INITIAL STUDY *and* CHECKLIST

Adopted by the Fortuna City Council on January 18, 2010

PROJECT NAME & FILE NUMBER: Stewart Street Reservoirs Replacement Project

LEAD AGENCY: City of Fortuna
621 11th Street
Fortuna, CA 95540

THIS INITIAL STUDY and CHECKLIST WAS PREPARED BY:

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Deputy Director of Community Development
Community Development Department

PROJECT LOCATION: The Stewart Street reservoir site is located adjacent to and southwest of the intersection of Stewart and Vancil Streets, on the existing City water tank site: (Assessor Parcel No. [APN] 040-053-001). The proposed pipeline construction for connecting Pressure Zone 5 and Pressure Zone 1 is along Home Avenue, between Home Avenue and Garden Lane, and along Garden Lane approximately 1,000 feet northwest of the Stewart Street reservoir site: (as illustrated on the Vicinity Map on page 3).

PROJECT PROPONENT: City of Fortuna

PROPERTY OWNER: City of Fortuna

EXISTING CITY GENERAL PLAN DESIGNATION: Residential Single Family

EXISTING CITY ZONING: R1-10 Residential Single Family

PROJECT DESCRIPTION: Demolition of two existing covered 500,000 gallon reservoirs, excavation of the site to lower the base elevation for the new reservoir approximately 15 feet to construct a foundation on a competent soil layer, construction of a new 2.0 million gallon concrete water tank, relocation of the booster pump station, rerouting of the on-site piping to connect the new water tank to the existing distribution system, and connection of Pressure Zone 5 to Pressure Zone 1 along Home Avenue, between Home Avenue and Garden Lane.

Project construction is anticipated to be divided into the following four phases:

1. **Pump Station Relocation**- The existing pump station will be relocated to accommodate the new tank during this phase. The relocation will require replacing the pipes connecting to the distribution system; constructing a new pump building and controls, installing the pumps, controls, valves and appurtenances; and demolishing the old pump station. Concurrently the City of Fortuna will be installing a 6-inch water main, reconnecting services, and installing a fire hydrant in Stewart Street to replace the main that crosses through the reservoir site.
   Approximate Time: 2 months

2. **Demolition and Excavation-** Demolition of the existing tanks, installation of the five 10,000 gallon temporary storage tanks and piping, construction of the access road, and excavation to subgrade will occur during this phase. **Approximate Time: 2 months**

3. **Connection of Pressure Zone #5 to Pressure Zone #1-** A new pipeline will be constructed from the Home Avenue Pump Booster Pump Station to Garden Lane. The project includes approximately 300 to 500 feet of 6-inch line installed by a trenchless technology methodology (Horizontal Directional Drill), 400 to 500 feet of 6-inch line installed by trenching, 600 to 700 feet of 2-inch line installed by trenching, installing fire hydrants, replacing water meters, installing pressure-reducing valves, and paving the trenches. The preferred alignment is preliminary at this time; the installation lengths may change prior to construction when the alignment is confirmed. This work can be completed concurrently with any other phase of the project. **Approximate Time: 1 month (Concurrent with another phase)**

4. **Construction of 2 MG Concrete Tank-** Construction of the 2 MG concrete tank, backfilling around the tank, finish grading, paving damaged streets, landscaping and clean up will occur during this phase. **Approximate Time: 8 months**

The construction of the proposed project is expected to occur over approximately 12 months, spanning two construction seasons. Total construction time is not a sum of the days associated with all construction phases because there is overlapping of certain tasks and phases. Construction season for Humboldt County is typically from April 15 to October 15. Construction work could be completed outside of this period with the proper permits and the use of BMPs.

Because the project is replacement of existing reservoirs and connection of existing pressure zones with water pipeline, the project areas will return to the same environmental condition as that existing prior to the temporary construction activities above.

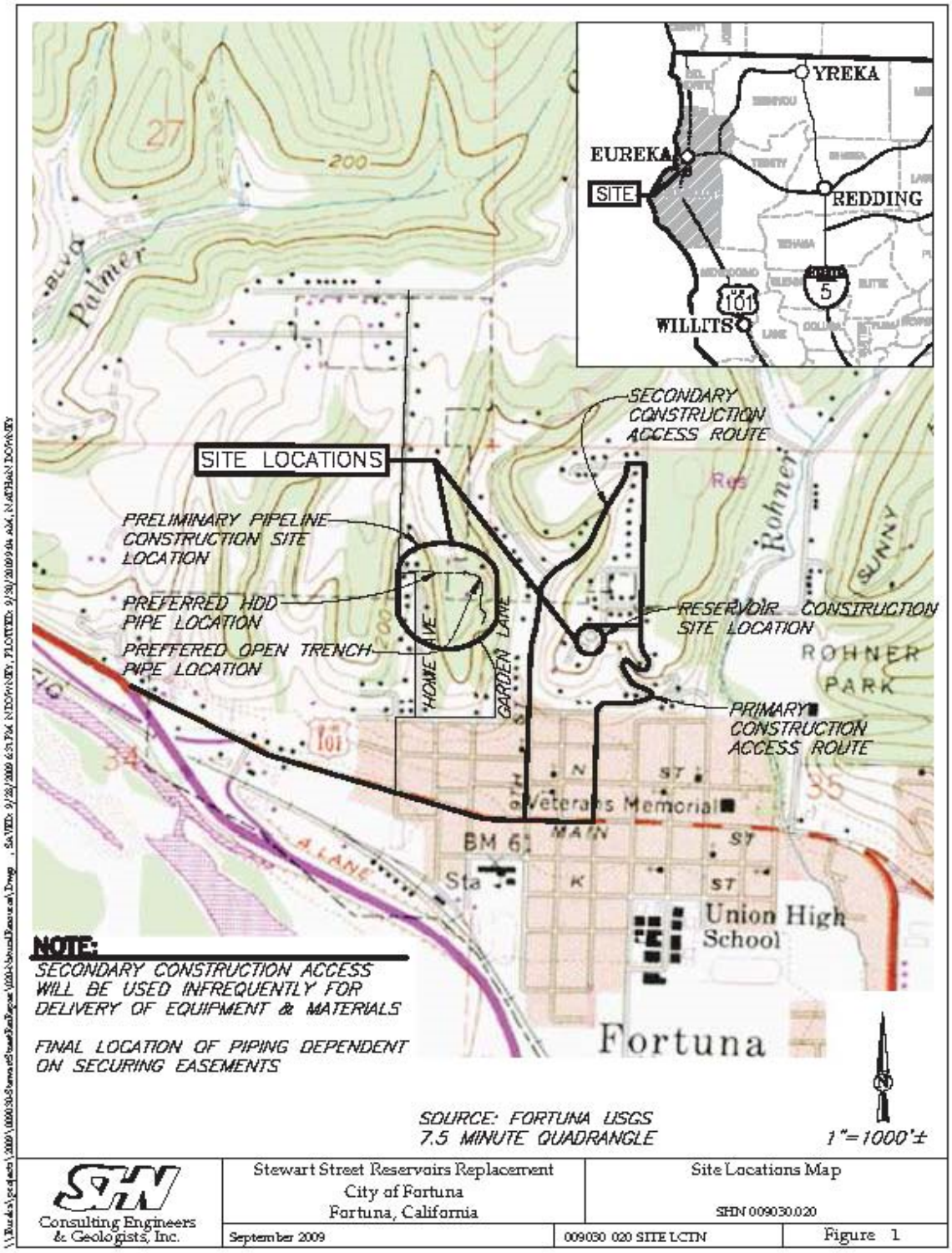
The Draft Construction Management Plan in Attachment 1 includes additional project description and schedule details.

SURROUNDING LAND USES:

Tank:		Pipeline:
North:	Residential (City)	North: Residential (City)
South:	Hill Side/Residential (City)	South: Residential (City)
East:	Residential (City)	East: Residential (City)
West:	Residential (City)	West: Residential (City)

REQUIRED APPROVAL FROM OTHER PUBLIC AGENCIES: Prior to the commencement of any clearing, grading or excavation, the City shall comply with the State Water Resources Control Board's National Pollutant Discharge Elimination System (NPDES) General Construction Activities Permit

STEWART STREET WATER RESERVOIR REPLACEMENT PROJECT
VICINITY MAP OF THE PROJECT AREAS



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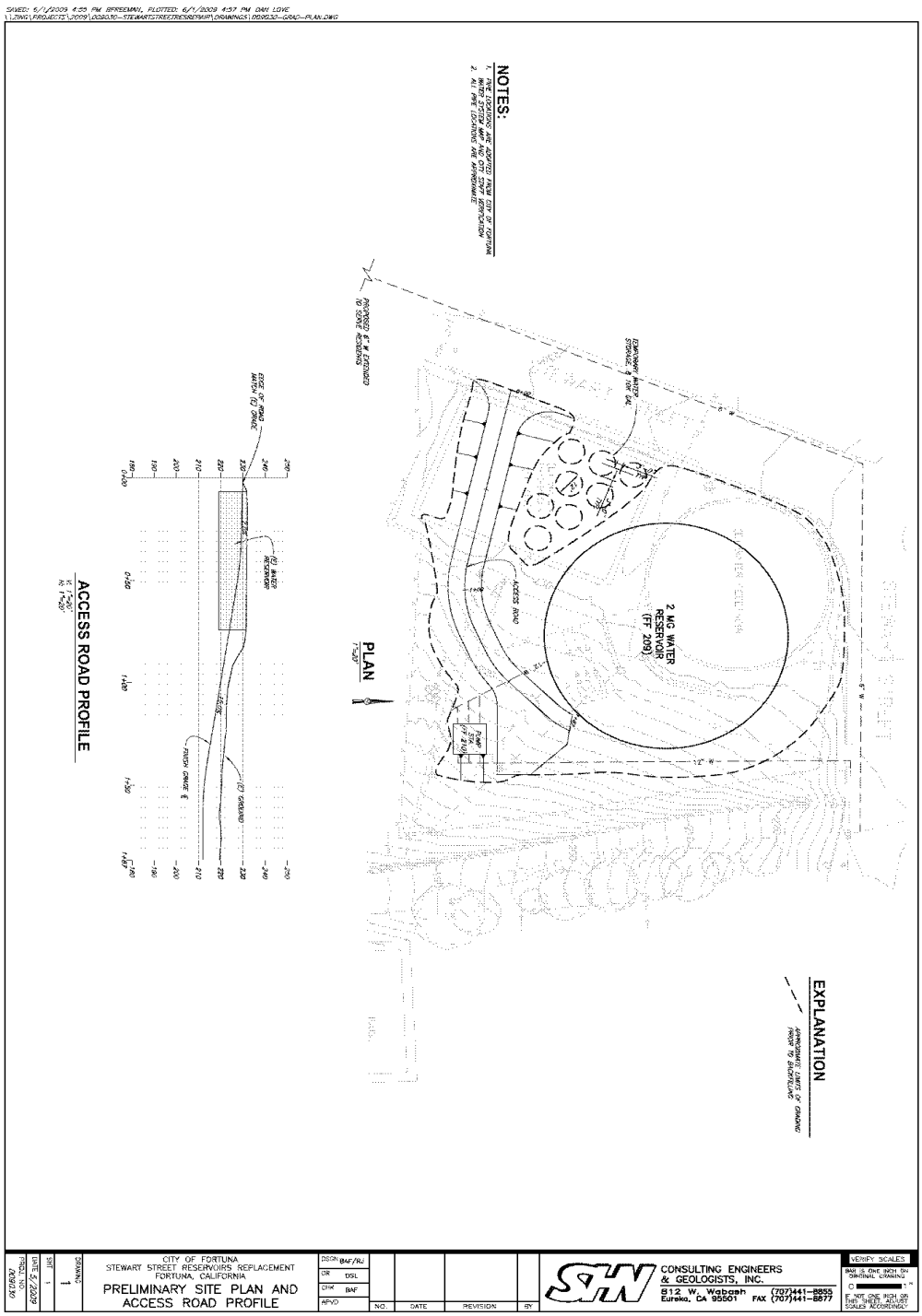
STEWART STREET WATER RESERVOIR REPLACEMENT PROJECT
SITE PLAN AND ACCESS ROAD PROFILE



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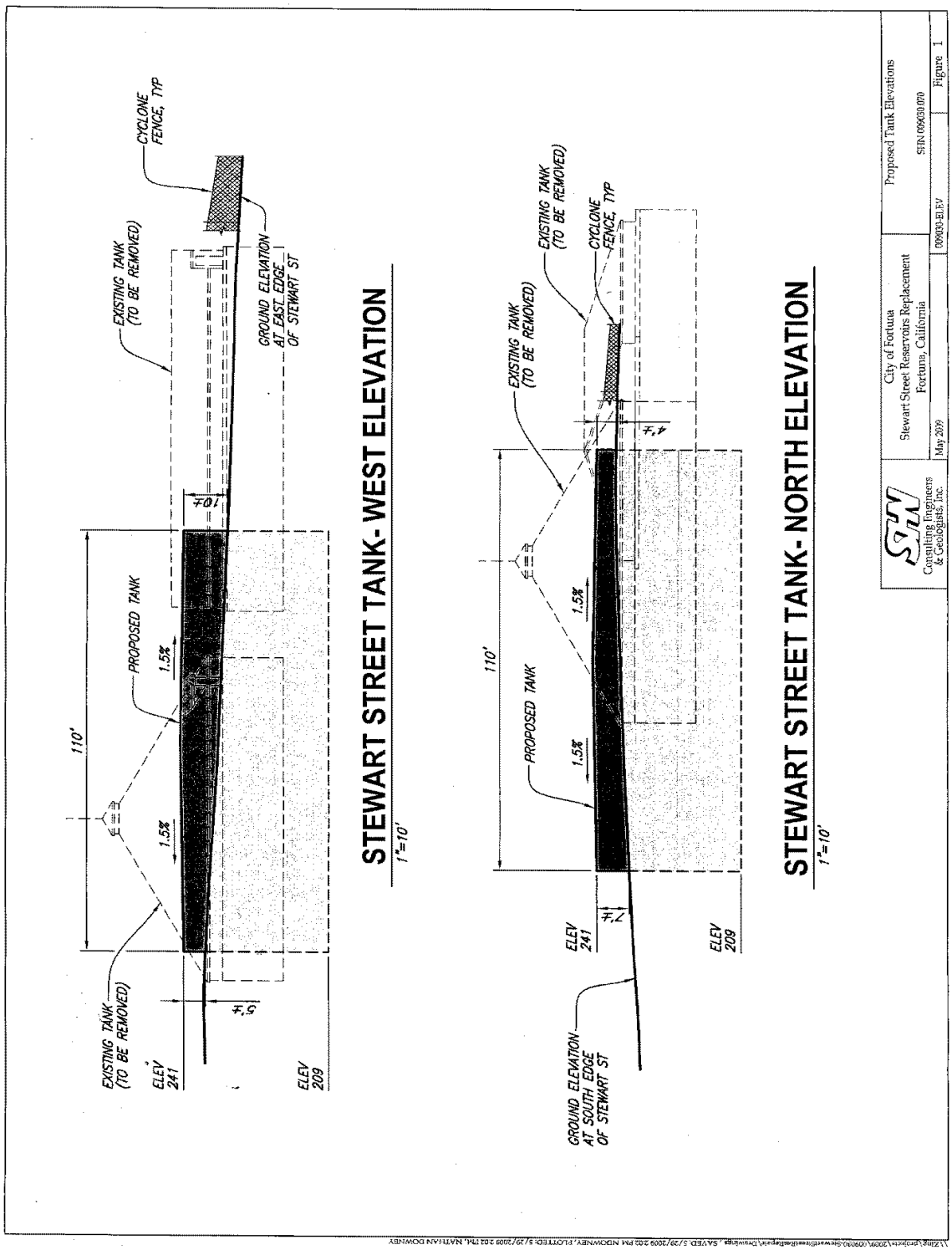
STEWART STREET WATER RESERVOIR REPLACEMENT PROJECT
PROPOSED WATER TANK ELEVATIONS



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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.

- ❑ Aesthetics
- ❑ Agricultural Resources
- ❑ Air Quality
- ❑ Biological Resources
- ❑ Cultural Resources
- ❑ Geology/Soils
- ❑ Greenhouse Gas Emissions
- ❑ Hazards & Hazardous Materials
- ❑ Hydrology/Water Quality
- ❑ Land Use/Planning
- ❑ Mineral Resources
- ❑ Noise
- ❑ Population/Housing
- ❑ Public Services
- ❑ Recreation
- ❑ Transportation/Traffic
- ❑ Utilities/Service
- ❑ Mandatory Findings of Significance

DETERMINATION

On the basis of this initial study:

☐	I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☒	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☐	I find the proposed project MAY could have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT (EIR) is required.
☐	I find the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact, but at least one effect has been (1) adequately analyzed in a previous document pursuant to applicable legal standards, and (2) addressed by mitigation measures based on the previous analysis as described on attached sheets. An EIR is required that analyzes only the effects that were not adequately addressed in a previous document.
☐	I find that although the proposed project could have a significant effect on the environment, no further environmental analysis is required because all potentially significant effects have been (1) adequately analyzed in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (2) avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are included in the project.

November 9, 2009

Date

Liz Shorey,
Deputy Director Community Development

EVALUATION OF ENVIRONMENTAL IMPACTS
(Suggested For Initial Studies in Appendix G of the CEQA Guidelines)

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

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

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

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

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

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

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

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

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

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

8. The analysis of each issue should identify: (a) the significance criteria or threshold used to evaluate each question; and (b) the mitigation measure identified, if any, to reduce the impact to less than significant.

DISCUSSION OF ENVIRONMENTAL FACTORS AND FINDINGS

I. AESTHETICS

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the project?					
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒	1,2
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒	1,2
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒	1,2
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☐	☒	1,2

**See Checklist of Information Sources following the Discussion of Environmental Factors & Findings.*

FINDINGS:

The proposed project would not have a substantial adverse effect on scenic resources or the visual character to and from the water tank or pressure zone connection improvements because two existing reservoir structures that obscure views will be removed and replaced by one water tank which will be located lower in elevation on the site, in an excavated area, and the water line improvements to connect pressure zone 5 to 1 will be located underground, or along existing roadways

Figure 1 on the following page illustrates PhotoShop, computer-generated views resulting from the removal of the existing reservoir structures and placement of the proposed water tank. While the proposed tank is bulkier than either of the two existing tanks, it is located on a lower base elevation and will improve views of the distant hills and horizon.

Light or glare will not change significantly from that existing on the sites. The new tank will not create a new source of substantial light or glare because it will be painted in a typical water tank, earth tone color. There are no trails, or public view areas that currently have, or will have views of the proposed water tank or improvements to connect pressure zone 5 to 1.

Because the reservoir site is barely visible from distant areas to the south, the construction activities and final improvements will not have a substantial adverse effect on a scenic vista, substantially damage scenic resources, degrade the existing visual character, or create a new source of light or glare.

For the reasons stated above, the project will have no impact on Aesthetics.

MITIGATION MEASURES: None Required.

Figure 1: PhotoShop Views of the Proposed Water Tank

Existing and Simulated Views South From Vancil Street

Existing and Simulated Views South From Stewart Street

II. AGRICULTURE AND FOREST RESOURCES:

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the project?					
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐	1,2
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒	1,2,13
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)) or timberland (as defined in Public Resources Code section 4526)?	☐	☐	☐	☒	1,2,13
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒	1,2
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 forest land to non-forest use?	☐	☐	☐	☒	1,2

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS:

The Humboldt County GIS website identifies prime agricultural and timberland soils on approximately the western half of the Stewart Street water tank replacement site. These prime soils were converted to non-prime soils with the construction of the existing water reservoirs. The GIS website does not identify any prime soils located in the proposed water system improvements to connect pressure zone 5 to zone 1.

The project areas are located within an urban, residential area, and are not zoned or used for agriculture or forest land, or under Williamson Act contract. Figure 2 on the following page illustrates the Humboldt GIS mapped prime agricultural soils on and adjacent to the project site.

The water tank improvements will result in excavation of an already impacted site to a depth of 15 feet, and staging of vehicles, construction materials and equipment: (as illustrated on the Preliminary Site Plan and Access Road Profile). The connection of pressure zone 5 to 1 will result in underground drilling and trenching along existing private roads within a developed, residential neighborhood.

Because the project and associated construction activities will replace the existing tanks, which have already impacted the only existing prime agricultural soils, on sites that are located in a developed, residential neighborhood, it will not convert prime agricultural or forest lands to a new use, nor conflict with existing zoning.

For the reasons stated above, the project will have less than significant impacts on Agriculture and Forest Resources.

MITIGATION MEASURES: None Required

Figure 2: Prime Agricultural Soils

III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the project?					
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒	1,2,3
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐	1,2,3
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is classified as non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒	1,2,3
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒	1,2,3
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐	1,2,3

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS:

The climate in Fortuna is moderate, with the predominant weather being moist air masses moving in a westerly direction from the ocean. Average annual rainfall is approximately 40 inches with the majority falling between October and April. The Draft Environmental Impact Report for the City of Fortuna General Plan Update concludes that: "The City of Fortuna benefits from generally good airflow and quality. Its primary sources of air emissions include smoke from residential wood stoves, vehicular exhaust particulates, and dust from unpaved roads."

The project sites are located within an area that is designated "non-attainment" for the State standard for PM-10 (particulate matter of 10 microns or smaller), and is within an area that is "attainment" or "unclassified" for all other Federal criteria pollutants. Wood stove exhausts, windblown dust from adjacent areas, and from grading and other construction activities generate particulate matter.

The construction activities associated with the development of the reservoir site will involve demolishing and removing the existing water tanks, covers, and piping system; excavation and grading. These construction activities may result in airborne particulates and exhaust emissions, including potential Asbestos Containing Materials (ACMs) and Lead Based Paint (LBP), which may be disturbed during demolition activities. Mitigation #2 below requires that known ACMs and LBPs be removed, handled, transported, and disposed: "to the satisfaction of the North Coast Unified Air Quality Management District (NCUAQMD)."

The connection of pressure zone 5 to 1 in the Home Avenue-Garden Lane area will result in underground drilling and trenching along existing private roads within a developed, residential neighborhood. Construction activities associated with this work shall also conform to existing North Coast Unified Air Quality Management District (NCUAQMD) air quality standards.

In June of 2009, SHN performed a LBP and ACM survey, and collected samples for analysis. Based upon the field survey and from the laboratory results from the 19 samples collected, ACMs were identified in concentrations of one percent or greater in approximately 25 square feet of asbestos-containing (5-10% Chrysotile asbestos) roof penetration mastic (gray/black in color); and approximately 3 linear feet (1-5% Chrysotile asbestos) white window putty. The roof mastic is located at the transition between exterior walls of the entryway and the conical roof of the round tank, and at the exterior wall of the entryway and the roof of the rectangular tank. The window putty is situated around the window glazing of the pump house. Asbestos Cement (AC) water pipe exists at the site, and it will be removed, handled, and disposed of in accordance with current regulations.

In June of 2009, SHN also collected 6 paint chip samples for lead analysis from the tank and pump house structure. LBP is defined as paint containing greater than 0.5% lead by weight or 5,000 parts per million (ppm) total lead. Based upon the limited LBP survey performed, lead was found in concentration ranging from 130 to 3,500 ppm.

Other than the demolition permit, no other permits are required for the project to control air pollution. However, the project will be subject to the general provisions of District Rule 430—Fugitive Dust Emissions, which requires that reasonable precautions be taken to prevent particulate matter from becoming airborne. These precautions include covering of trucks which carry materials prone to particulate matter emissions, watering of construction sites to inhibit dust creation, and cleaning street surfaces to keep them clear of dust and dirt.

SHN Consulting Engineers and Geologists prepared the Draft Construction Management Plan (CMP) in Attachment 1 to mitigate potential impacts resulting from the construction activities, such as ACM and LBP removal, handling, transportation, and disposal. The CMP is incorporated by reference into this Mitigated Negative Declaration and supports the proposed Air Quality Findings and Mitigation Measures.

While the proposed mitigation will maintain conformance with North Coast Unified Air Quality Management District (NCUAQMD) air quality standards, the neighbors have expressed concern about diesel emissions from construction equipment and vehicles left idling for extended periods. Consequently, the City Engineer has designated a Construction Observer to minimize diesel emissions and respond to neighborhood concerns.

For the reasons stated above, the project will not conflict with the applicable NCUAQD air quality plan, violate any air quality standards, result in a cumulatively considerable net increase of any criteria pollutant, expose sensitive receptors to pollutants, or create objectionable odors, and will have less than significant impacts on Air Quality with the following Mitigation Measures.

MITIGATION MEASURES:

Mitigation Measure #1: The project shall comply with Air Quality Regulation 1, Chapter IV to the satisfaction of the North Coast Unified Air Quality Management District (NCUAQMD). This will require, but may not be limited to:

(1) Covering open bodied trucks when used for transporting materials likely to give rise to airborne dust;
(2) Promptly removing earth or other material that has been transported by truck or earth moving equipment, erosion by water, or other means onto paved streets;
(3) Minimizing dust by using water as a control. Site and debris watering shall be performed a minimum of once a day during all demolition activities. During grading activities, any exposed soil areas shall be watered at least once per day. Stockpiles of crushed cement, debris, dirt or other dusty materials shall be covered or watered once per day as well. In addition, trucks carrying soil and debris shall be wetted or covered prior to leaving the Site. On windy days, or when fugitive dust can be observed leaving the site, additional applications of water will be applied;
(4) Installing soot traps or retrofitted equipment to reduce emissions on vehicles and construction equipment; and
(5) Turning off vehicles and construction equipment not in use to minimize diesel emissions.

Mitigation Measure #2: The project shall comply with Air Quality Regulations to the satisfaction of the NCUAQMD. This will require, but may not be limited to:

(1) Collecting a representative number of samples for potential LBPs and ACMs to determine which materials require special handling, transporting, and disposal.
(2) Preparing the appropriate forms and submit the appropriate report with laboratory results to the NCUAQMD.
(3) Removing, handling, transporting, and disposing of known ACMs in accordance with the Construction Management Plan (CMP). Retain the services of a Division of Occupational Safety and health (DOHS) licensed and registered asbestos contractor to remove the ACMs.
(4) Removing, handling, transporting, and disposing of known LBPs in accordance with the Construction Management Plan (CMP). Cal-OSHA requires training, personal protective equipment, and specific work practice precautions whenever employees will disturb lead in any

concentration because disturbance may result in airborne exposure over the Action Limit or Permissible Exposure Limit (PEL).

Mitigation Measure #3: To the extent feasible, pre-coated/natural colored building materials shall be used. Water-based or low VOC coatings shall be used that comply with SCAQMD Rule 1113 limits. Spray equipment with high transfer efficiency, or manual coatings application such as paintbrush, hand roller, trowel, etc. shall be used to reduce VOC emissions, where practical. Paint application shall use lower volatility paint not exceeding 100 grams of ROC per liter.

Timing for Implementation/Compliance: During construction of water system improvements.
Person/Agency Responsible for Monitoring: City Engineer or designated Construction Observer.
Monitoring Frequency: Daily; for duration of project.
Evidence of Compliance: Visual site inspection by City Engineering Staff.

IV. BIOLOGICAL RESOURCES

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the project?					
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐	1,2,4,10
b) Have a substantial adverse effect on any aquatic, wetland, or riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒	1,2,4,7
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒	1,2,4,12
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?	☐	☐	☐	☒	1,2,4,10
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒	1,2,6
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?	☐	☐	☐	☒	1,2,4,6

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS:

The project areas are physically associated with urban/disturbed habitat types in the City of Fortuna. Single family residences are developed primarily along streets associated with both the Stewart Street reservoir and Home Avenue-Garden Lane preliminary pipeline construction site location.

SHN Consulting Engineers & Geologists, Inc. conducted a biological investigation of the sites and prepared the Natural Resources Assessment Report in Attachment 2. Based on the Report, the investigating biologist, Shannon Zimmerman, prepared the following CEQA Findings and Mitigation Measures:

Issue (a):

"No special-status plant or animal species were observed on the sites. Of the 29 special status plant species potentially occurring in the Fortuna area, one (1) plant species, Howell's montia, is considered to have a low potential to occur within the sites (California Department of Fish and Game [CDFG], 2009a; California Native Plant Society [CNPS], 2009). Vegetation at the sites has been altered and modified by past land use and development. . These activities have altered the environmental conditions at the sites so that common, non-native plant species dominate the sites. The ongoing disturbed nature of the sites and regular impacts from human intrusion are factors that likely contribute to the absence of rare plants or their ability to colonize the site over time, with the exception of species that can tolerate a high disturbance regime. Given the above information and the fact that no special status plant species were detected during SHN's site visits, the proposed project is not anticipated to directly or indirectly impact any listed or special status plant species; thus, anticipated impacts are less than significant.

On March 26, 2009, Michael Van Hattem and Scott Bauer, Environmental Scientists with the CDFG, Aimee Weber, SHN botanist/ecologist, and Liz Shorey, Dennis Ryan, Stephen Avis, and Kevin Carter with the City conducted a site visit at the Stewart Street reservoir site to discuss the proposed project and potential biological impacts. Mr. Van Hattem and Mr. Bauer concluded during this site visit that there were no major biological issues present at the Stewart Street reservoir site.

On May 6, 2009, on behalf of the City, SHN submitted a formal Technical Assistance Report (TAR) for U.S. Fish and Wildlife Service (USFWS) assistance in the assessment of potential impacts to federally listed species, specifically potential impacts to the marbled murrelet and northern spotted owl at the Stewart Street reservoir site (SHN, 2009b). The USFWS determined after review of information pertaining to the request, and a site visit conducted by Mr. Hoffman of the USFWS staff at the Stewart Street reservoir site, that the proposed project will not affect either the northern spotted owl or the marbled murrelet (USFWS, 2009b; Attachment 2, Appendix C).

The Home Avenue-Garden Lane preliminary pipeline construction site location was not yet determined at the time of the CDFG March 26, 2009 site visit or May 6, 2009 TAR request to USFWS. A second TAR was submitted to USFWS on August 11, 2009 regarding the Home Avenue-Garden Lane pipeline construction, and CDFG was copied. A response from USFWS, dated August 24, 2009, on the second TAR regarding the pipeline construction has been received. USFWS determined that the proposed Stewart Street Water Reservoir Project, including the secondary pipeline alignment, will not affect either the northern spotted owl or the marbled murrelet (USFWS, 2009c; Attachment 2, Appendix C).

A total of two (2) animal species are considered to have moderate potential for occurrence within or adjacent to the sites: Cooper's hawk and sharp-shinned hawk (Attachment 2, Table 2). Neither of these species was observed on the site (Attachment 2, Appendix B). Although these two species were not observed on the sites, they are considered to have moderate potential for future occurrence because the

sites contain suitable habitat and are within either the breeding or migration ranges of these species. The proposed project is not anticipated to directly or indirectly impact listed or special status animal species; thus, it is less than significant.

Given raptors and other bird (for example, passerines [perching birds]) species may potentially nest within the trees and shrubs that occur in and adjacent to the sites, there is a potential for construction-related impacts to nesting birds. The proposed construction does not propose removal of trees. However, trees and shrubs exist within and along the project areas. Grading and construction activities (including the HDD portion of the pipeline installation) within the sites could cause nest abandonment and/or loss of eggs or young. Nests of native birds are protected under the California Fish and Game Code (CFGC) (Section 3503) and destruction of an active nest or eggs would represent a significant impact. Disturbance that results in the abandonment of an active nest is also considered a significant impact. However, implementation of Mitigation Measure BIO-1 (included as Mitigation Measure #4 below) would reduce these potential impacts to a less than significant level.

Given the site location, existing site conditions, and by implementing preconstruction nesting bird surveys (included as Mitigation Measure #4 below), impacts to special status or common animal species are less than significant."

Issue (b):

"There will be no temporary or permanent direct impacts to Waters of the State (WoS) (for example, isolated wetlands, drainages above Ordinary High Water Mark [OHWM], or riparian vegetation) regulated under the Porter Cologne Act and/or CFGC Section 1600.

No potential WoS was observed on, or adjacent to, the Home Avenue-Garden Lane preliminary pipeline construction site location. On March 26, 2009, a site visit was held with Mr. Van Hattem and Mr. Bauer, environmental scientists with CDFG. Mr. Van Hattem and Mr. Bauer concluded that a 1600 SAA was not required for the proposed work adjacent to the existing concrete drainage ditch located east of the Stewart Street reservoir site.

There are no sensitive natural communities within the project areas that will be adversely affected by the proposed project. The project does not propose removal of trees."

Issue (c):

"No impacts on federally protected Waters of the U.S. (WoUS) as defined by Section 404 of the CWA (including wetlands) are anticipated. There is an existing concrete drainage ditch located along the eastern parcel boundary (Attachment 2, Appendix A; Photo 4). It is located on the east side of the fence, and outside of the City's property boundary. No impacts to the aforementioned concrete drainage ditch are anticipated, and no wetlands or other WoUS were identified within the project areas."

Issue (d):

"No designation of major migratory routes has been identified for the sites. The sites are located within developed residential areas, within the city limits and are surrounded by urban development. Development exists on-the sites and adjacent to the sites (for example, Stewart Street/Home Avenue/Garden Lane and single family homes). During the March 26, 2009 site visit, an evaluation of the off-site concrete drainage was conducted. The drainage does not support fish and therefore; the project will not interfere with any movement of native resident or migratory fish.

The sites may facilitate home range and dispersal movement of resident wildlife species, but do not serve as wildlife movement corridors. Development of the sites would not restrict regional wildlife movement or wildlife migration patterns, and would have no related significant impacts. Preconstruction nesting bird surveys (included as Mitigation Measure #4 below) would reduce potential impacts to migratory birds to less than significant."

Issue (e):

"The City does not currently have any local regulations and/or ordinances for the protection of biological resources; therefore the project will not conflict with local polices or ordinances protecting these resources."

Issue (f):

"No Habitat Conservation Plans, Natural Community Conservation Plans or other local or regional plans have been adopted within the area that encompasses the sites; therefore, no impacts are anticipated and no mitigation is considered necessary."

Conclusions

"The Stewart Street reservoir and Home Avenue-Garden Lane pipeline project sites are altered and have been subjected to regular human disturbance, both recently and historically. The Stewart Street reservoir site is currently developed with existing City water infrastructure. The majority of the Home Avenue-Garden Lane pipeline site is currently developed with residences, existing public and private access roads and utilities. Jurisdictional waters of the U.S. and/or State (as wetlands and other waters of the U.S.) were not identified on the sites. No special status plants or animals were observed during the reconnaissance level biological surveys at either site. Although no special-status plants are anticipated to be impacted by any proposed site improvements, other biological resources such as birds could be subject to state and/or federal regulations. With careful site planning, and mitigation measures (for example, preconstruction nesting bird surveys), potential impacts from the project can be reduced to a level that is less than significant. It is important to note that the regulatory environment changes, and that these conclusions are based on current laws and policies (Attachment 2, Section 5.0)."

For the reasons stated above, the project will have less than significant impacts on Biological Resources with the following Mitigation Measure.

MITIGATION MEASURE:

Mitigation Measure #4: To avoid impacts to nesting raptors and/or other bird (for example, passerines – perching birds), one of the following shall be implemented:

1. Conduct vegetation removal and other ground disturbance activities associated with construction during September through January, when birds are not nesting, or

2. A qualified biologist shall conduct pre-construction surveys for nesting birds if vegetation removal and other ground disturbance activities are to take place during the nesting season (February 1 to August 31 for most birds). Pre-construction surveys for nesting pairs, nests, and eggs would occur in areas proposed for vegetation removal and other ground disturbance activities, and active nesting areas flagged. If active nests are encountered, species-specific

measures shall be prepared by a qualified biologist in consultation with the CDFG and implemented to prevent abandonment of the active nest.

Timing for Implementation/Compliance: During construction of water system improvements.
Person/Agency Responsible for Monitoring: Qualified Biologist
Monitoring Frequency: Monitoring Required Prior to construction.
Evidence of Compliance: Visual site inspection by City Engineering Staff.

V. CULTURAL RESOURCES

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the project?					
a) Cause a substantial adverse change in the significance of an historical resource as defined in CEQA Guidelines §15064.5?	☐	☒	☐	☐	1,2,6
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5?	☐	☒	☐	☐	1,2,6
c) Directly or indirectly destroy a unique paleontological resource or site, or unique geologic feature?	☐	☐	☐	☒	1,2,6
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐	1,2,6

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS:

The Draft EIR for the Fortuna Community Plan Update and a referral to the Northwest Information Center (Attachment 4) did not identify any known or registered historical, paleontological, or archaeological resources, or human remains near the project areas.

The project areas are developed with reservoirs and water lines, which provide water storage and service for Pressure Zones 5 and 1 in the City. The surrounding area has been developed with residences for many years. Replacement of the existing reservoirs with a new water tank on the same site, and underground drilling and trenching along existing streets for water line improvements will not cause a substantial adverse change in historical, archaeological, or paleontological resources.

Pursuant to Section 106 requirements (36 CFR Part 800.13(b)), if cultural or historical resources are discovered during project implementation, earthwork shall immediately cease so that a qualified specialist can review the site and make specific recommendations regarding any necessary resource recovery.

For the reasons stated above, the project will have a less than significant impact on Cultural Resources with the following mitigation.

MITIGATION MEASURE:

Mitigation Measure #5*:* If buried archaeological or historical resources are encountered during construction activities, the City Engineer or Construction Observer on-site shall call all work in the

immediate area to halt temporarily, and a qualified archaeologist shall be contacted to evaluate the materials. Prehistoric materials may include obsidian or chert flakes, tools, locally darkened midden soils, groundstone artifacts, dietary bone, and human burials. If human burial is found during construction, state law requires that the County Coroner be contacted immediately. If the remains are found to be those of a Native American, the California Native American Heritage Commission will then be contacted by the Coroner to determine appropriate treatment of the remains.

Timing for Implementation/Compliance: During construction of water system improvements.
Person/Agency Responsible for Monitoring: City Engineer or Construction Observer.
Monitoring Frequency: Daily; for duration of water system project.
Evidence of Compliance: Visual site inspection by City Engineering Staff.

VI. GEOLOGY AND SOILS

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the project?					
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:					
1) Rupture of a known earthquake fault, as described 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.)?	☐	☐	☐	☒	1,2,5
2) Strong seismic ground shaking?	☐	☒	☐	☐	1,2,5
3) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒	1,2,5
4) Landslides?	☐	☐	☒	☐	1,2,5
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐	1,2
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?	☐	☐	☐	☒	1,2,5
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒	1,2,5
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒	1,2,5

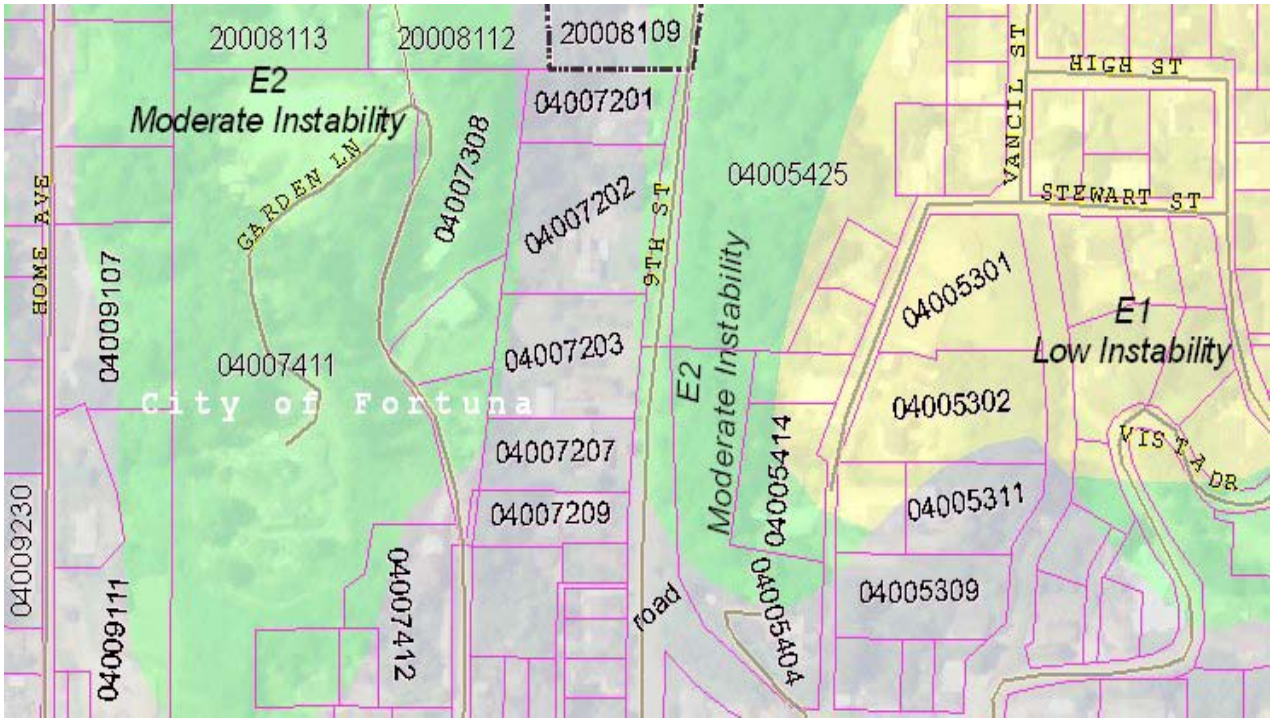
**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS:

The Humboldt County GIS website and the Draft EIR for the Fortuna Community Plan do not identify any earthquake faults, or earthquake fault hazard zones within the project areas. The Stewart Street

reservoir site and adjacent developed residential lots are classified as "E1 – Low Instability" areas. The Home Avenue-Garden Lane pipeline area is classified as E2 – Moderate Instability. A historic landslide is identified to the east of Vista Drive. Figure 3 below illustrates the Humboldt GIS mapped seismic safety zones in and adjacent to the project area.

Figure 3: Seismic Safety Zones



SHN Consulting Engineers & Geologists, Inc. conducted a geologic investigation of the Stewart Street reservoir site and prepared the report in Attachment 3, which is incorporated by reference into this Mitigated Negative Declaration. Geologic and geotechnical conditions of the Home Avenue-Garden Lane site were evaluated in the field on August 24, 2009 by Gary Simpson (C.E.G. 2107). This evaluation consisted of field reconnaissance of the site and vicinity. Subsequently, as part of on-going geotechnical characterization of the pipeline installation design, subsurface investigations were conducted on September 14, 2009. Based on this information, the investigating geologist, Gary Simpson (CA Certified Engineering Geologist #2107), prepared the following Findings:

"The two project sites (Stewart Street tank and Home Avenue-Garden Lane pipeline) are located on two broad, south-trending ridgelines that overlook the City of Fortuna. The ridges are within a series of ridges that border the northern margin of downtown Fortuna. The area is within a complex geologic environment characterized by high rates of active tectonic deformation and seismicity. The tectonic setting is characterized by proximity to the Mendocino Triple Junction, the intersection of three crustal plates (that is, the North American, Gorda, and Pacific plates).

North of Cape Mendocino, the Gorda plate is being actively subducted beneath North America, forming what is commonly referred to as the Cascadia Subduction Zone. In much of coastal Humboldt County, secondary deformation related to the subduction zone is manifested on-land as a series of northwest-trending thrust faults, and intervening folds (a "fold and thrust belt"). The Little Salmon fault, which is

about 7,500 feet northeast of the site, is a significant, active thrust fault within this regional fold and thrust belt.

The project area is underlain by middle to late Pleistocene age sedimentary materials of the Hookton Formation. The Hookton Formation is composed of non-marine gravel, sand, silt, and clay derived in a continental margin setting (that is, sediments were derived from both coastal land-derived and shallow marine environments).

Based on subsurface geotechnical investigations, the proposed tank site is underlain by sandstone, mudstone, and gravel-bearing conglomerate. These sediments are slightly to moderately indurated and typically consist of fine-grained sandy clays overlying clayey and gravelly, coarse sands. A dense, gently southeast-dipping layer of clayey, gravelly sand (13 to 19 feet below existing grade) is the target bearing material for the proposed reservoir tank. The upland portions of the Home Avenue-Garden Lane pipeline transect are underlain by predominantly sandy conglomerate. The pipe transect extends into the valley bottom west of the ridge, where it is underlain by fill soils and medium dense gravelly and clayey sand alluvium.

Basement rock beneath the lower Eel River valley (greater Fortuna area) is the Paleocene-Eocene age Yager terrane, a part of the Coastal belt of the Franciscan Complex. The Franciscan Complex is a regional bedrock unit that consists of a series of "terranes", discrete blocks of highly deformed oceanic crust that have been welded to the western margin of the North American plate over the past 140 million years. The Yager terrane is composed of well-indurated mudstone and thin-bedded siltstone. Yager terrane bedrock is shown on regional geologic cross-sections to be some 8,000 feet below the ground surface in the vicinity of Fortuna. This basement rock is overlain by a thick sequence of late Miocene to middle Pleistocene age sediments referred to as the Wildcat Group. These sediments were deposited in a deep coastal basin, the "Eel River basin", and are therefore relatively localized in the current Eel River valley and surrounding hills, but are very thick (thousands of feet of depositional thickness). The Wildcat Group sediments are subsequently overlain (unconformably) by the Hookton Formation, discussed above.

Fortuna is located in a region of high seismicity. The historic record of the region (that of European settlers anyway) suggests over 60 earthquakes that have produced notable damage. Because of the location in the Mendocino triple junction region, there are a multitude of potential seismic sources, from on-land faults in coastal Humboldt County, to offshore faults including the Cascadia Subduction Zone, 30 to 35 miles west of the site.

The Little Salmon fault, a major active thrust fault is located just east of the site. The Little Salmon fault is a northwest-trending, northeast-dipping thrust fault (that is, the northeast side of the fault slides up and over the southwest side of the fault along a northeast-dipping fault plane) capable of producing earthquakes in excess of magnitude 7. Studies of past earthquakes on the Little Salmon fault provide estimates for the amount of fault slip from individual earthquakes on the order of 15 to 23 feet. Radiocarbon dating suggests that earthquakes have occurred on the Little Salmon fault about 300, 800, and 1,600 years ago.

A great earthquake on the Cascadia Subduction Zone could produce rupture of up to 124 miles in length (that is, from Cape Mendocino to British Columbia), and may be up to magnitude 9.5. An earthquake of this magnitude obviously would generate intense seismic shaking for a long period of time (several minutes). Historic records from Japan describing a tsunami thought to have originated along the Cascadia Subduction Zone suggest the most recent great subduction event occurred on January 27, 1700. Paleoseismic studies along the subduction zone suggest that great earthquakes occur on the order of every 300 to 800 years.

Surface Fault Rupture. There are no known faults crossing the project site, and no evidence of a previously unrecognized fault was identified in site geotechnical investigations. The Little Salmon fault, the nearest known active fault, is about 7,500 feet northeast of the site. The site is not within a State-mandated Alquist-Priolo Earthquake Fault Zone (per California Public Resources Code, Chapter 7.5, Division 2).

Strong Ground Shaking. The principal geologic hazard identified in project geotechnical investigations (Attachment 3) is the potential for strong to very strong seismic shaking produced by earthquakes on the Little Salmon fault or any of the other earthquake sources in the region. Seismic shaking effects produced by earthquakes from more distant sources are likely to be significantly less severe, but there are several sources near enough to the site to generate strong to very strong ground shaking. Strong seismic shaking should be anticipated for the project site within the design life of the structures.

Liquefaction. Liquefaction is a secondary seismic phenomenon that occurs in certain geologic materials when subjected to prolonged seismic shaking. Susceptible materials tend to be geologically recent (late Holocene in age) sand- and silt-rich deposits, typically located adjacent to streams, rivers, bays, or ocean shorelines. Liquefaction occurs only when susceptible materials are saturated. Susceptibility to liquefaction decreases with increasing geologic age, due to the effects of weathering, and the degree of densification, compaction, and/or cementation.

As discussed above, the Stewart Street reservoir site and the upland portions of the Home Avenue-Garden Lane pipeline alignment are underlain by older, indurated sediments. Project geotechnical investigations, based on subsurface sampling, as well as quantitative computer models, concluded a negligible potential for liquefaction in these materials. There is a low to moderate liquefaction potential in the presumably younger alluvial sediments in the valley bottom portion of the Home Avenue site, although the potential is reduced by the cohesive nature of most of the soil profile and the depth of groundwater. It is unlikely that the water table would reach the pipeline grade for significant portions of time such that saturated conditions, and therefore liquefaction potential, is a significant concern. As the proposed pipeline will be connected to existing facilities at the Home Avenue pump station, the proposed improvements will not be exposed to a level of liquefaction hazard that is any greater than those currently present at the site.

Landslides. The proposed tank site is located along the crest of a broad ridgeline with moderately steep sideslopes. There is no geomorphic expression of past landsliding in the project vicinity. Uncontrolled fills sidecast across the site and burying the native topsoil layer, then saturated by leaking reservoirs, have been subject to accelerated soil creep in the past, and have damaged some piping and tank infrastructure. There is no evidence of global instability of the hillside, however. A significant near-vertical cut along an unimproved road surface (Barney Road alignment) directly below the site is in excellent condition and has experienced very little slumping or retreat.

Subsurface investigations at the Stewart Street site, consisting of a series of geotechnical borings to 46.5 feet, encountered fill materials to depths of 8 feet, with competent native materials beneath. Slope inclinometers, which measure deformation of a casing placed in a test boring, exhibited no movement below the surficial, unstable fill materials. Current plans call for the upper, lower-strength soils at the site to be removed, and for the reservoir foundation to be constructed on high strength materials (the dense sand layer discussed above) that are not subject to landslide processes.

The risk associated with landslide hazard at the Stewart Street site is considered very low.

The hillslope to be traversed by the Home Avenue to Garden Lane pipeline is a smooth, moderately steep hillslope that exhibits no geomorphic evidence of significant mass wasting. The slope is well-forested with mature conifer trees, and some have swept or deformed trunks, suggesting some level of shallow soil

creep. There is no apparent evidence of deep-seated earth movement. There is evidence in the site vicinity of shallow debris-type landslides, some of which have been repaired with rock buttresses or retaining walls. Therefore, some level of landslide potential is acknowledged at the site. As the pipeline will be constructed using trenchless technology (directional drilling) the pipe alignment will pass beneath any potential areas on the slope that may be subject to earth movement. Directional drilling is a low-impact construction method that does not result in significant vibration or other deleterious effects that would result in either short, or long-term, reduction in slope stability. As such, the risk associated with potential environmental impacts related to landsliding is considered low; the hazard being essentially mitigated by the chosen method of pipe emplacement.

Unstable Soil Unit. As discussed above, the site is underlain by older marine sediments that are not susceptible to secondary seismic effects, nor to short term effects that may occur during construction. The reservoir is to be sited on a competent, dense gravelly sand layer that will provide excellent bearing capacity. As such, there is a negligible risk of project impacts related to unstable soils. The same is true at the Home Avenue-Garden Lane site, where competent sandy conglomerate is present. Younger alluvial sediments in the valley bottom at Home Avenue are currently supporting numerous structures and various infrastructure elements, and have demonstrated no tendency toward instability.

Expansive Soils. Some moderately expansive clay was encountered in the upper part of the native soil profile at the Stewart Street site. This material will be removed from the site during site preparation, however, and the tank is proposed to be constructed on dense sandy material that is not expansive. Therefore the potential for impacts associated with expansive soils is negligible. The sandy conglomerate at the Home Avenue-Garden Lane site does not contain significant amounts of fines, and therefore are not expansive.

Soils Suitable for On-site Sewage Disposal. The project does not include plans for any form of on-site sewage disposal."

For the reasons stated above, the project will have less than significant impacts on Geology and Soil Resources with the following Mitigation Measure.

MITIGATION MEASURE:

Mitigation Measure #6: The project Geotechnical Report in Attachment 3 includes design standards for the proposed reservoir to withstand strong seismic shaking, and is incorporated by reference into this mitigation measure. Appropriate seismic parameters are included in the Geotechnical Report. The minimum standards for construction of the reservoir shall be in accordance with the latest edition of the California Building Code for the most seismically active areas."

Timing for Implementation/Compliance: During construction of water system improvements.
Person/Agency Responsible for Monitoring: Consulting Geologist & City Engineer or Construction Observer.
Monitoring Frequency: Daily, for duration of water system construction project.
Evidence of Compliance: Visual site inspection by City Engineering Staff.

VII. GREENHOUSE GAS EMISSIONS

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the project?					
a) Generate greenhouse gas emissions, either directly or indirectly, that may have significant impact on the environment, based on any applicable threshold of significance?	☐	☒	☐	☐	1,2,3
a) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose reducing the emissions of greenhouse gases?	☐	☐	☐	☒	1,2,3

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

California has recently passed Assembly Bill 32, mandating a reduction in Greenhouse Gas (GHG) emissions and Senate Bill (SB) 97, evaluating and addressing GHG emissions under CEQA. On April 13, 2009, Governor's Office of Planning and Research (OPR) submitted to the Secretary for Natural Resources its proposed amendments to the state CEQA Guidelines for GHG emissions, as required by Senate Bill 97 (Chapter 185, 2007).

At this time, it is not clearly established how to evaluate a project's production and contribution of GHG because thresholds have not been set by the California Air Resources Board or the North Coast Air Quality Management District (NCAQMD). However, the project will comply with all NCAQMD air quality standards.

The City has no established thresholds of significance, and has not adopted plans, policies or regulations for the purpose of reducing the emissions of greenhouse gases.

In an attempt to quantify this impact, project staff evaluated what would be the greatest contribution of GHG emissions. Transportation is easily one the largest contributors of GHGs in the state. However, the project does not propose a new use or add additional parking or roads; therefore, a permanent increase of GHG emission is not expected. Further, the project does not contemplate removal of significant amounts of vegetation that sequester carbon, which would otherwise be in the atmosphere.

The construction of the proposed project would contribute a temporary, short term increase in air pollution from vehicles and equipment during construction. However, the Stewart Street Reservoir is a constrained site with limited storage and parking and the contractor will be required to minimize vehicular access by carpooling to the site (Attachment 1). The construction of the proposed project is expected to occur over 12 months, spanning two construction seasons (Attachment 1).

There are existing reservoirs in use at the Stewart Street site and the City is not proposing a change in maintenance activities after project construction. Post construction (operational) activities associated with the proposed project would not change from preconstruction conditions and would not create a significant change in GHG emissions above existing conditions. Maintenance of the new pipeline is minimal and potential air quality impacts will not extend past construction. Because of the temporary nature of the proposed project GHG emissions, coupled with the modest quantity of CO_2 emissions, the proposed project's cumulative impacts to global warming due to an increased contribution of GHGs is less than significant.

For the reasons stated above, the project will have a less than significant impact on Greenhouse Gas Emissions with the following Mitigation Measure.

MITIGATION MEASURE:

Mitigation Measure #1 in the Air Quality section of this Mitigated Negative Declaration requires that the project comply with air quality regulation 1, Chapter IV to the satisfaction of the NCAQMD.

VIII. HAZARDS AND HAZARDOUS MATERIALS

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the project?					
a) Create a significant hazard to the public or to the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐	1,2,3
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒	1,2,3
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒	1,2,3
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒	1,2
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒	1,2
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒	1,2
g) Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒	1,2,3
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒	1,2

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS:

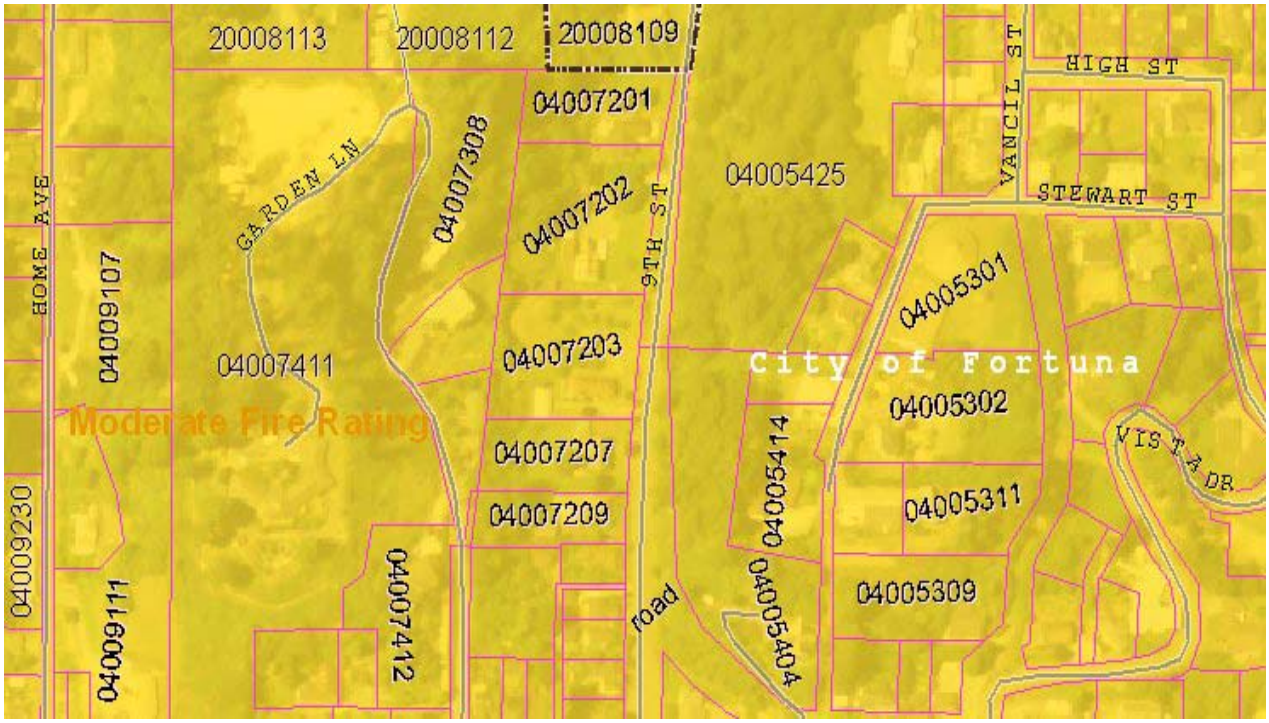
The Humboldt County GIS website and the Draft EIR for the Fortuna Community Plan do not identify any hazardous sites, or airports within the project areas. The project areas are developed, within a moderate fire hazard rating and not adjacent to any wildland areas with high fire hazard ratings. Figure 4 below illustrates the Humboldt County GIS mapped fire hazards.

There are potentially Asbestos Containing Materials (ACMs) and Lead Based Paints (LBPs) associated with the demolition of the water tanks and the pump house structure; and with the demolition of the existing Asbestos Cement (AC) piping. The project proposes to remove, handle, transport, and dispose of ACMs and LBPs that are known to exist. Therefore, there will be some risk posed to the public through the demolition, transport, and disposal process. There could be a reasonable chance of a release of these ACMs into the environment; however, the risk will be reduced to less than significant because the project shall comply with all NCUAQMD air quality regulations, including those for ACM and LBP hazardous materials.

No parcel within the immediate project areas is listed on a hazardous materials site**.** The project areas are also not located within two miles of an airport or private airstrip. Because all emergency access routes and emergency responders will be open and ready to respond, the project will not conflict with adopted emergency response or evacuation plans. Therefore, the project will not result in impacts related to the above-mentioned Hazards or Hazardous Materials.

The project areas are also located within the Fortuna Fire Protection District, and the proposed water tank will help support emergency response to fire hazards. The proposed replacement of the water reservoirs will support emergency response plans.

Figure 4: Fire Hazards



For the reasons stated above, this project will have a less than significant impact upon Hazards or Hazardous Materials with the following Mitigation Measure:

MITIGATION MEASURE:

Mitigation Measure #2 in the Air Quality section of this Mitigated Negative Declaration requires that the project comply with all NCUAQMD air quality regulations, including those for ACM and LBP hazardous materials.

IX. HYDROLOGY AND WATER QUALITY

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the project?					
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐	1,2,3,12
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 which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒	1,2,12
c) Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on-or off-site?	☐	☐	☒	☐	1,2,3,12
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on-or off-site?	☐	☐	☒	☐	1,2,3,12
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?	☐	☐	☐	☒	1,2,3,12
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐	1,2,3,12
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?	☐	☐	☐	☒	1,2,7
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	☒	1,2,7
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒	1,2,7
j) Be subject to inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒	1,2

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS:

The Humboldt County GIS website and Draft EIR for the Fortuna Community Plan do not identify any flood hazard areas, blue line streams, or streamside management areas within or adjacent to the project areas. Figure 5 below illustrates the Humboldt County GIS mapped blue line streams and streamside management areas.

At the Stewart Street reservoir site, a concrete drainage ditch is located along the eastern parcel boundary and is east of the property boundary fence, outside of the City's property. The concrete ditch is shallow and approximately 3-feet wide and drains south towards the intersection of Vista and Stewart Street. No impacts to the aforementioned concrete drainage ditch are anticipated. No streams or drainages were identified in or adjacent to the alignment for the Home Avenue-Garden Lane pipeline construction.

Because the project is simply the replacement of existing water reservoirs and connection of existing City water pressure zones, the project will not violate water quality standards, impact groundwater supplies, alter the course of any streams, create additional water runoff, nor contribute to an increase in erosion or flooding on or off the project areas. The project is not located within a 100-year flood zone, as identified by FEMA, nor is it within a dam inundation area, and is not subject to seiche, tsunami, or mudflow.

SHN Consulting Engineers and Geologists prepared the Draft Construction Management Plan (CMP) in Attachment 1 to mitigate potential impacts resulting from construction activities. The CMP is incorporated by reference into this Mitigated Negative Declaration and supports the proposed Hydrology and Water Quality Findings and Mitigation Measures.

Figure 5: Blue Line Streams and Streamside Management Areas

For the reasons stated above, this project will have a less than significant impact upon Hydrology and Water Quality with the following Mitigation Measure:

MITIGATION MEASURE:

Mitigation Measure #7: Prior to the commencement of any clearing, grading or excavation, the City shall comply with the State Water Resources Control Board's National Pollutant Discharge Elimination System (NPDES) General Construction Activities Permit (WQ Order No. 99-08-DWQ) as follows:

1. The City Engineer shall develop, implement and maintain a Storm Water Pollution Prevention Plan (SWPPP) or an Erosion Control Plan (ECP) to control the discharge of storm water pollutants including sediments associated with construction activities from sites that have an acre or more of exposed soil.

2. If a Construction General Permit is required, the City Engineer shall file a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB), and a Construction SWPPP will be prepared.

All earthwork must be done between May 1st and October 15th unless otherwise approved by the City Engineer, in compliance with the State Water Resources Control Board requirements, following a noticed public hearing. Construction areas must be adequately winterized as required by the City Engineer prior to October 15th. At a minimum an Erosion Control Plan (ECP) will be prepared and the following BMPs from the California Stormwater Quality Association Construction Handbook will be incorporated, which will minimize the release of soil and construction materials and prevent off site impacts to the roadways and drainages:

- BMP #3 (Erosion Control Plan)
- SE-1 (Silt Fence),
- SE-5 (Fiber Rolls)
- SE-7 (Street Sweeping)
- SE-10 (Storm Drain Inlet Protection)
- WE-1 (Wind Erosion Control)
- TC-1 (Stabilized Construction Entrance

Timing for Implementation/Compliance: During construction of water system improvements.
Person/Agency Responsible for Monitoring: City Engineer or Construction Observer.
Monitoring Frequency: Daily; for duration of water system project.
Evidence of Compliance: Visual site inspection by City Engineering Staff.

X. LAND USE AND PLANNING

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the project?					
a) Physically divide an established community?	☐	☐	☐	☒	1,2,6
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒	1,2,6
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒	1,2

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS:

The project areas are located in the north area of the City, in an existing residential area. There are no proposed physical changes on the existing water reservoir site or Home Avenue-Garden Lane area, which would physically divide an established community.

The project will provide adequate water service and fire flow protection for the City's Pressure Zone 1 – the largest pressure zone in the city, which includes the downtown area, at anticipated build out of the Zone.

The City has master planned the infrastructure in the area, including water and sewer, drainage, and roadways through the General Plan, zoning ordinance, Capital Improvement Plan, and Storm Drainage Master Plan. Therefore, the storage of existing water sources and improvement of existing fire suppression services will not conflict with applicable plans, policies, or regulations.

There are also no habitat or natural community conservation plans that cover the site or adjacent residential neighborhoods. The existing City Plan and zoning support the continued maintenance and provision of City water and fire suppression services.

For the reasons stated above this project will have no impact upon Land Use and Planning.

MITIGATION MEASURES: None Required.

XI. MINERAL RESOURCES

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the project result in?					
a) The loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒	1,2
b) 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?	☐	☐	☐	☒	1,2

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS:

The Humboldt County GIS website and the Draft EIR for the Fortuna Community Plan do not identify any mineral resource recovery sites in or near the project areas. The Timmons/Rohnerville/Hookton/ Carlotta/Arcata soils are found in these areas.

The project does not involve the extraction of mineral resources, and is not adjacent to a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. The project areas are also not designated or identified as a locally important resource recovery site within the Fortuna General Plan. Consequently, the proposed project will have no effect on future mining opportunities in the area.

For the reasons stated above, the project will have no impact on Mineral Resources.

MITIGATION MEASURES: None Required.

XII. NOISE

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the project result in?					
a) Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐	1,2,18
b) Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐	1,2,18
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒	1,2,18
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐	1,2,18

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒	1,2,18
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒	1,2

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS:

Current ambient noise and vibration levels within the project vicinity are generally average for a residential area, since there is no commercial development, nor high levels of traffic. The Draft EIR for the Fortuna Community Plan did not identify any significant noise sources near the project areas. The project is not located near an airport or private airstrip.

To minimize noise and vibration levels in the neighborhood, pile drivers will not be used. The excavation area on the reservoir site will also serve as a sound wall for the immediately adjacent and uphill neighbors, significantly mitigating noise transmission to immediately adjacent residential areas during much of the construction period.

SHN Consulting Engineers and Geologists prepared the Draft Construction Management Plan (CMP) in Attachment 1 to identify potential noise and vibration impacts resulting from the temporary construction activities. The CMP is incorporated by reference into this Mitigated Negative Declaration and supports the proposed Noise Findings and Mitigation Measure. The CMP includes the following findings for Noise and Vibration Control:

"Noise Control

Noise levels are measured in decibels (dB), but community noise levels are measured in terms of A-weighted sound level (dBA). The A-weighted scale of frequency sensitivity accounts for the sensitivity of the human ear and is sited in most noise criteria. The City of Fortuna does not have a noise ordinance or criteria. As such, we reviewed Housing and Urban Development (HUD) Noise Guidebook to establish criteria for this project.

According to the HUD Noise Guidebook, noise levels at or below 65 dB are "Acceptable," levels above 65 dBA but not exceeding 75 dBA are "Normally Unacceptable," and levels above 75 dBA are "Unacceptable." Based upon the HUD Noise Guidebook, ambient noise currently at the project sites is most likely below the 65 dBA and is therefore "Acceptable."

Noise from construction activities on this project will be a function of the noise generated by individual construction equipment items (as listed in the "Construction Equipment" section of the CMP in Attachment 1), the equipment location (much of this construction will be insulated by the landform, the depth of the excavation, and the concrete used for most of the structure), and the timing and duration of noise-generated activities. It is important to note that generally all equipment is not operated continuously or used simultaneously. The number, type, distribution, and usage of construction equipment will differ from phase to phase. The noise generated is both temporary in nature and limited in duration by the phase of construction and permitted hours of operation.

Based on this analysis, the project sites will experience increases above the 65 dB, "Acceptable" level. This increase will be short-term and temporary and will cease upon completion of construction. To mitigate temporary increases in noise, the following mitigation measure is recommended:

The hours of construction activity will be limited to non-holiday weekdays from 8:00 a.m. to 5:00 p.m. The Contractor will provide residents living within 500 feet of the project site with a construction schedule for the project prior to the commencement of construction and shall keep them informed of any material changes to the schedule. The notification shall also identify the name and phone number of a contact person with whom to register complaints.

Upon completion of construction activities, the noise level will return to ambient levels.

Vibration Control and Monitoring

Vibration from construction activities on this project will be a function of the vibration generated by individual construction equipment items (as listed in the "Construction Equipment" section of the CMP in Attachment 1), the equipment location (much of this construction will be insulated by the landform, the depth of the excavation, HDD construction techniques, and the concrete used for most of the tank structure), and the timing and duration of vibration-generated activities. The majority of the equipment (HDD drill rig, excavators, and skidsteer) produce little to no vibration during their use. It is important to note that generally all equipment is not operated continuously or used simultaneously. The number, type, distribution, and usage of construction equipment will differ from phase to phase. The vibration generated is both temporary in nature and limited in duration by the phase of construction and permitted hours of operation.

Qualitative vibration monitoring will be conducted as part of this CMP. If vibration levels are found to exceed the threshold for structural damage, other construction methods will be employed to eliminate any occurrence of structural damage. Such alternative construction methods include, but are not limited to, use of less vibration-intensive construction vehicles, demolition without impact tools, and sequencing tasks to demolition, earth-moving and ground-impacting operations so as not to cause structural damage."

Upon completion of construction activities, the vibration will return to pre-construction levels.

For the reasons stated above this project will have less than significant noise impacts with the following Mitigation Measure.

MITIGATION MEASURE:

Mitigation #8: The Contractor will prepare a Final Construction Management Plan (FCMP) to minimize temporary noise impacts on the surrounding residences to the fullest extent possible. Pile drivers will not be allowed on the project sites. The FCMP will include, at a minimum, the following measures:

Hours of Construction - The hours of construction activity will be limited to non-holiday weekdays from 8:00 a.m. to 5:00 p.m.

Complaint Response - The City Engineer shall designate a Construction Observer who shall also serve as a "noise disturbance coordinator," and be responsible for responding to any local complaints about construction noise or other impacts associated with construction activities. A telephone number for the disturbance coordinator would be conspicuously posted at the construction site and on the City website. The Construction Observer would determine the cause of the noise complaints (e.g., beginning work too early, bad muffler, etc.) and institute reasonable measures warranted to correct the problem. Reasonable measures to be considered *may* include (but are not limited to) the following:

- Construction of temporary sound walls or other physical noise barriers between the construction site and adjacent residences;

- Shielding of stationary combustion equipment such as pumps or generators with noise protection barriers;
- Installation of noise reduction features (mufflers & shrouds, etc.) on construction equipment.

Implementation of noise reduction features will be determined by the Construction Observer based on the type of complaint received from neighbors, the degree of noise levels based on actual measurements if necessary (assuming an acceptable interior noise level of 45 dB per State Building Standards Commission), and the feasibility of implementation of the specific measure.

Timing for Implementation/Compliance: During construction of water system improvements.
Person/Agency Responsible for Monitoring: City Engineer or designated Construction Observer.
Monitoring Frequency: Daily; for duration of water system project.
Evidence of Compliance: Visual site inspection by City Engineering Staff.

It is important to note that the terms of the Construction Contract forbid the City from directing the Contractor's forces, requiring that the Final Construction Management Plan be updated and confirmed by the Contractor upon award of the Contract, prior to the start of construction, to reflect the Contractor's intended process in completing the work specified in the Contract Documents. Pile Drivers will not be used for this project.

XIII. POPULATION AND HOUSING

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
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)?	☐	☐	☐	☒	1,2
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒	1,2
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒	1,2

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS:

The project will provide adequate water service and fire flow protection for the City's Pressure Zone 1 – the largest pressure zone in the city at anticipated build out of the Zone. Pressure Zone 1 includes the City's downtown area, areas to the south and east extending to Rohner Creek, and north generally within an area that extends west to Home Avenue. The City has master planned the infrastructure in the area, including water and sewer, drainage, and roadways through the General Plan, zoning ordinance, Capital Improvement Plan, and Storm Drainage Master Plan. The computer modeling used to determine the necessary system improvements was limited to the build-out population under the Fortuna General Plan, as explained below.

Computer modeling of the City's water system was carried out to determine recommended improvements as a part of the *Water System Improvements Preliminary Design Report* (PDR) prepared by Oscar Larson and Associates (OLA) in April of 2007. The study identified necessary improvements to the system, and based its recommendations on the need to serve the population of both existing developed parcels as well as vacant in-fill parcels within the zone. The area studied was limited to the current city limits, and was based on the maximum total population allowed under the densities of the land use designations of the Fortuna General Plan.

The storage volume that was calculated for Pressure Zone 1 is equal to the sum the maximum day demand plus fire flow for the pressure zone served by the reservoir. Thus, the modeling of the General Plan population and the maximum day demand plus fireflow resulted in a recommendation to provide a total of 2 million gallons of storage to serve Pressure Zone 1. For Zone 1, the fire storage volume is calculated to be 540,000 gallons, and the current maximum day demand is about 1,500,000 gallons, resulting in a total storage need of 2,000,000 gallons.

For the reasons stated above, the project will have no impact on Population and Housing. The project will not be growth-inducing because it will serve the population that is allowed by the Fortuna General Plan and analyzed in the Environmental Impact Report for the general plan. The storage of existing water sources, connection of existing pressure zones 5 and 1 and improvement of existing fire suppression services will not displace people or existing housing, nor will it induce substantial population growth in the area, because the project is replacing existing facilities.

MITIGATION MEASURES: None Required.

XIV. PUBLIC SERVICES:

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the Project?					
Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:					
a) Fire Protection?	☐	☐	☐	☒	1,2
b) Police Protection?	☐	☐	☐	☒	1,2
c) Schools?	☐	☐	☐	☒	1,2
d) Parks?	☐	☐	☐	☒	1,2
e) Other Public Facilities?	☐	☐	☐	☒	1,2

**See Checklist of Information Sources on Page 36.*

FINDINGS:

The City has master planned the infrastructure in the project areas, including water and sewer, drainage, and roadways through the General Plan, zoning ordinance, Capital Improvement Plan, and Storm Drainage Master Plan.

The storage of existing water sources, connection of pressure zones and improvement of existing fire suppression services will not conflict with applicable plans, policies or regulations. City of Fortuna service providers have been contacted regarding the project and have indicated the ability to provide services.

The General Plan encourages in-filling where existing facilities and services are already available. This project supports "infill" development. The following City services are currently available to the project areas:

a) Fire Protection: The City of Fortuna is within the Fortuna Fire Protection District (FFPD). The FFPD is staffed by the Fortuna Volunteer Fire Department (FVFD), which is comprised of all-volunteer firefighters. The FVFD operates out of three fire stations. The largest station is centrally located on South Fortuna Boulevard, with the two smaller stations located in Hydesville and Campton Heights. The proposed water system improvements will help meet Insurance Services Office (ISO) standards for improved water sources to support delivering fire protection services.

b) Law Enforcement: The Fortuna Police Department (FPD) currently has one officer per 755 residents (2009). The FPD responded to approximately 14,721 calls in 2008, with an average response time of less than three minutes. Civil jurisdiction is with the Fortuna Police Department and the Humboldt County Courts.

c) Schools: Three schools will serve the project area including Toddy Thomas School (5-8), Ambrosini School (K-4), and Fortuna Union High School (9-12). The school districts have been contacted regarding this project and have not indicated an adverse impact or any other concerns.

d) Parks: Park facilities are discussed below under "Recreation".

e) Other Public Facilities:

Library Services: The City of Fortuna library provides information, reading, audio, and visual materials. The present library has reached capacity at 18,000 books and has a monthly circulation around 9,000 books per month. The city has signed a memorandum of understanding between the City of Fortuna and the Humboldt County Library. The MOU transfers all library equipment owned by the City of Fortuna to the county. The Humboldt County Library is responsible for maintenance, supplies, and property insurance of the equipment, whereas the city owns the building and pay for repairs and maintenance.

Transit Services: The City of Fortuna provides public transit to all Fortuna residents through sponsorship of the Humboldt Transit Authority. The City's Parks and Recreation Department operates the "Dial-a-Ride" service for seniors over the age of fifty and disabled persons regardless of age. Two buses are in operation Monday through Friday from 8:30 a.m. to 4:30 p.m. One bus operates on Saturday from 9:00 a.m. to 3:30 p.m. The City of Fortuna 2009 – 2010 Budget allocated $258,305 towards transit services.

For the reasons stated above, the project will have no impact on Public Services.

MITIGATION MEASURES: None Required.

XV. RECREATION

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the Project?					
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒	1,2
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒	1,2

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS:

In addition to a full range of recreational activities and classes for children and adults, the City of Fortuna has 75 acres of community parkland in Rohner, Newburg and 2 mini/pocket parks, which exceeds the State Quimby Act LOS standards of 3-5 acres of parkland per 1,000 residents.

The new, award winning 13,000-square foot River Lodge features three conference rooms with flexible configurations for 10 to 500 people. All meeting/banquet rooms have sweeping panoramic views of the Eel River. The recreational parks and facilities exceed State standards and support the project.

The replacement of existing water reservoirs and connection of existing pressure zones will not impact any of the existing recreational parks and facilities.

For the reasons stated above, the project will have no impact on Recreation Resources.

MITIGATION MEASURES: None Required.

XVI. TRANSPORTATION / TRAFFIC

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the project?					
a) Result in a substantial increase in the number of vehicle trips, roadway vehicle volume or vehicle miles traveled?	☐	☐	☐	☒	1,2
b) Result in a change in traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒	1,2,3
c) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible land uses (e.g., farm equipment)?	☐	☒	☐	☐	1,2
d) Result in inadequate emergency access?	☐	☐	☐	☒	1,23

e) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒	1,2,6

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS: According to the Draft Fortuna General Plan and PEIR, Fortuna's street system includes approximately 52 miles of streets and 400 traffic control signs. The approximately seven miles of Highway 101 that run though the City are maintained by Caltrans.

Most City streets are in good condition and City residents typically enjoy free flowing traffic. However, the North Fortuna Boulevard/Main Street-Rohnerville Road and Kenmar Road/Highway 101 South Ramp are currently operating below the City General Plan LOS standard. These two roadway nodes are outside of the project construction area, and movement of heavy construction equipment typically will not need to travel through these points.

According to the Draft Construction Management Plan in Attachment 1:

"The project phases are limited to the existing Stewart Street reservoir site and the Home Avenue-Garden Lane residential neighborhoods. The project sites will primarily be located outside of the road travel ways. As such, there will be limited traffic control required during construction. The Contractor will attempt to maintain at least one-lane of travel throughout the construction period. There may be limited full closures when deliveries of equipment or piping occur, and during pipeline installation. The traffic control plan will be submitted by the Contractor for review by the City Engineer and at a minimum will comply with Caltrans Standard Plan T13: (incorporated by reference herein). Adjacent property owners will be notified with any changes to the traffic control plan.

The best haul route to and from the Stewart Street site is along Vista Drive by means of 11th Street. A secondary access for the site would be up 9th Street to Christie Ridge Road. The secondary access will be used primarily for equipment and materials delivery. The best haul route to and from the Home Avenue-Garden Lane site is along Home Avenue and Garden Lane. There may be an increase in traffic during some phases of the project as dump trucks and delivery trucks access the project site. Based on our review of the project sites, the traffic volume is below capacity, and the increased traffic volume (estimated at a peak increase of 10 vehicles per hour during construction) will not decrease the capacity of the roadways to unacceptable levels. As discussed above, the City may designate staging areas and disposal sites for materials and debris. In addition, the Contractor may propose to obtain other areas for approval by the City.

Upon completion of construction activities, the traffic volume will return to prior to construction levels. The City staff will visit the pump station and reservoir site once per day. The Home Avenue-Garden Lane pipeline will have infrequent traffic volume for hydrant testing and meter reading."

The project will result in an increase in traffic, but the increase would be within the capabilities of the existing road system. The project will not impact air traffic patterns nor increase hazards to a design feature. The project will include adequate off-street and on-street parking in compliance with the Fortuna Zoning Ordinance and the Fortuna Improvements and Specifications. The replacement of existing reservoirs with a water tank and connection of water pressure zones will not conflict with adopted policies or programs supporting alternative transportation, and will not result in adverse impacts to transportation systems or traffic.

To mitigate potential impacts to all City Streets used by trucks and vehicles associated with construction activities on the project site, these streets shall be rebuilt to a condition equal to or better than that existing prior to initiation of construction activities.

For the reasons stated above, the project will have a less than significant impact on Transportation and Traffic with the following Mitigation Measure.

MITIGATION MEASURE:

Mitigation #9: The project phases are primarily limited to the existing Stewart Street reservoir site. As such, there will be limited traffic control required during construction:

Construction Personnel and Parking - To limit the impacts, the Contractor will be required to minimize vehicular access by carpooling to the construction sites. The City will designate or approve the Contractor staging areas where the crews will park;

Traffic Control - The Contractor will maintain at least one-lane of travel throughout the construction period. There may be limited full closures when deliveries of equipment and piping occur. The traffic control plan will be submitted by the Contractor for review by the City Engineer and at a minimum will comply with Caltrans Standard Plan T13. Adjacent property owners will be notified of any changes to the traffic control plan;

Reconstruction of City Streets - City streets impacted by trucks or vehicles associated with construction activities on the project site shall be rebuilt to a condition equal to or better than that existing prior to initiation of the water system construction activities.

Timing for Implementation/Compliance: During construction of water system improvements.
Person/Agency Responsible for Monitoring: City Engineer or Construction Observer.
Monitoring Frequency: Upon completion of the project.
Evidence of Compliance: Visual site inspection by City Engineering Staff.

XVII. UTILITIES AND SERVICE SYSTEMS

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the project?					
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒	1,2
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒	1,2
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒	1,2

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒	1,2
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒	1,2
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒	1,2
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒	1,2

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS: The City has master planned the infrastructure in the project areas, including water and sewer, drainage, and roadways through the General Plan, zoning ordinance, Capital Improvement Plan, and Storm Drainage Master Plan. The storage of existing water sources and improvement of existing fire suppression services will not conflict with these applicable plans, policies and regulations.

The impervious surface increase, based on the preliminary site plan at Stewart Street, is about 400 SF which results in an increase of 0.03 cfs of stormwater during the 100 year storm. This volume of change is less than significant and would not even be a reportable change. The Home Avenue/Garden Lane has no change in impervious surface, thus no impact on stormwater.

Because the project will only require replacement of existing water reservoirs and pressure zone connections, it will not increase wastewater flow, not require construction of new stormwater facilities, nor negatively impact a landfill.

The project will not adversely impact any of the following utilities and services:

Wastewater: The City Wastewater Treatment Plant (WWTP) currently treats 1.0 Million Gallons per Day (MGD) during the dry weather season (June through September), and an average of 1.9 MGD annually (wet and dry weather flows). The recently upgraded WWTP has an average dry weather capacity of 1.5 MGD, and a wet weather capacity of up to 7 MGD. The WWTP can accommodate services for approximately 15,000 people.

Water: The overall current storage capacity of the city's water system is approximately 7.5 MG. The city's water supply is limited by water rights. According to the Humboldt County Capital Facilities Technical Report, the city is extracting approximately 75 percent of its groundwater allocation under current rights. The city has approximately 1,489 connections available before it would need to apply for additional water rights. A new 6-inch water main shall be installed down Stewart Street to improve water pressure and support installation of a new fire hydrant at the end of Stewart Street. The new tank excavation will require lowering the base elevation of the reservoir approximately 15 feet, to construct the foundation on a competent soil layer. The lower tank bottom will result in some services in Pressure Zone #1 receiving less than adequate water pressure. To compensate for this, the project will connect Pressure Zone #5 to Pressure Zone #1 by a pipe along Home Avenue, between Home Avenue and Garden Lane, and along Garden Lane.

Stormwater: The hydraulic analyses provided in the City's 2005 Storm Drain Master Plan identified 79 drainage structures within the City of Fortuna that were considered deficient (i.e., undersized for the 25-year design flow). The identified deficiencies were combined into 55 recommended improvement projects

with an estimated total implementation cost of approximately $14,787,000. In 2007, the Fortuna Redevelopment Agency issued over $12.6 million in revenue bonds to finance the construction or remediation of various infrastructure projects, which are scheduled for completion by the fall of 2010.

Solid Waste: The City of Fortuna has franchised municipal solid waste collection services to Eel River Disposal and Resource Recovery (ERD). ERD offers Fortuna resident's weekly garbage pickup and bi-weekly curbside recycling and green-waste. The city also promotes composting and sells compost bins at a subsidized rate to Fortuna residents. The City's Solid Waste Department is responsible for developing and implementing the many programs contained in the Fortuna Source Reduction and Recycling Element (FSRRE). The programs include public education, technology transfer, recycling, and waste reduction activities.

For the reasons stated above, the project will have no impact on Utilities and Service Systems.

MITIGATION MEASURES: None Required

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

Issues	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Information Sources**
Would the Project?					
a) Have the potential to: (1) degrade the quality of the environment, (2) substantially reduce the habitat of a fish or wildlife species, (3) cause a fish or wildlife population to drop below self-sustaining levels, (4) threaten to eliminate a plant or animal community, (5) reduce the number or restrict the range of a rare or endangered plant or animal, or (6) eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒	1,2,4
b) Have impacts that are individually limited, but cumulatively considerable? "Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.	☐	☐	☐	☒	1,2,3
c) Have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐	1,2,3,5

**See Checklist of Information Sources following the Discussion of Environmental Factors and Findings.*

FINDINGS:

The project has been reviewed in the context of other recent discretionary approvals in the area, in the context of conformance with policies and standards of the General Plan and Zoning Code, and in the context of future developments in the area that are known at the time of project review. Because the storage of existing water sources, connection of existing water pressure zones and improvement of existing fire suppression services will not conflict with applicable plans, policies or regulations, or induce substantial population growth, it will not have considerable cumulative impacts.

Consistency with general plan policies and standards assures to a large degree that potential community wide impacts are addressed.

Storage of existing water sources, connection of pressure zones and improvement of fire suppression services will also not have substantial direct or indirect adverse effects on human beings.

Based on the findings of this checklist, the project will not have the potential to degrade the quality of the environment, including reductions to plant or animal wildlife species, or eliminate important examples of the major periods of California history or prehistory.

MITIGATION MEASURES: None Required.

CHECKLIST OF INFORMATION SOURCES

1. Humboldt County Web GIS
2. Fortuna Community Plan Draft EIR, February 2008
3. SHN Draft Construction Management Plan dated August 24, 2009
4. SHN Natural Resources Assessment dated August 2009
5. SHN Geotechnical Investigation Report dated May 2009
6. City of Fortuna General Plan, as amended July 19,1993
7. City of Fortuna Storm Drainage Master Plan, completed 1982
8. Transportation and Traffic Engineering Handbook, Institute of Transportation Engineers, 2nd Edition, 1982
9. FEMA Flood Insurance Mapping
10. California Natural Diversity Database (CNDDB)
11. Flood Insurance Study, City of Fortuna, Federal Emergency Management Agency, November 3, 1981
12. North Coast Regional Water Quality Control Board 1995 Basin Plan
13. City of Fortuna Zoning Ordinance
14. City of Fortuna Department of Public Works
15. Fortuna Fire Protection District
16. California Division of Mines and Geology
17. US Fish & Wildlife Service
18. Housing and Urban Development Noise Guidebook

Mitigation Measures, Monitoring, and Report Program

The following table lists the mitigation measures discussed above, including the method of verification, monitoring schedule, and the responsible party.

Resource(s)	Measure No.	Summary of Mitigation Measure	Method of Verification	Monitoring Schedule	Responsible Party
Air Quality Greeenhouse Gas Emissions Hazards & Hazardous Materials	1	The project shall comply with Air Quality Regulation 1, Chapter IV to the satisfaction of the North Coast Unified Air Quality Management District (NCUAQMD). This shall require, but may not be limited to: (1) covering open bodied trucks when used for transporting materials likely to give rise to airborne dust; (2) promptly removing earth or other material that has been transported by truck or earth moving equipment, erosion by water, or other means onto paved streets; (3) Minimizing dust by using water as a control. Site and debris watering shall be performed a minimum of once a day during all demolition activities. During grading activities, any exposed soil areas shall be watered at least once per day. Stockpiles of crushed cement, debris, dirt or other dusty materials shall be covered or watered once per day as well. In addition, trucks carrying soil and debris shall be wetted or covered prior to leaving the Site. On windy days, or when fugitive dust can be observed leaving the site, additional applications of water will be applied; (4) Installing soot traps or retrofitted equipment to reduce emissions on vehicles and construction equipment; and (5) Turning off vehicles and construction equipment not in use to minimize diesel emissions.	Visual site inspection by City Engineering Staff	Daily for duration of project	City Engineer or Construction Observer
	2	The project shall comply with Air Quality Regulations to the satisfaction of the NCUAQMD. This shall require, but may not be limited to: (1) Collecting a representative number of samples for potential Lead Based Paints (LBPs) and Asbestos Containing Materials (ACMs) to determine which materials require special handling, transporting, and disposal. (2) Preparing the appropriate forms and submit the appropriate report with laboratory results to the NCUAQMD. (3) Removing, handling, transporting, and disposing of known ACMs in accordance with the Construction Management Plan (CMP). Retain the services of a Division of Occupational Safety and health (DOHS) licensed and registered asbestos contractor to remove the ACMs. (4) Removing, handling, transporting, and disposing of known LBPs in accordance with the Construction Management Plan (CMP). Cal-OSHA requires training, personal protective equipment, and specific work practice precautions whenever employees will disturb lead in any concentration because disturbance may result in airborne exposure over the Action Limit or Permissible Exposure Limit (PEL).			

Resource(s)	Measure No.	Summary of Mitigation Measure	Method of Verification	Monitoring Schedule	Responsible Party
Air Quality Greeenhouse Gas Emissions Hazards & Hazardous Materials	3	To the extent feasible, pre-coated/natural colored building materials shall be used. Water-based or low VOC coatings shall be used that comply with SCAQMD Rule 1113 limits. Spray equipment with high transfer efficiency, or manual coatings application such as paint brush, hand roller, trowel, etc. shall be used to reduce VOC emissions, where practical. Paint application shall use lower volatility paint not exceeding 100 grams of ROC per liter.	Visual site inspection by City Engineering Staff	Upon Completion of the Project	City Engineer or Construction Observer
Biological Resources	4	To avoid impacts to nesting raptors and/or other bird (for example, passerines – perching birds), one of the following shall be implemented: 1. Conduct vegetation removal and other ground disturbance activities associated with construction during September through January, when birds are not nesting, or 2. A qualified biologist shall conduct pre-construction surveys for nesting birds if vegetation removal and other ground disturbance activities are to take place during the nesting season (February 1 to August 31 for most birds). Pre-construction surveys for nesting pairs, nests, and eggs would occur in areas proposed for vegetation removal and other ground disturbance activities, and active nesting areas flagged. If active nests are encountered, species-specific measures shall be prepared by a qualified biologist in consultation with the CDFG and implemented to prevent abandonment of the active nest.	Visual Site Inspection by Qualified Biologist	Prior to Construction	Qualified Biologist

Resource(s)	Measure No.	Summary of Mitigation Measure	Method of Verification	Monitoring Schedule	Responsible Party
Cultural	5	If buried archaeological or historical resources are encountered during construction activities, the City Engineer or Construction Observer on-site shall call all work in the immediate area to halt temporarily, and a qualified archaeologist shall be contacted to evaluate the materials. Prehistoric materials may include obsidian or chert flakes, tools, locally darkened midden soils, groundstone artifacts, dietary bone, and human burials. If human burial is found during construction, state law requires that the County Coroner shall be contacted immediately. If the remains are found to be those of a Native American, the California Native American Heritage Commission will then be contacted by the Coroner to determine appropriate treatment of the remains.	Visual site inspection by City Engineer, or qualified archaeologist if buried cultural resources are encountered	Daily for duration of project	City Engineer or Construction Observer
Geology	6	The project Geotechnical Investigation Report in Attachment 3 includes design standards for the proposed water tank to withstand strong seismic shaking, and is incorporated by reference into this mitigation measure. Appropriate seismic parameters are included in the Geotechnical Investigation Report. The minimum standards for construction of the reservoir shall be in accordance with the latest edition of the California Building Code for the most seismically active areas.	Consulting Geologist & City Engineer or Construction Observer	Daily for duration of project	Consulting Geologist & City Engineer or Construction Observer

Resource(s)	Measure No.	Summary of Mitigation Measure	Method of Verification	Monitoring Schedule	Responsible Party
Hydrology	7	Prior to the commencement of any clearing, grading or excavation, the City shall comply with the State Water Resources Control Board's National Pollutant Discharge Elimination System (NPDES) General Construction Activities Permit (WQ Order No. 99-08-DWQ) as follows: 1. The City Engineer shall develop, implement and maintain a Storm Water Pollution Prevention Plan (SWPPP) or an Erosion Control Plan (ECP) to control the discharge of storm water pollutants including sediments associated with construction activities from sites that have an acre or more of exposed soil. **2.** If a Construction General Permit is required, the City Engineer shall file a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB), and a Construction SWPPP will be prepared. All earth work shall be done between April 15th and October 15th unless otherwise approved by the City Engineer, in compliance with all State Water Resources Control Board requirements, following a noticed public hearing. Construction areas must be adequately winterized as required by the City Engineer prior to October 15th. At a minimum an Erosion Control Plan (ECP) shall be prepared and the following BMPs from the California Stormwater Quality Association Construction Handbook shall be incorporated, which will minimize the release of soil and construction materials and prevent off site impacts to the roadways and drainages: • BMP #3 (Erosion Control Plan), • SE-1 (Silt Fence), • SE-5 (Fiber Rolls), • SE-7 (Street Sweeping), • SE-10 (Storm Drain Inlet Protection), • WE-1 (Wind Erosion Control), • TC-1 (Stabilized Construction Entrance).	Visual site inspection by City Engineering Staff	Daily for duration of project	City Engineer or Construction Observer

Resource(s)	Measure No.	Summary of Mitigation Measure	Method of Verification	Monitoring Schedule	Responsible Party
Noise	8	The Contractor shall prepare a Final Construction Management Plan (FCMP) to minimize impacts on the surrounding residences to the fullest extent possible. Pile drivers will not be allowed on the project sites. The Final CMP shall include, at a minimum, the following measures: **Hours of Construction -** The hours of construction activity shall be limited to non-holiday weekdays from 8:00 a.m. to 5:00 p.m. **Complaint Response -** The City Engineer shall designate a Construction Observer who shall also serve as a "noise disturbance coordinator," and be responsible for responding to any local complaints about construction noise or other impacts associated with construction activities. A telephone number for the disturbance coordinator would be conspicuously posted at the construction site and on the City website. The Construction Observer would determine the cause of the noise complaints (e.g., beginning work too early, bad muffler, etc.) and institute reasonable measures warranted to correct the problem. Reasonable measures to be considered *may* include (but are not limited to) the following: • Construction of temporary sound walls or other physical noise barriers between the construction site and adjacent residences; • Shielding of stationary combustion equipment such as pumps or generators with noise protection barriers; • Installation of noise reduction features (mufflers & shrouds, etc.) on construction equipment. Implementation of noise reduction features will be determined by the Construction Observer based on the type of complaint received from neighbors, the degree of noise levels based on actual measurements if necessary (assuming an acceptable interior noise level of 45 dB per State Building Standards Commission), and the feasibility of implementation of the specific measure. *It is important to note that the terms of the Construction Contract forbid the City from directing the Contractor's forces, requiring that the Final Construction Management Plan be updated and confirmed by the Contractor upon award of the Contract, prior to the start of construction, to reflect the Contractor's intended process in completing the work specified in the Contract Documents. Pile Drivers will not be used for this project.*	Submittal to City by Contractor	Prior to and during construction	Contractor and Noise Disturbance Coordinator

Resource(s)	Measure No.	Summary of Mitigation Measure	Method of Verification	Monitoring Schedule	Responsible Party
Transportation	9	The project phases are primarily limited to the existing Stewart Street reservoir site. As such, there shall be limited traffic control required during construction: **Construction Personnel and Parking -** To limit the impacts, the Contractor shall be required to minimize vehicular access by carpooling to the construction sites. The City will designate or approve the Contractor staging areas where the crews will park; **Traffic Control -** The Contractor shall maintain at least one-lane of travel throughout the construction period. There may be limited full closures when deliveries of equipment and piping occur. The traffic control plan will be submitted by the Contractor for review by the City Engineer and at a minimum will comply with Caltrans Standard Plan T13. Adjacent property owners will be notified of any changes to the traffic control plan; **Reconstruction of City Streets -** City streets impacted by trucks or vehicles associated with construction activities on the project site shall be rebuilt to a condition equal to or better than that existing prior to initiation of the water system construction activities.	Visual inspection by City Engineering Staff	Following completion of the project	City Engineer or Construction Observer

CONSULTING ENGINEERS & GEOLOGISTS, INC.
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Attachment 1

SHN Draft Construction Management Plan

Reference: 009030.201

October 6, 2009

Mr. Dennis Ryan, Public Works Director
City of Fortuna
621 - 11th Street
Fortuna, CA 95540

Subject: Draft Construction Management Plan for the Stewart St. Reservoirs Replacement Project

Dear Mr. Ryan:

SHN Consulting Engineers & Geologists, Inc. (SHN) has prepared this Construction Management Plan (CMP) for the environmental review phase of the Stewart Street reservoirs replacement project. The CMP will minimize the project's construction related environmental effects and foster public safety during the construction phase. This document is also a supplement to the Initial Study and summarizes the anticipated minimum requirements that will be included in the construction documents. The construction documents will include the requirements from regulatory agencies, environmental review, and Best Management Practices (BMPs) with which the Contractor will comply. The Contractor will update this CMP and prepare a Final Construction Management Plan in accordance with their work plan prior to beginning construction activities.

Project Description and Construction Schedule

Project construction is anticipated to be divided into four phases:

5. **Pump Station Relocation**- The existing pump station will be relocated to accommodate the new tank during this phase. The relocation will require replacing the pipes connecting to the distribution system; constructing a new pump building and controls, installing the pumps, controls, valves and appurtenances; and demolishing the old pump station. Concurrently the City of Fortuna will be installing a 6-inch water main, reconnecting services, and installing a fire hydrant in Stewart Street to replace the main that crosses through the reservoir site. **Approximate Time: 2 months**

6. **Demolition and Excavation-** Demolition of the existing tanks, installation of the five 10,000 gallon temporary storage tanks and piping, construction of the access road, and excavation to subgrade will occur during this phase. **Approximate Time: 2 months**

7. **Connection of Pressure Zone #5 to Pressure Zone #1-** A new pipeline will be constructed from the Home Drive Pump Booster Pump Station to Garden Lane. The project includes approximately 300 to 500 feet of 6-inch line installed by a trenchless technology methodology (Horizontal Directional Drill), 400 to 500 feet of 6-inch line installed by trenching, 600 to 700 feet of 2-inch line installed by trenching, installing fire hydrants, replacing water meters, installing pressure reducing valves, and paving the trenches. The preferred alignment is preliminary at this time; the installation lengths may change prior to construction when the alignment is confirmed. This work can be completed concurrently with any other phase of the project. **Approximate Time: 1 month (Concurrent with another phase)**

8. **Construction of 2 MG Concrete Tank-** Construction of the 2 MG concrete tank, backfilling around the tank, finish grading, paving damaged streets, landscaping and clean up will occur during this phase. **Approximate Time: 8 months**

The construction of the proposed project is expected to occur over approximately 12 months, spanning two construction seasons. Total construction time is not a sum of the days associated with all construction phases because there is overlapping of certain tasks and phases. Construction season for Humboldt County is typically from April 15 to October 15. Construction work could be completed outside of this period with the proper permits and the use of BMPs.

Hours of Construction

The hours of construction activity will be limited to non-holiday weekdays from 8:00 a.m. to 5:00 p.m., although the contractor could request a modification to these hours. The City Engineer would be required to approve a working-hours modification.

Construction Personnel and Parking

The Stewart Street reservoir and Home Avenue-Garden Lane pipeline connection project sites are constrained with limited storage and parking. To limit the impacts, the Contractor will be required to minimize vehicular access by carpooling to the site. The City will designate or approve the Contractor staging areas where the crews will park.

The total number of construction personnel at the site will vary depending on the construction phase and activity. It is expected that there will be an average of 10 workers daily at the job site during Phases 1 and 2. During Phase 3, it is expected there will be an average of eight workers daily at the job site. During Phase 4, it is expected that there will be an average of 14 workers on site.

Traffic Control

The project phases are limited to the existing Stewart Street reservoir site and the Home Avenue-Garden Lane residential neighborhoods. The project sites will primarily be located outside of the road travel ways. As such, there will be limited traffic control required during construction. The Contractor will attempt to maintain at least one-lane of travel throughout the construction period.

There may be limited full closures when deliveries of equipment or piping occur, and during pipeline installation. The traffic control plan will be submitted by the Contractor for review by the City Engineer and at a minimum will comply with Caltrans Standard Plan T13: (incorporated by reference herein). Adjacent property owners will be notified with any changes to the traffic control plan.

The best haul route to and from the Stewart Street site is along Vista Drive by means of 11th Street. A secondary access for the site would be up 9th Street to Christian Ridge Road. The secondary access will be used primarily for equipment and materials delivery. The best haul route to and from the Home Avenue-Garden Lane site is along Home Avenue and Garden Lane. There may be an increase in traffic during some phases of the project as dump trucks and delivery trucks access the project site. Based on our review of the project sites, the traffic volume is below capacity, and the increased traffic volume (estimated at a peak increase of 10 vehicles per hour during construction) will not decrease the capacity of the roadways to unacceptable levels. As discussed above, the City may designate staging areas and disposal sites for materials and debris. In addition, the Contractor may propose to obtain their own areas for approval by the City.

Upon completion of construction activities, the traffic volume will return to prior to construction levels. The City staff will visit the pump station and reservoir site once per day. The Home Avenue-Garden Lane pipeline will have infrequent traffic volume for hydrant testing and meter reading.

Construction Equipment

The anticipated construction equipment and typical noise levels during the various phases of the project are as follows:

Table 1
Construction Equipment and Typical Noise (in dBA at 50 feet)[1] for Each Phase

Phase 1: Pump Station Relocation	Backhoe (80) Excavator (85) Dump Trucks (84) Concrete Trucks (85) Compactor (83) Paver (85) Flat Bed Delivery Trucks (84) Skid Steer (80) Water Trucks (84)
Phase 2: Demolition and Excavation	Backhoe (80) Excavator (85) Dump Trucks (84) Flat Bed Delivery Trucks (84) Water Truck (84) Skid Steer (80)

Phase 3: Connection of Pressure Zone #5 to Pressure Zone #1	Backhoe (80) Horizontal Directional Drill Rig (82) Excavator (85) Dump Trucks (84) Flat Bed Delivery Trucks (84) Paver (85) Skid Steer (80) Compactor (83) Water Trucks (84) Concrete Trucks for Thrust Blocks
Phase 4: Construction of 2 MG Concrete Tank	Excavator (85) Dump Trucks (84) Concrete Trucks (85) Crane (85) Shot Crete System (85) Flat Bed Delivery Trucks (84) Skid Steer (80) Water Trucks (84) Compactor (83) Paver (85)
	[1]Per Federal Highway Administration 2006 Roadway Construction Noise Model User's Guide, January 2006

Safety and Security

Project Fencing

The entire perimeter of the site is fenced with a 6-foot high security fence. The fencing may be replaced during Phase 4. Temporary 6-foot high security fence will be erected as needed during Phase 4 construction. A 20-foot wide swinging gate on Stewart Street will provide access into the site and will be locked for security. The gate will be open when construction activity occurs to avoid interference with the work.

Pedestrian Protection

Currently, there is no pedestrian walkway adjacent to the site, pedestrians walk along Stewart Street. The existing fencing will remain during Phases 1 through 3 and temporary fence may be installed during Phase 4 to foster pedestrian safety. A safe and clean path along the frontage of the site will be provided at the end of each work day.

Safety and Security

Appropriate signage will be posted at the site indicating "No Trespassing," "Hard Hat Required," "Authorized Personnel Only," and other visitor and delivery information. Daily safety inspections will be conducted by the onsite construction superintendent.

Workers Safety
In June of 2009, SHN performed a Lead-Based Paint (LBP) and Asbestos Containing Materials (ACM) survey, and collected samples for analysis. Based upon the field survey and from the laboratory results from the 19 sample collected, ACMs were identified in concentrations of one percent or greater in approximately 25 square feet of asbestos-containing (5-10%Chrysotile asbestos) roof penetration mastic (gray/black in color); and approximately 3 linear feet (1-5% Chrysotile asbestos) white window putty. The roof mastic is located at the transition between exterior walls of the entryway and the conical roof of the round tank, and at the exterior wall of the entryway and the roof of the rectangular tank. The window putty is situated around the window glazing of the pump house. Additionally, SHN collected six paint chip samples for lead analysis from the tank and pump house structure. LBP is defined as paint containing greater than 0.5% lead by weight or 5,000 parts per million (ppm) total lead. Based upon the limited LBP survey performed, lead was found in concentration ranging from 130 to 3,500 parts per million (ppm).

Remove, handle, transport, and dispose of known ACMs in accordance with this Construction Management Plan (CMP). Retain the services of a Division of Occupational Safety and Health (DOHS) licensed and registered asbestos contractor to remove the ACMs.

Remove, handle, transport, and dispose LBPs in accordance with this CMP. Cal-OSHA requires training, personal protective equipment, and specific work practice precautions whenever employees will disturb lead in any concentration because disturbance may result in airborne exposure over the Action Limit or Permissible Exposure Limit (PEL).

Additionally, Asbestos Cement (AC) pipe exists within the site; and when encountered an 8-hour certified ACM worker is required for the removal and handling of this material, along with trained personnel.

Proper Personal Protection Equipment (PPE) will be used, and handling and disposal regulations will be adhered to. Refer to SHN's Pre-Demolition Asbestos and Lead-Based Paint Survey report for recommendation regarding workers safety (Attachment A of this CMP).

Air Quality Control, Fugitive Dust Control, Noise Control and Vibration Control

Demolition of Materials and Waste Control
Laboratory results indicate that ACMs exist in the roof mastic located at the transition between exterior walls of the entryway and the conical roof of the round tank, and at the exterior wall of the entryway and the roof of the rectangular tank. Also, ACMs were detected within the window putty that is situated around the window glazing of the pump house. Additionally, AC piping exists above and below grade at the site.

Retain the services of a Division of Occupational Safety and Health (DOHS) licensed and registered asbestos contractor to remove the ACMs from water tanks and the pump house structure prior to conducting demolition activities. When removing AC piping, which also has ACMs, trained workers will cut, wrap, and dispose of pipes appropriately. When cutting AC pipe only use

approved methods to minimize the release of air born particles, and workers must have the appropriate PPE. Bag up the ACM waste materials, dispose of it appropriately, and maintain appropriate documentation.

Laboratory results from six paint chip samples collected from the tanks and pump house structure indicate that LBP exists in concentration ranging from 130 to 3,500 ppm. Cal-OSHA requires training, personal protective equipment, and specific work practice precautions whenever employees will disturb lead in any concentration because disturbance may result in airborne exposure over the Action Limit or Permissible Exposure Limit (PEL).

Refer to SHN's Pre-Demolition Asbestos and Lead-Based Paint Survey report for recommendation regarding workers safety (Attachment A of this CMP).

Emissions Air Quality Control

To the extent feasible, pre-coated/natural colored building materials shall be used. Water-based or low Volatile Organic Compound (VOC) coatings shall be used. Spray equipment with high transfer efficiency, or manual coatings application (such as paint brush, hand roller, trowel, etc.) shall be used to reduce VOC emissions, where practical. Paint application shall use lower volatility paint not exceeding 100 grams of Reactive Organic Compounds (ROC) per liter.

Fugitive Dust Control

The project will comply with Air Quality Regulation 1, Chapter IV to the satisfaction of the North Coast Unified Air Quality Management Board (NCUAQMD). This will require, but may not be limited to: (1) covering open bodied trucks when used for transporting materials likely to give rise to airborne dust; and (2) promptly removing earth or other material that has been transported by truck or earth moving equipment, erosion by water, or other means onto paved streets.

Water will be used to minimize dust. Site and debris watering shall be performed a minimum of once a day during all demolition activities. During grading activities, any exposed soil areas shall be watered at least once per day. Stockpiles of crushed cement, debris, dirt or other dusty materials shall be covered or watered once per day as well. In addition, trucks carrying soil and debris shall be wetted or covered prior to leaving the Site. On windy days, or when fugitive dust can be observed leaving the site, additional applications of water will be applied.

Noise Control

Noise levels are measured in decibels (dB), but community noise levels are measured in terms of A-weighted sound level (dBA). The A-weighted scale of frequency sensitivity accounts for the sensitivity of the human ear and is sited in most noise criteria. The City of Fortuna does not have a noise ordinance or criteria. As such, we reviewed Housing and Urban Development (HUD) Noise Guidebook to establish criteria for this project.

According to the HUD Noise Guidebook, noise levels at or below 65 dB are "Acceptable," levels above 65 dBA but not exceeding 75 dBA are "Normally Unacceptable," and levels above 75 dBA

are "Unacceptable." Based upon the HUD Noise Guidebook, Ambient noise at the project sites is most likely below the 65 dBA and is therefore “Acceptable.”

Noise from construction activities on this project will be a function of the noise generated by individual construction equipment items (as listed in the “Construction Equipment” section above), the equipment location (much of this construction will be insulated by the landform, the depth of the excavation, and the concrete used for most of the structure), and the timing and duration of noise-generated activities. It is important to note that generally all equipment is not operated continuously or used simultaneously. The number, type, distribution, and usage of construction equipment will differ from phase to phase. The noise generated is both temporary in nature and limited in duration by the phase of construction and permitted hours of operation.

Based on this analysis, the project sites will experience increases above the 65 dB, "Acceptable" level. This increase will be short-term and temporary and will cease upon completion of construction. To mitigate temporary increases in noise, the following mitigation measure is recommended:

Construction activities will adhere to the hours prescribed above. The Contractor will provide residents living within 500 feet of the project site with a construction schedule for the project prior to the commencement of construction and shall keep them informed of any material changes to the schedule. The notification shall also identify the name and phone number of a contact person with whom to register complaints.

Upon completion of construction activities, the noise level will return to ambient levels.

Vibration Control and Monitoring

Vibration from construction activities on this project will be a function of the vibration generated by individual construction equipment items (as listed in the “Construction Equipment” section above), the equipment location (much of this construction will be insulated by the landform, the depth of the excavation, HDD construction techniques, and the concrete used for most of the tank structure), and the timing and duration of vibration-generated activities. The majority of the equipment (HDD drill rig, excavators, and skidsteer) produce little to no vibration during their use. It is important to note that generally all equipment is not operated continuously or used simultaneously. The number, type, distribution, and usage of construction equipment will differ from phase to phase. The vibration generated is both temporary in nature and limited in duration by the phase of construction and permitted hours of operation.

Qualitative vibration monitoring will be conducted as part of this CMP. If vibration levels are found to exceed the threshold for structural damage, other construction methods will be employed to eliminate any occurrence of structural damage. Such alternative construction methods include, but are not limited to, use of less vibration-intensive construction vehicles, demolition without impact tools, and sequencing tasks to demolition, earth-moving and ground-impacting operations so as not to cause structural damage.

Upon completion of construction activities, the vibration will return to pre-construction levels.

Erosion and Sediment Control Plan

If more than one-acre of soil is disturbed and exposed at any one time during the demolition and construction of this project then a Notice of Intent (NOI) will be required to be filed with the State, and a Construction Storm Water Pollution Prevention Plan (SWPPP) with erosion control measures will be prepared.

At a minimum, an Erosion Control Plan (ECP) will be prepared and the following BMPs from the California Stormwater Quality Association Construction Handbook will be incorporated, which will minimize the release of soil and construction materials and prevent off site impacts to the roadways and drainages:

1. BMP #3 (Erosion Control Plan)
2. SE-1 (Silt Fence)
3. SE-5 (Fiber Rolls)
4. SE-7 (Street Sweeping)
5. SE-10 (Storm Drain Inlet Protection)
6. WE-1 (Wind Erosion Control)
7. TC-1 (Stabilized Construction Entrance/Exit)

Closing

This Construction Management Plan presents the minimum anticipated measures to address the environmental effects of the construction. The regulatory review process may result in additional measures not addressed in this plan.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

Brian A. Freeman, P.E.
Project Engineer

BAF:scw

Appendix 1. Pre-Demolition Asbestos and Lead-Based Paint Survey

Appendix 1

Reference: 009030.203

August 21, 2009

Mr. Dennis Ryan
Public Works Director—City of Fortuna
PO Box 545
Fortuna, CA 95540

Subject: Pre-Demolition Asbestos and Lead-Based Paint Survey, Stewart Street Tank Site, 621 - 11th Street, Fortuna, California

Dear Mr. Ryan:

SHN Consulting Engineers & Geologists, Inc. (SHN) has prepared this letter in reference to the pre-demolition asbestos and Lead-Based Paint (LBP) survey performed at your request on June 19, 2009, at the Stewart Street tank site, located at 621 - 11th Street, Fortuna, California.

The survey was conducted by Mr. Dustin Tibbets, a California Occupational Safety and Health Administration (Cal-OSHA) Certified Asbestos Site Surveillance Technician (Certification #04-3614), and Kaila Benton-Vitz, a California Department of Public Health (CDPH) Certified lead Inspector/Risk Assessor (Certification #20202). Certifications for Mr. Tibbets and Ms. Benton-Vitz are available upon request.

The objectives of the survey were to:

- perform a visual inspection and destructive sampling for asbestos and LBP from the two water tanks and pump house prior to demolition; and
- provide this report, which includes our findings and recommendations.

Asbestos Survey

The asbestos survey was conducted in accordance with the requirements set forth in Environmental Protection Agency (EPA) National Emissions Standards for Hazardous Air Pollutants (NESHAP) Regulation (40 Code of Federal Regulations [CFR], Part 61), the methods presented in the EPA Federal Asbestos Hazard Emergency Response Act (AHERA) regulation (40 CFR, Part 763), and the Cal-OSHA Asbestos Construction Standard (8 CCR 1529). A visual inspection was conducted to identify suspect Asbestos Containing Materials (ACMs) that will be impacted by the planned demolition project. Once identified, bulk samples were collected from the suspect ACMs.

Once sampling was completed, samples were placed in sealed containers marked with unique sample numbers. Bulk samples were submitted under proper chain-of-custody protocol to Asbestos TEM

Laboratories of Berkeley, California, for analysis using Polarized Light Microscopy (PLM) by method EPA-600/R93/116. Asbestos TEM Laboratories is accredited under the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program (NIST/NVLAP) for the asbestos analysis.

Nineteen (19) suspect ACM samples were collected during the survey. Asbestos was identified in concentrations of one percent or greater in the following materials:

- approximately 25 square feet (SF) of Asbestos Containing (AC) gray/black roof penetration mastic (5-10% Chrysotile asbestos). The AC gray/black roof penetration mastic was identified at the transition between the entry doorway and the conical structure roof and at the transition between the doorway and the rectangular structure roof. The AC gray/black roof penetration mastic is defined by the EPA as a Category I non-friable ACM and by Cal-OSHA as an ACM; and
- approximately 3 linear feet of asbestos-containing white window glazing putty/compound (1-5% Chrysotile asbestos). The ACM window putty/glazing compound was identified at the window within the pump house. The AC window glazing putty/compound is classified by the EPA as a Category I non-friable ACM and classified by Cal-OSHA as an ACM.

Based on survey findings, the following materials had no asbestos detected when analyzed by the PLM method:

- asphalt roofing shingles and felt underlayment located at the water tanks and pump house; and
- interior and exterior concrete located throughout the water tanks and pump house structures.

Note: When a result of "None Detected" (ND) appears in this report, it should be interpreted as meaning no asbestos was identified in the sample material above the reliable limit of detection for the PLM method.

The EPA enforces the EPA 40 CFR Part 61 NESHAP regulation and regulates Regulated ACMs (RACMs) and Category I and Category II non-friable ACMs with the potential of becoming friable.

> ***RACMs are defined by the EPA as:*** (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by 40 CFR 61.
>
> ***Category I non-friable ACMs are defined by the EPA as:*** Asbestos containing packings, gaskets, resilient floor covering, and asphalt roofing products

containing more than 1% asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763 Section 1, Polarized Light Microscopy.

Category II non-friable ACMs are defined by the EPA as: Any asbestos containing material excluding Category I non-friable ACMs, containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763 Section 1, Polarized Light Microscopy.

Cal-OSHA regulates all construction work, including demolition work, which impacts or disturbs ACMs and Asbestos Containing Construction Materials (ACCMs).

Asbestos Containing Materials (ACMs) are defined by Cal-OSHA and the EPA as: Any material containing more than one percent (1%) asbestos.

Asbestos Containing Construction Materials (ACCMs) are defined by Cal-OSHA as: Any manufactured construction material, which contains more than one tenth of one- percent (0.1) asbestos by weight.

Lead-Based Paint Survey

The lead-based paint survey was conducted following sampling procedures set forth by the California Department of Public Health (CDPH) and the Department of Housing and Urban Development (HUD). A visual inspection was conducted to identify suspect LBPs prior to the planned demolition project. Once identified, bulk samples were collected from the suspect LBPs.

Once sampling was completed, samples were placed in sealed containers marked with unique sample numbers. Paint chip samples were submitted under proper chain-of-custody protocol to Asbestos TEM Laboratories of Berkeley, California, for analysis by Atomic Absorption Spectroscopy (Flame AA) by method EPA- 3050B Digestion/EPA 7420 (modified). The detection limits vary based upon the weight of the sample provided. Asbestos TEM Laboratories is accredited under the American Industrial Hygiene Association's Environmental Lead Laboratory Accreditation Program.

A total of six (6) paint chip samples were collected from the two water tanks and pump house. Samples were collected from paint materials (dark brown, beige, blue pipe paint, and off-white) (Sample Nos. 030-6-19-09-01, 030-6-19-09-101, 030-6-19-09-102, 030-6-19-09-201, 030-6-19-09-202, and 030-6-19-09-203).

Based on the limited LBP survey performed, lead was found in concentrations ranging from 130 to 3,500 parts per million (ppm). The EPA, HUD, and CDPH define LBP as paint containing greater than 0.5% lead by weight or 5,000 ppm total lead.

Recommendations and Conclusions

Based on the inspection performed at the subject site, SHN is providing the following recommendations:

Asbestos Recommendations

- Retain the services of a Division of Occupational Safety and health (DOSH) licensed and registered asbestos contractor to remove the asbestos containing roof penetration mastics and the window with associated white window putty/glazing.
- If any material cannot be determined to be homogeneous to the materials sampled as part of this inspection, the material should be sampled for asbestos prior to its disturbance or alternatively be treated as an ACM.
- This report should be kept by the owner and all future owners for the life of the property and be made readily available for review. At the completion of the removal process, a final visual inspection and letter report will need to be provided for local Air Quality Management District Requirements to document that all ACMs have been properly removed prior to demolition operations.

Lead Paint Recommendations

- Prior to any demolition activities, all loose and flaking paints should be stabilized to prevent potential lead exposure to workers and possible contamination at the site. This process may include scraping loose and flaking materials from the surface and application of a primer or similar coating. All work, which impacts painted surfaces with detectable concentrations of lead, should be done by properly trained personnel that employ dust reduction and containment controls to prevent lead paint chip or dust emissions or contamination. Work should at minimum take into consideration the requirements of the Lead in Construction Standard, Title 8 CCR, Section 1532.1 and Title 17 of CDPH.
- At completion of demolition operations, a final visual inspection should be performed at the site to ensure that no paint chips, lead paint dust, or other lead contamination above regulatory limits remains on site.

Attachment 1 presents a copy of the laboratory analytical results and chain-of-custody documentation. Attachment 2 presents a site map that shows sample locations. Asbestos and lead certifications for Mr. Tibbets and Ms. Benton-Vitz are available upon request.

SHN appreciates the opportunity to provide these services at your site. SHN can provide a cost estimate for environmental project monitoring, air sampling, and clearance sampling initiatives for asbestos and LBP upon request. If you require additional information, please call Mr. Freeman or Ms. Benton-Vitz at 707-441-8855.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

Kaila B. Benton-Vitz, MS Project Industrial Hygienist	Mitch Edwards, CAC, CDPH Senior Industrial Hygienist Sensible Environmental Solutions Inc.	Brian Freeman, P.E. Project Manager

KBV:MME:BAF:lms

ATTACHMENT 2

Natural Resources Assessment Report

Stewart Street Reservoirs Replacement
Fortuna, California

Prepared for:

City of Fortuna

Consulting Engineers & Geologists, Inc.
8 . Wabash Ave.
a, CA 95501-2138
4108855

Month Year
Type shn ref #

CONSULTING ENGINEERS & GEOLOGISTS, INC.
812 W. Wabash • Eureka, CA 95501-2138 • 707/441-8855 • FAX: 707/441-8877 •shninfo@shn-engr.com

Reference: 009030.020

October 6, 2009

Mr. Dennis Ryan, Public Works Director
City of Fortuna
PO Box 545
Fortuna, CA 95540

Subject: Natural Resources Assessment Report, Stewart Street Reservoirs Replacement, Fortuna, Humboldt County, California

Dear Mr. Ryan:

Attached is the Natural Resources Assessment for the proposed Stewart Street Reservoirs Replacement project at Stewart Street in Fortuna, California. The purpose of this report is to assess potential impacts to biological resources within the vicinity of the proposed Stewart Street Reservoirs Replacement project.

For species with the potential to be impacted by project activities, we discuss the possible types and sources of impacts and assess the likelihood of an impact. Finally, we make recommendations to avoid and/or minimize potential impacts, based on consultation with state and federal agencies.

Please contact me at 707-441-8855 if you have any questions or if we can help you in any way.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

Shannon S. Zimmerman
Biologist

SSZ:scw
Enclosure: Natural Resources Assessment Report dated October 2009

Reference: 009030.020

Natural Resources Assessment Report

Stewart Street Reservoirs Replacement
Fortuna, California

Prepared for:

City of Fortuna

Prepared by:

Consulting Engineers & Geologists, Inc.
812 W. Wabash Ave.
Eureka, CA 95501-2138
707-441-8855

October 2009

QA/QC: LKS___

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Acronyms and Abbreviations

ACOE	Army Corps of Engineers
APN	Assessor's Parcel Number
Ar4	Arcata loam soil series
BIO-#	Mitigation Measure-number
BIOS	Biogeographical Information and Observation System
CCA	California Coastal Act
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CERES	California Environmental Resources Evaluation System
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CFGC	California Fish and Game Code
CH	Critical Habitat
City	City of Fortuna
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CWA	Clean Water Act
DPS	Distinct Population Segment
ESU	Evolutionary Significant Unit
FC	Federal Candidate
FD	Federally Delisted
FE	Federally Endangered
FESA	Federal Endangered Species Act
FT	Federally Threatened
HDD	Horizontal Directional Drill
HA	Hydrologic Area
HR	Hydrologic Region
HSA	Hydrologic Sub-Area
HU	Hydrologic Unit
MBTA	Migratory Bird Treaty Act
MSL	Mean Sea Level
N	North
N/A	Not Applicable
NCCP	Natural Community Conservation Planning Act
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPPA	Native Plant Protection Act
NR	No Reference
NRCS	Natural Resources Conservation Service
OHWM	Ordinary High Water Mark
PT	Federally Proposed Threatened
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement

Acronyms and Abbreviations, Continued

SE	State Endangered
SFP	State Fully Protected
SHN	SHN Consulting Engineers & Geologists, Inc.
SONCC	Southern Oregon Northern California Coast
SPWS	Super Planning Watershed
SR	State listed Rare
SSC	Species of Special Concern
ST	State Threatened
State	State of California
SWRCB	State Water Resources Control Board
TAR	Technical Assistance Request
U.S.	United States
U.S. EPA	U.S. Environmental Protection Agency
USC	U.S. Code
USDI	U.S. Department of Interior
USFWS	U.S. Fish and Wildlife Services
USGS	United States Geological Survey
W	West
WDR	Waste Discharge Requirements
WoS	Waters of the State
WoUS	Waters of the United States

1.0 Executive Summary

The evaluation included in this report encompasses the Stewart Street reservoirs replacement project site and the secondary piping project site connecting Pressure Zone #5 to Pressure Zone #1 between Home Avenue and Garden Lane (Figure 1). As described in the project description below, secondary piping is required to compensate for inadequate water pressure in Pressure Zone #1 due to the lower tank bottom of the new proposed reservoir.

The Stewart Street reservoir and Home Avenue-Garden Lane pipeline project sites are altered and have been subjected to regular human disturbance, both recently and historically. The Stewart Street reservoir site is currently developed with existing City of Fortuna (City) water infrastructure. The majority of the Home Avenue-Garden Lane pipeline site is currently developed with existing public and private access roads. No special status[1] plants or animals were observed during the reconnaissance level biological surveys at either site. Jurisdictional waters of the U.S. and/or State (as wetlands and other waters of the U.S.) were not identified at either site. With careful site planning and implementation of the proposed mitigation measure, potential impacts from the proposed water infrastructure improvement project can be reduced to a level that is less than significant.

2.0 Introduction

SHN Consulting Engineers & Geologists, Inc. (SHN) has conducted site investigations, literature reviews, and an assessment to determine potential impacts to biological natural resources present at the proposed Stewart Street reservoir site on Stewart Street and proposed Home Avenue-Garden Lane pipeline site along and between Home Avenue and Garden Lane in Fortuna, California.

2.1 Project Location

The proposed reservoir site is located in the northwest quadrant of Section 35, Township 3 North (N), Range 1 West (W) Humboldt Base and Meridian of the Fortuna 7.5-minute quadrangle (Figure 1). The Stewart Street reservoir site is located at the existing Stewart Street reservoir site within Fortuna's city limits, near the northern city boundary on Assessor's Parcel Number (APN) 040-053-001. The northern and western boundaries of the Stewart Street reservoir site are bound by Stewart Street, a two-lane paved city roadway (Figure 2). An unimproved, steep gradient access road (Barney Street) parallels the eastern edge of the Stewart Street reservoir site (Appendix A, Photo 4). The latitude and longitude of the Stewart Street reservoir site is approximately 40.602109° N and -124.155782° W, respectively.

The proposed Home Avenue-Garden Lane pipeline site is located in the northwest quadrant of Section 34, Township 3 N, Range 1 W Humboldt Base and Meridian of the Fortuna 7.5-minute quadrangle (Figure 1). Piping is proposed along Home Avenue, between Home Avenue and Garden Lane, and along Garden Lane (Figure 1). The latitude and longitude of the project site is approximately 40.603889° N and -124.160833° W, respectively.

[1] The term "Special Status Species" is used collectively to refer to species that are state or federally listed, species that are state candidates for listing, and all species listed by the California Natural Diversity Database. This term is consistent with the biological resources that need to be assessed pursuant to the California Environmental Quality Act.

2.2 Project Description

The proposed project involves making improvements to the City's existing water storage and distribution system. This project will enable the City to provide adequate water storage for domestic and fire demands in Pressure Zone #1. The City currently stores water in two, 500,000-gallon reservoirs at the Stewart Street reservoir site within the City boundary. One of the concrete reservoirs is approximately 100 years old. The second tank is approximately 75 years old and has started to leak. The proposed project consists of removing/demolishing existing water tanks, constructing a new 2.0-million gallon concrete storage reservoir, relocating the booster pump station, rerouting on-site piping to connect the new storage tank to the existing distribution system, and connecting a new pipe to the system from Pressure Zone #5 (a Horizontal Directional Drill [HDD] will be used for a portion of the pipe installation).

The proposed reservoir project site is the existing Stewart Street reservoir site. The two 500,000-gallon reservoirs and booster pump station are situated on land sloped down at a gradient of approximately 10%, with herbaceous vegetation cover that is regularly mowed (Appendix A, Photo 2). The project will require relocating the booster pump station, demolishing the existing tanks, and excavating the site for the new tank construction. On-site piping will be rerouted to accommodate the new storage. Refer to Figure 3 for a Preliminary Site Plan. The new tank excavation will require lowering the base elevation of the reservoir approximately 15 feet, to construct the foundation on a competent soil layer. The lower tank bottom will result in some services in Pressure Zone #1 receiving less than adequate water pressure. To compensate for this, the project will connect Pressure Zone #5 to Pressure Zone #1 by a pipe along Home Avenue, between Home Avenue and Garden Lane, and along Garden Lane (Appendix A, Photos 5-8). A preferred alignment has been determined (Figure 1). Final location of the piping is dependent on securing easements. The piping will be a 6-inch line connecting the two zones. The HDD operation will not require a large footprint, but consists of an entry or launch point and exit boreholes. The entry borehole for the proposed project will be located off Home Avenue, approximately 10 feet by 50 feet in size, and will be a minimum 5 feet deep. The HDD will be at an adequate depth to avoid negatively impacting tree roots from the drilling operations. The exit borehole will be located on private property off Garden Lane and will be approximately 20 feet by 40 feet in size and approximately 6 feet deep. The piping will require some minor vegetation removal. The entire HDD for the proposed project will be located on private property.

Directional drilling presents significant advantages for placing pipelines in environmentally sensitive areas and steep topography. Because the pipeline is not constructed with an open excavation, all the adverse effects on surface environmental features that result from trench excavation are avoided. However, directional drilling also presents potentially significant environmental risks. The most significant is that the drilling bore may fracture the overlying sediments and force the drilling fluids (which are under pressure) into the near surface environment features that were intended to be avoided. This result would be considered a significant adverse effect in the project area if the "frac-out" resulted in introducing drilling fluids (which contain very fine clays) to surface water features. The "frac-out" potential in the project area is only considered a possibility in shallow areas, such as the entry and exit pits where the drilling fluid is under the most pressure during the HDD process.

In addition to the approximately 300- to 500-foot HDD portion of the pipeline, 600 to 700 feet of 2-inch pipeline is proposed within the existing right-of-way of Home Avenue. The 2-inch pipeline

will be installed by trenching. Approximately 400 to 500 feet of 6-inch line would be installed by trenching from the HDD exit borehole within a portion of the existing Garden Lane. Two new fire hydrants are also proposed along the portion of piping off Garden Lane.

2.3 Site Descriptions

The Stewart Street reservoir site presently supports two, partially buried water supply reservoirs and a wood-frame pump house. The reservoirs consist of reinforced concrete water tanks, one circular and one rectangular, each having about 0.5 million gallons of storage (Appendix A, Photos 1 and 2). The elevation at the Stewart Street reservoir site ranges from approximately 200 feet to 234 feet above Mean Sea Level (MSL). The Stewart Street reservoir site boundary encompasses approximately 0.75 acres. The site slopes 10% to 45% to the southeast. There is a concrete drainage ditch located along the eastern parcel boundary (Appendix A, Photo 4). It is located on the east side of a fence, which is outside of the City's property boundary.

The portion of the alignment for the secondary piping connecting Pressure Zone #5 to Pressure Zone #1 is along Home Avenue and within existing Home Avenue right-of-way. The entry borehole for the HDD portion of the pipeline will be located off Home Avenue. The entire HDD portion of the proposed project will be located on private property. The exit borehole for the HDD will be located on private property off Garden Lane. From the HDD exit borehole, additional piping is proposed along Garden Lane, within private property. No streams or drainages were identified in or adjacent to the alignment for the pipeline construction.

The surrounding land uses at the Stewart Street reservoir and Home Avenue-Garden Lane pipeline sites include urban development consisting of primarily single family residences. Photos are included in Appendix A of this report.

2.4 Scope of Report

The purpose of this natural resources assessment is to determine if the proposed project will result in an impact to special status species, habitat that is jurisdictionally regulated such as wetlands, and/or other sensitive natural communities that may be subject to local policies or ordinances. The findings and recommendation measures included in this report shall be used to facilitate the California Environmental Quality Act (CEQA) review and biological permitting for the proposed project.

3.0 Methods

3.1 Literature Review

This natural resources assessment includes a review of pertinent literature on habitat characteristics of the sites, and a review of information related to species of plants and animals that could potentially utilize the described habitats. A habitat analysis has been conducted in order to

determine the potential presence of natural resources occurring within the survey areas. This report documents the methods, results, and conclusions for the natural assessment and analysis conducted for the sites.

The findings for this report are a result of several sources, including a review of existing literature regarding sensitive resources that have the potential to occur within the sites. Resources for this determination included:

1. California Natural Diversity Database (CNDDB) query for the Fortuna and the surrounding[2] U.S. Geological Survey (USGS) 7.5 minute topographic quadrangles (California Department of Fish and Game [CDFG], 2009a; Figure 4).
2. Electronic Inventory of Rare and Endangered Vascular Plants of California (California Native Plant Society ([CNPS], 2009) was queried for a list of all plant species reported for the Fortuna and the surrounding USGS 7.5 minute topographic quadrangles.
3. U.S. Fish and Wildlife Service (USFWS) Listed/Proposed Threatened and Endangered Species for the Fortuna Quad (Candidates Included) (USFWS, 2009a).
4. Special Animals (CDFG, 2009b).
5. State and Federally Listed Endangered, Threatened, and Rare Plants of California (CDFG, 2009c).
6. State and Federally Listed Endangered and Threatened Animals of California (CDFG, 2009d).
7. Special Vascular Plants, Bryophytes, and Lichens List. Quarterly publication (CDFG, 2009e).
8. Biogeographical Information and Observation System (BIOS; CDFG, 2009f).
9. National Wetland Inventory (U.S. Department of Interior [USDI], 1987) (Figure 5).
10. Soils of Western Humboldt County California (McLaughlin and Harradine, 1965) (Figure 6).

Nomenclature for special status animals conforms to CDFG (2009a, 2009b, and 2009d), respectively. Plant community names conform to Holland (1986) and Sawyer and Keeler-Wolf (1995). Special status plant community designations correspond to *List of Terrestrial Natural Communities Recognized by the CNDDB* (CDFG, 2003) and *Vegetation Classification and Mapping Program List of California Vegetation Alliances* (CDFG, 2007). Botanical nomenclature in this assessment follows the *Jepson Manual (*Hickman, 1993; UC Berkeley, 2009). A list of species observed is included in Appendix B.

3.2 Field Observations and Studies

On February 24, 2009 and March 26, 2009, SHN's botanist/ecologist Aimee Weber, with the support of SHN's environmental planner Rosalind Litzky, conducted site visits at the Stewart Street reservoir

[2] The surrounding USGS 7.5 minute topographic quadrangles include: (Scotia [636A], Taylor Peak [636B], Ferndale [655D], Cannibal Island [655A], Capetown [637A), Hydesville [654D], McWhinney Creek [654A], and Fields Landing [654B].

site. A follow-up site visit was conducted on August 24, 2009 by SHN's biologist Shannon Zimmerman at the Home Avenue-Garden Lane preliminary pipeline construction site. The site visits were conducted for the purpose of determining if the proposed project would result in impacts to special status plant species and/or habitat that are jurisdictionally regulated such as wetlands, and/or other sensitive natural communities that may be subject to local policies or ordinances. Focused botanical survey(s), following the CDFG guidelines (CDFG, 1984 [revised 2000]) was not conducted, and is not considered necessary as impacts from the proposed project are within the existing developed area and maintained areas. No potential habitat for special status plant species was observed within the Stewart Street reservoir site or Home Avenue-Garden Lane pipeline site.

On June 11, 2009, SHN's biologist, Shannon Zimmerman, with the support of SHN's environmental planner Erica Kimnach, conducted a reconnaissance level field survey at the reservoir project site. A preliminary review (windshield survey) was conducted for the secondary piping connecting Pressure Zone #5 to Pressure Zone #1 during the June 11, 2009 site visit. On August 24, 2009, Shannon Zimmerman, with SHN's professional geologist Gary Simpson, C.E.G. conducted a reconnaissance level field survey at the Home Avenue-Garden Lane site. The aforementioned site visits were conducted to evaluate the presence or absence of the habitat necessary for the special status wildlife species known to occur in the Fortuna area. The assessment at the Stewart Street reservoir and Home Avenue-Garden Lane pipeline sites included on-site inspections, by foot. The reconnaissance level field survey was adequate to provide a thorough inspection of the project site. Focused wildlife and nesting bird survey(s) were not conducted, and are not considered necessary. Thus, the identity, description, and potential for occurrence of these special status bird species appear in Section 6.0. A list of animal species (or signs) encountered during the assessment is presented in Appendix B.

Wetland delineation methods described in *The Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* were used to identify Waters of the United States (WoUS) under the Army Corps of Engineers (ACOE) jurisdiction. The ACOE method uses a "three-parameter" approach, in which criteria for hydrophytic vegetation, hydric soils, and wetland hydrology must each be met (present at the point of field investigation) to conclude that an area is a wetland and thus, qualifies as WoUS.

3.3 Trustee and Other Agency Consultation

On March 26, 2009, Michael van Hattem and Scott Bauer, Environmental Scientists with the CDFG, Aimee Weber, SHN Botanist/Ecologist, and Liz Shorey, Dennis Ryan, Stephen Avis, and Kevin Carter with the City conducted a site visit at the Stewart Street reservoir site to discuss the proposed project and potential biological impacts. Mr. van Hattem and Mr. Bauer concluded during this site visit that there were no major biological issues present at the Stewart Street reservoirs site and that a 1600 Streambed Alteration Agreement (SAA) was not required for the construction proposed, including construction adjacent to the concrete drainage ditch located in the vicinity east of the Stewart Street reservoir site.

On May 6, 2009, on behalf of the City, SHN submitted a formal Technical Assistance Request (TAR) for U.S. Fish and Wildlife Services (USFWS) assistance in the assessment of potential impacts to federally listed species, specifically potential impacts to the marbled murrelet and northern spotted owl at the Stewart Street reservoir site (SHN, 2009b). After review of information pertaining to the request and a site visit conducted by Ken Hoffman of the USFWS staff at the

Stewart Street reservoir site, USFWS determined that the construction related to the Stewart Street reservoir site will not affect either the northern spotted owl or the marbled murrelet (USFWS, 2009b; Appendix C).

The Home Avenue-Garden Lane pipeline site location was not yet determined at the time of the CDFG March 26, 2009 site visit or the May 6, 2009 TAR request to USFWS. A second TAR was submitted to USFWS on August 11, 2009 regarding the pipeline construction, and CDFG was copied (SHN, 2009c). A response from USFWS, dated August 24, 2009, on the second TAR regarding the Home Avenue-Garden Lane pipeline site has been received. USFWS determined that the proposed Stewart Street Water Reservoir Project, including the secondary piping alignment, will not affect either the northern spotted owl or the marbled murrelet (USFWS, 2009c; Appendix C).

4.0 Environmental Setting

The environmental setting within the Fortuna area is predominately affected by the mild maritime climate, active tectonic processes that are manifested in the geomorphic landscape, and current and historical development. Influence from these factors is evident in the variety of habitat types found throughout the area, which include freshwater wetlands, coastal prairie, scrub-shrub, and North Coast coniferous forest. Appendix A contains site photographs which depict the existing conditions at the site. Based on the site conditions observed during multiple site visits and review of reference material (for example, soils map, National Wetland Inventory, and Geological Investigation Report), no further analysis regarding wetlands was warranted at the project sites (i.e., no soil pits were excavated).

4.1 Hydrology

The Stewart Street reservoir and Home Avenue-Garden Lane pipeline sites are located within the North Coast Hydrologic Region (HR), Eel River Hydrologic Unit (HU), Lower Eel River Hydrologic Area (HA), Ferndale Hydrologic Sub-Area (HSA), and Fortuna Super Planning Watershed (SPWS) (California Environmental Resources Evaluation System [CERES] GeoFinder, 2009). Fortuna is located along the eastern edge of the lower Eel River valley and is approximately 11 miles upstream of the mouth of the Eel River. There are no wetlands, flood hazard areas, or blue line streams within or adjacent to the project areas (Figures 1 and 5).

At the Stewart Street reservoir site a concrete drainage ditch is located along the eastern parcel boundary and is east of the property boundary fence, outside of the City's property. The concrete ditch is shallow and approximately 3-feet wide and drains south towards the intersection of Vista and Stewart Street. Surface water was observed (< 1-inch) in the concrete drainage ditch during the June 11, 2009 site visit. An attempt was made to locate any up gradient storm water drop inlets, but none were observed.

No surface water ponding was observed within or adjacent to the reservoirs project site during the multiple site visits. A drain pipe with associated rip rap was observed near the southeast corner of

the property. The source of the drain could not be determined. No Ordinary High Water Mark (OHWM) or swale feature was observed extending from this drain pipe. The vegetation down gradient of the drain pipe was less maintained than the majority of the site.

The Home Avenue-Garden Lane pipeline site will be conducted within existing right-of-way and use a HDD that will be located on private property. No drainage ditches were observed within the vicinity of the Home Avenue-Garden Lane preliminary pipeline construction site. Multiple drop inlets were observed along Home Avenue. A visual assessment was performed for observing characteristics that would indicate ponding or saturation of soils during the rainy season. No hydrology indicators were observed in the unpaved portions of the Home Avenue-Garden Lane pipeline site.

4.2 Soils

Soils at the Stewart Street reservoir and Home Avenue-Garden Lane pipeline sites were mapped as part of the Soil Survey for Western Humboldt County (UC Davis, 1965; Figure 6). The Natural Resources Conservation Service (NRCS) Web Soil Survey 2.1 was also queried, but the mapping of the project area is not complete (NRCS, 2009a). The Stewart Street reservoir and Home Avenue-Garden Lane S sites host one (1) soil map unit: Arcata loam (Ar4) (Figure 6). Arcata loam 0 to 3% (Ar4) is finer textured than the fine sandy loam, and contains a higher percentage of organic matter in the surface. The Arcata loam (Ar4) series is not designated as a hydric soil on the *National Hydric Soils List* (NRCS, 2009b).

Soils at the Stewart Street reservoir site were defined in the Geotechnical Investigation Report completed for the proposed project (SHN, 2009a). Soils encountered in the 10 exploration borings at the site were generally uniform in occurrence and composition. The general soil profile encountered consisted of a layer of uncontrolled fill (generally 1 to 8 feet thick) commonly overlaying native topsoil, which in turn mantles weathered Hookton Formation sediments. The fill materials typically consisted of moist to wet, medium stiff to soft, locally derived silty, sandy clays and clayey fine sands.

4.3 Vegetation Communities

The dominant vegetation community within the Stewart Street reservoir and Home Avenue-Garden Lane sites is urban/disturbed. Outside of the Stewart Street reservoir site and within the HDD portion of the Home Avenue-Garden Lane pipeline site, North Coast coniferous forest (Element Code: 82000; Holland, 1986)[3] is present.

Urban/disturbed habitat is widespread around the Stewart Street reservoir site. This habitat consists of development that is surrounded by vegetation dominated by ruderal herbaceous species. The site is regularly mowed and native species composition is lacking. Non-native species are located throughout the Stewart Street reservoir site and include cotoneaster (*Cotoneaster pannosa*), English

[3] Plant communities are described primarily in accordance with the Sawyer and Keeler-Wolf (1995) terrestrial vegetation classification system. The Holland (1986) vegetation classification system is also referenced. The Holland system was used by the CNDDB until October 2000 when it was replaced by the Sawyer/Keeler-Wolf system, which is also integrated into the CNPS *Vegetation Rapid Assessment Protocol* (2001 rev. 2007).

ivy (*Helix helix*), heather (*Erica* sp.), and English holly (*Ilex aquifolium*) (Appendix A, Photos 1 and 2). The moderately open overstory east of the project site consists of scattered grand fir (*Abies grandis*), red alder (*Alnus rubra*), Port-Orford-cedar (*Cupressus lawsoniana*), Douglas-fir (*Pseudotsuga menziesii*), willow (*Salix* sp.), and coastal redwood *(Sequoia sempervirens*).

The Home Avenue-Garden Lane pipeline site also consists predominately of urban/disturbed habitat. The forested area between Home Avenue and Garden Lane consists of a dense overstory with grand fir, Douglas-fir, coastal redwood *(Sequoia sempervirens*), and open understory. Immediately north of the proposed HDD portion between Home Avenue and Garden Lane is an overhead utility line which ends with a dead-end pole off the northern (privately maintained) portion of Garden Lane.

4.4 Wildlife Habitats

Common wildlife species expected on the Stewart Street reservoir and Home Avenue-Garden Lane pipeline sites are those typically associated with urban and North Coast coniferous forest (Holland, 1986). A list of the wildlife species and/or wildlife signs observed at the site is included in Appendix B.

Although urban landscape habitats are generally of low value to wildlife, many common opportunistic wildlife species adapted to high levels of human disturbance utilize this habitat. Mammalian species that typically use this community type include Virginia opossum (*Didelphis virginiane*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and gray fox (*Urocyon cinereoargenteus*). Urban landscapes also attract many species of birds, ranging from those feeding at bird feeders to those that are attracted to habitat provided by gardens, ornamental vegetation, and other urban activities. These species are common, and are typically adapted to the urban environment.

The common wildlife species typically found in North Coast coniferous forest habitat surrounded by, or adjacent to, urban development include California slender salamander (*Batrachoseps attenuatus*), Pacific giant salamander (*Dicamptodon tenebrosus*), northern rough-skinned newt (*Taricha granulose*), Pacific tree frog (*Hyla regilla*), chestnut-backed chickadee (*Parus rufescens*), Stellar's jay (*Cyanocitta stellari*), varied thrush (*Ixoreus naevius*), raccoon, striped skunk, gray fox, coyote (*Canis latrans*), mule deer (*Odoicoileus hemionus*), and the occasional black bear (*Ursus americanus*).

4.5 Wildlife Movement Corridors

Wildlife movement includes migration (i.e., usually one-way per season), inter-population movement (i.e., long-term genetic flow) and small travel pathways (i.e., daily movement corridors within an animal's territory). While small travel pathways usually facilitate movement for daily home range activities, such as foraging or escape from predators, they also provide a connection between outlying populations and the main corridor, permitting an increase in gene flow among populations.

These linkages among habitat types can extend for miles from primary habitat areas and occur on a large scale throughout California. Habitat linkages facilitate movement between populations located in discrete areas and populations located within larger habitat areas. The mosaic of habitats found

within a large-scale landscape results in wildlife populations that consist of discrete sub-populations constituting a large single population, which is often referred to as a meta-population. Even where patches of pristine habitat are fragmented, such as occurs with coastal scrub, the movement between wildlife populations is facilitated through habitat linkages, migration corridors and movement corridors. Depending on the condition of the corridor, genetic flow between populations may be high in frequency, thus allowing high genetic diversity within the population, or may be low in frequency. Low-frequency genetic flow may potentially lead to complete isolation and, if pressures are strong, potential extinction (McCullough, 1996 and Whittaker, 1998).

In the vicinity of the sites are residential uses. Stewart Street is located immediately north and west of the Stewart Street reservoir site (Figures 1 and 2). An unimproved, steep gradient access road (Barney Street) with a footpath parallels the eastern edge of the Stewart Street reservoir site (Appendix A; Photo 4). Residential property bounds the southern boundary of the Stewart Street reservoir site. Residential properties exist along both Home Avenue and Garden Lane. The unimproved access road to the east of the Stewart Street reservoir site and the forested area between the Home Avenue-Garden Lane pipeline site provide opportunities for the dispersal of highly adaptable common mammals — raccoons, gray fox, Virginia opossum — and birds to enter the area. However, based on the development present in the sites' boundaries and in the immediate vicinity, movement would typically be localized and limited.

5.0 Regulatory Setting

Regulatory authority over biological resources is shared by federal, state, and local authorities under a variety of legislative acts. The following section summarizes the federal, state, and local regulations for special status species, jurisdiction waters of the United States (U.S.) and State of California (State), and other sensitive biological resources. Only select regulations will be applicable to this project.

5.1 Federal Laws

5.1.1 Clean Water Act Sections 404 and 401

Under Section 404 (33 U.S. Code (USC) 1344) of the Clean Water Act (CWA), as amended, the ACOE retains primary responsibility for permits to discharge dredged or fill material into WoUS. All discharges of dredged or fill material into jurisdictional WoUS that result in permanent or temporary losses of WoUS are regulated by the ACOE, and a permit from the ACOE must be obtained before placing fill or grading in wetlands or other WoUS, unless the activity is exempt from CWA Section 404 regulation (for example, certain farming and forestry activities).

WoUS are defined at 33 Code of Federal Regulations (CFR) Part 328, and include traditional navigable waters; relatively permanent, non-navigable tributaries of traditional navigable waters; and certain wetlands. Following recent court cases, the U.S. Environmental Protection Agency (U.S. EPA) and ACOE published a memorandum entitled Clean Water Act Jurisdiction (U.S. EPA/U.S. ACOE, 2008) to guide the determination of jurisdiction over WoUS, especially for wetlands. The applicability of Section 404 permitting over discharges to wetlands is therefore a two-step process: (1) Determining the areas which are wetlands, and (2) where wetlands are present, assessing the

wetlands' connection to traditional navigable waters and non-navigable tributaries to determine whether the wetlands are jurisdictional under the CWA. A wetland is considered jurisdictional if it meets certain specified criteria.

The ACOE defines wetlands as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (Environmental Laboratory, 1987)." In other words, the ACOE defines wetlands by the presence of all three wetland indicators: hydrophytic vegetation, hydric soils, and wetlands hydrology.

The ACOE is required to consult with the USFWS and/or National Marine Fisheries Service (NMFS) under Section 7 of the Federal Endangered Species Act (FESA) if the action subject to CWA permitting could result in "Take" of federally listed species or an adverse affect to designated critical habitat.

Section 401 of the CWA (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into WoUS to obtain a certification from the state in which the discharge originates or would originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the affected waters at the point where the discharge originates or would originate, that the discharge will comply with the applicable effluent limitations and water quality standards. A certification obtained for the construction of any facility must also pertain to the subsequent operation of the facility. The responsibility for the protection of water quality in California rests with the State Water Resources Control Board (SWRCB) and its nine (9) Regional Water Quality Control Boards (RWQCB). The City is within the jurisdiction of the North Coast RWQCB.

There is a concrete drainage ditch located along the eastern parcel boundary of the Stewart Street reservoir site (Appendix A; Photo 4). It is located on the east side of a fence, which is outside of the City's property boundary. No impacts to the aforementioned concrete drainage ditch are anticipated, and no wetlands were identified within the Stewart Street reservoir or Home Avenue-Garden Lane pipeline sites. No impacts to federally protected WoUS as defined by Section 404 of the CWA (including wetlands) are anticipated.

5.1.2 Rivers and Harbors Appropriation Act of 1899

The Rivers and Harbors Appropriation Act of 1899 addresses activities that involve the construction of dams, bridges, dikes, and other structures across any navigable water. Placing obstructions to navigation outside established federal lines and excavating from or depositing material in such waters require permits from the ACOE pursuant to Section 10 (33 USC 403) of the Rivers and Harbors Appropriation Act, which prohibits the unauthorized obstruction or alteration of any navigable WoUS. This section provides that the construction of any structure in or over any navigable WoUS, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters, is unlawful unless the work has been recommended and authorized by the ACOE, Chief of Engineers.

No navigable waters as defined by Rivers and Harbors Appropriation exists within or adjacent to the sites; thus, no permitting under the Rivers and Harbors Appropriation Act is required.

5.1.3 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 USC Sections 661-667e, March 10, 1994, as amended 1946, 1958, 1978, and 1995) requires that whenever waters or channel of a stream or other body of water are proposed or authorized to be modified by a public or private agency under a federal license or permit, the federal agency must first consult with the USFWS and/or NMFS and with the head of the agency exercising administration over the wildlife resources of the state where construction will occur (in this case the CDFG), with a view to conservation of birds, fish, mammals and all other classes of wild animals and all types of aquatic and land vegetation upon which wildlife is dependent.

If direct permanent impacts occur to WoUS from a proposed project, then a permit from ACOE under the CWA Section 404 is required for the construction of the proposed project. ACOE is required to consult with USFWS and/or NMFS as appropriate regarding potential impacts to federally listed species under FESA. Such action may prompt consultation with CDFG which would review the project pursuant to California Endangered Species Act (CESA) and issue a consistency letter with USFWS and/or NMFS, if required.

There is a concrete drainage ditch located along the eastern parcel boundary at the Stewart Street reservoir site (Appendix A, Photo 4). No impacts to the aforementioned concrete drainage ditch are anticipated. No impact on federally protected WoUS (including wetlands) is anticipated; thus, no coordination under the Fish and Wildlife Coordination Act is anticipated.

5.1.4 Federal Endangered Species Act

The U.S. Congress passed the FESA in 1973 to protect species that are endangered or threatened with extinction. The FESA is intended to operate in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend and within which they live. The USFWS and the NMFS are the designated federal agencies responsible for administering the FESA.

The FESA prohibits the “Take” of endangered or threatened wildlife species. A “Take” is defined as harassing, harming (including significantly modifying or degrading habitat), pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species, or any attempt to engage in such conduct (16 USC 1532, 50 CFR 17.3). An activity can be defined as a “Take” even if it is unintentional or accidental. Taking can result in civil or criminal penalties. Activities that could result in “Take” of a federally listed species require an incidental “Take” authorization resulting from FESA Section 7 consultation or FESA Section 10 consultation. Plants are legally protected under the FESA only if “Take” occurs on federal land or from federal actions, such as issuing a wetland fill permit.

A federal endangered species is one that is considered in danger of becoming extinct throughout all, or a significant portion, of its range. A federal threatened species is one that is likely to become endangered in the foreseeable future. The USFWS also maintains a list of species proposed for listing as threatened or endangered. Proposed species are those for which a proposed rule to list as endangered or threatened has been published in the Federal Register. In addition to endangered, threatened, and proposed species, the USFWS maintains a list of candidate species. Candidate (formerly category 1 candidate) species are those for which the USFWS has on file sufficient information to support issuance of a proposed listing rule.

Pursuant to the requirements of the FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally-listed endangered or threatened species may be present in the project area and determine whether the proposed project will have a potentially significant impact on such a species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under the FESA or result in the destruction or adverse modification of critical habitat designated or proposed to be designated for such species (16 USC 1536[3], [4]). Project-related impacts to species on the FESA endangered or threatened list would be considered significant and would require mitigation.

The proposed project is not anticipated to impact federally listed plant or animal species.

5.1.5 Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) of 1918 makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in CFR Part 10, including feather or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The MBTA also prohibits disturbance and harassment of nesting migratory birds at any time during their breeding season. The USFWS is responsible for enforcing the MBTA (16 USC 703).

Most of the native bird species that occur in Humboldt County are covered by this act.

5.1.6 Bald Eagle Protection Act

The Bald Eagle Protection Act (16 USC 668) was passed in 1940 to protect bald eagles and was later amended to include golden eagles. Under the act, it is unlawful to import, export, take, sell, purchase, or barter any bald eagle or golden eagle, their parts, products, nests, or eggs. Take includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing eagles.

Bald eagle and golden eagle are considered to have no potential for occurrence at the Stewart Street reservoir or Home Avenue-Garden Lane pipeline sites (see Table 1 in Section 6 [Special Status Biological Resources]). No active bald eagle or golden eagle nests were observed during the field surveys. No coordination or permitting under the Bald Eagle Protection Act is anticipated for the project.

5.2 State Laws

5.2.1 Porter-Cologne Water Quality Act

The State and RWQCB also maintain independent regulatory authority over the placement of waste, including fill, into Waters of the State (WoS) under Porter-Cologne Act. WoS are defined by the Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The SWRCB protects all waters in its regulatory scope, but has special responsibility for isolated wetlands and headwaters. These water bodies might not be regulated by other programs, such as Section 404 of the CWA. WoS are regulated by the RWQCBs under the State Water Quality Certification Program, which regulates discharges of dredged and fill material under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Projects that require an ACOE permit, or fall under other federal jurisdiction, and have the potential to impact waters of the State are required to comply with the terms of the Water Quality Certification Program. If a proposed project does not require a federal license or permit, but does involve activities that may result in a discharge of harmful substances to WoS, the RWQCBs have the option to regulate such activities under its state authority in the form of Waste Discharge Requirements (WDRs) or Certification of WDRs.

As a trustee agency under CEQA, CDFG reviews potential project impacts to biological resources, including wetlands. In accordance with the CEQA thresholds of significance for biological resources, areas that meet the state criteria of wetlands and could be impacted by a project must be analyzed. Pursuant to CFGC Section 2785, CDFG defines wet areas as "lands which may be covered periodically or permanently with shallow water and which include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, fens, and vernal pools." Wet areas are determined by CDFG by the presence of one of the three-wetland indicators (hydrophytic vegetation, hydric soils, or wetland hydrology).

There is a concrete drainage ditch located along the eastern parcel boundary at the Stewart Street reservoir site (Appendix A, Photo 4). It is located on the east side of a fence, which is outside of the City's property boundary. No impacts to the aforementioned concrete drainage ditch are anticipated, and no wetlands were identified within or adjacent to the Stewart Street reservoir and Home Avenue-Garden Lane pipeline areas. No impacts to State protected WoS as defined by Porter-Cologne Act (including wetlands) are anticipated.

5.2.2 California Endangered Species Act

The State enacted the CESA in 1984. The CESA is similar to the FESA but pertains to state-listed endangered and threatened species. Under the CESA, the CDFG has the responsibility for maintaining a list of threatened and endangered species designated under State law (for example, California Fish and Game Code [CFGC] 2070). Section 2080 of the CFGC prohibits "Take" of any species that the commission determines to be an endangered or threatened species. "Take" is defined in Section 86 of the CFGC as "to hunt, purse, catch, capture, or kill, or attempt to hunt, purse, catch, capture, or kill."

The State and Federal lists of threatened and endangered species are generally similar; however, a species present on one list may be absent from the other. CESA regulations are also somewhat different from the FESA in that the State regulations included threatened, endangered, and candidate plants on non-federal lands within the definition of "Take." CESA allows for "Take" incidental to otherwise lawful development projects.

Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether State-listed endangered or threatened species may be present in the project area and determine whether the proposed project will have a potentially significant impact on such species. Project-related impacts to species on the CESA endangered or threatened list would be considered significant and would require mitigation.

The proposed project is not anticipated to impact State listed plant or animal species.

5.2.3 California Environmental Quality Act Guidelines Sections 15380 and 15370

CEQA Guidelines Section 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. Thus, CEQA provides the ability to protect a species from potential project impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

CEQA also calls for the protection of other locally or regionally significant resources, including natural communities. Although natural communities do not at present have legal protection of any kind, CEQA calls for an assessment of whether any such resources would be affected, and requires a finding of significance if there will be substantial losses. Natural communities listed by CNDDB as sensitive are considered by CDFG to be significant resources and fall under the CEQA Guidelines for addressing impacts. Local planning documents such as general plans often identify these resources as well.

Proposed projects that may result in an impact pursuant to Section 15380(b) must meet the requirements of CEQA Section 15370. Section 15370 specifies that a project must avoid, minimize, or mitigate the impact to a less than significant level as determined by the lead agency, resource agency(s), and trustee agency(s).

The proposed project is subject to CEQA. The City is the lead agency for the proposed project under CEQA.

5.2.4 California Coastal Act

The California Coastal Commission (CCC) regulates the alteration of wetlands within the Coastal Zone under jurisdiction of the California Coastal Act (CCA). The project site is located outside of the Coastal Zone; thus, not under the requirements of the CCA.

5.2.5 California Fish and Game Code Section 1600

Streams, lakes, and riparian vegetation as habitat for fish and other wildlife species, are subject to jurisdiction by the CDFG under Sections 1600-1616 of the CFGC. Any activity that will do one or more of the following: 1) substantially obstruct or divert the natural flow of a river, stream, or lake; 2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or 3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake generally require a SAA. The term "stream," which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as follows: "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life." This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation (14 CCR 1.72). In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG, 1994a). Riparian is defined as "on, or pertaining to, the banks of a stream"; therefore, riparian vegetation is defined as, "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself" (CDFG, 1994a). Removal of riparian vegetation also requires an SAA from the CDFG.

No impacts to the concrete drainage ditch located along the eastern parcel boundary of the Stewart Street reservoir site outside of the City's property boundary are anticipated (Appendix A, Photo 4). Additionally, no impact is anticipated to the existing vegetation located along the eastern property boundary and immediately adjacent to the concrete drainage ditch. No drainages were identified within or adjacent to the Home Avenue-Garden Lane preliminary pipeline construction site. No permitting under CFGC Section 1600 is anticipated.

5.2.6 California Fish and Game Code Sections 3503 and 3513

According to Section 3503 of the CFGC it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird (except English sparrows (*Passer domesticus*) and European starlings [*Sturnus vulgaris*]). Section 3503.5 specifically protects birds in the orders Falconiformes and Strigiformes (birds-of-prey). Section 3513 essentially overlaps with the MBTA, prohibiting the "Take" or possession of any migratory non-game bird. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "Take" by the CDFG.

Given raptors and other bird (for example, passerines [perching birds]) species may potentially nest within the trees and shrubs that occur in and adjacent to the sites, there is a potential for construction-related impacts to nesting birds.

5.2.7 Fully Protected Species and Species of Special Concern

The classification of "fully protected" was the CDFG's initial effort to identify and provide additional protection to those animals that were rare or faced with possible extinction. Lists were created for fish, amphibian and reptiles, birds, and mammals. Most of the species on these lists have

subsequently been listed under CESA and/or FESA. The CFGC sections (fish at Sec. 5515, amphibian and reptiles at Sec. 5050, birds at Sec. 3511, and mammals at Sec. 4700) dealing with "fully protected" species states that these species "…may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species," (CDFG, 1998) although "Take" may be authorized for necessary scientific research. This language makes the "fully protected" designation the strongest and most restrictive regarding the "Take" of these species. In 2003, the code sections dealing with fully protected species were amended to allow the CDFG to authorize "Take" resulting from recovery activities for state-listed species.

Species of Special Concern (SSC) are broadly defined as animals not listed under the CESA, but which are nonetheless of concern to the CDFG because they are declining at a rate that could result in listing or historically occurred in low numbers and known threats to their persistence currently exist. This designation is intended to result in special consideration for these animals by the CDFG, land managers, consulting biologists, and others, and is intended to focus attention on the species to help avert the need for costly listing under CESA and cumbersome recovery efforts that might ultimately be required. This designation also is intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them. Although these species generally have no special legal status, they are given special consideration under CEQA during project review.

Table 2 (Section 6 [Special Status Biological Resources]) includes potentially occurring State Fully Protected (SFP) and SSC animals from the Fortuna area.

5.2.8 Native Plant Protection Act of 1973

The Native Plant Protection Act (NPPA) of 1973 (Sec. 1900-1913 of the CFGC) includes provisions that prohibit the taking of endangered or rare native plants from the wild and a salvage requirement for landowners. The CDFG administers the NPPA and generally regards as "rare" many plant species included on Lists 1B, 2, 3, and 4 of the CNPS Inventory of Rare and Endangered Vascular Plants of California (Tibor, 2001; CNPS, 2009).

Table 1 (Section 6 [Special Status Biological Resources]) includes potentially occurring endangered or rare native plants from the Fortuna area (including CNPS Lists 1B through 4).

5.2.9 Natural Community Conservation Planning Act

The Natural Community Conservation Planning Act (NCCP) of 1991 is an effort by the State of California, and numerous private and public partners that is broader in its orientation and objectives than the CESA and FESA (refer to discussions above). The primary objective of the NCCP Act is to conserve natural communities at the ecosystem scale while accommodating compatible land use. The NCCP seeks to anticipate and prevent the controversies and gridlock caused by species' listings by focusing on the long-term stability of wildlife and plant communities and including key interests in the process.

None of the three (3) potential regionally occurring natural communities from the Fortuna area according to the CNDDB query (for example, Coastal Terrace Prairie, Northern Coastal Salt Marsh, and Sitka Spruce Forest) exist at the Stewart Street reservoir or Home Avenue-Garden Lane pipeline sites.

5.2.10 California Public Resources Code Section 21083.4

Under State Public Resources Code Section Sec. 21083.4, a county shall determine whether a project within its jurisdiction may result in a conversion of oak woodlands that will have a significant effect on the environment.

The Stewart Street reservoir and Home Avenue-Garden Lane pipeline sites do not contain oak woodlands; thus, the project is not under the requirements of California Public Resources Code Section 21083.4.

5.2.11 Sensitive Vegetation Communities

Sensitive vegetation communities are natural communities and habitats that are either unique, of relatively limited distribution in the region, or of particularly high wildlife value. However, these communities may or may not necessarily contain special status species. Sensitive natural communities are usually identified in local or regional plans, policies or regulations, or by the CDFG (i.e., CNDDB) or the USFWS. Impacts to sensitive natural communities and habitats must be considered and evaluated under the CEQA (CCR: Title 14, Div. 6, Chap. 3, Appendix G).

The project areas are not considered sensitive vegetation communities.

5.3 Other Statutes, Codes, and Policies Affording Limited Species Protection

California Native Plant Society. CNPS maintains a list of plant species native to California whose members exists in significantly reduced populations from historical levels, occurs in limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Plants of California (Tibor, 2001; CNPS, 2009). CDFG recognizes that Lists 1A[4], 1B, 2, 3, and 4 of the CNPS Inventory consist of plants that may qualify for listing, and the CDFG recommends they be addressed in projects pursuant to CEQA.

Table 1 (see Section 6 [Special Status Biological Resources]) includes CNPS Lists 1B through 4 from the Fortuna area.

5.4 Local Regulations and Ordinances

[4] The plants of CNPS List 1A (less than 30 taxa) are presumed extinct because they have not been seen or collected in the wild in California for many years. This list includes plants that are both presumed extinct in California, as well as those plants which are presumed extirpated in California. A plant is extinct in California if it no longer occurs in or outside of California. A plant that is extirpated from California has been eliminated from California, but may still occur elsewhere in its range.

5.4.1 Fortuna General Plan

The Fortuna General Plan (Section 6800) sets forth goals and policies to concerning the development, utilization, and conservation of natural resources including water, forests, soils, rivers, fisheries, and wildlife (City of Fortuna, 1993). The following goals and policies pertain to the project areas.

5.4.2 Goals

6811: Maintain and enhance the quality of the streams in Fortuna and the Eel River.

6812: Maintain riparian vegetation to the extent practical by assuring that compatible land uses are located next to streams and by using good engineering practices when drainage improvements are constructed.

5.4.3 Policies

6822: The foothill-valley character of the City and its surrounding should be protected. The foothill area should be zoned from 1 to 4 homes/acre.

6823: The open space stream buffers indentified on the Open Space Map are to be maintained as open space. The City shall obtain drainage easements that are 50 feet wide (25 feet from the center line of the stream) along the streams within the city unless a larger easement is specified in the Storm Drainage Master Plan.

6824: Streams and adjacent marshes and other wetland areas should remain in a natural condition to the extent possible.

6825: Development within stream channels is limited to (1) fishery and wildlife enhancement projects, (2) road crossings, (3) flood control projects including drainage channels, stream channels, levees, and dikes, and (4) public works projects.

6826: The dedication of land for open space may be required of sub dividers to protect riparian vegetation and the foothill-valley character of the City.

6828: Regulate development that would pollute watersheds.

6829: Support the development of fisheries enhancement projects on streams within the City limits.

5.4.4 City of Fortuna Zoning Code, Chapter 17.12 R-1 Residential Single-Family Districts

There are no zoning restrictions that relate to biological resources at the Stewart Street reservoir and Home Avenue-Garden Lane pipeline sites.

6.0 Special Status Biological Resources

As a component of this assessment, an evaluation was conducted for the potential presence or absence of habitat for special status plant and animal species. Tables 1 and 2 were compiled of all potentially occurring special status plants and animals from the Fortuna area based on a search of current available database records (for example, CNDDB, USFWS list, and CNPS Electronic Inventory). The potential for occurrence of those species included on the list were then evaluated

Table 1

Potential Regionally Occurring Sensitive Botanical Species from the Fortuna Area

Stewart Street Reservoirs Replacement, Fortuna, California

Species Latin Name	Common Name	Status (Federal/ State/CNPS)[1]	Life Form/General Habitat Requirements[2]	Blooming Period	Potential for Occurrence
Abronia umbellata ssp. *breviflora*	pink sand-verbena	-[3]/-/1B	Perennial herb. Coastal dunes below 50 feet (ft.) above Mean Sea Level (MSL).	June-October	None
Anomobryum julaceum	slender sliver moss	-/-/2	Moss. Broadleafed upland forest, lower montane coniferous forest, North Coast coniferous forest, damp rock and soil on outcrops, usually on road cuts, between approximately 330-3,280 ft. above MSL.	N/A	None
Astragalus pycnostachyus var. *pycnostachyus*	coastal marsh milk-vetch	-/-/1B	Perennial herb. Mesic coastal dunes, coastal salt marshes and swamps below 100 ft. above MSL.	April-October	None
Carex leptalea	bristle-stalked sedge	-/-/2	Perennial rhizomatous herb. Bogs and fens, meadows and seeps, marshes and swamps from sea level to 2,300 ft. above MSL.	March-July	None
Carex lyngbyei	Lyngbye's sedge	-/-/2	Perennial rhizomatous herb. Brackish or freshwater marshes and swamps below 35 ft. above MSL.	May-August	None
Castilleja affinis ssp. *litoralis*	Oregon coast paintbrush	-/-/2	Perennial herb. Coastal bluff scrub, sandy coastal scrub, and dunes from 50-330 ft. above MSL.	June	None
Castilleja ambigua ssp. *humboltiensis*	Humboldt Bay owl's-clover	-/-/1B	Annual herb. Coastal salt marsh and swamps up to 10 ft. above MSL.	April-August	None
Clarkia amoena ssp. *whitneyi*	Whitney's farewell-to-spring	-/-/1B	Annual herb. Coastal bluff scrub, coastal scrub between 32-330 ft. above MSL.	June-August	None
Cordylanthus maritimus ssp. *palustris*	Point Reyes bird's-beak	-/-/1B	Annual herb hemiparasitic. Coastal salt marsh and swamps up to 30 ft. above MSL.	June-October	None
Erysimum menziesii ssp. *eurekense*	Humboldt Bay wallflower	FE/SE/1B	Perennial herb. Coastal dunes up to 30 ft. above MSL.	March-April	None
Erythronium oregonum	giant fawn lily	-/-/2	Perennial herb. Cismontane woodland, meadows and seeps, sometimes serpentinite, rocky openings between 330-1,640 ft. above MSL.	March-May	None
Erythronium revolutum	coast fawn lily	-/-/2	Perennial bulbiferous herb. Bogs and fens, mesic areas in broadleaved forests and North Coast coniferous forest, and streambanks up to 3,500 ft. above MSL.	March-June	None
Gilia capitata ssp. *pacifica*	Pacific gilia	-/-/1B	Annual herb. Various, including coastal bluff scrub and coastal prairie generally below 1,000 ft. above MSL.	April-August	None
Hesperevax sparsiflora var. *brevifolia*	short-leaved evax	-/-/1B	Annual herb. Coastal bluff scrub and coastal dunes up to 700 ft. above MSL.	March-June	None

Table 1

Potential Regionally Occurring Sensitive Botanical Species from the Fortuna Area

Stewart Street Reservoirs Replacement, Fortuna, California

Species Latin Name	Common Name	Status (Federal/ State/CNPS)[1]	Life Form/General Habitat Requirements[2]	Blooming Period	Potential for Occurrence
Hesperolinon adenophyllum	glandular western flax	-/-/1B	Annual herb. Chaparral, cismontane woodland, valley and foothill grassland, usually serpentinite between 490-4,315 ft. above MSL.	May-August	None
Lathyrus palustris	marsh pea	-/-/2	Perennial herb. Bogs and fens, coastal prairie, coastal scrub, lower montane coniferous forest, marshes and swamps, North Coast coniferous forest/mesic up to 330 ft. above MSL.	March-August	None
Layia carnosa	beach layia	FE/SE/1B	Annual herb. Coastal dunes and coastal scrub up to 200 ft. above MSL.	March-July	None
Lilium occidentale	western lily	FE/SE/1B	Perennial bulbiferous herb. Coastal bluff scrub, coastal prairies, openings in North Coast coniferous forests including edges of freshwater marshes and swamps up to 600 ft. above MSL.	June-July	None
Montia howellii	Howell's montia	-/-/2	Annual herb. Vernally wet, open sites in North Coast coniferous forests including meadows and seeps/often in disturbed areas (e.g., roadsides).	March-May	Low
Oenothera wolfii	Wolf's evening-primrose	-/-/1B	Perennial herb. Coastal bluff scrub, coastal dunes, coastal prairie, lower montane coniferous forest; sandy substrates; usually mesic sites from 10-2,600 ft. above MSL.	May-October	None
Packera bolanderi var. *bolanderi*	seacoast ragwort	-/-/2	Perennial rhizomatous herb. Coastal scrub, North Coast coniferous forest, sometimes roadside, between 95-2,135 ft. above MSL.	May- July	None
Piperia candida	white-flowered rein orchid	-/-/1B	Perennial herb. Broadleaf upland forest, lower montane coniferous forest, North Coast coniferous forest, sometime serpentinite between approximately 100-5,000 ft. above MSL.	May-September	None
Polemonium carneum	Oregon polemonium	-/-/2	Perennial herb. Coastal prairie, coastal scrub, lower montane coniferous forest from sea level to approximately 6,000 ft. above MSL.	April-September	None
Puccinellia pumila	dwarf alkali grass	-/-/2	Perennial herb. Coastal salt marshes and swamps up to 30 ft. above MSL.	July	None
Sidalcea malachroides	maple-leaved checkerbloom	-/-/4	Perennial herb. Broadleaved upland forest, coastal prairie, coastal scrub, North Coast coniferous forest/ often in disturbed areas (e.g., roadsides) up to 2,300 ft. above MSL.	April-August	None

Table 1

Potential Regionally Occurring Sensitive Botanical Species from the Fortuna Area

Stewart Street Reservoirs Replacement, Fortuna, California

Species Latin Name	Common Name	Status (Federal/ State/CNPS)[1]	Life Form/General Habitat Requirements[2]	Blooming Period	Potential for Occurrence
Sidalcea malviflora ssp. *patula*	Siskiyou checkerbloom	-/-/1B	Perennial rhizomatous herb. Openings in North Coast coniferous forest and coastal prairie from 50-2,300 ft. above MSL.	May-August	None
Sidalcea oregana ssp. *eximia*	coast checkerbloom	-/-/1B	Perennial herb. Openings in lower montane and North Coast coniferous forests, meadows and seeps, and coastal prairie from 15-4,400 ft. above MSL.	June-August	None
Sisyrinchium hitchcockii	Hitchcock's blue-eyed grass	-/-/1B	Perennial rhizomatous herb. Cismontane woodland openings, valley and foothill grassland at approximately 1,000 ft. above MSL.	June	None
Spergularia canadensis var. *occidentalis*	western sand spurrey	-/-/2	Annual herb. Coastal salt marshes and swamps up to 10 ft. above MSL.	June-August	None

1. CNPS List 1B includes plants that are rare, threatened, or endangered in CA and elsewhere.
   CNPS List 2 includes plants that are rare, threatened, or endangered in California but more common elsewhere.
   SR: State listed Rare, pursuant to CESA. SR designation refers to species that although not presently threatened with extinction, occur in such small numbers throughout their range that they may become endangered if their present environment worsens.
   CNPS List 4 includes plants of limited distribution and should be documented as they are watch list species
   FE: Federally listed Endangered, pursuant to the Federal Endangered Species Act (FESA), as amended. This designation includes taxa that are in danger of extinction throughout all or a significant portion of their range.
   FT: Federally listed Threatened, pursuant to the FESA, as amended. This designation refers to species that are not presently threatened with extinction but are likely to become endangered throughout all or a significant portion of their range in the foreseeable future if special protection and management efforts are not undertaken.
   SE: State listed Endangered, pursuant to California Endangered Species Act (CESA). SE designation includes taxa that are in danger of extinction throughout all or a significant portion of their range.
   ST: State listed Threatened, pursuant to CESA. ST designation includes taxa that are likely to become endangered throughout a significant portion of their range.
   N/A: Not Applicable
2. Plant habitat descriptions are from CNDDB (September 2009a), Tibor (2001), and Hickman (1993).
3. "-": no status/listing.

Table 2

Potential Regionally Occurring Sensitive Wildlife Species from the Fortuna Area

Stewart Street Reservoirs Replacement, Fortuna, California

Species Latin Name	Common Name	Status (Federal/State) [1]	General Habitat Requirements[2]	Potential for Occurrence
Fish				
Acipenser medirostris	green sturgeon – southern DPS[3]	FT/SSC	Most marine species of sturgeon. Abundance increases northward of Point Conception. Spawns in the Sacramento. Spawns at temps between 8-14 °C. Preferred spawning substrate is large cobble, but can range from clean sand to bedrock.	None
Eucyclogobius newberryi	tidewater goby	FE (CH)/SSC	Brackish water habitats along the California coast from San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, where water is fairly still but not stagnant water with high oxygen levels.	None
Oncorhynchus clarii clarkii	coast cutthroat trout	-[4]/SSC[1]	Spawns in small coastal tributary streams, and utilizes slow flowing backwater areas, low velocity pools, and side channels for rearing of young. Prefers good forest canopy cover, in-stream woody debris, from the Eel River north to the Oregon border.	None
Oncorhynchus kisutch	southern Oregon/ northern California (SONCC) coho salmon ESU[1]	FT (CH)/ST	Freshwater, nearshore and offshore environments throughout their lifecycles. Coho prefer low stream velocity, shallow water, and small gravel. Spawning and rearing habitat mainly in low gradient tributaries and side channels of river systems. Require beds of loose, silt-free, coarse gravel for spawning. Also needs cover, cool water, and sufficient dissolved oxygen.	None
Oncorhynchus mykiss irideus	northern California steelhead ESU[1]	FT (CH)/SSC	Coastal basins from Redwood Creek south to the Gualala River. Spawning and rearing habitat mainly in low-medium gradient tributaries, side channels, and mainstem of river systems.	None
Oncorhynchus tshawytscha	California coastal Chinook salmon ESU[1]	FT (CH)/-	Coastal basins from Redwood Creek south to the Gualala River. Spawning and rearing habitat mainly in low-medium gradient tributaries, side channels, and mainstem of river systems.	None
Thaliechthys pacificus	southern eulachon DPS[1]	PT/SSC	An anadromous species, adults enter fresh water and spawn from February to mid-May. This species' range is Northern California to eastern Bering Sea and Pribilof Islands.	None

Table 2

Potential Regionally Occurring Sensitive Wildlife Species from the Fortuna Area

Stewart Street Reservoirs Replacement, Fortuna, California

Species Latin Name	Common Name	Status (Federal/State) [1]	Life Form/General Habitat Requirements[2]	Potential for Occurrence
Amphibians				
Actinemys marmorata marmorata	Northwestern pond turtle	-/SSC	Permanent ponds, lakes, streams, irrigation ditches or permanent pools along intermittent streams. Require basking sites such as partially submerged logs, rocks, mats of floating vegetation, or open mud banks	None
Ascaphus truei	western tailed frog	-/SSC	Inhabits cold, clear, rocky fast flowing perennial streams in forested areas. From near sea level to 8,400 ft. above MSL. Restricted to perennial montane streams. Tadpoles require water below 15 ºC.	None
Rana aurora aurora	northern red-legged frog	-/SSC	North Coast coniferous forest; breeds in ponds and slow moving backwater in creeks. Found in humid forests, woodlands, grasslands, and streamsides with plant cover. Most common in lowlands or foothills. Frequently found in woods adjacent to streams. Breeding habitat is in permanent water sources; lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps. Sea level to 4,680 ft. above MSL.	None
Rana boylii	foothill yellow-legged frog	-/SSC	Found in or near rocky streams in a variety of habitats. Prefer shallow, shaded perennial streams with some open canopy; breeds in stream margins. Rarely encountered far from permanent water.	None
Rhyacotriton variegatus	southern torrent salamander	-/SSC	Habitat includes cold, clear well-shaded streams, waterfalls and seepages, particularly those running through talus and under rocks all year. Found primarily on north-facing slopes in the southern part of their range where forests are warmer and drier. Sea level to 5,000 ft. above MSL.	None
Birds				
Accipiter cooperii	Cooper's hawk	-/SSC	Can be associated with dense forests, edge habitat, and urban interface. Nests sites characteristically in dense cover of tree canopy.	Moderate
Accipiter striatus	sharp-shinned hawk	-/SSC	Non-breeding habitat preference highly variable from closed forests to urban interface. Nesting locations tend to be dense mixed-forests but can also be urban.	Moderate

Table 2 Potential Regionally Occurring Sensitive Wildlife Species from the Fortuna Area Stewart Street Reservoirs Replacement, Fortuna, California				
Species Latin Name	**Common Name**	**Status (Federal/State) [1]**	**Life Form/General Habitat Requirements[2]**	**Potential for Occurrence**
Birds (cont.)				
Agelaius tricolor	tricolored blackbird	-/SSC	Nesting preference variable, but usually associated with emergent wetlands and vegetation over water; gregarious during non-breeding season.	None
Aquila chrysaetos	golden eagle	-/FP	Rolling foothills and mountain areas. Cliff-walled canyons provide nesting habitat throughout most of the species range, as well as large trees in open areas.	None
Ardea alba	great egret	-/-	Colonial nesting species; nests in trees near tideflats, marshes, irrigated pastures, and margins of lakes and rivers.	None
Ardea herodias	great blue heron	-/-	Colonial nesting species; nests in trees near tideflats, marshes, irrigated pastures, and margins of lakes and rivers.	None
Brachyramphus marmoratus	marbeled murrelet	FT (CH)/ SE	Spend the majority of their lives on the ocean, but come inland to nest in old-growth forests, characterized by large trees, multiple canopy layers, and moderate to high canopy closure.	None
Charadrius alexandrinus nivosus	western snowy plover	FT (CH)/SSC	Sparsely vegetated beaches, along coastal strip, also inland; ground nester and gregarious in non-breeding season.	None
Coccyzus americanus occidentalis	western yellow-billed cuckoo	FC/SE	Nests in tall cottonwood and willow riparian woodland. Requires patches of at least 10 hectares (25 acres) of dense riparian forest with a canopy cover of at least 50 percent in both the understory and overstory; nests typically in mature willows.	None
Egretta thula	snowy egret	-/-	Colonial nesting species; nests in trees near tideflats, marshes, irrigated pastures, and margins of lakes and rivers.	None
Haliaeetus leucocephalus	bald eagle	FD/SE, SFP	This species is generally found along ocean shores, lake margins, and rivers. Nests in large, old growth, or live trees with open branches, especially ponderosa pine, within 1 mile of water source. Species roosts communally in winter.	None
Nycticorax nycticorax	black-crowned night heron	-/-	Colonial nesting species; nests in trees near tideflats, marshes, irrigated pastures, and margins of lakes and rivers.	None
Pandion haliaetus	osprey	-/-	Primarily along rivers, lakes, bay, and seacoasts. Nests in dead snags, living trees, utility poles, etc. usually near or above water.	None
Strix occidentalis caurina	northern spotted owl	FT (CH)/SSC	Coastal to mountainous mature coniferous forests. Nests in cavities or on natural platforms.	None
Mammals				

Table 2 Potential Regionally Occurring Sensitive Wildlife Species from the Fortuna Area Stewart Street Reservoirs Replacement, Fortuna, California				
Species Latin Name	**Common Name**	**Status (Federal/State) [1]**	**Life Form/General Habitat Requirements[2]**	**Potential for Occurrence**
Antrozous paliidus	pallid bat	-/SSC	Occurs in a variety of habitats from desert to coniferous forest. Most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California. Relies heavily on trees for roosts.	None
Arborimus pomo	Sonoma tree vole	-/SSC	Coniferous forest, especially those dominated by Douglas-fir. Build nests within the living portion of the canopy. Arboreal species. Feeds almost exclusively on Douglas-fir needles, but will occasionally take needles of grand fir, hemlock or spruce. May spend entire life in a single tree.	Low
Corynorhinus townsendii	Townsend's big-eared bat	-/SSC	Undisturbed roosts, nursery, and hibernaculum.	None
Lasiurus cinereus	hoary bat	-/SSC	Habitats suitable for bearing young include all woodlands and forests with medium to large-size trees and dense foliage.	None
Martes americana humboldtensis	Humboldt marten	-/SSC	Occurs only in the Coastal Redwood zone from the Oregon border south to Sonoma County. Coniferous forest with >40% canopy closure, large trees and snags with complex physical structure near the ground. Presumed extant.	None
Myotis umanensis	Yuma myotis	-/-	Open forests and woodlands with sources of water over which to feed and for drinking. Roosts and bears young in buildings, mines, caves, or crevices.	None

Table 2
Potential Regionally Occurring Sensitive Wildlife Species from the Fortuna Area
Stewart Street Reservoirs Replacement, Fortuna, California

Species Latin Name	Common Name	Status (Federal/State) [1]	Life Form/General Habitat Requirements[2]	Potential for Occurrence

1. CH: Critical Habitat
   DPS: Distinct Population Segment
   ESU: Evolutionary Significant Unit
   FE: Federally listed Endangered, pursuant to the Federal Endangered Species Act (FESA), as amended. This designation includes taxa that are in danger of extinction throughout all or a significant portion of their range.
   FT: Federally listed Threatened, pursuant to the FESA, as amended. This designation refers to species that are not presently threatened with extinction but are likely to become endangered throughout all or a significant portion of their range in the foreseeable future if special protection and management efforts are not undertaken.
   FC: Federal Candidate. This designation includes taxa that require additional information to propose for listing pursuant to the Endangered Species Act of 1973, as amended.
   FD: Federally Delisted.
   PT: Federally Proposed Threatened
   SE: State listed Endangered, pursuant to California Endangered Species Act (CESA). SE designation includes taxa that are in danger of extinction throughout all or a significant portion of their range.
   SFP: State Fully Protected
   ST: State listed Threatened, pursuant to CESA. ST designation includes taxa that are likely to become endangered throughout a significant portion of their range.
   CDFG: California Department of Fish and Game
   SSC: Spies of Special Concern are species that the CDFG consider of conservation concern. These species must be considered pursuant to CEQA.
   N/A: Not Applicable; species is considered to be sensitive for other reasons such as colonial nesting or that the species is rare or uncommon. While no formal conservation status is afforded, the CNDDB still tracks the presence of these species and they must be considered.
2. Habitat descriptions are from CNDDB (2009a), Tibor (2001), and Hickman (1993).
3. Includes all spawning populations south of the Eel River.
4. "-": no status/listing.

based on the habitat requirements of each species relative to the conditions observed during the field surveys. Each species was evaluated for its potential to occur on the project site according to the following criteria:

(1) **None**. Species listed as having "none" with regards to their potential to occur on the project sites are those species for which:

- there is no suitable habitat present on the sites (i.e., habitats on the project sites are unsuitable for the species requirements [for example, elevation, hydrology, plant community, disturbance regime, etc.]).

(2) **Low**. Species listed as having a "low" potential to occur on the project sites are those species for which:

- there is no known records of occurrence in the vicinity of the sites; and
- there is marginal or very limited suitable habitat present on the sites.

(3) **Moderate**. Species listed as having a "moderate" potential to occur on the project sites are those species for which:

- there is known record of occurrence in the vicinity of the sites; and
- there is suitable habitat present on the sites.

(4) **High**. Species listed as having a "high" potential to occur on the project sites are those species for which:

- there is known record of occurrence in the vicinity of the sites (there are many records and/or records in close proximity); and
- there is highly suitable habitat present on the sites.

(5) **Present**. Species listed as "present" on the project sites are those species for which:

- the species was observed on the sites.

6.1 Special Status Natural Communities

Natural communities are habitats that are generally defined by vegetation type and geographical location and are increasingly restricted in abundance and distribution. CNDDB natural communities are habitat for numerous special status plant and animal species. The natural communities that are included in the CNDDB are based on the state and global ranking status, which provides an estimate of the number of acres that remains of a particular community and threat level designation. Recognition of natural communities is an ecosystem-based approach to maintaining biodiversity in California. The potential regionally occurring natural communities from the Fortuna area, according to the CNDDB query include Coastal Terrace Prairie, Northern Coastal Salt Marsh, and Sitka Spruce Forest.

Coastal Terrace Prairie (Element Code: 41100). Coastal terrace prairie is a native grassland community found on sandy, marine terraces within the zone of fog intrusion. This habitat is dominated by fairly tall (greater than 3 feet) sod and tussock-forming perennial grasses. Herbaceous annuals species are typically scattered amongst the grasses. Much of California's coastal prairie habitat has been destroyed by agricultural conversion and development. The remaining areas are also threatened by the invasion of exotic weeds such as annual fescues (*Vulpia* sp.), nonnative

bromes (*Bromus* sp.), and oats (*Avena* sp.). The state rarity status for coastal terrace prairie is very threatened (S2.1) with 2,000-10,000 acres remaining in the state. This natural community is not located on or adjacent to the sites.

Northern Coastal Salt Marsh (Element Code: 52110). Northern coastal salt marshes develop along the intertidal shores of bays, lagoons, and estuaries. The historic distribution of northern coastal salt marsh in Humboldt County and throughout California has been greatly reduced by agricultural conversion, diking, and coastal development. Native species commonly associated with northern coastal salt marsh include spearscale (*Atriplex patula*), tufted hairgrass (*Deschampsia caespitosa*), saltgrass (*Distichlis spicata*), gumweed (*Grindelia stricta*), salt rush (*Juncus lesueurii*), pickleweed (*Salicornia virginica*), and silverweed (*Potentilla anserina*). A number of sensitive plant species are found within this habitat type (refer to Table 1). The state rarity status for northern coastal salt marsh is very threatened (state rank S3.2) with 2,000 to 10,000 acres remaining in the state. This natural community is not located on or adjacent to the sites.

Sitka Spruce Forest (Element Code: 82100). Sitka spruce grows in mild wet coastal climates and occurs in a narrow band along the Pacific coast from Northern California to Alaska. Sitka spruce forest is usually found growing on steep seaward upland slopes or topographically flat areas, but can also occur in wetlands, such as stream and river backwaters, bottoms, and floodplains. Species commonly associated with upland Sitka spruce forests include redwood (*Sequoia sempervirens*), western hemlock (*Tsuga heterophylla*), hazelnut (*Corylus cornuta*), cascara (*Rhamnus purshiana*), salmonberry (*Rubus spectabilis*), Douglas's iris (*Iris douglasiana*), false lily-of-the-valley (*Maianthemum dilatatum*), and sword fern (*Polystichum munitum*). The state rarity status for Sitka spruce forest is very threatened (state rank S1.1) with less than 2,000 acres remaining in the state.

Palustrine forested wetlands that are dominated with Sitka spruce have a different assemblage of species. The overstory typically consists of Sitka spruce, Oregon crabapple (*Malus fusca*), red alder, with a subcanopy of cascara (*Rhamnus purshiana*), willows, twinberry, and wax myrtle (*Myrica californica*). Dominant shrubs include salmonberry, thimbleberry, and elderberry. Common herbaceous species are sword fern, false lily-of-the-valley, milk maids (*Cardamine californica*), Douglas iris, and grass species including Pacific reed grass (*Calamagrostis nutkaensis*). This natural community is not located on or adjacent to the sites.

6.2 Special Status Plant Species

Based on a review for special status plant species (CDFG, 2009a; CNPS 2009; USFWS, 2009), a total of 29 special status plant species have been reported from the region consisting of the site's quadrangle (Fortuna) and the aforementioned surrounding quadrangles. Based on the 29 plant species reported, the range of habitats present at the project sites, and the geographical range of the various special status plant species, one (1) plant species listed in Table 1 is considered to have a low potential to occur within the sites. This species includes Howell's montia (*Montia howellii*). As stated above, a protocol level focused botanical survey was not conducted at the project sites.

Howell's montia is an annual herb that is tolerant of disturbance and occurs in a variety of habitats that have minimal vegetation cover. Off-site to the east within the unimproved Barney Street right-of-way, potentially suitable habitat exist for Howell's montia. The proposed project is not expected to impact this CNPS List 2 species.

None of the 29 special status plant species reported in Table 1 were observed during the 2009 site visits.

6.3 Special Status Animal Species

Based on a review for special status animal species (CDFG, 2009a; USFWS, 2009a), a total of 32 special status animal species have been recorded or have potential to occur from the project region consisting of the site's quadrangle (Fortuna) and the aforementioned surrounding topographic quadrangles. Based on the 32 animal species potentially occurring in the region, the habitat present at the project sites, and the geographical range of the various special status animal species, two (2) animal species included in Table 2 are considered to have a moderate potential to occur within the sites. Those species include: Cooper's hawk and sharp-shinned hawk. Information presented in this section was gathered during the site visits, from published habitat requirements of each species, and through professional knowledge and experience with several of the species and their habitat requirements, disturbance issues, and distribution in northwestern California.

Sharp-shinned hawks (*A. striatus*) and **Cooper's hawk** (*Accipiter cooperii*) are in the Family Accipitridae and are primarily associated with dense forests but can be found in several habitat types including ecotones and urban environments. *Accipiters* are also relatively common in neighborhoods where bird feeders attract prey species. Like other raptors and birds in general, sharp-shinned hawk and Cooper's hawk are protected under CFGC Section 3503.5 and the federal MBTA. No hawks or hawk nests were observed during the reconnaissance level biological surveys. Construction activities are not anticipated to impact sharp-shinned hawks or Cooper's hawk.

7.0 Conclusions

The project sites are altered and have been subjected to regular human disturbance, both recently and historically. Jurisdictional waters of the U.S. and/or State (as wetlands and other waters of the U.S.) were not identified at the sites. Although no special status plants are anticipated to be impacted by any proposed improvements, other biological resources such as birds could be subject to state and/or federal regulations. With careful planning, and mitigation measures (for example, BIO-1 [see Section 8.0, below]), potential impacts from the project can be reduced to a level that is less than significant. It is important to note that the regulatory environment changes, and that these conclusions are based on current laws and policies (see Section 5.0).

7.1 Potential Impacts on Special Status Species

No special status plant or animal species were observed at the sites.

Of the 29 special status plant species potentially occurring in the Fortuna area, one (1) plant species, Howell's montia, is considered to have a low potential to occur within the sites (CDFG, 2009a; CNPS, 2009). Vegetation at the sites has been altered and modified by past land use. These activities have altered the environmental conditions at the sites so that common, non-native plant species dominate the sites. The ongoing disturbed nature of the sites and regular impacts from

human intrusion are factors that likely contribute to the absence of rare plants or their ability to colonize the sites over time, with the exception of species that can tolerate a high disturbance regime. Given the above information and the fact that no special status plant species were detected during SHN's site visits, the proposed project is not anticipated to directly or indirectly impact any listed or special status plant species; thus, anticipated impacts are less than significant.

On March 26, 2009, Michael van Hattem and Scott Bauer, Environmental Scientists with the CDFG, Aimee Weber, SHN botanist/ecologist, and Liz Shorey, Dennis Ryan, Stephen Avis, and Kevin Carter with the City conducted a site visit at the Stewart Street reservoir site to discuss the proposed project and potential biological impacts. Mr. van Hattem and Mr. Bauer concluded during this site visit that there were no major biological issues present at the Stewart Street reservoir site. On May 6, 2009, on behalf of the City, SHN submitted a formal TAR for USFWS assistance in the assessment of potential impacts to federally listed species, specifically potential impacts to the marbled murrelet and northern spotted owl at the Stewart Street reservoir site (SHN, 2009b). The USFWS determined after review of information pertaining to the request, and a site visit conducted by Mr. Hoffman of the USFWS staff at the Stewart Street reservoir site, that the proposed project will not affect either the northern spotted owl or the marbled murrelet (USFWS, 2009b; Appendix C). The Home Avenue-Garden Lane preliminary pipeline construction site location was not yet determined at the time of the CDFG March 26, 2009 site visit or the May 6, 2009 TAR request to USFWS. A second TAR was submitted to USFWS on August 11, 2009 regarding the Home Avenue-Garden Lane pipeline construction, and CDFG was copied. A response from USFWS, dated August 24, 2009, on the second TAR regarding the pipeline construction has been received. USFWS determined that the proposed Stewart Street Water Reservoir Project, including the secondary pipeline alignment, will not affect either the northern spotted owl or the marbled murrelet (USFWS, 2009c; Appendix C).

A total of two (2) animal species are considered to have moderate potential for occurrence within or adjacent to the sites: Cooper's hawk and sharp-shinned hawk (Table 2). Neither of these species was observed at the sites (Appendix B). Although these two species were not observed at the sites, they are considered to have moderate potential for future occurrence because the sites contain suitable habitat and are within either the breeding or migration ranges of these species. The proposed project is not anticipated to directly or indirectly impact listed or special status animal species; thus, potential impacts to listed or special status animal species are less than significant.

7.2 Potential Impacts on Nesting Birds

Given raptors and other bird (for example, passerines [perching birds]) species may potentially nest within the trees and shrubs that occur in and adjacent to the sites, there is a potential for construction-related impacts to nesting birds. The proposed construction does not propose removal of trees. However, trees and shrubs exist within and along the project areas. Grading and construction activities (including the HDD portion of the pipe installation) within the sites could cause nest abandonment and/or loss of eggs or young. Nests of native birds are protected under the CFGC (Section 3503) and destruction of an active nest or eggs would represent a significant impact. Disturbance that results in the abandonment of an active nest is also considered a significant impact. However, implementation of Mitigation Measure BIO-1 (below) would reduce these potential impacts to a less than significant level.

Given the site location, existing site conditions, and by implementing BIO-1 (preconstruction nesting bird surveys), impacts to special status or common animal species are less than significant.

7.3 Potential Impacts on Protected Waters of U.S. and/or State, Riparian Habitat or other Sensitive Natural Communities

There will be no temporary or permanent direct impacts to WoS (for example, isolated wetlands, drainages above OHWM, or riparian vegetation) regulated under the Porter Cologne Act and/or CFGC Section 1600.

No potential WoS was observed on, or adjacent to, the Home Avenue-Garden Lane preliminary pipeline construction site location. On March 26, 2009, a site visit was held with Mr. van Hattem and Mr. Bauer, environmental scientists with CDFG. Mr. van Hattem and Mr. Bauer concluded that a 1600 SAA was not required for the proposed work adjacent to the existing concrete drainage ditch located east of the Stewart Street reservoir site.

There is no sensitive natural community within the project areas that will be adversely affected by the proposed project. The project does not propose removal of trees.

No impact on federally protected WoUS as defined by Section 404 of the CWA (including wetlands) is anticipated. There is an existing concrete drainage ditch located along the eastern parcel boundary of the Stewart Street reservoir site (Appendix A; Photo 4). It is located on the east side of the fence, and outside of the City's property boundary. No impacts to the aforementioned concrete drainage ditch are anticipated, and no wetlands or other WoUS were identified within the project areas.

7.4 Potential Impacts on Wildlife Movement

No designation of a major migratory route has been identified for the sites. The sites are located within developed residential areas, within the city limits and are surrounded by urban development. Development exists on-site and off-site (for example, Stewart Street/Home Avenue/Garden Lane and single family homes). During the March 26, 2009 site visit, an evaluation of the off-site concrete drainage was conducted. The drainage does not support fish and therefore; the project will not interfere with any movement of native resident or migratory fish.

The sites may facilitate home range and dispersal movement of resident wildlife species, but do not serve as wildlife movement corridors. Development of the sites would not restrict regional wildlife movement or wildlife migration patterns, and would have no related significant impacts. Mitigation Measure BIO-1 (preconstruction nesting bird surveys) would reduce potential impacts to migratory birds to less than significant.

7.5 Potential Conflicts with Local Policies or Ordinances Protecting Biological Resources

The City does not currently have any local regulations and/or ordinances for the protection of biological resources; therefore the project will not conflict with local polices or ordinances protecting these resources.

7.6 Potential Conflicts with Adopted Habitat Conservation Plan

No Habitat Conservation Plans, Natural Community Conservation Plans or other local or regional plans have been adopted within the area that encompasses the sites; therefore, no impacts are anticipated and no mitigation is considered necessary.

8.0 Recommendations[5]

Mitigation Measure BIO-1. To avoid impacts to nesting raptors and/or other bird (for example, passerines [perching birds]), one of the following shall be implemented:

- conduct vegetation removal activities associated with construction during September through January, when birds are not nesting; or
- a qualified biologist will conduct a brief pre-construction survey for nesting birds two weeks prior to construction if vegetation removal is to take place during the nesting season (February 1 to August 31 for most birds). Preconstruction surveys for nesting pairs, nests, and eggs would occur in areas proposed for vegetation removal, and active nesting areas flagged. If active nests are encountered, species-specific measures shall be prepared by a qualified biologist in consultation with the CDFG and implemented to prevent abandonment of the active nest.

9.0 References Cited

Army Corps of Engineers. (2008). Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region. J. S. Wakeley, R. W. Lichvar, and C. V. Noble, eds., ERDC/EL TR-08-13, U. S.

California Department of Fish & Game. (1984 revised May 8, 2000). *Guidelines for Assessing Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities.* Sacramento:CDFG.

---. (1994a). *A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607, California Fish and Game Code*. Sacramento:CDFG.

---. (January 1, 1998). *Fish and Game Commission. Fish and Game Code.* Sacramento:CDFG.

---. (2003). *The Vegetation Classification and Mapping Program*. NR (No Reference):Biogeographic Data Branch, List of California Terrestrial Natural Communities Recognized by The California Natural Diversity Database.

---. (2007). *Vegetation Classification and Mapping Program List of California Vegetation Alliances*. Biogeographic Data Branch, California Natural Diversity Database. Sacramento:CDFG.

---. (2009a). California Natural Diversity Database (CNDDB) URL: http://www.dfg.ca.gov/biogeodata/cnddb/. (Database version: January 2008). Sacramento:CDFG.

[5] Note: the mitigation measures listed below may not follow the number sequence included in the Mitigated Negative Declaration but the content shall be the same.

---. (2009b). *Special Animals*. Biogeographic Data Branch, California Natural Diversity Database. Sacramento:CDFG.

---. (2009c). *State and Federally Listed Endangered, Threatened, and Rare Plants of California*. Sacramento:CDFG.

---. (2009d). *State and Federally Listed Endangered and Threatened Animals of California*, Sacramento:CDFG.

---. (2009e). *Special Vascular Plants, Bryophytes, and Lichens List*. Quarterly publication. 71 pp. Sacramento:CDFG.

---. (2009f). Biogeographic Information and Observation System (BIOS). URL: http://bios.dfg.ca.gov/. Sacramento:CDFG.

California Native Plant Society. (2009). *Electronic Inventory of Rare and Endangered Plants of California*. Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor. California Native Plant Society. Sacramento, CA. Available from http://www.northcoastcnps.org/cgi-bin/inv/inventory.cgi. Accessed April 29, 2009.

CERES GeoFinder. (2009). Available from http://ceres.ca.gov/natural_resources/.

Environmental Laboratory. (1987). "Corps of Engineers Wetland Delineation Manual," Technical Report Y-87-1, Vicksburg: U.S. Army Engineers Waterways Experiment Station.

Fortuna, City of. (July 19, 1993). *Fortuna General Plan*. Fortuna:COF.

Hickman, J. C., ed. (1993). *The Jepson Manual Higher Plants of California*. Berkeley: University of California Press Berkeley.

Holland, R. F. (1986). *Preliminary Descriptions of Terrestrial Natural Communities of California*. Non-game Heritage Program. Sacramento:California Department of Fish and Game. 156 pp.

McCullough, D. (1996). *Met populations and Wildlife Conservation*. NR: Island Press. 429 pp.

McLaughlin, J. and Harradine, F. (1965). *Soils of Western Humboldt County, California*. Dept. of Soils and Plant Nutrition, UC Davis, in cooperation with Humboldt County.

Natural Resources Conservation Service, U.S. Department of Agriculture. (2009a). Web Soil Survey (2.1) http://websoilsurvey.nrcs.usda.gov.

---. (2009b). National Hydric Soils List. http://soils.usda.gov/use/hydric/

Sawyer, J.O. and T. Keeler-Wolf. (1995). *A Manual of California Vegetation*. Sacramento:California Native Plant Society Press.

SHN Consulting Engineers & Geologists, Inc. (May 2009a). *Geotechnical Investigation Report*. Eureka:SHN.

---. (May 6, 2009b). *Technical Assistance Request to Mike Long, for Potential Effects on Special Status Species*. Eureka:SHN.

---. (August 11, 2009c). *Technical Assistance Request to Randy Brown, for Potential Effects on Special Status Species*. Eureka:SHN.

Tibor, David, P., ed. (2001). *Inventory of Rare and Endangered Plants of California, 6th Edition; Special Publication No. 1*. Sacramento: California Native Plant Society.

United States Department of Interior. (1987). National Wetland Inventory Map, Arcata South California Quadrangle. U.S. Department of the Interior Fish and Wildlife Service. Downloaded from http://www.fws.gov/nwi/

University of California, Davis: Department of Soils and Plant Nutrition. (1965). *Soils of Western Humboldt County California.* 84 pp. plus maps. Davis: UC, Davis.

United States Fish and Wildlife Service. (2009a). Listed/Proposed Threatened and Endangered Species for the Fortuna Quad (Candidates Included). Arcata (CA): Arcata Fish and Wildlife Office. Accessed April 28, 2009. Available from http://www.fws.gov/arcata/specieslist/search.asp.

---. (2009b). Response Letter to Shannon Zimmerman Regarding Request for Technical Assistance for the City of Fortuna's Stewart Street Water Reservoir Project, Fortuna, California. Arcata:USFWS. Letter received May 22, 2009.

---. (2009c). Response Letter to Shannon Zimmerman Regarding Request for Technical Assistance for the City of Fortuna's Stewart Street Water Reservoir Project, Fortuna, California. Arcata:USFWS. Letter received August 24, 2009.

University of California, Berkeley (UC). (2009). *Jepson Online Interchange*. Available from http://ucjeps.berkeley.edu/ interchange.html. Berkeley:UC Berkeley.

Whittaker, R. (1998). *Island Biogeography: Ecology, Evolution, and Conservation.* Oxford University Press. 285 pp.

Appendix A

Photographs

Photo 1: Existing tanks; orientation is north. Photo taken by SHN on February 24, 2009.

Photo 2: Existing pump station; orientation is south. Photo taken by SHN on February 24, 2009.

Photo 3: View of slope facing southeast. Photo taken by SHN on February 24, 2009.

Photo 4: View of concrete drainage ditch; orientation is south. Proposed project is west. The unimproved, steep gradient access road (Barney Street), which parallels the eastern edge of the Stewart Street reservoir site is shown in the background. Photo taken by SHN on February 24, 2009.

Photo 5: View east off of Home Avenue towards the approximate location of preferred entrance borehole for the Horizontal Directional Drill (HDD) portion of the Home Avenue-Garden Lane pipeline site. Red arrow marks the existing booster pump station. Photo taken by SHN on August 24, 2009.

Photo 6: View of Home Avenue standing east of existing booster pump station shown in Photo 5; orientation is south. Photo taken by SHN on June 11, 2009.

Photo 7: View south at north end of Garden Lane. Red arrow marks the preferred location of the exit borehole for the HDD of the pipeline construction. Photo taken by SHN on August 24, 2009.

Photo 8: View along Garden Lane; orientation is south. Photo taken by SHN on August 24, 2009.

Appendix B

Species List

Species List Stewart Street Reservoirs Replacement Fortuna, California		
Plants		
Latin Name	**Common Name**	**Presence (1=tree, 2=shrub, 3=herb)**
Abies grandis	grand fir	1
Alnus rubra	red alder	1
Cupressus lawsoniana	Port Orford cedar	1
Ilex aquifolium	English holly	1
Pseudotsuga menziesii	Douglas-fir	1
Salix sp.	willow	1
Sequoia sempervirens	coast redwood	1
Cotoneaster pannosa	cotoneaster	2
Cytisus scoparius ssp. *scoparius*	scotch broom	2
Rosa sp.	rose	2
Rubus discolor	Himalayan blackberry	2
Allium sp.	onion	3
Athyrium filix-femina	lady fern	3
Bellis perennis	English daisy	3
Bromus sp.	brome grass	3
Dactylis glomerata	orchard grass	3
Daucus carota	wild carrot	3
Erica sp.	Heather	3
Festuca sp.	fescue	3
Fragaria vesca	wood strawberry	3
Geranium sp.	geranium	3
Hedera helix	English Ivy	3
Hypochaeris radicata	hairy cat's-ear	3
Juncus effusus	common rush	3
Juncus patens	spreading rush	3
Lonicera sp.	honeysuckle	3
Lotus corniculatus	birdfoot trefoil	3
Plantago lanceolata	English plantain	3
Polystichum munitum	sword fern	3
Prunella vulgaris	self-heal	3
Ranunculus repens	creeping buttercup	3
Rubus ursinus	Pacific bramble or California blackberry	3
Scirpus microcarpus	small-flowered bulrush	3
Sonchus sp.	sow thistle	3
Stachys ajugoides	hedge nettle	3
Taxacum californicum	California dandelion	3

Species List Stewart Street Reservoirs Replacement Fortuna, California	
Animals	
Latin Name	**Common Name**
Carpodacus mexicanus	Housefinch
Cathartes aura	Turkey Vulture
Corvus brachyrhynchos	American Crow
Corvus corax	Common Raven
Cyanocitta stelleri	Steller's Jay
Psaltriparus minimus	Bushtit
Turdus migratorius	American Robin
Ursus americanus	Black bear

Appendix C

USFW Technical Assistance Letters

REC'D MAY 27 2009

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arcata Fish and Wildlife Office
1655 Heindon Road
Arcata, California, 95521
Phone: (707) 822-7201 FAX: (707) 822-8411

In Reply Refer To:
8-14-2008-TA-3445.2

MAY 22 2009

Ms. Shannon Zimmerman
Botanist/Project Manager
SHN Consulting Engineers & Geologists, Inc.
812 West Wabash Ave.
Eureka, CA 95501

Subject: Response to Request for Technical Assistance Regarding the City of Fortuna's Stewart Street Water Reservoir Project, Fortuna, California

Dear Ms. Zimmerman:

This responds to your request for U.S. Fish and Wildlife Service (Service) technical assistance, received in our office on May 14, 2009, on the City of Fortuna's Stewart Street Water Reservoir Project (Project). At issue in the request is the assessment of the potential impacts of the proposed Project on the federally listed northern spotted owl (*Strix occidentalis caurina*) and marbled murrelet (*Brachyramphus marmoratus*). After review of the information pertaining to this request, and a site visit conducted by Mr. Ken Hoffman of my staff, the Service provides the following technical assistance.

The proposed Project consists of demolishing/removing two existing 500,000 gallon water tanks, excavating the site, constructing a new 2.0-million gallon concrete storage reservoir, relocating the booster pump station, rerouting on-site piping to connect the new storage tank to the existing distribution system, and connecting a new pipe between pressure zones. The Project location is in a neighborhood approximately five blocks from Main Street, Fortuna (see enclosed map). No habitat for either species of concern is present or located within 0.25 mile of the Project site, and therefore, no habitat for either species of concern will be removed or degraded by the proposed Project. The Service has determined that the proposed Stewart Street Water Reservoir Project will not affect either the northern spotted owl or the marbled murrelet. Thank you for the opportunity to provide this technical assistance for the City of Fortuna's Stewart Street Water Reservoir Project.

All maps and data used to provide this technical assistance are on file at this office. If you have questions regarding this response, please contact Mr. Ken Hoffman of my staff at the Arcata Fish and Wildlife Office at (707) 822-7201.

Sincerely,

Randy A. Brown
Acting Field Supervisor

enclosure
cc:
City of Fortuna: L. Shorey, 621 11th Street, Fortuna, CA 95540
DFG: K. Moore, 619 Second Street, Eureka 95521

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arcata Fish and Wildlife Office
1655 Heindon Road
Arcata, California, 95521
Phone: (707) 822-7201 FAX: (707) 822-8411

In Reply Refer To:
8-14-2008-TA-3445.3

AUG 24 2009

Ms. Shannon Zimmerman
Botanist/Project Manager
SHN Consulting Engineers & Geologists, Inc.
812 West Wabash Ave.
Eureka, CA 95501

Subject: Response to Request for Additional Technical Assistance Regarding the City of Fortuna's Stewart Street Water Reservoir Project, Fortuna, California

Dear Ms. Zimmerman:

This responds to your request for additional U.S. Fish and Wildlife Service (Service) technical assistance, received in our office on August 13, 2009, on the City of Fortuna's Stewart Street Water Reservoir Project (Project). At issue in the request is the assessment of the potential impacts of the proposed Project on the federally listed northern spotted owl (*Strix occidentalis caurina*) and marbled murrelet (*Brachyramphus marmoratus*). After review of the information pertaining to this request the Service provides the following technical assistance.

The proposed Project consists of demolishing/removing two existing 500,000 gallon water tanks, excavating the site, constructing a new 2.0-million gallon concrete storage reservoir, relocating the booster pump station, rerouting on-site piping to connect the new storage tank to the existing distribution system, and connecting a new pipe between Pressure Zone #5 and Pressure Zone #1. The Project location is in a neighborhood approximately five blocks from Main Street, Fortuna (see enclosed map). No habitat for either species of concern is present or located within 0.25 mile of the Project site, and therefore, no habitat for either species of concern will be removed or degraded by the proposed Project. The Service has determined that the proposed Stewart Street Water Reservoir Project will not affect either the northern spotted owl or the marbled murrelet. Thank you for the opportunity to provide this additional technical assistance for the City of Fortuna's Stewart Street Water Reservoir Project.

All maps and data used to provide this technical assistance are on file at this office. If you have questions regarding this response, please contact Mr. Ken Hoffman of my staff at the Arcata Fish and Wildlife Office at (707) 822-7201.

Sincerely,

Randy A. Brown
Acting Field Supervisor

Enclosure
cc:
City of Fortuna: L. Shorey, 621 11th Street, Fortuna, CA 95540
DFG: K. Moore, 619 Second Street, Eureka 95521

Attachment 3

Geotechnical Investigation Report

Stewart Street Reservoirs Replacement
Fortuna, California

Prepared for:

City of Fortuna

Consulting Engineers & Geologists, Inc.
812 W. Wabash Ave.
Eureka, CA 95501-2138
707-441-8855

May 2009
009030.050

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Reference: 009030.050

May 29, 2009

Mr. Dennis Ryan, Public Works Director
City of Fortuna
P.O. Box 545
Fortuna, CA 95540

Subject: Geotechnical Investigation Report, Stewart Street Reservoirs Replacement, Fortuna, California

Dear Mr. Ryan:

The enclosed report documents the results of our investigations for your proposed project. In the report we discuss geological and geotechnical site characteristics, and provide specific recommendations for site preparation and grading, foundation design criteria and construction strategies for the proposed new 2-million-gallon reservoir.

Based on the results of our field and laboratory investigations, SHN believes that from a geologic and geotechnical engineering standpoint, the project can be developed as planned, and that the proposed reservoir can be constructed using conventional foundations, and conventional grading and cutslope support systems, provided our recommendations are followed, and that the noted conditions and risks are acknowledged.

This report concludes our work on this phase of the project in accordance with our current agreement. If you have any questions, please call me at 707-441-8855.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

Brian Freemen, P.E.
Project Manager

Roland S. Johnson, C.E.G.
Project Engineering Geologist

BAF:RSJ/SMB:lms
Enclosure: Report

Reference: 009030.050

Geotechnical Investigation Report

Stewart Street Reservoirs Replacement
Fortuna, California

Prepared for:

City of Fortuna

Prepared by:

Consulting Engineers & Geologists, Inc.
812 W. Wabash Ave.
Eureka, CA 95501-2138
707-441-8855

May 2009

QA/QC: RSJ _____

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Abbreviations and Acronyms

pcf	pounds per cubic foot
psf	pounds per square foot
ASTM	American Society for Testing and Materials-International
B-#	Boring-number
BGS	Below Ground Surface
BH-#	Borehole-number
CDMG	California Division of Mines and Geology
MRfz	Mad River Fault Zone
NR	No Reference
O.D.	Outside Diameter
P-#	Piezometer-number
SHN	SHN Consulting Engineers & Geologists, Inc.
USGS	United States Geological Survey

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Introduction

This report presents the results of the geologic and geotechnical investigation conducted by SHN Consulting Engineers & Geologists, Inc. (SHN) for the construction of a new 2-million-gallon reinforced concrete potable water supply reservoir at the existing Stewart Street Reservoir site (Assessor's Parcel Number 040-050-01), in Fortuna, California, see Figure 1. The two existing reservoirs will be taken out of service, demolished, and replaced by the new larger reservoir. It is our understanding that the concrete reservoir will be supported by a steel reinforced concrete ring foundation and be approximately 110 feet in diameter, and 32 feet high. The reservoir is proposed to be partially embedded with the slab on grade base at a design elevation of 207 feet. We anticipated that excavation cut slopes up to 25 feet in height will be required.

Purpose and Scope of Services

This report is intended to provide the owner with findings, conclusions, and recommendations related to the geotechnical aspects of project feasibility, design, and construction. Our investigation was performed primarily to evaluate subsurface conditions at the site in order to develop geotechnical criteria for design and construction of the proposed structure such that it will not contribute or be subject to significant risk associated with the geologic environment of the site. Specifically, the scope of our services consisted of the following tasks:

1. Review selected geotechnical and geological reports and maps pertinent to the project.
2. Perform a geologic reconnaissance of the project area. Supervise the advancement, logging, and soil sample collection from 10 exploratory test borings. Install and periodically measure four slope inclinometers and seven piezometers.
3. Perform laboratory tests on soil samples, evaluate geologic and geotechnical data collected from investigations, and formulate geotechnical conclusions and recommendations for design and construction of the proposed reservoir.
4. Present a report that includes location and site maps, exploratory test hole logs, laboratory test data, and our conclusions and recommendations.

The recommendations contained in this report are subject to the limitations presented herein. Attention is directed to the "Construction Phase Monitoring" and "Closure and Limitations" sections of this report.

Site Conditions

The proposed reservoir site is located along the flank of a broad southwest-trending divide in the northwest quadrant of Section 35, Township 3 North, Range 1 West of the Fortuna 7.5-minute quadrangle (Figure 1). The site slopes 10% to 45% to the southeast. The upper northwest corner of the site is at an elevation of approximately 234 feet above mean sea level. The northern and western boundaries of the project area are bound by Stewart Street, a two-lane paved city roadway. An unimproved, steep gradient access road (Barney Street) parallels the eastern edge of the site.

The site presently supports two, partially buried water supply reservoirs and a wood-frame pump house. The reservoirs consist of reinforced concrete water tanks, one circular and one rectangular, each having about 0.45 million gallons of storage. The reservoirs are old (70 to over 100 years) and are known to leak.

The rectangular tank is in very poor condition. It is severely cracked and has been repaired numerous times. In 1992, the tank was lined with a hypalon (plastic) liner to stop the water leakage. Initially, the leakage appeared to be stopped, but now it is known to be leaking fairly seriously again.

The circular tank appears to be in relatively good condition. Although we did not conduct a detailed inspection, we understand that previous inspections have revealed little cracking and/or structural distress in the concrete sidewalls.

Below the existing structures, the project area is undeveloped and supports grass and patches of brush. A natural surfaced, unimproved roadway provides access to the existing reservoirs and pump station.

Field Investigation

SHN initiated a geotechnical investigation to evaluate and characterize geologic and geotechnical conditions in the project area in June 2008. Geologic reconnaissance of the project area was conducted prior to commencement of the subsurface investigations, which occurred over intermittent periods between February 2000 and May 2009. Our assessment of subsurface conditions in the project area involved the excavation of 13 mechanical borings (BH-1 through BH-4; BH-DRB-1; P-1 though P-5: and BH-10 through BH-13). Track-mounted drill rigs were used to advance the borings using 7-inch (Outside Diameter [O.D.]) hollow stem and 5-inch flight augers. Boring depths in the project area ranged from 17 to 46.5 feet Below Ground Surface (BGS). Soils encountered in the borings were logged in general accordance with the Unified Soil Classification System.

Penetration resistance tests were conducted as each boring was advanced. The sampler-driving hammer consisted of a 140-pound, 30-inch drop, above-ground, automatic hammer unit. The observed blow counts (total blows per 6-inch increment, for a total of 18 inches of penetration into the soil) are shown on the Field Boring Logs (Appendix A), and were used for shear strength correlation with other data. The sum of the blows for the second and third 6-inch increments shown on the boring logs are typically converted to standard penetration resistance, N value, and used for correlation with other data. Penetration resistance values are a useful index in estimating the consistency, relative density, and shear strength of the tested material.

Relatively undisturbed thin walled tube and disturbed bulk samples were collected from each of the exploratory borings using a modified California (3-inch O.D.) split spoon sampler or a 2-inch (O.D.) split spoon. A representative number of these samples were submitted for laboratory testing to determine index properties of the soils that underlie the site. Laboratory testing included in-place moisture content, dry density, gradation, plasticity, direct shear strength, and unconfined compressive strength.

Our evaluation of subsurface conditions at the site also included a review of eight (B1 through B8) shallow exploration borings excavated during a previous SHN site investigation (SHN, 2000). Piezometers were installed in these borings to evaluate groundwater level changes downslope of the old leaking reservoirs. Refer to Figure 2 for piezometer locations.

Piezometers were installed in borings P-1 though P-4, BH-5, BH-11 and BH-12 immediately following excavation of the borings. The piezometers consisted of 2-inch diameter slotted polyvinyl chloride pipe that extended to a maximum depth of 36.5 feet BGS. Each piezometer was installed with a surface seal to prevent overland flow from infiltrating into the well. Water elevations were measured on several occasions between June 2008 and May 2009.

Slope inclinometers were placed in borings BH-1 through BH-4 immediately following their completion. Each inclinometer was tremi-grouted with a bentonite-cement grout mix. Inclinometer casings were installed to depths ranging between 30.5 and 31.5 feet. Instrument readings were recorded from each site on three separate occasions between June 2008 and May 2009.

Regional Geology and Structure

Geologic maps of the region indicate the material underlying the project area and surrounding slopes is associated with the Middle to Late Pleistocene aged Hookton Formation (Kilbourne, 1985). The Hookton Formation is composed principally of non-marine gravel, sand, silt, and clay; however, some of the sediments along the western limits of this formation appear to have been deposited in shallow marine or marginal environments (Ogle, 1953). As a result of depositional diversity, Hookton Formation sediments can be extremely variable, both locally and regionally. As and example, in the Table Bluff area, Hookton Formation sediments are fine-grained, and clays and silts commonly dominate. The Hookton Formation in the project area is dominated by sands.

Our field site evaluation confirmed that the reservoir site is underlain by Hookton Formation sediments. Hookton Formation sandstone, mudstone, and gravel-bearing conglomerate were observed in samples collected during our subsurface investigation. These sediments are slightly to moderately indurated and typically consist of fine-grained sandy clays overlying clayey and gravelly, coarse sands.

Hookton Formation sediments in the project area have experienced structural deformation in response to thrusting along the Little Salmon fault (see Seismic Setting for discussion). Oblique compression along this fault has resulted in the formation of several large, northwest-striking anticlines and corresponding synclines that trend subparallel to the fault (see Figure 3, Tectonic Setting). One of these northwest-striking structures (a syncline) dissects the project area. Regional geologic maps indicate Hookton Formation sediments along the southern limbs of the syncline have northwest strikes with southward dips that range from 10° to 20°.

Geologic Hazards

This section of the report is intended to provide the City with findings, conclusions, and recommendations related to geologic hazards that could potentially impact the proposed project area.

Slope Stability

The proposed reservoir site consists of a smooth, well-rounded convex slope along the southeastern flank of a low gradient divide. During our site investigation, we did not observe any evidence that the native slopes adjacent to the existing reservoirs had experienced mass movements recently or in the distant past. However, evidence of downslope soil creep was noted in fill material in the region east of the rectangular reservoir. In November 1999, SHN installed a series of eight hand-drilled exploratory borings to quantify soil and groundwater conditions on selective portions of the slope below the two existing reservoirs (B1 through B8)(SHN, 2000). See Figure 2 for borehole locations.
This investigation concluded that the low strength near surface (up to 10 feet thick) fill soils in the area adjacent to, and downslope of the eastern side of the rectangular reservoir and southeast of the circular reservoir are prone to chronic accelerated soil creep. The saturated fill soils and soft underlying native topsoils appear to be moving very slowly downslope under the influence of year-round excess soil moisture caused by reservoir leakage. The depth of downslope soil creep was not determined at that time, but it

appeared to be deep enough to have removed support from the eastern edge of the rectangular reservoir and possibly to have shifted the pump house structure eastward.

In June 2008, SHN installed four inclinometers (BH-1 through BH-4) to a maximum depth of 31 feet BGS to characterize slope movement in the area downslope of the reservoirs. Our 9-month winter period monitoring program revealed no movement in the high strength native soils underlying the mid-slope portion of the site. Instrument readings at BH-2 through BH-4 indirectly indicated trace amounts of deformation in the upper 4 to 8 feet of the soil column (which corresponds to fill and topsoil deposits). Data from BH-1 was inconsistent and not incorporated into our evaluation. Downhole measurements at BH-1 appear to have been corrupted by either backfill expansion and/or settlement.

Seismic Setting

Northwestern California is located in a complex tectonic region dominated by northeast-southwest compression associated with collision of the Gorda and North American tectonic plates. The Gorda plate is being actively subducted beneath North America north of Cape Mendocino, along the southern part of what is commonly referred to as the Cascadia Subduction Zone. This plate convergence has resulted in a broad fold and thrust belt along the western edge of the accretionary margin of the North American plate. In the Humboldt Bay region, this fold and thrust belt is manifested as a series of northwest-trending, southeast-vergent thrust faults, including the Little Salmon fault and faults that comprise the Mad River fault zone (MRfz). These faults are active and are capable of generating moderate- to large-magnitude earthquakes.

No active faults are mapped passing through the project site, and no part of the site lies within an Alquist-Priolo Earthquake Fault Zone. Alquist-Priolo Earthquake Fault Zones are established by the State of California along “sufficiently active, well-defined” faults, to preclude the construction of certain structures across active faults. The nearest known (on-land) fault to the project area that is zoned by the State of California as active is the Little Salmon fault (Hart and Bryant, 1997). This particular fault represents the principle tectonic feature in the project area and consists of a northwest-trending, northeast-dipping thrust fault that dissects slopes along the northern valley wall of the Eel and Van Duzen River basins. The trace of the Little Salmon fault is mapped approximately ¾ of a mile northeast of the project area (McLaughlin and others, 2000).

The Little Salmon fault is capable of generating very large earthquakes. Offset relations within the upper Wildcat Group suggest that vertical separation exceeds 5,900 feet, representing about 4.4 miles of dip-slip motion on the Little Salmon fault since the Quaternary (that is, in the past 700,000 to 1 million years; Woodward-Clyde Consultants, 1980). The fault is associated with a slip rate that exceeds 6 millimeters per year (Carver and Burke, 1992). Paleoseismic studies of the Little Salmon fault indicate that the fault deforms late Holocene sediments at the southern end of Humboldt Bay (Clarke and Carver, 1992). Radiocarbon dating suggests that earthquakes have occurred on the Little Salmon fault about 300, 800, and 1,600 years ago (Carver and Burke, 1992). Average slip rate for the Little Salmon fault for the past 6,000 years is between 6 and 10 millimeters per year. Based on currently available fault parameters, the maximum magnitude earthquake for the Little Salmon fault is thought to be between 7.0 (CDMG/USGS, 1996) and 7.3 (Geomatrix Consultants, 1994). Strong ground shaking associated with this fault is considered the principal geologic hazard associated with this site.

Other potential seismic ground shaking sources that could have an impact on the project area include:

- **The Gorda Plate**: This relatively small oceanic plate remnant is breaking up as it approaches the subduction zone. Frequent earthquakes are generated along left-lateral strike-slip faults within the plate itself. The plate is subducting in a northeastward direction.
- **The Mendocino Fracture Zone**: This high-angle, east-west trending fault represents the plate boundary between the Gorda and Pacific plates. It generates frequent predominantly right-lateral strike-slip earthquakes.
- **The Cascadia Subduction Zone:** This zone is the most significant potential seismic source in the region. A great subduction event, rupturing from Cape Mendocino to British Columbia could be up to magnitude 9.5. Recurrence intervals are estimated at 300 to 500 years. The last subduction event occurred just over 300 years ago. In general, Cascadia Subduction Zone earthquakes represent the most significant hazard to development throughout the Pacific Northwest. A great subduction event would generate very strong, long duration ground shaking, and is likely to trigger large-scale coseismic landsliding in landslide-prone areas.
- **The San Andreas Fault:** This fault represents the right lateral translational boundary between the Pacific and North American Plates. A magnitude 8.3 earthquake along the San Andreas fault in 1906 resulted in considerable damage along North Coast, with shaking intensities possibly as high as VIII or IX in Briceland, Eureka, Fortuna, Ferndale, and Petrolia (Dengler and others, 1992).

Considering the location of the reservoir site and the seismic history of the general region, there is a possibility that the area proposed for development could be subject to very strong ground shaking during the design life of the proposed structure.

Liquefaction

Liquefaction is a secondary seismic effect of earthquake shaking that can cause loose, water-saturated, and weakly cohesive or non-cohesive earth materials to temporarily lose shear strength due to an increase in pore-fluid pressures. Based on the published results of geotechnical testing and post-earthquake studies, the susceptibility of sediments to liquefaction can be directly correlated to the type, origin, and age of the deposits. Geologic materials most susceptible to liquefaction are geologically recent (late Holocene age) sand- and silt-rich deposits, located adjacent to streams, rivers, bays, or ocean shorelines. Liquefaction occurs only when susceptible materials are saturated. Susceptibility to liquefaction decreases with increasing geologic age, due to the effects of weathering, and the degree of densification, compaction, and/or cementation.

At this site, liquefaction is considered a negligible risk under all but rare, extreme seismic earthquake events due to the great age of the underlying materials and the lack of loose, clean sandy deposits.

Geological Hazards Conclusions and Recommendations

Based on the results of our field and laboratory investigations, it is SHN's opinion that the site can be developed as planned without being subject to or contributing to significant geologic hazards, provided our recommendations are followed and that the noted conditions and risks are acknowledged.

1. The principal geologic hazard at the site is strong to very strong levels of seismic shaking produced by earthquakes on the Little Salmon fault or any of the other earthquake sources in

the North Coast region. Seismic shaking effects produced by large earthquakes from more distant sources are likely to be significantly less severe, but there are several sources near enough to the site to generate strong to very strong ground shaking. Strong seismic shaking should be anticipated for the project site within the design life of the structures. We recommend that the proposed reservoir be designed to withstand strong seismic shaking. The minimum standard for construction of the reservoir should be in accordance with the latest edition of the California Building Code for the most seismically active areas.

2. The proposed reservoir area is located along the crest of moderately steep ridgeline that is devoid of landslide morphology. In addition, the reservoir foundation will be constructed on high strength materials that are not prone to landslide processes; therefore, the risk that slope failure will adversely effect the new reservoir is very low.
3. The risk of liquefaction having an adverse effect on the proposed reservoir is negligible.
4. Significant soil erosion is not currently occurring on the subject site. However, erosion rates are likely to increase during and immediately after the installation of site improvements if not mitigated. Changes in land use, including construction of impervious surfaces (the reservoir roof, paved areas, and so on) will change existing runoff conditions. Increased concentrated runoff could result in accelerated erosion. Erosion control and drainage system design should be based on Best Management Practices during and following construction activities.

Geotechnical/Soils Engineering

This section of the report is intended to provide the City and facility designers with findings, conclusions, and recommendations related to geotechnical aspects of project planning, design, and construction.

Soils

Soils encountered in the 10 exploration borings are generally uniform in occurrence and composition. The general soil profile encountered consists of a layer of uncontrolled fill (generally 1 to 8 feet thick) commonly overlaying native topsoil, which in turns mantles weathered Hookton Formation sediments. The fill materials typically consist of moist to wet, medium stiff to soft, locally derived silty, sandy clays and clayey fine sands. Field observations and standard penetration blow counts recorded in these fill soils suggest that they were not compacted during placement and are therefore considered “uncontrolled” fill and not suitable for support of permanent structures.

In general, the 1- to 2.5-foot thick topsoil horizon encountered beneath the uncontrolled fill materials is typically black, soft to firm, wet to saturated, and primarily composed of silty to clayey fine sands. These low strength soils mantle a sequence of moist, moderately strong, sandy clays and medium dense, clayey fine sands; which in turn overlie an over consolidated, high strength, very dense, clayey to gravelly sand layer. Depths to the high strength sand strata range from approximately 13 to 19 feet BGS. All of our borings (deepest to 46.5 feet) terminated in this layer, so it can be considered “bedrock” in the project vicinity. It appears that the soil units that underlie the project area slope gently southeastward.

The clay and fine sand soils strata encountered above the high strength sand material generally contain a moderate to high plasticity clay layer that is characterized as low to moderately expansive (tendency to change volume with significant changes in moisture content). Dry densities for the fine-grained cohesive

soils range from 80 to 125 pounds per cubic foot (pcf), with unconfined compressive strengths of up to 6,200 psf.

The very dense sand "bedrock" is characterized by low plasticity and a very low compressibility for the range of anticipated new structural loads. Dry densities for this granular material range from 100 to 138 pcf, with unconfined compressive strengths of up to 3,700 psf.

Refer to the boring logs presented in Appendix A of this report for detailed material descriptions, borehole surface elevations, specific soil layer contact depths, blow counts, laboratory test results, groundwater conditions, and other information.

Groundwater

Perched groundwater located in wet to saturated zones was encountered in each of our borings between 1.75 to 16 BGS (see boring logs in Appendix A). A majority of these perched zones were located at or immediately above the contact between the buried topsoils and the underlying medium stiff silty clays and medium dense clay fine sands. Previous groundwater monitoring studies (SHN, 2000) recorded static water table levels between 0.1 and 7.9 feet BGS (see Table B-1 in Appendix B for water table elevations). During this early study, SHN concluded that leakage from the existing reservoirs was directly influencing groundwater occurrence and soil moisture conditions in areas to the east and downslope. Our May 26, 2009, measurements imply that current leakage from the existing reservoirs is not influencing upslope water elevations, and that the groundwater conditions recorded at BH-11 and BH-12 are more indicative of the natural hydrogeology of the surrounding area (see Table B-1). We anticipate that once the existing tanks are removed, water levels in the excavation area will drop noticeably and be more consistent with those recorded at BH-11 and BH-12. However, it should be noted that groundwater levels do fluctuate in response to the rainy season and that the silt- and clay-rich soils at the site could be pre-disposed to perched groundwater layers or localized preferential flow paths particularly during the winter and spring seasons. Therefore, during and following periods of heavy precipitation or late season storm events, groundwater levels could be significantly higher than those observed during our investigations.

It is important to note that even small quantities of persistent seepage may complicate construction operations when excavations extend near or below areas of saturated soil. Construction difficulties resulting from near surface groundwater or excess soil moisture will be much less likely if grading activities are conducted during the dry season.

Conclusions

Based on the results of our field and laboratory investigations and analysis of collected data, SHN believes that from a geotechnical engineering standpoint, the project can be developed as planned, and that the proposed reservoir can be constructed using conventional foundations and conventional grading and cut slope support systems, provided our recommendations are followed, and that the noted conditions and risks are acknowledged.

Design Recommendations

Seismic Design

From our understanding of site geology, we estimate the site can be categorized as a Site Class D (stiff soil profile) for determining earthquake loads outlined in the 2007 California Building Code.

Based on a Site Class D (stiff soil profile), Occupancy category IV (Essential Facility), and a latitude and longitude of 40.6021 N and -124.1557 W, respectively, we calculated design spectral response acceleration parameters for the project area. A hand-held Global Positioning System was used to determine the site latitude and longitude.

We used the United States Geological Survey (USGS) seismic calculator software program, "Seismic Hazard Curves, Response Parameters, Design Parameters: Seismic Hazard Curves, and Uniform Hazard Response Spectra, v. 5.0.9," dated October 6, 2008. Calculated values are presented in Table 1.

Table 1

Seismic Design Criteria

S_S	2.481
S_1	0.896
F_a	1.0
F_v	1.5
S_{MS}	2.481
S_{M1}	1.345
S_{DS}	1.654
S_{D1}	0.896

For Occupancy IV structures, where S_1 is greater or equal to 0.75, the Seismic Design Category is F

Settlement Potential

Based on our laboratory test results and in situ penetration resistance values, we have determined that a 32-foot high, partially buried, reservoir founded on the high strength sand strata will not be subject to total or differential settlement amounts that require special design criteria. Therefore, the risk of significant post construction settlement is considered to be negligible.

Excavation Characteristics

Laboratory test results and drilling efforts required for the advance of the geotechnical borings indicate that the high strength sands (bedrock materials) that underlie the proposed reservoir site should be rippable using conventional heavy excavation machinery.

Site Preparation and Grading

We recommend the following, where cutting or filling operations are included in the project measures.

1. Prior to commencing site work, determine the precise location of underground utilities.
2. To prepare subgrade surfaces to support improvements or structural fill, strip and remove all existing improvements, surface debris, vegetation, and major root systems. Also strip

existing uncontrolled fill, dark-colored organic-rich topsoil, and any disturbed/soft/loose soils. Stripping should extend out beyond the perimeter of the improvement far enough to ensure that unsuitable materials that could adversely effect the integrity of proposed improvements are removed. Additionally, excavate as required to accommodate design grades.

3. With the exception of vertical sides or steps, subgrade surfaces to receive structural fill should be cut-graded to slope no steeper than 10%.

4. Conduct a geotechnical engineering review of exposed subgrade surfaces that will support structures, or that will receive structural fill to support structures. The geotechnical engineer will recommend that remaining unsuitable soils (such as, overly weak, compressible, or disturbed soils,)be additionally stripped. This evaluation may include in-place soil density testing, as well as proofrolling as described in the following paragraph.

5. Scarify and compact (90% minimum relative compaction[6] American Society for Testing Materials-International [ASTM] 1557) the upper 6 inches of exposed subgrade soils that are to receive structural fills. Alternatively, the subgrade surface may be proofrolled using a loaded 10-wheel, 10-cubic yard dump truck, or equivalent. The proofrolling should be accomplished under the observation of the geotechnical engineer with the soil damp or moist (not wet or dry), and a firm, non-yielding surface should be evident during the proofrolling. If a yielding surface is observed (pumping, weaving under wheel loads), additionally excavate the yielding area, and replace the overexcavated material with Caltrans specification Class 2 baserock, in a manner that will result in a stable subgrade surface under the proofrolling, following the overexcavation and replacement.

6. Structural fill material should consist of relatively non-plastic (Liquid Limit less than 30, Plasticity Index less than 10) material containing no organic material or debris, and no individual particles over 3 inches across. If gravel is used, it should be well-graded, to include a variety of particle sizes to minimize relatively large void spaces, into which fine-grained soils can migrate. We suggest the use of well-graded granular soils (sand, gravel) for fill, because these soils are relatively easy to moisture condition and compact.

7. Structural fill should be placed to design grades and compacted to a minimum of 90% of the maximum relative dry density as determined by the current ASTM D1557 test method. If structural fill is required beneath the reservoir floor slab, it should be compacted to a minimum of 95% of the maximum relative dry density.

8. Permanent cut-and-fill slopes not associated with excavation and backfill of the reservoir should be placed no steeper than 1.5:1 and 2:1 (horizontal to vertical), respectively. Cuts and fills should be designed, or foundations deepened, so that hypothetical lines extending outward and downward from the perimeters of existing or new footing bases, at slopes of 1:1, remain embedded within competent, undisturbed, native soils or structural fill, and do not encounter cut or fill slopes.

Structure and utility trench backfill should be moisture conditioned, placed in lifts 8 inches or less in loose thickness, and mechanically compacted to at least 90% relative compaction; jetting is not appropriate.

[6] Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same soil, as determined by the American Society for Testing and Materials-International D1557 compaction test procedure. Optimum moisture is the water content (percentage by dry weight) corresponding to the maximum dry density.

Reservoir Foundation/Wall

Following site preparation as recommended, foundations may be constructed. We anticipate that the perimeter of the reservoir will be supported by a concrete ring footing structure embedded into the reservoir base pad. The ring footing foundation should be embedded at least 12 inches below adjacent grade. This footing may be poured directly onto the subgrade soils as long as the subgrade surface is free of loose material and is in an undisturbed condition. Foundations may be designed so they do not exceed an allowable bearing capacity of 5,000 psf for dead plus long-term live loads. This value may be increased by one-third to account for the short-term effects of wind and/or seismic loading.

A horizontal friction coefficient of 0.35 times the net vertical dead load may be used for the footing/soil contact. Frictional resistance may be calculated in conjunction with an allowable lateral passive pressure represented by an equivalent fluid weighing 350 pcf for short-term loadings, such as lateral foundation resistance in response to wind or earthquake loadings. Lateral pressure can be calculated where footings bear laterally against firm soil; however, passive pressure should be neglected within the upper ½ foot, unless confined by other concrete structures.

Reservoir walls should be designed to resist active lateral soil pressures represented by an equivalent fluid weighing 35 pcf providing the walls are backdrained as recommended below. Lateral forces may be resisted by the passive pressure exerted on the side of the ring footing and by friction along the base. The passive pressure can be taken as that pressure exerted by an equivalent fluid weighing 300 pcf for the steady state lateral loadings that will be applied by the reservoir wall foundations, which can be increased to 350 pcf under dynamic loadings including earthquake forces. The sliding friction coefficient may be taken as 0.35.

Where the finished grade elevation difference across the reservoir is 6 feet or greater, the tank should be designed to additionally resist a seismic force increment. The seismic force increment can be considered applied to the reservoir wall by the portion of the higher-side soils, which are above the ground surface elevation on the lower side. The seismic force increment, per horizontal foot, can be calculated as P=35 H2, where H (in feet) is the difference in ground surface elevation across the reservoir and P is in pounds. This incremental force need only be applied where H>6 feet. The resultant of this force should be applied at 0.6H up from the ground surface elevation on the lower side of the reservoir.

The design active pressures presented above are predicated on positive drainage being provided behind the reservoir walls, to mitigate the potential for hydrostatic pressure build-up. The wall backfill shall be free draining aggregate, or equivalent, with an underdrain piping system designed to preclude the build-up of hydrostatic pressure. The underdrain collector pipes shall be sloped to exterior outlets capable of containing the relatively low flows expected to be produced. Following completion of construction activities, the total underdrain system discharge should not exceed 10 gallons per minute.

Backfill Materials and Placement Criteria

Structural backfill should consist of free draining material, such as river run gravel or equivalent. All fill material should be free of perishable material, have no particles larger than 3 inches in maximum dimension, and have no more than 15% greater than 2 inches. Additionally, the compacted fill should remain stable during placement, without pumping or weaving.

In areas where wall backfill settlement is not tolerable, backfill should be compacted to between 87 and 92% of the maximum relative dry density as determined by the American Society for Testing and Materials-

International (ASTM) D1557-91 test method. To avoid settlement of the backfill, backfill should not be undercompacted. To avoid excess pressure against the reservoir walls, backfill should not be overcompacted.

A minimum of a 2-foot thick layer of relatively "impermeable" soil should be placed above the free draining material to prevent infiltration of surface water into the structural backfill surrounding the reservoir. The surface of the engineered backfill and impermeable cap should be graded such that runoff is not allowed to pond above reservoir backfill.

Site grading during and shortly after the rainy season is typically problematic. On-site soils will have moisture contents well above that where the specified compaction will be obtained; therefore, we do not recommend using any on-site native soils as fill material.

It must be the contractor's responsibility to select equipment and procedures that will accomplish the grading as described above. The contractor must organize the work in such a manner that the engineer can test and/or observe each element of grading.

Temporary Unsupported Cut Slopes

Temporary cut slopes excavated into the native, clay-rich soil materials should be graded no steeper than 1:1 (horizontal:vertical) without installation of appropriate shoring systems. Cuts in the underlying high strength sands should be graded no steeper than 1/10:1 (see Figure 1, Appendix C). Some areas of old reservoir backfill may be too weak or wet to stand at a 1:1 gradient. We anticipate that these materials will be removed during excavation of the new reservoir base pad, but if some remain, we recommend that they be over excavated or laid back to a gradient no steeper than 2:1.

Stability analyses were conducted to determine acceptable temporary cut slope configurations using the computer program SLOPE/W. The analysis is based on the results of in situ penetration resistant tests and the laboratory shear strength tests on relatively undisturbed samples obtained during our subsurface explorations. A minimum safety factor of 3.4 for Cut Slope Section 1 as shown on Figure 1 Appendix C was calculated for dynamic conditions. Increases in cut slope angles resulted in less than acceptable safety factors; therefore, steeper cuts will require artificial support. Summaries of soil properties used in modeling the underlying material and the stability analysis results are included in Appendix C.

Although a high groundwater level is not anticipated, construction-phase monitoring should include close observation for indications of perching or high groundwater conditions, which could adversely affect temporary cut slope stability. The nature of the soil materials exposed in the cut slope excavations, the location of the groundwater table, and any evidence of creep, ground cracking, or incipient landsliding should be closely monitored until backfill operations begin.
The engineering geologist should observe all cut slopes to check the exposed soil conditions and provide additional stability and drainage recommendations, if required. If subsurface conditions are encountered that vary significantly from those described in this report, during excavation of the cut slopes, SHN must be contacted immediately to review exposed soil and evaluate whether there is an increased risk of cut bank instability.

Excess moisture loss across the cut slope faces could result in shrinkage of the clay dominant materials resulting in dry ravel and slaking. Sloughing of the fine-grain material will likely require periodic maintenance and could potentially reduce the stability of the cut slope. Therefore, we recommend that

mitigative treatments be implemented, such that the moisture levels of the exposed clay materials are maintained.

A berm or V-ditch should be established at both the tops and toes of cut slopes that will provide good surface drainage away from the temporary cut slope to protect against erosion.

Supported Cut Slopes

Temporary cut slopes excavated into the native, clay-rich materials that are artificially stabilized should be graded no steeper than 1/4:1 (horizontal:vertical). Passive reinforcement techniques such as soil nailing would probably be the most effective method for stabilization. Soil nailing stabilizes in-situ soils through the installation of steel reinforcements. Nails are installed as construction proceeds in a top down construction method. As the ground deforms laterally in response to excavation, nails are placed in tension. Nail tensile force acting across potential failure surfaces through the ground increases the soil's shearing resistance. This produces a block of reinforced ground which can support itself, external loadings, and the unreinforced ground behind the reinforced block.

Site Drainage

Surface drainage measures should be provided to divert water away from proposed cut-and-fill slopes. All concentrated flows should be collected in a lined-channel system and discharged at a suitable location well away from fill slopes. Culverts and other drainage devices should not be positioned so that they discharge onto or concentrate runoff in areas of existing erodible soils. Provisions should be made to provide routine maintenance of surface drainage facilities, so that debris can be removed and repairs made, as required.

Drainage and Erosion

To mitigate erosion potential, we recommend the following measures:

1. Wherever possible, design finished grade to allow sheet runoff rather than concentrated runoff.
2. Where concentrated runoff will occur, minimize its velocity by controlling slopes, and protect the channel and discharge area by dissipating flow energy, using rock or other erosion resistant surfacing as appropriate.
3. Compact exposed fill slopes, and protect both cut and fill slopes from concentrated runoff or heavy sheet runoff by utilizing brow ditches or other drainage control facilities.
4. Erodable cut or fill slopes, or other soil surfaces, should be protected by using vegetative cover, jute mesh and straw, rock slope protection, or other measures to provide erosion resistance.
5. Perform site work and vegetation establishment during seasons not subject to repeated or prolonged rainfall.
6. Provide periodic maintenance of erosion control measures.
7. Fiber rolls or hay bales should be placed around the downhill perimeter of the freshly graded area, if the grading is completed between October 1 and April 30th.

Construction Phase Monitoring

In order to assess construction conformance with the intent of our recommendations, it is important that a representative of our firm:

1. Monitor adequate site stripping and removal of old reservoir backfill, including removal of vegetation, root-filled soils, upper dark-colored organic topsoils, and uncontrolled existing fill soils.
2. Determine methods for and monitor adequate subgrade preparation.
3. Monitor placement of structural fill.
4. Monitor foundation excavations.
5. Monitor backdrains.

This construction phase monitoring is important because it provides the City and SHN the opportunity to verify anticipated site conditions, and recommend appropriate changes in design or construction procedures if site conditions encountered during construction vary from those described in this report. It also allows SHN to recommend appropriate changes in design or construction procedures if construction methods adversely affect the competence of onsite soils to support the structural improvements.

Construction Considerations

The following construction considerations are presented to aid in project planning. These considerations are not intended to be comprehensive; other issues may arise which will require coordination between the owner, the engineer, and the contractor's construction methods and capabilities.

It is important to note that even small quantities of persistent seepage may substantially complicate construction operations if the proposed excavation extends near or below areas of saturated soil. Construction difficulties resulting from near surface groundwater or excess soil moisture will tend to become less likely if grading activities are conducted during the dry season.

Subsurface investigations, laboratory analysis, experience with a previous construction cut slope at a nearby site, and stability analyses, indicate that an adequate safety factor for construction cut slope stability exists. However, subsurface conditions may be variable, and there is a risk that portions of the construction cut slopes, which are planned at nominal slopes of 1:1 (horizontal: vertical), may be unstable. Due to the general cohesiveness of site materials encountered, and their inferred moderate permeability, sudden (less than a minute, for example) slope failures with large movements (more than 5 feet, for example) are not anticipated. As a construction precaution, however, any personnel in the open excavation should have the ability to move away from the slope face at any time on short notice. Groundwater conditions in these slopes should be monitored and the work area carefully monitored frequently for any evidence of incipient construction cut slope failures, such as creep, ground deformations, ground cracking, or changes in groundwater seepage patterns.

We consider it possible that groundwater may exist in shallow perched layers, or may follow preferential flow paths, and that a consistent water table may or may not be encountered during excavation for the project. There may be isolated seepage areas. Some sandy strata could be cohesionless enough to pipe or flow into the excavation if groundwater seepage exists at that location, although this is not considered likely. If piping or flowing sandy soils conditions begin to degrade the slope face, remedial procedures, such as the

placement of filter fabric and associated buttressing, may have to be quickly implemented to prevent piping or flowing of soil materials from the slope face.

The excavation is planned to proceed relatively quickly, and if evidence of high groundwater conditions is encountered, such as groundwater seepage from high up the face of the excavation cut slope, it may be necessary to stop or slow the excavation temporarily to allow time for water to drain from the groundmass behind the exposed cut slope face. It may be necessary to allow time to draw down a water table, a perched water table, or water in a preferential flow path, to reduce risk of slope instability during construction.

Exposed soil subgrade in the reservoir base pad area may be difficult to compact if natural moisture contents are over optimum or the soil materials are coarse or contain hard "clods." Proofrolling to demonstrate firm subgrade may be more practical than nuclear gage tests under these conditions.

Occupational Safety and Health Administration trench and excavation safety regulations should be acknowledged and followed. Compliance with safety regulations is the responsibility of the contractor.

Closure and Limitations

The analyses, conclusions, and recommendations contained in this report are based on site conditions that we observed at the time of our investigation, data from our subsurface explorations and laboratory tests, our current understanding of proposed project elements, and on our experience with similar projects in similar geotechnical environments. We have assumed that the information obtained from our limited subsurface explorations is representative of subsurface conditions throughout the site.

We recommend a representative of our firm confirm site conditions during the construction phase. If subsurface conditions differ significantly from those disclosed by our investigation, we should be given the opportunity to re-evaluate the applicability of our conclusions and recommendations. Some alteration of recommendations may be appropriate.

If the scope of the proposed construction, including the proposed loads, grades, or structural locations, changes from that described in this report, our recommendations should also be reviewed.

If there is a substantial lapse of time between the submission of our report and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, we should review our report to determine the applicability of the conclusions and recommendations considering the changed conditions and time lapse. This report is applicable only to the project and site studied.

The conclusions and recommendations presented in this report are professional opinions derived in accordance with current standards of professional practice. Our recommendations are tended on the assumption that design of the improvements will conform to their intent. No warranty is expressed or implied.

The field and laboratory work was conducted to investigate the site characteristics specifically addressed by this report. Assumptions about other site characteristics, such as hazardous materials contamination, or environmentally sensitive or culturally significant areas, should not be made from this report.

References Cited

California Building Standards Commission. (2007). *2007 California Building Code*. Based on International Building Code (2006) by the International Code Council. Sacramento:California Building Standards Commission.

Carver, G.A., and R.M. Burke. (1992). "Late Cenozoic Deformation on the Cascadia Subduction Zone in the Region of the Mendocino Triple Junction," in Burke, R.M. and G.A.Carver (eds), *1992 Friends of the Pleistocene Guidebook, Pacific Cell*, p. 31-63. NR:NR.

California Department of Conservation, Division of Mines and Geology/United States Geological Survey (CDMG/USGS). (1996). *Probabilistic Seismic Hazard Assessment for the State of California*: *DMG Open-File Report 96-08, USGS Open-File Report 96-706.* Sacramento, California: CDMG.

Clarke, S.H., Jr. and G.A. Carver. (1992). "Late Holocene Tectonics and Paleoseismicity of the Southern Cascadia Subduction Zone, Northwestern California." *Science, v. 255*, p. 188-192. NR:NR.

GeoSlope International. (accessed 2009). computer program "SLOPE/W Slope Stability Analysis." available at: http://www.w2hk.net/geoslope/slopew.html

Dengler, L., R. McPherson, and G.A. Carver. (1992). "Historic Seismicity and Potential Source Areas of Large Earthquakes In North Coast California," in Burke, R.M. and G.A. Carver (eds), *1992 Friends of the Pleistocene Guidebook, Pacific Cell,* p. 112-118. NR:NR.

Geomatrix Consultants. (1994). *Seismic Ground Motion Study for Humboldt Bay Bridges on Route 255.* Unpublished consultants report for the California Department of Transportation. NR: Geomatrix.

Hart, E.W. and W.A. Bryant. (1997). *Fault-Rupture Zones in California, Alquist-Priolo Earthquake Fault Zoning Act* (with Index to Earthquake Fault Zone Maps, California Division of Mines and Geology Special Publication 42, with Supplements 1 and 2 added in 1999, 38). NR: NR.

Kilbourne, R. (1985). "Geology and Geomorphic Features Related to Landsliding, Fortuna 7.5-Minute Quadrangle, Humboldt County, California." (OFR 85-I SF). NR: CDMG.

McLaughlin, R.J., and 7 others (2000). Geology of the Cape Mendocino, Eureka, Garberville, and Southwestern part of the hayfork 30 x 60 Minute Quadrangles and Adjacent Offshore Area, Northern California: U.S. Geological Survey Miscellaneous Field Studies MF-2336.

Ogle, B.A. (1953). Geology of the Eel River valley area, Humboldt County, California: California Department of Natural Resources, Division of Mines, Bulletin 164.

SHN Consulting Engineers & Geologists, Inc. (March 10, 2000). "Preliminary Geotechnical Evaluation to Determine Slope Movement Risk Due to Leakage From the Stewart Street Reservoirs, Fortuna, California." Eureka:SHN.

United States Geological Survey (USGS) seismic calculator software program, "Seismic Hazard Curves, Response Parameters, Design Parameters: Seismic Hazard Curves, and Uniform Hazard Response Spectra, v. 5.0.9,"

Woodward-Clyde Consultants (1980). Evaluation of the potential for resolving the geologic and seismic issues at the Humboldt Bay Power Plant Unit No. 3. Unpublished consultants report for Pacific Gas and Electric.

Attachment 4

Northwest Information Center Referral

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM	DEL NORTE and HUMBOLDT COUNTIES	North Coastal Information Center Yurok Tribe 15900 Hwy 101 North Klamath, California 95548 Phone(707) 482-1822
October 5, 2009		File Number: Shorey 09-01

Liz Shorey, Deputy Director
City of Fortuna
P.O. Box 545
Fortuna, CA 95540

RE: Stewart Street Water Tank, Section 35, T3N, R1W, Fortuna Quad

Dear Ms. Shorey,

Per your request of August 31, 2009, a complete records search was conducted for the area that you indicated on the attached map. This record search included review of previous studies conducted in the vicinity of the project, review of any previously recorded site records (archeological and historic), review of historic maps, and review of applicable historic and ethnographic documents.

Previous Studies Conducted in Vicinity
This office does not have records of previously recorded studies that have been conducted in or near your project area.

Historic and Cultural Resources
This office does not have records of previously recorded historic resources that have been found in or near your project area.

Literature Review
The following literature and maps were reviewed for possible unrecorded historic resources. No further information was obtained from these sources.

Ethnography & Archaeology of the Wiyot Territory (Loud)	No sites.
Place Names of Humboldt County (Turner)	No sites.
California Inventory of Historic Resources (OHP)	No sites.
California Historic Property Inventory (OHP)	No sites.
1890 GLO Land Plat Map	No sites.

Recommendations
These recommendations are based only on the information on file in this office. There is always the possibility that additional documents and records exist elsewhere or that unrecorded historic and cultural resources exist within your project area.

We predict that there is a **low to moderate** probability of finding sites or other evidence of human cultural activity in your project area. Please be advised that the locations of historic and cultural resources do not always follow predictive patterns.

Your project area has not been surveyed.

Thank you for your efforts to preserve Northwest California historic and cultural resources. Should you have further questions concerning your project or this correspondence please do not hesitate to call us at (707) 482-1822.

Sincerely,

Vicky Bates

Vicky Bates, Coordinator
North Coastal Information Center

ATTACHMENT 5
Public Comments

1. Comments Submitted by Stewart Street Residents on March 23, 2009 19

2. Summary of Comments Received at June 24, 2009 CEQA Scoping Session 25

TO: CITY OF FORTUNA MARCH 23, 2009
CITY COUNCIL, CITY MANAGER, CITY ENGINEER, COMMUNITY DEVELOPMENT, PLANNING DEPARTMENT

STEWART STREET WATER TANK PROJECT CONCERNS
Submitted by Stewart Street Residents March 23, 2009

We Stewart Street residents are submitting our further concerns regarding the Stewart Street Tank Project. This is a follow up to our meeting at City Hall with Liz Shorey a couple of weeks ago.

We urge everyone involved to take a long look at the serious impacts we have presented here with an eye towards significantly mitigating the geological, health, safety, traffic, noise, visual and other impacts on their neighbors and fellow citizens. As part of the City approval process we expect the City of Fortuna to adopt enforceable mitigations and create the required Mitigation Monitoring Report Program [MMRP]. Please consider this document to be a part of the public record.

Disclaimer: these are laymen perceptions and knowledges are to by no means to be considered exhaustive as to extent of impacts nor extent of possible mitigations.

>>>

SAFETY OF NEIGHBORHOOD

Security Issues:

It is well know that crime goes up relative to construction projects due to many unknown persons, visits not normally in neighborhood and opportunity for "casing" daily habits, patterns and possessions of residents. How are we to be protected against theft, vandalism and violence?

Possible mitigations:

- Extra security precautions--24 hour security patrols
- 24 hour on site security personnel with residential security responsibility for immediate neighborhood
- 24 hour security cameras focused on neighborhood at site [but no extra lights--too much additional impact
- No on street after work hours parking of vehicles [traffic safety impacts]

Street Closing Impacts

emergency vehicle access [many elderly in neighborhood]
mail and delivery impact[i.e. prescription delivery]
school bus access
school children vehicle ride access other than school bus
Fortuna Senior Bus access

Possible Mitigations:

- Minimum road closing times [30 minutes-
- Guaranteed emergency vehicle access
- Road widening and clearance for emergency vehicles
- No construction vehicle parking on street [possible obstruction of emergency vehicle]
- Adequate notice to all affected residents
- Special lowered construction speed limits recognizing large, heavy vehicles may have longer stopping distances in case of emergency braking
- Use of Barney Street--much less need for road closing

Road Safety and Access Issues:

Existing roads are too narrow for adequate large vehicle passage, are not marked adequately, [yellow center line, blind corner yellow line marking, speed limit signage]

Possible mitigations:

- Traffic pattern design for maximum resident safety
- Use of Barney Street
- Temporary road widening of Vancil.
- Temporary road widening of Stewart Street at the tank site [build temporary road extension along and into Stewart Tank site property to relieve congestion problems at corner [for resident safety and access and construction safety and access]
- Clear and adequate signage and street markings for maximum safety
- On-going maintenance of street markings due to excess wear during construction

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DIESEL EMISSIONS:

HEALTH IMPACTS

Asthma exacerbation
Asthma cause [in children]
Hearth disease exacerbation [triggers atrial fibrillation--two parties directly across from project site have atrial fibrillation and there may be more in neighborhood]
Cancer: diesel emissions are a known carcinogen [70% of carcinogens people are commonly exposed to are diesel emissions] No safe level of exposure to diesel fumes is known
Odors are an extreme toxic irritant to respiratory passages [especially for chemically sensitive individuals]
Children are at a much higher risk from diesel exposure

DIESEL EMISSIONS MITAGATIONS/CONTROLS/LIMITS
[ON-STREET AND OFF-STREET]

All diesels used in construction required by City to meet California mandated standards for new diesels for 2010 if adequate
Install extra high filtration systems on all diesel engines used in construction
Use Barney Street for access to eliminate trips through neighborhoods

- Reduction in number of hours and days of impact:
- Limited work/noise production hours [no noise, no engine/or vehicle start -up or show up before 8 am and no vehicle departure after 5 p.m..
- Limit number of trips per day of diesel vehicles
- Work limited to no weekends
- Limit work to 1/2 day Friday or no Friday work to give us an extended weekend [tie in holidays for three day weekends]
- No workers vehicles to the project area--shuttle workers from central site out of area [reduces traffic, noise, emissions, parking congestion, street safety, especially for elderly and children]
- Required normal holiday observance

OTHER DIESEL IMPACTS:

HOME DIESEL INTRUSION

INSIDE OF HOME

With exposures 8 hour per day [or more], five days per week, clearly diesel fumes will penetrate into our homes through normal air transfer through cracks, through fireplace chimneys, and when doors open and close [which is often for our many retirees or stay-at-home parents, and children, since they go in and out doors many times per day]

Possible Mitigation:

- City purchase and install high quality HEPA filters [or better] and pay for electricity to run the filter in each home.
- Reduction in number of hours and days of impact:
- Limited work/noise production hours [no noise, no engine/or vehicle start -up or show up before 8 am and no noise, or vehicle departure after 5 p.m..

- Limit number of trips per day of diesel vehicles
- No weekend work
- Limit work to 1/2 day Friday or no Friday work to give us an extended weekend [tie in holidays for three day weekends]
- No workers vehicles to the project area--shuttle workers from central site out of area [reduces traffic, noise, emissions, parking congestion, increases street safety, especially for elderly and children]
- Required normal holiday observance [for quiet enjoyment of our property on our holiday time]
- Use of Barney Street

OUTSIDE OF HOME

In the presence of heavy, toxic diesel fumes outdoor activities, especially children's play and gardening would dangerous to health and intolerable due to noxious fumes

Diesel particulates [the actual toxins in diesel emissions] settle directly to the ground fairly quickly near the source of the emission.

This means a heavy cumulative concentration of diesel particulates in the air for breathing and falling onto the landscaping, vegetables and mixing into our soil. Landscaping plants can be adversly affected with diesel toxins Toxification of our vegetables and our soil so as to destroy their health and dollar value to us as usable food for the duration of the project [possibly 2 years and beyond, since the soil will be contaminated] is a significant impact.

The loss of the pleasure of children playing outside and adults engaging in gardening is a significant impact, destroying yet another part of our "quiet enjoyment" of our property.

Possible Mitigation:

- Vegetable gardening:
- City leases and provides water and fencing for "safe and convenient location" in city for a community garden for impact area residents.
- At end of project City pays for resident's vegetable garden soil removal and replacement with clean, organic, composted soil.
- Reduction in number of hours and days of impact:
- Limited work/noise production hours [no noise, no engine/or vehicle start - up or show up before 8 am and no vehicle departure after 5 p.m..
- Limit number of trips per day of diesel vehicles
- Work limited to no weekends
- Limit work to 1/2 day Friday or no Friday work to give us an extended weekend [tie in holidays for three day weekends]
- No workers vehicles to the project area--shuttle workers from central site out of area [reduces traffic, noise, emissions, parking congestion, street safety, especially for elderly and children]
- Required normal holiday observance

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>>>>> >>>>>

ongoing site work dust production
toxic sprays,
painted on treatments,
chemical treatments
other unspecified activities and treatments unknown to we laymen at this time

Possible mitigations:

- Serious and ongoing water spraying of all dust producing activities (including "in process" concrete demolition, "in process" earth moving etc., not just street watering
- Effective tarping of all concrete and soil transit vehicles to prevent dust
- Adequate notice to residents of chemical, paint and toxic applications so they can close doors and windows, leave area, use masks, etc.
- Use of Barney Street

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- No on street parking of construction vehicles
- No on street parking of construction equipment
- No on street storage of construction supplies
- No on street placement of construction container storage/shop space

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Stewart Street Water Storage Reservoir Replacement Project

Summary of Public Comments Received at the 6/24/09 CEQA Scoping Meeting

CEQA Checklist Issues	Summary of Public Comments & Concerns
Air Quality	Diesel fumes from construction equipment and idling trucks could impact air quality in the residential neighborhood adjacent to the project site.
Biological Resources	Why aren't Marbled Murrelets an issue on this site? Will sensitive habitat or species be impacted by the project? Did US Fish & Wildlife staff review the project?
Geology/Soils	Concern was expressed about a catastrophic earthquake causing the tank to split open and flood down slope properties. Can the project engineers and geologists guarantee that the water tank will not fail during any earthquake?
Noise	Noise and vibration could impact the neighborhood. If the Construction Management Plan is modified, how will adequate mitigation be maintained? If hours of operation are extended per contractor request, will there be a public hearing to discuss the alternative hours?
Transportation/ Traffic	How will construction equipment and supplies be transported to the project site? Will local street damage be repaired when the project is complete?
Utilities/Service Systems	Another project is needed in the southern areas of the City to insure water service is available during natural disasters and emergencies. What is the construction season?