drilling as the primary method of installation of new 8-inch waterlines, replacing the existing 4 inch waterlines. This will also require trenching at connections and short distances where directional drilling would not be practical. The project has been designed to minimize root impacts through a partial alignment under existing pavement and/or in the same location as the existing metal water lines and by avoiding the root health zone (5 times the diameter at breast height (Dbh) as measured in a radius from the tree trunk) of native trees where possible. Implementation of **Standard Project Requirement Bio 2: Sensitive Natural Communities** would reduce impacts to the sensitive *Sequoia sempervirens* Alliance vegetation type to a less than significant level.

- c) No wetlands will be directly impacted as a result of the proposed project activities. In addition, Best Management Practices (BMP's) and Project Requirements (**Hydro-, Hydro-, Haz-1**) will be incorporated into the project design to avoid indirect impacts from sediments or construction related contaminants entering Fife Creek. No impact.
- d) The proposed project would not impede fish passage or wildlife movement. No barriers will be installed and no work will occur in the Fife Creek or any other fish bearing stream. Potential impacts from the proposed project would have no impact on fish passage or wildlife movement. No impact.
- e) As stated in the Environmental Setting above, Sonoma County is subject to state and federal quarantine regulations for the pathogen *Phytophthora ramorum*, which causes the often fatal disease known as Sudden Oak Death in numerous species of native plants, especially oaks. Project activities could inadvertently transport this disease to new uninfected locations through pathogen spores in soil or on infected plant material that stick to construction vehicles, equipment, or personnel. Implementation of **Project Specific Requirement Bio-4: Sudden Oak Death** would reduce any potential impacts to a less than significant level.
- f) This project does not conflict with any Habitat Conservation Plans, Natural Communities Conservation Plans, or other approved habitat conservation plan. No impact.

V. CULTURAL RESOURCES

ENVIRONMENTAL SETTING

Armstrong Redwoods State Natural Reserve (SNR) is located in central Sonoma County, approximately three miles north of Guerneville. The SNR is situated north of the Russian River in a deep canyon bisected by Fife Creek. Fife Creek enters the park from the north and drains south into the Russian River. Situated 71 feet above sea level in the Pacific Coast Range, the majority of park land is located on a flat valley floor covered with a dense grove of virgin redwoods (*Sequoia sempervirens*). The tree covered valley is surrounded by hills that rise abruptly to the east and west. This area tends to stay cooler than the adjacent Austin Creek State Recreation Area (SRA) to the north. Classified as a temperate rainforests, Coast Redwoods need a wet, mild climate to survive. Climate in this region is variable with an average rainfall of 55 inches per year. Often during the summer months, morning fog blankets the park, resulting in cool morning temperatures with considerably higher temperatures in the afternoon.

Besides the coast redwoods, a number of other species including tanoak, Douglas fir, California laurel, and big leaf maple grow in Armstrong SNR. Additionally, over 150 different varieties of flowering plants and more than 50 different mosses, liverworts, and lichens comprise the forest understory. Nocturnal animals are the most common in the grove, while animals such as deer, bobcat, and squirrels are more plentiful on the higher, more open ridges where it is lighter and food more plentiful.



Redwoods SNR.

Armstrong Redwoods SNR was first established as Armstrong Redwoods *State Park* in 1934. Prior to that year, it was a county park; the heirs of James Boydston Armstrong having 'sold' the land to Sonoma County in 1917. Shortly after the park came under state ownership, men employed by both the Works Progress Administration (WPA) and the Civilian Conservation Corps (CCC) created and installed much of the early park infrastructure, park furniture, and larger park features such as the Forest Theater in the mid-to-late 1930s and later. The Area of Potential Effect (APE) covers most of Armstrong

CULTURAL SETTING

There are two main categories of cultural resources, the archaeological environment and the historic environment, both influenced by the resources available in the area. The topography, mild climate, and the abundance and diversity of natural resources in the region provided an ideal setting for both prehistoric and historic utilization and settlement. Archaeological and ethnographic data from studies in Armstrong Redwoods SNR, Austin Creek State Recreation Area (SRA), and the broader region suggest Native populations heavily utilized the area including the riverine and marine environments, open woodlands, foothills, and meadows surrounding the redwood park; however, these studies also indicate usage by Native peoples in the dense redwood forest of Armstrong Redwoods SNR were less frequent than in the

surrounding areas. The tree density created a dark and damp environment, not necessarily conducive to habitation or resource procurement and processing.

Historic settlement in Sonoma County began in 1812, west of the project area on the Sonoma Coast, with the establishment of Fort Ross by the Russians. To prevent further Russian settlement inland, the Sonoma Mission (Mission San Francisco de Solano) was founded in 1823. Operational aspects of the California mission system resulted in gathering up indigenous peoples from throughout Northern California, including the Pomo to build the missions as forced Indian labor. Spain's Indian policy during the mission period was a combination of economic, military, political, and religious, motives. Needless to say, missionization of California indigenous people had a negative effect on these groups including the introduction of devastating disease, homicide, and loss of the native environment and food sources (Cook 1976). Following Mexican independence from Spain in 1821, large ranchos were granted throughout northern California including Sonoma County where 27 land grants were established. During this era, the primary economic mainstay in the area was cattle ranching and timber; this until the Gold Rush in 1849, which brought a large influx of people into the region. This deluge of people created an increased demand for other consumer goods, most notably, dairy products (Salisbury and Roscoe 2012).

Prehistoric and Ethnographic Background

Prehistory

Research related to the prehistory of Sonoma County suggests the project vicinity has been inhabited for at least the last 6,000 years (Fredrickson 1973a, b). During the 1940s and 1950s, with the onset of serious archaeological investigations in the region, researchers typically tried to associate the cultural chronologies of Marin and Sonoma Counties into the accepted chronology of the Bay Area (Meighan 1953, Heizer 1947). In later attempts, researchers correlated the cultural chronology of the region with that of the North Coast Ranges, which focused primarily on Humboldt and Mendocino Counties (Fredrickson 1973a; 1974). Later, it became obvious from archaeological investigations conducted in region, that the data generated from these studies did not correlate well with either the Bay Area to the south or with the North Coast Ranges. This region instead, represents a transitional zone where two adjacent cultural chronologies merge (Basgall et. al. 2006).

Archaeological sites in the area appear to exhibit affinities to prehistoric cultures to the north in Mendocino County, to the east in Lake County, and to the south in the San Francisco Bay Area. Fredrickson (1973a; 1974) established a cultural sequence for the North Coast that relates only loosely to sites in the region of the project area. This cultural sequence is based on his adaptation of the taxonomic framework for Central California archaeology (Fredrickson 1973b). Originally, this framework was developed by J. Lillard and W. Purves in 1936, and was a three phased sequence grounded on studies throughout the Sacramento Delta region. These phases included "Early," "Intermediate," and "Recent" cultures (Lillard and Purves 1936). The sequence was later refined and developed further by Richard Beardsley in 1948 and 1954 who expand the system include the San Francisco Bay area. Beardsley divided the sequence into Early, Middle, and Late Horizons called the Central California Taxonomic System (CCTS) (Moratto 1984; Beardsley 1948; Lillard, Heizer, and Fenega 1939) and was widely applied to site dating and taxonomy throughout Central California.

The notion of cultural patterns was introduced by Fredrickson and is a concept which centers on the understanding that local variations to a widespread cultural-horizon existed. Fredrickson utilized a period sequence consisting of a Paleoindian Period, and Archaic Period (divided into Lower, Middle, and Upper Periods), and an Emergent Period (divided into Lower and Upper Periods). Archaic and Emergent terms were already in use (Fredrickson 1973b) prior to Fredrickson's concept of cultural patterns. The pattern divisions developed by Fredrickson are based on cultural content while his period divisions are strictly chronological. The archaeological periods described below are derived on a sampling of sites investigated in Marin and Sonoma counties, and correlation of available archaeological data for this region. Many of these prehistoric sites have been documented in the general vicinity of the project area.

Paleoindian (Prior to 8,000 BP) -

Earliest occupation of the North Coast Range was in the Paleoindian Period (10,000-6,000 B.C.). Fredrickson refers to this earliest cultural manifestation as the Post Pattern which is named after Charles Post, who discovered several Clovis-like fluted points at the Borax Lake site, CA-LAK-36. Obsidian, primarily debitage was found at Warm Springs Creek in the basal component of CA-LAK-547 has been tentatively dated to late in this period.

Lower Archaic Period (8,000-5,000 BP) -

The Borax Lake Pattern appeared in the Lower Archaic (6,000-3,000 B.C.) as defined by Fredrickson. Diagnostic of this pattern are wide stem projectile points found in Santa Rosa (Wickstrom and Fredrickson 1982). These Borax Lake wide stem points are manufactured from Franciscan chert from quarries near the coast, obsidian from local sources, and basalt from the Sierra Nevada foothills (Justice 2002). In addition to the wide stem points, crescents, and milling stones are typical artifacts recovered from sites of this period. Other Lower Archaic sites in the area include Duncan's Point Cave, Laguna Sea, and Bodega Bay (Phal 2004; Fredrickson 1984). Typically, these sites tend to be situated away from the coast and bay shores. Whether this is an accurate representation of settlement patterns or perhaps sites obscured or destroyed by rising sea levels is a topic of debate (Basgall et. al. 2006).

Middle Period (5,000-2,500 BP) -

During the Middle Archaic (3,000-1,000 B.C.) manos and milling stones are present at numerous sites in the southern region of the North Coast. Indicative of the Mendocino Aspect of the Borax Lake Pattern are concave-base points. Some sites show strong bay-side adaptation with the Berkeley Pattern represented by Ellis Landing Aspect traits. Radiocarbon dates indicate this period of occupation; however, artifact assemblages are either unclear or may point to a later occupation (Fredrickson 1984).

Upper Period (2,500-1,100 BP) -

The Houx Aspect of Fredrickson's Berkeley Pattern seems to have replaced the Borax Lake Pattern by 500 B.C. towards the beginning of the Upper Archaic Period. The Houx Aspect is viewed as an amalgamation of Borax Lake Pattern traits and Berkeley Pattern traits, which were seemingly transferred north from the San Francisco Bay Area and the Central Valley. The Houx Aspect assemblages found thus far are dominated by hunting toolkits, with projectile

points of shouldered lanceolate and contracting-stem forms (Moratto 1984). It is uncertain if manos and milling stones persisted in the Houx Aspect. Basgall et al. (2006) suggest that sites of this era were once considered a rarity in Marin County; however, increasing numbers have been found in recent years along the margins of the North Bay. Sites from this period in Sonoma County are found in valleys, oak woodland habitats, and along the bay shores and other marine settings (Basgall et al. 2006). It is thought this period is associated with an increase in diet breadth and resource intensification as these assemblages display a very broad range of food resources. It is assumed that acorns become an increasingly important component of the diet and appears to correlate with a substantial increase in the number of mortars and pestles found at sites during this period.

Emergent Period (1,100-200 BP) -

During the Emergent Period, the Clear Lake Aspect of the Augustine Pattern begins to appear after A.D. 500. Representative sites found in the Clear Lake Aspect completely lack strong ceremonial orientation and indicate a cultural divergence from sites associated with the Augustine Pattern found in the Central Valley (Moratto 1984). Side-notched and serrated-stemmed projectile points indicative of the Augustine Pattern appear in numerous sites in Sonoma and Lake Counties. In a later phase, diagnostic evidence of clamshell disk and Olivella bead manufacture has been found at several sites around Santa Rosa. This indicates a significant exchange between the inhabitants of the Central Valley and those in Sonoma County.

Typical throughout many areas of California, this period is marked by increasing sedentism, resource intensification, and social complexity and stratification. Overall, population increased during this period which results in closely spaced village sites (Basgall et al. 2006). In Emergent Period sites, artifacts typically include small, often serrated projectile points, triangular projectile points, clamshell disk beads, Olivella beads, incised tubular bird bone artifacts, and various other bone artifacts. Historic era artifacts including trade beads and worked glass begin to appear in the archaeological record as Euro-American settlers start to move into the region (Moratto 1984).

Ethnography

Ethnographic villages are recognized following the Emergent Period. The project area is situated within the territory of the Pomo (the Southwestern or Kashaya Pomo). The Kashaya people are one of seven groups known to speak Pomoan languages and the only group that has a name for them-selves (Kashaya). The name Kashaya was given to the group by a neighboring Pomoan group (Parrish 2001) and means “expert gambler.” Spelling variations in the spelling of the name include: Kacia, Kacaya, Kah-chi-ah, Kashaiya, and Ka-shiah (McLeandon and Oswalt 1978).

Traditionally the Kashaya occupied about thirty miles of the Pacific coast in the northwestern portion of Sonoma County. This strip extended from the Gualala River in the north to Duncan’s Point a few miles south of the Russian River. From west to east, Kashaya territory stretched from the coastline over four coastal ranges, varying between five and thirty miles inland (Parrish 2001; McLeandon and Oswalt 1979).

The Pomo were one of the largest settlements of Native peoples anywhere in California with an estimated population at 8,000 plus. In Sonoma, Lake, and Mendocino Counties four hundred and seventy-nine settlements have been identified (McLeandon and Oswalt 1978; Parrish 2001). Kashaya settlement varied with the season. During the cooler months inland settlements were established when the food supply depended on hunting of deer, elk, and smaller mammals. In the warmer season, the Kashaya resided closer to the sea, subsisting on abalone, mussel, fish, marine mammals, sea plants, and sea salt. Sea salt was procured for both domestic consumption and for trade. A wide assortment of nuts, berries, seeds, greens, roots, acorns, and tubers were harvested throughout the year. Items such as tools, utensils, basketry, jewelry, and clothing were made from a variety of materials including stone, bone, shell, horn, fibers, hides, and feathers.

The Kashaya built single family conical structures constructed of redwoods slabs for shelter. The structures ranged between eight to fifteen feet in diameter with heights of six to eight feet (Bean and Theodoratus 1978). Structures in the winter months were situated on hillsides to avoid flooding. In the dryer summer months, simple semi-subterranean brush structures were built in each village. Large assembly houses approximately seventy feet in diameter were used by the village for dances and ceremonies. Sweathouses were small, and used only by the males of a village for sleeping and for daily sweats (Bean and Theodoratus 1978).

Within the Kashaya territory, Parrish's historical account (2001) estimates that the pre-contact population of the Kashaya was approximately 1,500 persons living in large villages spread over the different environmental zones. The Kashaya villages included principle and subsidiary villages that were linked to each other both politically and socially. The main residences of the headmen and women were the larger villages. These villages were accustomed to the activities of the group. Center to the Kashaya ceremonial and social life were religious and political leaders. Villages were comprised of extended family units which provided protection, moral support, and identity to individuals. Codes of personal responsibility and family honor were strongly encouraged, and relationships beyond the group were discouraged. Significant personal events for each individual were celebrated with ritual and ceremony; integrating the natural, supernatural and human worlds (Parrish 2001).

Historic Background

In late summer 1821, Spanish Captain Luis Argüello led an expedition into the upper Russian River Valley. Argüello's expedition was sent out by then Governor Sola, in response to information that English or American trappers had established themselves in the region. In 1836, further exploration was carried out under the authority of General Mariano G. Vallejo. Between 1836 and 1842, Vallejo, his brother Salvador, and Indian ally Chief Solano carried out numerous campaigns against hostile Indians in the Russian River allowing greater settlement of the region. By 1845 several ranches were established in the vicinity of the Russian River and present day Santa Rosa. Early settlers included Mark West, John Wilson and Joaquin Carrillo (Tays, 1934).

The gold rush of 1848 and 1849 brought thousands of newcomers into California and after 1850, settlement of the Russian River region accelerated. In 1860, R.B. Lunsford established a lumber camp in a large flat area on the north side of the Russian River. From here he and his men cut trees for shipment, in various forms, to Santa Rosa, San Raphael, Petaluma and

Sonoma. The camp referred to as Stumptown, prospered (Wright 1975; Markwyn, 2001). In 1867, George E. Guerne arrived in Stumptown, purchased a suitable flat area of land and started selling land to create a subdivision now known as Guerneville, or Guerneville, Park. Shortly thereafter Guerne erected a sawmill and Stumptown took on the name Guerneville (Wright 1975, DPR 2001). Also in 1867, newcomers Thomas H. Stone and A. C. Laud established claims on 140 and 100 acres, respectively, of valley property 3 miles north of Guerneville. By 1869 Laud would become the sole owner of these 240 acres, which are part of present-day Armstrong Redwoods State Natural Reserve (DPR n.d.).

In 1874, Colonel James Boydston Armstrong moved his family to Sonoma County from Ohio. During the civil War, Armstrong was commissioned a Colonel in the Union Army – a title he would be known by ever after. In partnership with Joseph Estep, Armstrong purchased 240 acres of land from H.T. Hewitt (DPR n.d.). The following year, Armstrong bought out Estep's interest in the property and also purchased an adjoining 160 acre parcel (DPR 1975). In 1876 Armstrong added 40 more acres to his holdings. A great portion of this 440 acre holding forms present-day Armstrong Redwoods State Natural Reserve. Armstrong's business ventures included involvement in the Guerneville lumber boom of the 1870's; logging and owning and operating a sawmill site north of Guerneville. Armstrong's mill produced approximately 5 million board feet of lumber per year (DPR 2012).

In 1878, Armstrong gifted 440 acres of land to his daughter, Kate Armstrong. Colonel Armstrong wanted this property (an old growth redwood grove) to be preserved and, eventually, operated as an arboretum. The Colonel tried for many years to ensure the preservation of the grove. In 1891, he attempted to establish an administration with Luther Burbank as the chairman of its first committee. Unfortunately, Armstrong was unable to realize his plan because it required a special act of the State legislature and such support did not exist at the time. Despite this defeat, Armstrong continued to work and plan toward the realization of his dream, the preservation of his beloved grove of redwoods (DPR 2012).

Due to financial and familial pressures, Kate deeded 190 of her 440 acres to her brother, Walter. This parcel was later purchased by Armstrong family friend, Harrison M. LeBaron (DPR 2012). Kate Armstrong died in 1898 and Colonel Armstrong died in 1900. The struggle to preserve the grove was left to Lizzie Armstrong Jones – Armstrong's surviving daughter – and the LeBaron family (DPR 2012). In 1909, a bill for the acquisition of the Grove was passed by both houses of the state legislature, but then Governor Gillette 'pocket vetoed' the bill due to concerns about the State's ability to administer the Grove (DPR n.d.). In 1913, Grove area locals started a county-wide campaign to persuade their county supervisors to purchase the Grove.

In 1917, the continued efforts of Lizzie Armstrong and the LeBarons were rewarded when the County of Sonoma purchased the property for \$80,000.00. The Grove was operated by Sonoma County until 1934 when the State took ownership of it as part of the financial arrangement whereby Sonoma Coast State Park was purchased. The grove was opened to the public as Armstrong Redwoods State Park in 1936.

While general public enjoyment of Armstrong Redwoods occurred even during Colonel Armstrong's ownership, large-scale infrastructure development did not begin until the 1930s. Between 1933 and 1939, men from both the WPA and the CCC cleared flatter areas within the park and constructed camp and picnic sites in the park. Additional maintenance, conservation

and construction work included construction of a large Community Hall, an outdoor theater, footbridges spanning Fife Creek and the construction of various roads and trails.

In 1964 the grove's status was changed from State Park to State Reserve to reflect a greater understanding of its ecological significance. This change in status provides a more protective management of the parks significant resources (DPR 2012). In 1975, DPR removed all campsites from Armstrong Redwoods SNR as part of a plan to reduce overall visitor impacts and further protect the vegetation throughout the park. In 2004, Armstrong's classification was changed once again, this time to State *Natural* Reserve. In the few years following, DPR removed additional, small, structures and other visitor use facilities, such as camp stoves and footpaths.

Historic Resources

Historic features located near project sites are associated with the CCC/WPA-era park development years of 1936 to 1939. These features include the Forest Theater and assorted park furniture such as Diablo stoves, picnic tables and a drinking fountain.

Archaeology

An archaeological survey was conducted in the park by Francis Riddell and a contingent from San Francisco State in 1969. This survey included the intermittent creek which enters the SNR from the northwest and joins Fife Creek in the middle of the park (west branch of Fife Creek). This archaeological investigation proved negative for the presence of archaeological resources in park; however, in a cleared area adjacent to the park headquarters, evidence of a midden was located. During further research by Riddell, which included consultation with parks rangers, it was discovered that midden soil was put there as fill material to level the area. The fill was excavated from a large prehistoric site (CA-SON-530) situated further up Fife Creek approximately 300 to 400 meters above the park water tank in a large open knoll, which was formerly a vineyard. The site is located north of the project area in the Austin Creek State Recreation Area (SRA).

District Archaeologist Breck Parkman was consulted for this project regarding the archaeological resources in Armstrong Redwoods. Parkman indicates he would not expect to find pre-contact sites in Armstrong Redwoods. Legend has it that the area now known as Armstrong Grove was especially shunned by Native People, as the darkness and eerie silence (lack of wildlife) was indicative of the "evil spirits" dwelling therein. The grove was referred to as the "Dark Place" (Wright 1975). It is probable that the creeks in the park were used as transportation routes prehistorically from inland camps to and from the coast to procure resources; however, it is unlikely that the area was in habituated prior to contact.

An archaeological survey was conducted in support of this deferred maintenance project on October 1, 2012. Two State Parks archaeologists from the Northern Service Center (NSC) conducted the survey. This survey included walking the route of the new waterline (installed using open trenches and directional drilling) where ground disturbing activities are proposed. The survey began at the park entrance and terminated at the water tank. Special attention was given to those areas where open trenches will be excavated and in those locations where the drilling equipment will be staged. Survey transect intervals were more closed in these areas. Additionally, an archaeological monitoring was present during a geotechnical

investigation on September 19 and 20, 2013. The boreholes were located throughout the project area and dug to a depth of either 15 or 30 feet. The monitor inspected each core sample looking for evidence of subsurface archaeological deposits. These samples showed no evidence of subsurface archaeological deposits at any of the borehole locations.

During this investigation, no previously undocumented archaeological resources (pre-contact or historic) were discovered DPR State Park archaeologists in the project area. Features associated with development of the park (WPA and CCC) were noted during the survey and will be addressed by the historian responsible for this review. Additionally, attempts were made to relocate CA-SON-530 but were unsuccessful. The results of this current investigation and those of the past, suggest that significant archaeological deposits will not be impacted by project work; however, given the ambiguity of archaeological sites (often buried in subsurface deposits) project requirements have been developed that will insure the protection of cultural materials discovered inadvertently during project implementation.

	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
WOULD THE PROJECT:				
a) Cause a substantial adverse change in the significance of a historical resource, as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource, pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CRITERIA FOR DETERMINING SIGNIFICANCE

Cultural resource specialist use Criteria a-c, described in the environmental checklist above for analyzing the significance of impacts of the Proposed Action to Cultural Resources.

DISCUSSION

- a) As discussed in the Environmental Setting, the project site essentially stretches the full length of Armstrong Redwoods SNR. The proposed method for improving the water lines is by means of directional drilling approximately 10 – 30 feet below the surface. Because the work will be carried out this far underground there will be no substantial adverse changes to the significance of any historical resource. No impact
- b) As indicated from archival research and past and present field investigations, archaeological deposits appear not to be present in the project area for waterline replacement in Armstrong Redwoods State Park; however, one archaeological site related to prehistoric land use activities is located near the project vicinity. DPR during their field investigations, were unable to locate the site. Other attempts at relocating the site have

failed as well. Because this site is near the project area, there is a higher degree of archaeological sensitivity in this location. DPR developed the **Specific Project Requirement Cult 1** for work ground disturbing work in this area (locational information confidential).

Discussion - Project Implementation: Other Specific Project Requirements developed for this project to insure the protection of archaeological resources prior to and during project implementation include **Specific Project Requirements Cult 2-Cult 7**.

Discussion - Inadvertent Finds - Given the inherent nature of archaeological deposits, often contained in subsurface deposits, there always a possibility of encountering such resources despite conducting the proper investigative work. To account for the inadvertent discovery of archaeological resources during project work, DPR will implement the following Standard Project Requirement. **Standard Project Requirement 1a and 1b** is normal protocol for all DPR projects.

- c) The probability of unearthing human remains during project work is low; however, in the unlikely event, such finds are uncovered, DPR will implement the protocol developed in cooperation with the Native American Heritage Commission (NAHC) to handle these discoveries. **Standard Project Requirement Cult 2** is normal protocol for all DPR projects.

XI. GEOLOGY AND SOILS

ENVIRONMENTAL SETTING

Geology

Armstrong Redwoods State Natural Reserve (ARSNR) is situated within the Coast Ranges Geomorphic Province, a series of northwest -trending mountain ranges and valleys that are a result of folding and faulting (California Geological Survey 2002). These ranges and valleys roughly parallel the San Andreas Fault. Mountain top elevations average 2000 to 4000 feet amsl (above mean sea level), with occasional peaks that rise above 6000 feet amsl. Thick Mesozoic and Cenozoic sedimentary strata comprise the bulk of the Coast Ranges. The San Francisco Bay separates the northern and southern Coast Ranges.

Franciscan Complex rocks underlie ARSNR (California Department of Conservation 2012a). The Franciscan is a jumbled, heterogeneous assemblage of rock blocks that represent varied physical characteristics. Specific rock types mapped in the general area of the project include sandstone, metagraywacke, shale, conglomerate, chert, and greenstone. Most of these rocks are Late Jurassic (about 165 million to 146 million years ago) and early Cretaceous (146 million to 100 million years ago) in age.

Topography

The project site generally consists of level to gently sloping terrain in the Fife Creek drainage, which is a narrow stream course hemmed in by steep canyon slopes. Elevations in the project area range from approximately 120 feet amsl near the park entrance kiosk to 200 feet amsl near the park maintenance facilities.

Seismicity

Sonoma County is a seismically active area. The last major earthquakes in Sonoma County were the 5.6 and 5.7 M_w (moment magnitude) earthquakes on the Healdsburg fault in Santa Rosa in 1969 (Wong and Bott 1995). The historically active San Andreas Fault Zone is situated approximately 12 miles to the west of the project area (California Department of Conservation 1994). Displacement on this fault zone has occurred within the last 200 years, including the 7.9 M_w "San Francisco Earthquake" of 1906 (California Department of Conservation 2012b).

The Rodgers Creek and Healdsburg Fault Zones lay approximately 10 miles east of the project area. Holocene fault displacement (during the past 11,700 years) has been identified on the Rodgers Creek Fault. Parts of the Healdsburg Fault Zone exhibit fault displacement during the late Quaternary (past 700,000 years). Pre-Quaternary faults (older than 1.6 million years) or faults without recognized Quaternary displacement are mapped near the project area.

Seismic data analysis indicates that 8.5 and 7.5 M_w earthquakes can be expected for the San Andreas and the Healdsburg-Rodgers Creek faults respectively (Sonoma County 2008). Earthquakes of 8.0 M_w or more can be expected every 50 to 200 years on the San Andreas Fault.

Although potentially susceptible to seismic events, ARSNR does not occur within an Alquist-Priolo Special Studies Zone (California Department of Conservation 2012c). A moderate to

strong ground-shaking hazard from a 7.1 M_w earthquake is calculated for the general project area (Sonoma County 2008).

Soils

The National Cooperative Soil Survey of the USDA Natural Resources Conservation Service (NRCS) has mapped the soils of Sonoma County and one of four soil mapping units identified in the general project area occurs within project boundaries (USDA 2012). Cortina very gravelly sandy loam, 0 to 2 percent slopes, consists of recently deposited alluvium from mixed sedimentary and basic rocks. This somewhat excessively drained soil occupies flood plains (e.g. Fife Creek) that are subject to occasional flooding. Soil depth averages 60 inches and depth to the water table is 80 inches. Due to low clay content Cortina very gravelly sandy loam exhibits a low shrink swell potential.

WOULD THE PROJECT:	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area, or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1997), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste disposal systems, where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site, or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CRITERIA FOR DETERMINING SIGNIFICANCE

The analysis of determining the significance of impacts of the Proposed Action to Geology and Soils is based on criteria VI a – f, described in the environmental checklist above.

DISCUSSION

- a) As described in the Environmental Setting above the Project Site is located in a seismically active area and a moderate to strong ground-shaking hazard from a 7.1 MW earthquake is possible for the general project area. While the chance of the rupture of a known earthquake fault, strong seismic ground shaking, or seismic-related ground failure are certainly possible in this area, this project would not substantially increase the exposure of people or structures to risk of loss, injury, or death as a result of these events.
- i) The project site is not located within an Alquist-Priolo Earthquake Fault Zone as identified by the California Department of Conservation (2012c). No structures that are designed for human occupancy are located at the project site and are not proposed as part of this project. Therefore, there is no expected adverse effect on people or structures from surface rupture of a known fault due to this project. Integration of Specific Project Requirement Geo-1: Post-Earthquake Inspection (See Chapter 2) would reduce the potential impact of damage to the water system from fault rupture to a less than significant level.
- ii) As described in the Environmental Setting above there are three active, or potentially active, faults within twelve miles of the proposed project, including the San Andreas Fault Zone. Earthquakes of 8.5 and 7.5 MW can be expected for the San Andreas and the Healdsburg-Rodgers Creek faults, respectively. Since no structures designed for human occupancy are part of this project there is no expected adverse effect on people or structures from potential future earthquakes. Integration of Specific Project Requirement Geo-1: Post-Earthquake Inspection (See Chapter 2) would reduce the potential impact of damage to the water system from a moderate to strong earthquake to a less than significant level.
- iii) Seismic-induced ground failure, such as liquefaction, usually occurs in unconsolidated granular soils that are water saturated. During seismic-induced ground shaking, pore water pressure can increase in loose soils, causing the soils to change from a solid to a liquid state (liquefaction). Some portions of the project are located on alluvial soils that could be susceptible to liquefaction; however as described above no structures designed for human occupancy are part of this project and there is no expected adverse effect on people or structures from liquefaction. Integration of **Specific Project Requirement Geo-1: Post-Earthquake Inspection** (See Chapter 2) would reduce the potential impact of damage to the water system from liquefaction to a less than significant level.
- iv) As described in the Environmental Setting above a landslide lies adjacent to a portion of the project; however, since no structures designed for human occupancy are part of this project there is no expected adverse effect on people or structures from potential future landslides. No impact.

- b) A temporary increase in soil erosion and sedimentation could occur during construction of the proposed project. Integration of Standard Project Requirement Hydro-1: Erosion and Sediment Control and Pollution Prevention (See Chapter 2) would reduce the potential impact of erosion and sedimentation to a less than significant level.
- c) The project is not located on a geologic unit or soil that is known to be unstable or would become unstable as a result of project implementation and would not result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. There is a potential for escape of drilling fluids during the directional drilling process; however, Best Management Practices for spill prevention would reduce this to a less than significant impact.
- d) As described in the Environmental Setting above the Project Site is underlain by soil with a low potential for soil expansivity. Expansive soils (expansive clays) are generally plastic clays and the Cortina very gravelly sandy loam contains little to no clay minerals. There would be no risks to life or property from implementation of this project; therefore no impact.
- d) The project does not involve the installation of a septic system or leach field; therefore, no impact.
- e) No known unique paleontological or geological resources exist within the project site; therefore, no impact.

VII. GREENHOUSE GAS EMISSIONS

ENVIRONMENTAL SETTING

Greenhouse gases (GHG) such as carbon dioxide and methane trap heat in the earth's atmosphere. Over time, increased concentrations of these gases produce an increase in the average surface temperature of the earth. The rising temperatures can produce changes in precipitation patterns, storm severity, and sea level, resulting in what is commonly referred to as "climate change."

The California State Legislature proposed and then Governor Schwarzenegger approved laws and policies to reduce the amount of GHG generated each year. As stated in Assembly Bill 32, Global Warming Solutions Act (AB 32), passed in 2006; "The State of California found that Global Warming would have detrimental effects on some of the California's largest industries including agriculture, wine, tourism, skiing, recreational and commercial fishing, and forestry." AB 32 requires statewide GHG emissions in California be reduced to 1990 levels by the year 2020 and requires the California Air Resources Board (CARB) to adopt rules and regulations to achieve this goal.

Sonoma County has a variety of green initiatives intended to meet the County's GHG reduction goal:

- Participation in the Bay Area Air Quality Management District Best Practices grant program;
- Formation of an internal roadmap to guide green efforts at the Department level, implementation of a County-wide single stream recycling program and implementation of the "Slow Down Sonoma County," a driver outreach and education program that demonstrates the green benefits of safe and prudent vehicle operations;
- A remote computer management and power savings initiative and, finally;
- Pursuit of a Leadership in Energy and Environmental Design (LEED) certification for capital projects with attainment of "Silver" level certification for the Valley of the Moon Children's Home project.

The County of Sonoma has become a leader in climate protection and greenhouse gas (GHG) reduction efforts; the initiatives listed above demonstrate a commitment. Once fully implemented over time, these efforts represent an investment of over \$50 million. This investment will yield greenhouse gas reductions and provide substantial savings in power and fuel expenditures to both the county government and county residents.

The California Department of Parks and Recreation (DPR) developed a "Cool Parks" initiative to address climate change within the State Park system. Cool Parks proposes that DPR itself adapt to the environmental changes resulting from climate change. In order to fulfill the Cool Parks initiative, State Parks is dedicated to using alternative energy sources, low emission vehicles, recycling and reusing supplies and materials, and educating staff and visitors on climate change (CDPR 2008).

	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
WOULD THE PROJECT:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CRITERIA FOR DETERMINING SIGNIFICANCE

The analysis of determining the significance of impacts of the Proposed Action to GHG is based on criteria **VII a – b**, described in the environmental checklist above.

DISCUSSION

- a) This project would improve a deteriorating water supply system. Although some use of internal combustion equipment (see Chapter 2, Project Implementation) would be required, this use would not generate, directly or indirectly, a significant amount of GHG that would impact the environment.
- b) As mentioned above, Sonoma County has initiated numerous programs to reduce GHG. The proposed waterline improvement project would not violate any policy at the state or county level. No impact.

VIII. HAZARDS AND HAZARDOUS MATERIALS.

ENVIRONMENTAL SETTING

The California Department of Environmental Protection (CALEPA) has the responsibility for compiling (pursuant to Government Code §65962.5) information on hazardous materials sites in California that together are known as the “Cortese” list. A review of this list found that the closest hazardous materials sites to the project area are two sites approximately 10 miles to the southwest near the community of Jenner and the mouth of the Russian River.

The types of materials used and stored at ARSNR that could be hazardous include fluids such as motor vehicle and mechanical equipment fuels, oils, and other lubricants. DPR maintains storage facilities for these fuels and lubricants within the park unit. No storage facilities, or other structures or industrial sites that could contain hazardous materials are located at the sites of the proposed project.

Airports

Six public use airports are located in Sonoma County (Sonoma County 2008). The closest airport is the Charles M. Schulz-Sonoma County Airport approximately 11 miles to the southeast of the project area. The proposed project is not within an airport land use zone/plan or within two miles of a public airport or private airstrip.

Fire Hazards

The California Department of Forestry and Fire Protection (Cal Fire) assesses fire danger throughout California based on methods that estimate fire fuel potential over a 30 to 50-year time horizon, the probability of a burn, and potential vegetation exposure to new construction (Cal Fire 2007). Cal Fire has three severity classifications: moderate, high, and very high. The project area is situated within a high fire severity zone that has been designated as a State Responsibility Area (Cal Fire 2007). Fire protection for the property is available from Cal Fire’s Monte Rio station, approximately 5 miles from the project area and the local Russian River Fire Protection District station in Guerneville(FireDepartmentDirectory.com 2012) , approximately 1 mile from the project area. Additionally, ARSNR is outfitted with fire suppression materials.

Schools

The closest school, Guerneville School (K-8), is located approximately two miles south of the project boundary in the community of Guerneville (Sonoma County Office of Education 2012).

	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
WOULD THE PROJECT:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

hazardous materials, substances, or waste 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Be located on a site which is included on a list of hazardous materials sites, compiled pursuant to Government Code §65962.5, and, as a result, create a significant hazard to the public or environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport? If so, would the project result in a safety hazard for people residing or working in the project area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Be located in the vicinity of a private airstrip? If so, would the project result in a safety hazard for people residing or working in the project area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| h) Expose people or structures to a significant risk of loss, injury, or death from wildland fires, including areas where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

CRITERIA FOR DETERMINING SIGNIFICANCE

The analysis of determining the significance of impacts of the Proposed Action to Hazards and Hazardous Materials is based on criteria **VII a – h**, described in the environmental checklist above

DISCUSSION

- a) Construction activities associated with the proposed Armstrong Redwoods Water System Improvements Project could require the use of certain hazardous materials, such as fuels, oils, lubricants, and directional drilling fluids (bentonite) associated with the operation and maintenance of vehicles and equipment. Generally, these materials would be contained within vessels engineered for safe storage. During the directional drilling process drilling fluids would be contained in excavated earth pits until removed and properly disposed of offsite. Spills, upsets, or other construction related accidents could result in an inadvertent release of fuel or other hazardous substances into the environment. Integration of **Standard Project Requirement Hazmat-1: Spill Prevention and Response and Project Requirement Hydro-1: Erosion and Sediment Control and Pollution Prevention** (See Chapter 2) would reduce the potential for adverse impacts from these incidents to a less than significant level.
- b) During the project, hazardous substances could be released to the environment from construction related vehicle or equipment fluid spills or leaks. Integration of Integration of

Standard Project Requirement Hazmat-1: Spill Prevention and Response and Standard Project Requirement Hydro-1: Erosion and Sediment Control and Pollution Prevention (See Chapter 2) and a Frac-Out Contingency Plan identified in Section a above would reduce the risk to on-site workers, the public, and the environment to a less than significant level.

- c) As noted in the Environmental Setting above, there are no schools within one-quarter mile of the project sites. No impact.
- d) No part of Armstrong Redwoods State Natural Preserve is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5. No areas within the project sites are currently restricted or known to have hazardous materials present. No impact.
- e, f) The project is not located within an airport land use zone/plan, within two miles of a public airport, or in the vicinity of a private air strip. The project would not result in a safety hazard to people residing or working in the area. No impact.
- g) In the event of a park emergency where evacuation or emergency response is necessary construction activities could interfere with an emergency response plan or emergency evacuation plan. Integration of **Project Specific Requirement Hazmat-2: Emergency Response Planning** Co would reduce this risk to a less than significant level.
- h) The project site is within a forested area which is subject to dry and warm to hot conditions from late spring through autumn. Heavy equipment that could become hot with extended use would be in close proximity to flammable vegetation. Improperly outfitted exhaust systems or friction between metal parts and/or rocks could generate sparks, resulting in a fire. Integration of **Standard Project Requirement Hazmat-3: Wildfire Avoidance and Response** (See Chapter 2) would reduce the potential for adverse impacts from wildfire to a less than significant level.

IX. HYDROLOGY AND WATER QUALITY.

ENVIRONMENTAL SETTING

Climate and Precipitation

The region experiences cool, wet winters and warm, dry summers, a typical climate for northern coastal California. Average annual rainfall in Armstrong Redwoods is 55 inches with measurable amounts occurring on an average of 73 days each year. Although rainfall is rare during the summer months, fog often comes up the Russian River, approximately 2.5 miles south of the Park, from the Pacific Ocean, producing enough condensation to produce “fog drip”, which sustains the region’s redwood trees and ferns (Stewards (1) & Wikipedia).

Watershed – Surface Water

The Fife Creek watershed consists of a basin approximately 6.7 square miles in size. Originating at an elevation of approximately 1,940 feet at the south slope of McCray Mountain in Austin Creek State Recreation Area (SRA), Fife Creek flows to its confluence with the Russian River through Armstrong Redwoods State Natural Reserve (SNR) into the town of Guerneville (Stewards (2)). A majority of the surface water in the North Coast Hydrologic Region goes to environmental uses because of the wild and scenic designation of most of the region’s rivers (DWR).

During the 1960’s, concrete check dams, rip-rap and stream bank revetments were installed in Fife Creek within Armstrong Redwoods SNR with the intent of alleviating bank erosion. Sediment build-up behind the check dams reduced and or eliminated summer flows and flattened the channel gradient. In response to bank erosion, sackcrete stream bank



revetments were installed, which reduced stream bank erosion where installed but resulted in increased erosion where stream banks were not reinforced. Because sackcrete revetments eliminate riparian vegetation and in-stream habitat and are subject to sudden failure (among other issues), there is an effort underway to remove approximately 750 linear feet of sackcrete and concrete rubble within Fife Creek within Armstrong Redwoods SNR and place natural revetments of logs, rock, and live plantings to stabilize the stream banks (Stewards (2)).

Fife Creek dries up annually within the project area, typically between July and November, with sub-surface flow continuing below the creek bed. Surface water returns to the dry portion of the creek typically in late December after an average of 6 inches of rainfall achieves soil saturation and subsequent surface water build-up (pers. comm. Oneil).

Flooding

100 year flood boundaries for Sonoma County were determined in a flood insurance study conducted by the Federal Emergency Management Agency (FEMA) in 2008. Sonoma County extends approximately 50 miles from northwest to southeast along the Pacific Coast and has a width of approximately 40 miles from the coast inland to the crest of the Coast Range. The principal watercourses in Sonoma County are the Petaluma River, Russian River, Sonoma

Creek, and their tributaries. Fife Creek, a tributary of the Russian River, runs through Armstrong Redwoods. Characteristic floods of the Russian River basin are normally of short duration, lasting 3 or 4 days. They are the flash-flood type and develop within 24 to 48 hours after the beginning of a flood producing storm and typically recede within 3 days after the end of the storm. Tributaries can rise so rapidly that flooding occurs as early as 4 hours after a heavy rainfall begins. Flood peaks for the Russian river basin generally occur between December and March. The principal flooding problems are caused by inadequate channel capacity to carry off large flows from short duration storms of high intensity and many inadequate bridges and culverts add to the flood problem (FEMA 2008).

Water Quality Regulation

Sonoma County is within the jurisdiction of the North Coast Regional Water Quality Control Board (NCRWQCB), which oversees ten northern California counties. Per the requirements of the Clean Water Act (CWA), and the California Porter-Cologne Act, the NCRWQCB has prepared a Water Quality Control Plan for the watersheds under its jurisdiction. The North Coast Regional Water Quality Control Board Basin Plan (NCRWQCBBP) identifies beneficial uses that exist or have the potential to exist in each water body, establishes water quality objectives for each water body to protect beneficial uses or allow their restoration and provides an implementation program that achieves water quality objectives. Per the requirements of CWA Section 303(c), the NCRWQCBBP is reviewed every three years and revised as necessary to address problems with the plan, and meet new legislative requirements. While Fife Creek is not included in the list of Beneficial Uses of Waters of the North Coast region, nearby Austin Creek is listed. Beneficial uses for Austin Creek include municipal and domestic water supply, agricultural supply, industrial service supply, groundwater recharge, navigation, contact and non-contact recreation, commercial and sport fishing, warm and cold freshwater habitat, wildlife habitat, rare, threatened or endangered species habitat, migration of aquatic organisms, spawning, reproduction and early development. Potential beneficial uses include industrial process supply, hydropower generation and aquaculture (NCRWQCB: Basin Plan Documents; Beneficial uses).

Water Quality

Groundwater quality characteristics and specific local impairments vary with regional setting within the North Coast Hydrologic Region (NCHR). In general, seawater intrusion and nitrates in shallow aquifers are problems in the coastal groundwater basins. From 1994 through 2000, 584 public supply water wells were sampled in 32 of the 63 basins and sub-basins in the NCHR. Analyzed samples indicate that 553 (95%) wells met the state primary Maximum Contaminant Levels (MCL) for drinking water. The remaining 5% of sampled wells had constituents that exceeded one or more MCL (radiological, nitrates, inorganic, volatile and semi-volatile organic compounds). A 1965 report indicated groundwater in Lower Russian River Valley is of the calcium magnesium bicarbonate type and is generally of good quality, with total dissolved solids ranging from 120 to 210 mg/L (DWR).

Macroinvertebrate sampling was performed in Fife Creek in June 1999, whose headwaters are above Armstrong redwoods, at three main locations. A fourth site was tested for dissolved oxygen only. The three main sites were sampled for dissolved oxygen, temperature, pH, specific conductance, total and fecal coliform, minerals and nutrients. Results are listed below.

Station ¹	Time	DO (mg/l)	Temp. °C	SC umhos/cm	pH
Upper Fife Cr.	1230	10.0	15.1	285 (252)	8.1 (8.12)
MD-Fife Cr. 2	1530	5.8	---	---	---
MD-Fife Cr.	1500	7.4	16.4	185 (161)	6.8 (6.82)
Fife Cr. @ Mill St.	1140	9.4	18.0	255 (264)	7.7 (7.70)

¹Values in parentheses are from Sequoia Analytical Lab

Parameter	Upper Fife Creek	MD-Fife Cr.	Fife Cr. @ Mill St.
Calcium (mg/l)	24.8	15.8	15.7
Magnesium (mg/l)	12.4	7.27	14.8
Silica (SiO ₂) (mg/l)	19.3	16.3	14.9
Sodium (mg/l)	10.2	7.23	7.5
Chloride (mg/l)	4.99	4.33	5.11
Sulfate (mg/l)	13.5	6.96	10.6
TDS (mg/l)	161	106	136
Total Alkalinity (mg/l)	124	78	114
Bicarbonate Alkalinity (mg/l)	124	78	114
TPO ₄ (as Total P) (mg/l)	ND	0.0512	0.0512
Hardness (mg/l)	113	69.3	100
Total Coliform (MPN/100 ml)	33	7	>1600
Fecal Coliform (MPN/100 ml)	2	<2	140

WOULD THE PROJECT:	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- | | | | | |
|---|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| c) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Substantially degrade water quality? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map, or other flood hazard delineation map? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| h) Place structures that would impede or redirect flood flows within a 100-year flood hazard area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| i) Expose people or structures to a significant risk of loss, injury, or death from flooding, including flooding resulting from the failure of a levee or dam? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| j) Result in inundation by seiche, tsunami, or mudflow? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

DISCUSSION

- a) Drilling for the installation of water lines may result in the discharge of “drilling mud”, 80% of which is planned to remain in the ground, with approximately 20% being disposed off-site. A minimal potential for impacts to water quality could result from releases of fuels or other fluids from vehicles used in the drilling process. Along with **STANDARD PROJECT REQUIREMENT HAZ 1**, integration of **STANDARD PROJECT REQUIREMENT HYDRO 1 (see Chapter 2)** into construction plans would control releases of pollutants into Fife Creek. Less than significant impact.
- b) Drilling below Fife Creek at approximately four locations has the potential to impact groundwater processes. The project is designed to minimize potential impacts to groundwater by drilling up to 15 – 20 feet below the creek bed. Less than significant impact.
- c) Existing drainage patterns at the project site would not be affected in a manner that would significantly increase on or off-site erosion or siltation. BMPs for erosion will be integrated into the project design (**STANDARD PROJECT REQUIREMENT HYDRO 1**) and no existing creeks or streams would be altered by this project. Less than significant impact.

¹ Values in parentheses are from Sequoia Analytical Lab

- d) The existing drainage patterns from the project area would not be altered in a manner that would significantly increase the rate or amount of surface water that would result in on or off-site flooding. No impact.
- e) This project would not create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. No impact.
- f) This project will not degrade water quality. No impact.
- g) This project involves no structures, and therefore will not place housing in a 100-year flood hazard area. No impact.
- h) This project involves no structures, and therefore will not impede or redirect flood flows within a 100-year flood hazard area. No impact.
- i) This project involves no structures, and therefore will not expose people or structures to a risk of loss, injury or death from flooding. No impact.
- j) Drilling for project activities has the potential to release minor amounts of mud, but by implementing **STANDARD PROJECT REQUIREMENT HYDRO 1**, the potential for mudflow will be reduced to a less than significant impact. The project area is far enough away from the ocean to not contribute to inundation by seiche or tsunami. Less than significant impact.

X. LAND USE AND PLANNING

ENVIRONMENTAL SETTING

Sonoma County consists of approximately 1,025,000 acres (1,500 square miles). State and federal agencies, including the U.S. Bureau of Land Management (BLM), and DPR, are responsible for managing over 120,000 acres, encompassing approximately 12 percent of the total area within the County (EPS 2003).

Sonoma County directly administrates land use and planning policies within its boundaries with the exception of State, federal and tribal lands. The County divides itself into nine areas for planning purposes defined as Planning Areas/City Urban Service Areas (USA). ARSNP is located in the Russian River Planning Area. The majority of the planning area is designated for long-term natural open space and resource protection.

No Habitat Conservation Plans (HCPs) protecting specific plant and animal species have been adopted for SPSP or FRSHP.

	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
WOULD THE PROJECT:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with the applicable land use plan, policy, or regulation of any agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

- a) The proposed project would not divide an established community because none exist within the boundaries of ARSNP; therefore, there would be no impact.
- b) All proposed work would occur within the boundaries of ARSNP. The proposed Project is consistent with local plans and policies including the County of Sonoma General Plan. Although ARSNP does not have a General Plan, work to repair, replace or rehabilitate existing facilities or to protect public health and safety are permitted under PRC § 5002.2(c). No impact.
- c) No Habitat Conservation Plans (HCPs) protecting specific plant and animal species have been adopted for ARSNP. No impact.

XI. MINERAL RESOURCES

ENVIRONMENTAL SETTING

The California Geological Survey (CGS), formerly the California Division of Mines and Geology (DMG), classifies the regional significance of mineral resources in accordance with the California Surface Mining and Reclamation Act (SMARA) of 1975 and assists the CGS in the designation of lands containing significant aggregate resources. Mineral Resource Zones (MRZs) have been designated to indicate the significance of mineral deposits. (California Geological Society)

Various minerals have been mined in Sonoma County during the past century, mining operations at the current time consist almost exclusively of the extraction and processing of rock, sand and earth products for use in construction and landscaping. From 1995 to 2002, an average of 4.84 million tons of construction aggregate was mined and marketed each year to meet local needs and a share of the North Bay regional needs. Sonoma County has adopted the Aggregate Resources Management (ARM) Plan to set forth the State mandated mineral management policy for the County. During the process of adoption of the plan, the County considered the aggregate resource areas classified as MRZ-2, "areas where adequate information indicates significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence". (Sonoma County GP).

DPR policy does not permit the commercial extraction of mineral resources on DPR property in accordance with the Public Resources Code § 5001.65.

	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
WOULD THE PROJECT:				
a) Result in the loss of availability of a known mineral resource that is or would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

a,b) The project site is within Armstrong Redwoods State NR. The project would not change land use activities within the Reserve; therefore, would not result in the loss of availability of a known mineral resource or a locally important mineral resource recovery site. As stated in the Environmental Setting above, under PRC § 5001.65, mining within any State Park unit is prohibited. No impact.

XII. NOISE.

ENVIRONMENTAL SETTING

Sound is any detectable fluctuation in air pressure and generally is measured on a logarithmic scale in decibels (dB). When unwanted sound (i.e., noise) is measured, an electronic filter is used to de-emphasize extreme high and low frequencies to which human hearing has decreased sensitivity. Resulting noise measurements are expressed in weighting frequencies called A-weighted decibels (dBA). While zero dBA is the low threshold of human hearing, a sustained noise equal or greater than 90 dBA is painful and can cause hearing loss (Table XI-1, Bearden 2000).

Table NE-1: Examples of A- Weighted Sound Levels Relative Loudness

Sound	Sound Level (dbA)	Relative Loudness (approximate)	Relative Sound Energy
Jet aircraft, 100 feet	130	128	10000000
Rock music with amplifier	120	64	1000000
Thunder, snowmobile (operator)	110	32	100000
Boiler shop, power mower	100	16	10000
Orchestral crescendo at 25 feet, noisy	90	8	1000
Busy Street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobile at low speed	50	½	0.1
Average office	40	¼	0.01
City residence	30	1/8	0.001
Quiet country residence	20	1/16	0.0001
Rustle of leaves	10	1/32	0.00001
Threshold of hearing	0	1/64	0

(Sonoma County 2008)

Noise is further described according to how it varies over time and whether the source of noise is moving or stationary. Background noise in a particular location gradually varies over the course of a 24-hour period with the addition and elimination of individual sounds. Several terms are used to describe noise and its effects. The equivalent sound level (L_{eq}) describes the average noise exposure level for a specific location during a specific time period, typically over the course of one hour. The Community Noise Equivalent Level (CNEL) is a twenty-four hour average of L_{eq} with an additional 5 dBA penalty for noise generated between the hours of 7:00 p.m. and 10:00 p.m. and a 10 dBA penalty during the hours of 10:00 p.m. and 7:00 a.m. The penalties account for how much more pronounced a noise is at night when other sounds have diminished. Federal, state, and local governments have defined noise and established

standards to protect people from adverse health effects such as hearing loss and disruption of certain activities. Noise is defined in the California Noise Control Act, Health and Safety Code, California Code of Regulations (CCR) § 46,022 as excessive or undesirable sound made by people, motorized vehicles, boats, aircraft, industrial equipment, construction, and other objects.

To promote compatibility among various land uses and protect health and safety, Sonoma County sets noise standards for projects in certain land use categories and for sensitive receptors such as residential areas, hospitals, schools, libraries, and places of worship. The acceptable noise levels for these areas is up to 60 dBA, tolerable with levels from 61 to 75 dBA, normally unacceptable from 76 to 85, and clearly unacceptable above 85 dBA (Sonoma County 2020).

Armstrong Redwoods SNR is comprised of approximately 752 acres in the rural interior of Sonoma County (DPR 2012). The park unit is known for its stand of towering coast redwoods, the largest virgin stand of redwoods in Sonoma County. Though largely quiet, the occasion sounds heard in the project area include bird song, wind through the trees, and the chatter of chipmunks. Throughout the year, out-of-town visitors and local residents are likely to be heard within the park unit, particularly at the Visitor Center, along the numerous park trails and in the day use areas found throughout the project site. Motor vehicles traveling along Armstrong Woods Road are audible all along the proposed project area.

The Visitor Center and park ranger station/unit office are located along Armstrong Woods Road however they lie outside the larger proposed project area (Google Maps 2012). There are three homes for housing DPR personnel and their families; two are situated near the Visitor Center/park unit office area (Citlau 2012). The closest private residence is situated along Armstrong Woods Road approximately one mile south of the proposed project (Citlau 2012, Google Maps 2012).

There are six public use airports throughout Sonoma County (Sonoma County 2008, 2010). Of these, the Charles M. Schulz – Sonoma County Airport is about thirteen air miles east of the proposed project and is the closest airport in the County to the site of the proposed project. No public facilities with sensitive receptors are located in the vicinity of the project sites. The closest public facilities to the project sites, the Guerneville School and the Guerneville Community Church are located two and three miles, respectively, to the south in Guerneville (Google Maps 2012).

	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
WOULD THE PROJECT:				
a) Generate or expose people to noise levels in excess of standards established in a local general plan or noise ordinance, or in other applicable local, state, or federal standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Generate or expose people to excessive groundborne vibrations or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Create a substantial permanent increase in ambient noise levels in the vicinity of the project (above	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

levels without the project)?

- | | | | | |
|---|--------------------------|--------------------------|-------------------------------------|--------------------------|
| d) Create a substantial temporary or periodic increase in ambient noise levels in the vicinity of the project, in excess of noise levels existing without the project? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e) Be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport? If so, would the project expose people residing or working in the project area to excessive noise levels? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| f) Be in the vicinity of a private airstrip? If so, would the project expose people residing or working in the project area to excessive noise levels? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

CRITERIA FOR DETERMINING SIGNIFICANCE

The analysis of determining the significance of impacts of the Proposed Action to Noise is based on criteria **XI a – f**, described in the environmental checklist above.

DISCUSSION

- a) Trucks and heavy equipment such as a backhoe and directional drill would operate during materials delivery and construction activities associated with the proposed project. Project-related noise levels in and adjacent to proposed drill pit sites would fluctuate, depending on the type and number of vehicles and equipment in use at any given time.

Visitors and local residents driving past the project sites on Armstrong Woods Road could hear noises related to construction activities until they pass the sites. Depending on the specific project-related activities being performed, short-term increases in ambient noise levels could result in speech interference near the project sites and could annoy park visitors and local residents. Under these circumstances, park visitors and local residents could recreate in other portions of Armstrong Redwoods SNR, Austin Creek SRA or seek out other nearby parks and recreation facilities.

Generally, project-related work would not occur during on weekends or holidays when visitation is higher than during the week. Weekend work could be implemented, but only to accelerate the proposed project or address emergency or unforeseen circumstances. Noise associated with the proposed project is considered to have a potentially significant short-term impact to nearby noise-sensitive receptors. Integration of **STANDARD PROJECT REQUIREMENT NOISE-1, NOISE EXPOSURE** (See Chapter 2) for noise exposure would reduce potential impacts of the project to a less than significant level.

- c) Project-related activities would not involve the use of explosives, pile driving, or other intensive construction techniques that could generate significant ground vibration or noise. Minor vibration adjacent to mechanized equipment, such as the directional drill, during construction work would be generated only on a short term basis. Therefore, ground-borne vibrations and noises would have a less than significant impact.

- d) Once the water system improvements and associated work are completed, project-related noises would cease. The project would not create any source of noise that would contribute to a substantial permanent increase in noise levels in the vicinity of the project areas. No impact.
- d) See Discussion (a) and (c) above. Integration of **STANDARD PROJECT REQUIREMENT NOISE-1, NOISE EXPOSURE** (See Chapter 2) would reduce any potential impacts to a less than significant level.
- e) The project is not located within an airport land use plan or within two miles of a public or public use airport. No impact.
- f) The project is not located within two miles of any privately owned airstrip. No impact.

XIV. POPULATION AND HOUSING

ENVIRONMENTAL SETTING

Sonoma County had a population of 484,470 in 2008. Between 2000 and 2008, the County's population grew at a rate of 0.5% (Sonoma County Permit and Resource Management Department (PRMD), 2009). ARSNP, located in the Russian River Planning Area is one of the more sparsely populated of the nine planning regions in the County. In 2000, the 16,400 residents of this region lived primarily in Forestville, Mirabel and Guerneville; outside these small communities, the population is limited.

The community of Guerneville is located just outside the park's southern boundary. Adjacent properties are ranchlands, and open space to the east.

Housing within the park boundaries is limited to an employee cabin near the park entrance and one located past the picnic area towards Bull Frog Pond. ARSNP is an area managed for the purpose of preserving native ecological associations in a condition of undisturbed integrity. The development of permanent housing is inconsistent with that objective and not a planned use of the park.

	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
WOULD THE PROJECT:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

- The project proposes to replace an existing above-ground water line with one placed entirely underground with no increase in capacity. It does not propose any elements that would induce population growth in the area. No impacts.
- No housing would be moved or removed for the project. No impact.
- No persons would be displaced either temporarily or permanently. No impact.

XIV. PUBLIC SERVICES.

ENVIRONMENTAL SETTING

Public services include fire and police protection, schools, parks, and other public facilities. Armstrong Redwoods State Natural Reserve (SNR) is located approximately three miles north of the town of Guerneville, thirty miles west of Santa Rosa, and 78 miles northwest of San Francisco (Google Maps 2012). The Armstrong Redwoods Water System Improvements Project site extends from a location approximately 50 feet north of the entrance kiosk, to the parks' existing 50,000 gallon water tank. An offshoot water line will extend to the west up to approximately 50 yards east of the existing Forest Theater. The overall project site benefits from existing public services, such as fire and law enforcement protection.

Fire Protection

The California Department of Fire and Forestry Protection (CalFire) has primary jurisdiction for fire suppression in State Responsibility Areas (SRA), including units of the State Park System (CalFire 2012). The Sonoma-Lake-Napa Unit of CalFire is responsible for fire protection in Armstrong Redwoods SNR and the nearest CalFire Air Attack Base is located in the northeast corner of the Sonoma County Airport, north of Santa Rosa, approximately eighteen miles from Armstrong Redwoods SP (Google Maps 2012). Additionally, CalFire conducts facility inspections and permits modifications, change-of-use facilities, and other facility related projects. While CalFire has legal jurisdiction and, in the case of an event, has command authority, the local fire department, Russian River Fire Protection District handles local responsibilities such as HazMat inspection/enforcement and emergency event response, through delegated authority from CalFire (Citlau 2012). The Russian River Fire Protection District (RRFPD) is staffed by both full-time permanent employees as well as volunteers and is based out of a single station located in Guerneville, approximately two miles south of the entrance to Armstrong Redwoods SNR at 14100 Armstrong Woods Road (Google Maps 2012).

Police Protection

DPR rangers assigned to Armstrong Redwoods SNR are Peace Officer Standards and Training (POST) certified law enforcement officers and provide year round law enforcement within park unit boundaries. The Sonoma County Sheriff's Department provides supplemental law enforcement from their substation in Guerneville, about three miles south of the proposed Armstrong Redwoods Water System Repair Project sites. Officers from this substation cover a 557 square mile area that includes all unincorporated areas surrounding Guerneville as well as the Sonoma Coast (Sonoma County Sheriff's Dept., 2012, Google Maps 2012). The Sonoma County Sheriff would assist DPR with any emergency and law enforcement issues within the boundaries of Armstrong Redwoods SP. The California Highway Patrol (CHP) serves as the primary law enforcement presence on interstates, state routes, and county roads. The CHP staffs a station in the town of Rohnert Park, approximately twenty-seven miles east of Guerneville and approximately thirty miles east of the sites of the proposed project (CHP 2012, Google Maps 2012). The CHP would provide assistance along public roadways in the vicinity of the park unit.

Schools

The closest school, Guerneville School (K-8), is located approximately two miles south of the project sites in the town of Guerneville (Google Maps 2012, Sonoma County Office of Education 2012). No schools exist within the project site.

Parks and Other Public Facilities

Many parks and recreational facilities that serve local residents and visitors are located throughout Sonoma County. The Russian River Recreation & Park District oversees smaller recreations facilities such as playgrounds and beach areas in the town of Guerneville. The Highlands Resort is a private overnight facility located in Guerneville a little over two miles south of Armstrong Redwoods SNR. The closest large hospital to the park is Kaiser Foundation, approximately 21 miles southeast of the project site, in Santa Rosa,

	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
WOULD THE PROJECT:				
a) Result in significant environmental impacts from construction associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CRITERIA FOR DETERMINING SIGNIFICANCE

The analysis for determining the significance of impacts of the Proposed Action to Public Services is based on criteria **XIII a**, described in the environmental checklist above.

DISCUSSION

This proposed project would repair the water system that serves the Armstrong Redwoods Day Use areas within Armstrong Redwoods SNR.

- a) Fire Protection: No components of the proposed Armstrong Redwoods Water System Improvements Project would contribute to an increase of visitation and the level of required public services is expected to remain relatively static; however, use of construction equipment in the vicinity of flammable vegetation at the project sites could present an increased risk of fire that could result in additional demands on CalFire and/or local fire

response teams. Any impact on services would be temporary and nothing in the project scope would contribute to the need for an increase in the level of fire protection after construction is complete. Integration of **STANDARD PROJECT REQUIREMENT HAZMAT-2, WILDFIRE AVOIDANCE AND RESPONSE** (See Chapter 2) would reduce the potential impact to fire protection services to a less than significant level.

Police Protection: As noted in the Environmental Setting, DPR rangers with law enforcement authority patrol Armstrong Redwoods SNR with emphasis on campgrounds and public use areas. DPR rangers have full law enforcement authority and only require assistance from local police as backup for unusual situations. No additional demands on rangers or local police are expected as a result of this project. No impact.

Parks and Other Public Facilities: There would be no impacts to schools, other parks, or other public facilities, as a result of the proposed project. The project would repair the water delivery system and associated facilities that support existing recreational services at Armstrong Redwoods SNR. No impact.

XV. RECREATION.

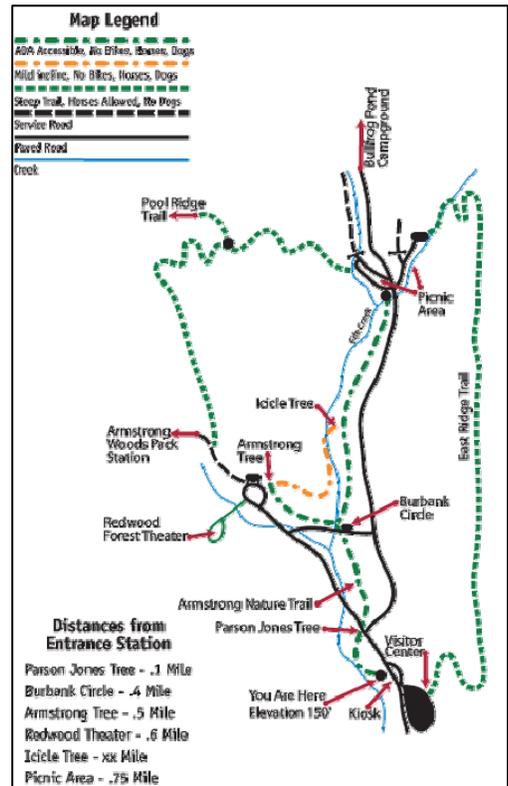
ENVIRONMENTAL SETTING

Sonoma County Parks include more than 150 miles of trails leading to beaches, mountains, forests, meadows and lakes. From Petaluma to The Sea Ranch and Sonoma to Bodega Bay: hike, camp, host a picnic, ride a bike, paddle a kayak, or take in the view

Armstrong Redwoods SNR, located approximately one mile north of Guerneville, is one of the last virgin growth Coastal Redwood groves in this coastal area.

The reserve includes a visitor center, outdoor amphitheater, self-guided nature trails, and a variety of picnic facilities. The picnic area is 3/4 of a mile from the park entrance; grills, tables and restrooms are situated beneath the tall trees while seasonal creeks meander throughout the park during the winter months. All trails are closed to equestrian use through the winter season. However, when conditions permit, the trails are opened, usually during the peak season in summer.

Although no camping is available in the redwood grove, there is a campground at Austin Creek State Recreation Area, which is adjacent to the park. Austin Creek is accessed through the same entrance as Armstrong Redwoods and its rolling hills, open grasslands, conifers, and oaks are a contrast to the dense canopy of the redwood grove.



WOULD THE PROJECT:	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
a) Increase the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CRITERIA FOR DETERMINING SIGNIFICANCE

The analysis of determining the significance of impacts of the Proposed Action to Recreation is based on criteria XV a – b, described in the environmental checklist above.

DISCUSSION

- a) The proposed water system improvement project would upgrade the existing deteriorated system. Although portions of the Reserve would close, as needed, while construction activities occur, visitors would have the option of using alternate trails and/or areas to pursue their recreation needs. In addition, the implementation period would be of relatively short duration (3-4 months). Some visitors could choose to avoid the Reserve during project implementation and use nearby parks; however, this use is not expected to significantly impact other facilities. Less than significant impact.
- b) No part of this project requires the construction or expansion of recreational facilities. No impact.

XVI. TRANSPORTATION/TRAFFIC.

ENVIRONMENTAL SETTING

The proposed project is located in ARSNR, in the Guerneville area of Sonoma County. This region does not have an extensive highway network due to its remote location in the county and relatively low population density. The major roads and highways in the vicinity of the site are State Highway 116 and River Road. River Road connects the community of Windsor on State Highway 101 and Guerneville. State Highway 116 connects the town of Petaluma with the community of Jenner on the Sonoma Coast, and passes through Guerneville.

Access to ARSNR is provided by Armstrong Redwoods Road, a county-maintained road that also provides access to several private residences and undeveloped privately-owned parcels beyond the park boundaries.

The performance of the county roads and highways is evaluated based on LOS definitions. Six levels of service represent varying roadway conditions ranging from ideal (LOS "A") to forced flow (LOS "F").

Level Of Service (LOS)	Description of Typical Traffic Conditions	Delay	Service Rating
A	Highest quality of service. Free traffic flow, low volumes and densities. Little or no restriction on maneuverability or speed, and a high level of comfort and convenience.	None	Excellent
B	Stable traffic flow – speed becoming slightly restricted; the presence of others in the traffic stream begins to be noticeable. Low resistance on maneuverability.	None	Very Good
C	Stable traffic flow, but less freedom to select speed, change lanes or pass. Comfort and convenience decreasing as density increases.	Minimal	Good
D	Approaching unstable flow. Speeds tolerable, but subject to sudden and considerable variation. Reduced maneuverability, driver comfort and convenience.	Minimal	Adequate
E	Unstable traffic flow with rapidly fluctuating speeds and flow rates. Short headways, low maneuverability and low driver comfort and convenience.	Significant	Fair
F	Forced traffic flow. Speed and flow may drop to zero with high densities. Queues tend to form behind such locations since arrival flow exceed traffic discharges.	Considerable	Poor

	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
WOULD THE PROJECT:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Cause a change in air traffic patterns, including either an increase in traffic levels or a change in location, that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Contain a design feature (e.g., sharp curves or a dangerous intersection) or incompatible uses (e.g., farm equipment) that would substantially increase hazards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Result in inadequate parking capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CRITERIA FOR DETERMINING SIGNIFICANCE

The analysis of determining the significance of impacts of the Proposed Action to Transportation and Traffic is based on criteria **XVI a – g**, described in the environmental checklist above.

DISCUSSION

- a) As noted in the “Environmental Setting” section above, Armstrong Woods Road is a county-maintained road that provides access to recreation areas, staff residences, Austin Creek State Recreation Area and privately owned land beyond ARSNR boundaries. The proposed project occurs entirely within a State Nature Reserve; the project could temporarily conflict with the circulation system for vehicles; however this conflict would be of short duration and temporary; therefore, less than significant.
- b) ARSNR is located in a rural area that is not governed by a congestion management program. The arrival and departure of construction personnel vehicles as well as

construction vehicle and material delivery trucks would increase on Armstrong Woods Road. The LOS on this county road is considered “Highest quality of service. Free traffic flow, low volumes and densities. Little or no restriction on maneuverability or speed, and a high level of comfort and convenience” or Level A. In addition, this increase would be temporary and not expected to significantly increase traffic on the road, violating level of service standards on a County road. Less than significant impact.

- c) The project would not affect air traffic patterns. No impact.
- d) The project would not contain any features or introduce incompatible uses that would increase hazards. No impact.
- e) Construction of the project could result in temporary closures to portions of roads: however construction crews would have the ability to cover any open trenches to provide access to roads during emergency situations. In addition, DPR Rangers would need access to patrol the Reserve for safety purposes; therefore, small sections would continue to be available. Less than significant.
- f) During the construction process, parking spaces could be used for staging equipment and by construction personnel, thereby reducing the number of available spaces for park visitors; however, project implementation is temporary and of short duration (3-4 months). Therefore, considered a less than significant impact.
- g) No part of the project would conflict with adopted policies, plans, or policies regarding public transit. No impact.

XVI. UTILITIES AND SERVICE SYSTEMS.

ENVIRONMENTAL SETTING

Armstrong Redwoods State Nature Reserve is located in Sonoma County, approximately 3 miles north of Guerneville on Armstrong Woods Road..

Sonoma County Waste management Agency with the Guerneville Transfer Station provides solid waste collection services. (DPR 2013)

Sewage treatment is provided via an existing DPR-owned and operated sewage treatment system (leachfields) and one sewer lift station within the park boundaries. DPR owns and operates its own water system within the park to serve operational needs. The existing 70 year old water supply system includes a +/- 60 foot that produces approximately 40 gallons per minute.

	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
WOULD THE PROJECT:				
a) Exceed wastewater treatment restrictions or standards of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities?	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no		
Would the construction of these facilities cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities?	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no		
Would the construction of these facilities cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination, by the wastewater treatment provider that serves or may serve the project, that it has adequate capacity to service the project's anticipated demand, in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations as they relate to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CRITERIA FOR DETERMINING SIGNIFICANCE

The analysis of determining the significance of impacts of the Proposed Action to Utilities and Service Systems is based on criteria **XVII a – g**, described in the environmental checklist above.

DISCUSSION

- a) The proposed project would improve an existing deteriorated water system; the project does not have a wastewater treatment component. No impact.
- b-c) The proposed project does not include water, wastewater treatment nor new storm drainage facilities. No impact.
- d) The proposed project improves a deteriorating water system. While the Reserve currently has ample water supplies to provide high-quality recreational opportunities, improvement of the deteriorating system could provide additional water as leaking waterlines are replaced. No new or expanded entitlements are needed, No impacts.
- e) The Reserve disposes of wastewater via a leachfield system. However, as previously, stated, the proposed project has no wastewater component. No impact.
- f-g) As proposed, the project will comply with federal, state, and local statutes and regulations as they relate to solid waste. No impact.

CHAPTER 4 MANDATORY FINDINGS OF SIGNIFICANCE

	<u>POTENTIALLY SIGNIFICANT IMPACT</u>	<u>LESS THAN SIGNIFICANT WITH MITIGATION</u>	<u>LESS THAN SIGNIFICANT IMPACT</u>	<u>NO IMPACT</u>
WOULD THE PROJECT:				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Have the potential to eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means the incremental effects of a project are considerable when viewed in connection with the effects of past projects, other current projects, and probably future projects?)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Have environmental effects that will cause substantial adverse effects on humans, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION

Department of Parks and Recreation Environmental Specialists evaluated the proposed project and its impacts on the environment, fish and wildlife, plants, animals and plant communities, and rare or endangered plants and animals. While the project has the potential to degrade the environment in the short-term, the purpose and goal of the project is improve the existing water system to meet current Health and Safety standards. Most project activities have been designed to avoid potentially significant impacts to the physical or biotic environment. Standard and Specific Project Requirements have been developed to further avoid or ensure that potential impacts remain less than significant. In addition, for potentially significant impacts for which avoidance is not possible, due to seasonal timing, in order to accomplish project objectives, mitigation measures have been incorporated into the project design. Full implementation of these measures would eliminate or reduce impacts to a less-than significant level.

b) Department of Parks and Recreation Cultural Specialists evaluated the proposed project for its potential impacts on historical, cultural, and archaeological impacts. As a result of the evaluations of the proposed project site, Standard Project Requirements addressing inadvertent finds have been incorporated into the project design. Implementation and

fulfillment of these project requirements would render project impacts on cultural resources less than significant.

- c) DPR often has smaller maintenance programs and rehabilitation projects planned for a park unit. A water availability study is planned scheduled within the next few months; no other projects, other than routine maintenance, are planned for the proposed project area in the foreseeable future. Additionally, impacts from other environmental issues addressed in this evaluation do not overlap in such a way as to result in cumulative impacts that are greater than the sum of the parts. Less than significant impact.
- d) Most project activities would have no potentially significant effects on humans. However, environmental impacts on air quality (e.g., heavy equipment emissions), ambient noise levels (e.g., heavy equipment operation), could have substantially adverse effects on humans. While this project could have substantially adverse, direct or indirect effects on humans, implementation of this project according to designed safety standards, engineering specifications, park closure and warning notices and other prescribed safety precautions, project monitoring, and measures outlined in Standard and Specific Project Requirements would ensure potential impacts from emissions remain at a less than-significant level.

CHAPTER 5

Summary of Mitigation Measures

No mitigation measures were necessary as part of the Water System Improvements Project. DPR standard and specific project requirements (see Chapter 2) reduced all impacts to less than significant levels.

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APPENDIX A

MAPS, TABLES, AND CHARTS

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APPENDIX B

PROJECT DESIGN GRAPHICS

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