



**SUBSEQUENT MITIGATED NEGATIVE DECLARATION
R. BROWN AND SONS QUARRY
RECLAMATION PLAN AMENDMENT AND
PROPOSED EXPANSION**

Recirculation Draft - SCH# 2016062059

February 2017

**COUNTY OF HUMBOLDT
PLANNING AND BUILDING DEPARTMENT**

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1.0 PROJECT INFORMATION

A. Applicant/Owner

R. Brown and Sons Quarry
406 Brown Way
Willow Creek, California 95573

B. Project Representative

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Willow Creek, California 95573
(530) 629-3702
Contact Person: Kevin Brown

C. Staff Contact

Kevin Brown
R. Brown and Sons Quarry (530) 629-3702

Wendy Johnston
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D. Project Name

R. Brown and Sons Quarry 39-acre expansion area (Assessor's Parcel No. (APN) 316-061-011).

E. Project Location

The R. Brown and Sons Quarry is located approximately three miles west of the town of Willow Creek, California, along California State Highway 299. The current mining area and proposed expansion area are located in Sections 1, Township 6 North, Range 4 East, Humboldt Base Meridian. The latitude and longitude at the center of the project are 40° 55' 45.95", and -123° 40' 40.37", respectively. In decimal degrees, the latitude and longitude at the center of the project are 40.93° and -123.68°, respectively (WGS 1984). The general site location is shown on Figure 1. The Use Permit Amendment addresses additional mining and reclamation activities within portions of APN 316-061-011. The parcel is 77 acres in size and shown on Figure 2.

F. Type of Application

Use Permit Amendment to cover expansion within APN 316-061-011.

G. General Plan Designation

The Humboldt County General Plan has classified the project area, including the active mine site and the area slated for site expansion, as *Timber Production Zone (TPZ)*. The Humboldt County General Plan land use designations are shown on Figure 3.

H. Zoning

The Humboldt County General Plan has classified the project area, including the active mine site and the area slated for site expansion, as *Timber Production Zone (TPZ)*. Zoning designations are shown on Figure 4.

I. Project Background

The original Reclamation Plan for the R. Brown and Sons Quarry was completed, underwent California Environmental Quality Act (CEQA) review, and was approved by Humboldt County in 1990. The County of Humboldt approved Conditional Use Permit CUP-11-90 and Surface Mining Permit SMP-02-90 on April 19, 1990, for a term of ten years. Reclamation Plan No. RP-99-01 and Conditional Use Permit CUP-99-01 were approved on May 16, 2000, extending the life of the site by 15 years. A request to renew and extend the Conditional Use Permit was submitted to the Humboldt County Planning Department in July 2014. The request was approved on October 16, 2014, with the revised Conditional Use Permit CUP-14-013X, Surface Mining Permit SMP-14-001X, and Reclamation Plan RP-14-001X. The project proponent wishes to expand the mining operation to include an additional 39-acre surface disturbance area.

R. Brown and Sons will continue operating under the original conditions outlined in UP-185-78, CUP-99-01, and SMP-14-001X, as well as RP-14-001X, on Assessor's Parcel Number (APN) 316-061-011. This document amends Reclamation Plan No. 99-01 to include an approximately 39-acre expansion, along with modification of final contours, updates to reclamation requirements to meet current SMARA standards, revised removal volume, and revised number of trucks using the highway each day. The revised reclamation plan also includes the receipt of rock from outside sources.

CEQA review is limited to the expansion area, reclamation, removal volume, and traffic and will not include review of other previously reviewed and permitted operations.

The amendment of CUP-99-01 and Reclamation Plan No. 99-01 is to address the proposed 39-acre expansion area. The expansion area will be used primarily for removal of material, with the exception of approximately 8 acres that were included to allow additional stockpiling and to clarify the current permit. Stockpiling will occur on previously permitted areas. This amendment also includes revisions to final site topography to address the 39-acre expansion area and current SMARA and Humboldt County requirements. Other minor modifications to the original reclamation and mining plan are proposed, which include language to clarify traffic and mine volume numbers. The project area currently supports mining operations.

Rock of various sizes will continue to be mined. Additional rock removal (25,000 cubic yards annually) is planned. The quantity of material to be mined is highly dependent upon the subsurface basement elevations, the thickness of the rock deposit, and market conditions. Mining has already occurred on approximately 25 acres of the parcel. The total additional disturbed quarry area is estimated to be 19 acres, for a total of 44 acres. The production rate of mining is anticipated to increase over time to a maximum of 25,000 cubic yards of product annually. The maximum depth of mining will be at an elevation of 1450 feet above mean sea level.

The actual allowable removal number in the quarry use permits has varied over the years. The following amounts were specified in previous permits:

<u>Permit</u>	<u>Approval Date</u>	<u>Duration</u>	<u>Approved Volume</u>
CUP-11-90/SMR-02-09	4/19/90	10	2,000 cyds/yr
CUP-99-06/SMP-99-01 /RP-99-01	5/16/00	15	16,000 cyds/yr 2000-2005 6,500 cyds/yr 2005-2015 5,500 cyds/yr
CUP-14-013X/SMP-14-001X /RP-14-001X	10/6/14	15	6,667 cyds/yr calculated 5,500 cyds/yr other

Based on the records reported to the County and the Office of Mine Reclamation (OMR), the quarry has removed an average of 5,681 cubic yards for the last five years. The highest removal year was 2011 and the lowest of the five years was 2014. The permit is not clear whether the specified volume is an annual maximum or an average over a period of years, and this is further complicated by OMR's use of a rolling average for certain regulatory purposes. In order to clarify this number, the Reclamation Plan Amendment has requested an annual-volume-removed maximum of 25,000 cubic yards per year.

No changes are proposed to the reclamation of the areas already disturbed and covered under the existing Reclamation Plan, where final topography does not change under this Addendum. Additional disturbed areas proposed in the mining and reclamation plan will be restored to a primary use of timber production zone following reclamation of mined lands. Beneficial aspects under this land use will be both economic and ecosystem related, along with forest and shrub habitat with inclusions of riparian habitat along intermittent drainages.

A Reclamation Plan Amendment has been prepared in compliance with Humboldt County Requirements and SMARA, as amended. The Reclamation Plan meets the California Code of Regulations, Title 14, Division 2, Chapter 8, Subchapter 1, Article 9, *Reclamation Standards*.

J. **Surrounding Land Use**

Lands immediately adjacent to the project area are classified by the Humboldt County General Plan as *Timber Production Zone*, and *Unclassified*. Surrounding land use elements were shown on Figure 3. Surrounding lands are zoned as *Timber Production Zone*, *Unclassified* and *Agriculture Exclusive*. Surrounding zoning is shown on Figure 4.

Following reclamation and revegetation of the project area, the land will be converted back to *Timber Production Zone*. The surrounding area is not used for agricultural purposes. The nearest residence occurs approximately 800 feet from the project property boundary to the north across Highway 299W.

K. **Project Description/Current Conditions**

The designated land use for the current mining operation and the proposed expansion area is mining of rock and aggregate. The operation includes the existing quarry which includes a processing area, truck scales, office, and material stockpiles. The project also includes various sediment control structures throughout the quarry.

The expansion area is shown on Figure 5. The amendments to the Reclamation Plan include revisions to interim and final site topography to address the 39-acre expansion area, truck traffic, visual quality, annual removal volume, reclamation activities, and updates to meet current SMARA and Humboldt County requirements.

L. Project as Defined

Amend Use Permit CUP-14-013X and Reclamation Plan No. 14-001X to allow for overburden storage and rock removal on the northern half of APN 316-061-011. Current topography, final topography and drainage, typical cross-section, and topsoil stockpile locations are shown on Figures 6, 7, 8, and 9, respectively.

The original project area underwent CEQA review prior to issuance of the 1999 Use Permit (UP-99-01). No substantial changes to the activities proposed in 1999 are anticipated. This CEQA review covers only the addition of the 39-acre expansion area.

M. Environmental Setting

Aesthetics The existing visual character of the site is that of forested/brush lands with moderate to steep topography. The project site is located adjacent to Highway 299 and is situated 400 to 1,000 feet from the highway. A viewshed analysis was completed and is included as Appendix A.

Due to the steep and forested nature of the area, the majority of the project site is shielded from Highway 299. The quarry is difficult to see and is visible to passing traffic on Highway 299 for only a brief period of time. The surrounding aesthetic value is not affected. The segments of Highway 299 from which the quarry is visible are shown on Figure 10.

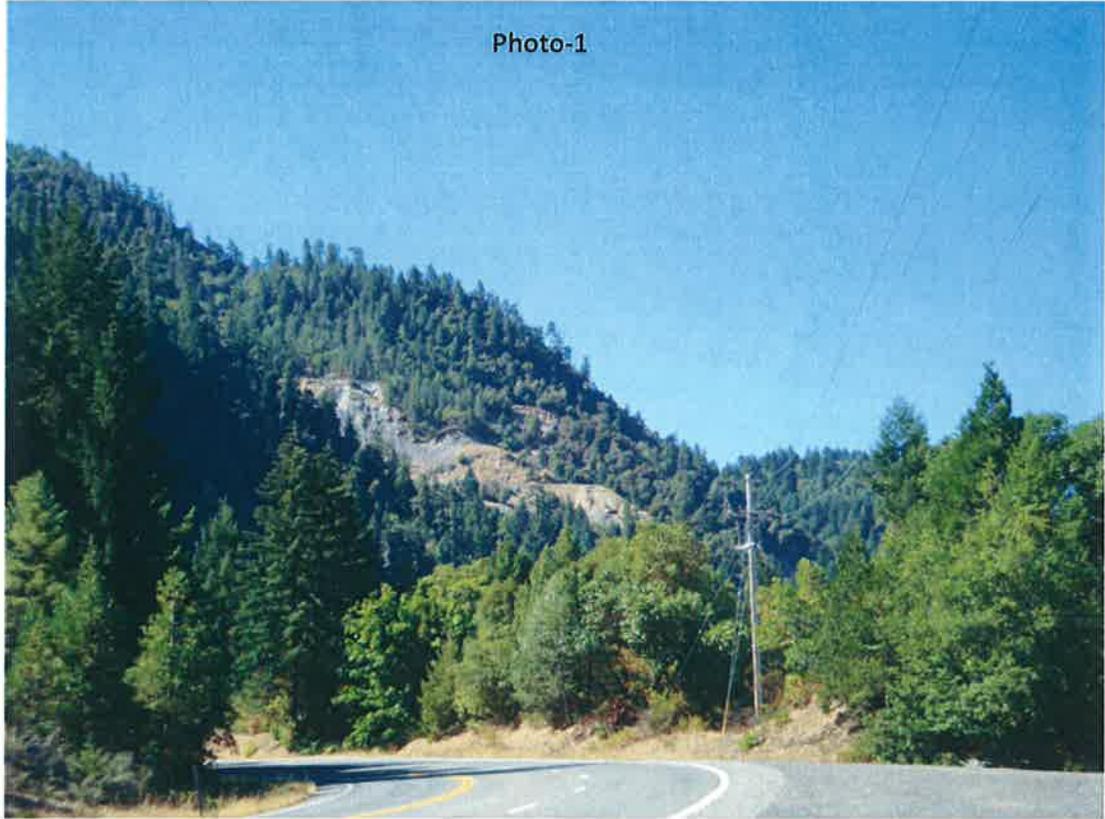
The current mining operation is composed of two operating areas: Area 1 to the west and Area 2 to the east. The western area (Area 1) is visible from cars traveling east on Highway 299 for a segment of Highway 299 west of the project site of approximately 0.2 miles. The quarry expansion encompasses the area between the two previously permitted segments. Photographs of the quarry view from Highway 299 taken on August 30, 2016, are included below. The current view of the project site from the west side is shown on Photo-1 and the view of the project site from the east is shown on Photo-2.

The quarry expansion area is shown on Figure 5. This includes an additional area within the current property boundary north of Area 2 and the area between the two existing rock pits. The quarry expansion will result in disturbance of approximately 19 acres between the two current pits.

The expansion area below the existing quarry area was added to include the existing access road and stockpiles which were omitted from the original permit and previous revisions. No excavation will occur in this area and trees and vegetation will remain over the life of the site. The upper area of the proposed expansion will use individual rock removal and the topography and aesthetics will not change.

Visual impacts would occur gradually over the 30-year operation life of the project. The upper areas will be mined first and reclaimed as the mining progresses downslope. The

impact on visual quality will be minimized following reclamation.



Geologic Description The site, including the current and proposed expansion area, is located within the western margin of the Klamath Mountains geologic province of northwestern California and southwestern Oregon. The Klamath Mountains province is bordered by the Coast Range province to the west and southwest, Great Valley province to the southeast and the Cascade Range province to the northeast. The project site is underlain by both Jurassic-age Galice Formation and the Late Paleozoic Triassic-age rocks of the Western Paleozoic and Triassic Belt of the Klamath Mountains province. The surface geology is shown on Figure 11. Individual deposits are described further below.

Undifferentiated surficial deposits are present at the ground surface across most of the site where quarrying has not yet begun. They include regolith soils of both the Western Paleozoic and Triassic Belt rocks. Colluvial materials ranging from cobbles and boulders to large blocks and landslide deposits are also present at the site. Most of the surficial materials exhibited some degree of weathering and common fracturing.

The Galice Formation predominately exhibits gray phyllitic metagrawacke, slate, and phyllitic slate. These materials often weather to a light silvery-gray to tan in coloration and are often cut by scattered, thin, meta felsite dikes and sills. At the project site, the materials were observed to be intensely fractured and exhibited foliate structure. Bedding is not distinguishable and failures tend to be structurally controlled by joint sets. The geomorphology of the formation materials on the parcels is a structural incompetence of the underlying rock, where west slopes tend to be very steep with debris slides and small rotational landslides.

The project site is located within the Rattlesnake Creek terrain of the Western Paleozoic and Triassic belt. The Rattlesnake Creek terrain consists predominately of serpentinized ultramafic rocks, gabbro, diabase, pillow lava, and other mafic volcanic rocks. The Western Paleozoic and Triassic belt also includes phyllite, thin-bedded radiolarian chert, discontinuous lenses of limestone, and locally interbedded sandstone and pebble conglomerate. These rocks generally are metamorphosed to low greenschist facies, where strata is highly folded and faulted. This unit tends to fail as large, deep-seated rockslides and earthflows, and subsequently fails as smaller debris slides and rockslides which are seen in the project vicinity.

Soils Detailed soil maps are not available for the project area. General soil data provided by the Natural Resource Conservation Service (NRCS, 2006) for the project vicinity are included on Figure 12. The soils within the project area belong to the Skalan-Kistim-Holland Families Association, which have been developed from metasedimentary rocks. The soils in the Skalan group are characterized by very gravelly loam (0 to 12 inches) and clay loam (12 to 56 inches) above lithic bedrock. The Kistim group soils are characterized by very gravelly loam (0 to 8 inches), very cobbly silty clay loam (8 to 53 inches), and extremely gravelly clay (53 to 72 inches) above lithic bedrock. The soils in the Holland group are comprised of loam (0 to 6 inches), clay loam (6 to 46 inches), and very gravelly clay loam (46 to 60 inches) above paralithic bedrock. All soils within the project area are well drained with a depth to groundwater of more than 80 inches.

Topography and Landform Trinity Valley Consulting Engineers completed the topographic mapping for the site. The active project area encompasses approximately 64 acres (including the 39-acre expansion area) of the 77-acre project site and is generally described as steep terrain ranging from 1200 to 2500 feet above mean sea level. Portions of the site have been graded and act as landings for the processing plant, aggregate stockpile area, office, parking, Caltrans material storage area, and topsoil storage area. The active mine area is steep with the only flat areas being the benches. The northeastern portion of the site is the steepest with existing topography steeper than 1H:1V. The proposed final site topography has been modified to include the revised geotechnical values and recommendations for the expansion area. Topography is shown on Figure 13.

Hydrology The project site is located adjacent to Willow Creek, a large perennial watercourse known to support populations of sensitive anadromous species. According to the Humboldt County Web GIS maps, the project site is located just outside of the 100-foot setback required by Humboldt County Streamside Management code for perennial watercourses.

The project area contains two small watercourses that are located on the eastern and western property boundaries. These flow northward to Willow Creek and are fed by springs, precipitation, and snowmelt. During the survey conducted by Trinity Valley Consulting Engineers, the streams on the eastern and western boundaries were running in the upper reaches, but were dry in the lower reaches. The intermittent flows, steep gradient, and several potential fish-passage barriers make it unlikely that the watercourses would support fish populations. The active mine site has several erosion and stormwater control features including ditches, culverts, berms, and settling basins. The intermittent stream on the eastern boundary of the site will not be disturbed during quarry expansion and will maintain setbacks required by Humboldt County Code.

The quarry site is made up of mostly fractured and weather rock; therefore, the site is pervious and a majority of stormwater infiltrates. Concentrated flows are observed only during heavy rain events. These flows are contained and slowed by berms on the outboard side of roads and benches and ultimately directed into settling basins prior to discharge from one of the site's two discharge points.

Standard soil erosion control protocols are currently practiced throughout the site and will continue during mining operations. These include:

- Use of berms, water bars, or rolling dips
- Use of rock check dams on roadway ditches
- Diverting run-on away from stockpile areas
- Installing stabilizers as necessary (silt fence, wattles, etc.)
- Directing runoff within quarry to siltation depressions at the in-slope edge of quarry benches

The facility is covered under General Order 2014-0057-DWQ *General Permit for Storm Water Discharges Associated with Industrial Activities*. The Notice of Intent was filed prior to

July 1, 2015, to meet the requirements of the new General Order. Best management practices (BMPs) are in place pursuant to the Storm Water Pollution Prevention Plan (SWPPP) for the site. The SWPPP was added to the Reclamation Plan to clarify erosion control practices in place. All erosion control BMPs have been recommended or designed by a Professional Engineer licensed in the State of California, a certified Qualified Industrial Stormwater Practitioner (QISP) (under the Industrial General Order requirements), or a certified Qualified SWPPP Developer (QSD) or Qualified SWPPP Practitioner (QSP) (under the Construction General Order requirements). These BMPs are adequate to control onsite discharges. Historically, the site has had minimal periods of discharge and, when discharge did occur, the site met the benchmark values in the previous General Order Associated with Industrial Storm Water Discharges (Order 97-03-DWQ). The site discharged during the 2015-2016 year, collecting the required four sampling events, and sampling results were within the Numeric Action Levels (NALs) contained in the new General Order.

The Regional Water Quality Control Board (RWQCB) has authority under both the Clean Water Act and Porter-Cologne Water Quality Act to regulate discharges to and that impact waters of the U.S. and California. The Basin Plan was adopted to meet the requirements of both Federal and State law. The U.S. EPA and State Water Resources Control Board (SWRCB) have determined that compliance with the *General Permit for Storm Water Discharges Associated with Industrial Activities* (Order 2014-0057-DWQ) is protective of water quality. To date, the quarry has been in compliance with the benchmarks and NALs of the General Order and, therefore, is in compliance with the NCRWQCB Basin Plan.

The watershed directly upslope from the mine area has a drainage area of approximately 45 acres. Utilizing the rational formula, the flow for a 100-year storm event is 27 cubic feet per second. Surface hydrology is shown on Figure 14.

The predominant source of groundwater recharge of the mine area is percolation through the soil and weathered bedrock into the subsurface. No data is available in regards to groundwater depth. Present mining operations have not encountered groundwater, with the exception of the spring onsite from which water is used for dust suppression.

Biological Resources

Terrestrial A botanical survey was completed in 2014 by Trinity Valley Consulting Engineers. Timber and vegetation onsite are composed of Douglas fir (*Pseudotsuga menziesii*) with a strong tan oak (*Notholithocarpus densiflorus* var. *densiflorus*) and madrone (*Arbutus menziesii*) component and some scattered pine (*Pinus ponderosa*) and true oak (*Quercus chrysolepis*). Understory shrubs include poison oak (*Toxicodendron diversilobum*) and oceanspray (*Holodiscus discolor*). The herbaceous layer on the rocky outcrops and stone formations is predominately *Sedum* sp., with Hooker's fairybell (*Disporum hookeri*), sword fern (*Polystichum munitum*), and fescue (*Festuca* sp.).

Aquatic The project area contains two small, intermittent water courses. The California Natural Diversity Database (CNDDDB) states that the tailed frog (*Ascaphus truei*) and the southern seep salamander (*Rhyacotriton variegatus*) were identified during a visual survey one

mile from the site. The natural habitat requirement for these species is fast-moving forest streams, which may occur in the project area; however, the habitat removal area is quite dry and would not support these species. The adjacent streams and wet areas are protected by the sediment controls on the project site.

Special-Status Plants and Wildlife Trinity Valley Consulting Engineers spent 28 field hours surveying the project area. The survey protocol was based on the California Department of Fish and Wildlife (CDFW) Protocol for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities. The California Natural Diversity Database (CNDDDB) and the California Native Plant Society (CNPS) were searched for special-status plants previously identified on or near the project site. As shown on Figure 15, no special-status plant or wildlife species have been identified within the proposed expansion area; however, special-status plants do occur within close proximity to the project site. Two special-status plant species were identified through the CNDDDB search as occurring adjacent to the site, including wayside aster (*Wucephalis vialis*), and California globe mallow (*Illiamna latibracteata*).

A study of the special-status wildlife in the project area was completed by LBJ Enterprises in 2015. According to the data from CNDDDB, special-status wildlife species occur within five miles of the project site; however, most are unlikely to occur in the vicinity or be potentially impacted by the project. The northern spotted owl (*Strix occidentalis*) has habitat within the project area that will be removed. Prior to removal, the area will be surveyed to confirm absence of the species to ensure that there will be no impact during breeding season. U.S. Fish and Wildlife Service (USFWS) protocol surveys were completed in 2016. Terrestrial, botanical, and wildlife resources are further addressed in the Biological Characterization Report included in Appendix B.

Air Resources/Climatology Air resources will not be impacted by the addition of the expansion area. Average maximum temperatures approach 90 degrees during the summer months of July and August, as shown on Figure 16. Minimum temperatures are generally above freezing year-round (Willow Creek National Weather Station Cooperative ID 049694; years of record 1968-2015).

Average total precipitation and pan evaporation by month are shown on Figure 17. Average monthly precipitation exceeds 7 inches between November and February and is less than 0.25 inches during the month of July (Willow Creek National Weather Station Cooperative ID 049694; years of record 1968-2015). Evaporation is anti-phased with precipitation; monthly average pan evaporation may exceed 7 inches per month during July (Willow Creek National Weather Station Cooperative ID 049694; years of record 1968-2015). The average precipitation balance (defined by average monthly precipitation minus evaporation) is negative during summer months, reflecting the warm temperatures and sparse precipitation observed during the summer. The 20-year, 24-hour storm event amount is 7 inches.

A wind rose from the Arcata/Eureka Airport Station was developed using data from 1985 to 2015. The wind rose is shown on Figure 18. Predominant wind direction is from the northwest and east, which accounts for approximately 60 percent of the observed data.

Dust has historically not been a problem at the site. Dust will continue to be controlled as necessary through the application of water from a spray truck onto surface roads or through the application of dust palliative agents. Mitigation of dust by the application of water from spray trucks will be in accordance with North Coast Unified Air Quality Management District regulations by meeting General Permit and operating conditions.

At the request of the North Coast Unified Air Quality Management District (District), the project proponent performed a detailed geologic evaluation of the property in 2004 to evaluate the potential of impacts from serpentinite rock bodies. To update this report, geologists inspected the site on June 13, 2016, and compiled additional geologic maps. The previous and current geologic evaluations identified one small, isolated, shallow area of serpentinite. This body is located at the base of the mine site and should not be disturbed. If necessary, the small area will be removed and stockpiled for use in reclamation. No other ultramafic or serpentinite-bearing lithologies, or any asbestos or asbestos-form minerals, were identified. This is also true for stockpiles, roadbeds, and berms within areas of current operation at the time of the site examination.

The quarry is located within the Eastern Belt of the Franciscan Complex of California. Rocks in the vicinity consist of metasedimentary rocks of Permian to late Jurassic age. These rocks are of diverse origin and are believed to be accreted terranes emplaced on the western margin of North America by subduction of the Farallon Plate. Tectonic blocks of ultramafic rocks, largely altered to serpentinite, occur throughout the Eastern Belt. These blocks range from a few meters to tens of kilometers long and are the metamorphosed remains of lower oceanic crust abducted onto the continent during subduction.

The Caltrans New Technology and Research Program within the Office of Infrastructure Research contracted with the Department of Conservation's California Geological Survey (CGS) to prepare landslide inventory maps of the Highway 299 corridor between Blue Lake and Willow Creek in order to give the slides along the corridor a regional perspective and provide background information for current and future projects. The available map series includes a map of landslides along the highway corridor superimposed on a bedrock geologic map at a scale of 1:12,000 (California Geological Survey, Special Report 195). The R. Brown and Sons Quarry is located within the Caltrans study corridor. R. Brown and Sons Quarry is underlain entirely by semi-consolidated to unconsolidated colluvium derived from Quaternary landslide deposits. These, in turn, are derived from rocks of the Western Paleozoic and Triassic Belt Mélange (TRPz) that constitute the in-place bedrock uphill of the quarry. In the area of the quarry, the unit consists of fine-grained volcanic rocks, heavily sheared greywacke, blocks of chert and siliceous argillite, and occasional small lenses of limestone and conglomerate. The serpentinite units are discontinuous and occur in a matrix of highly sheared greywacke and chert.

As mapped, the nearest in-place serpentinite body is located approximately 0.6 mile north of the property boundary. Coarser-scale maps, such as the U.S. Geological Survey (USGS) data cited by the District, show the lens immediately adjacent to the property. It should be noted that this map was produced at a scale of 1:62,500. The map is also the

basis of the GIS data cited by the District in its letter (Blake et al., 2002). The map provided by the District in their letter also has the quarry property incorrectly mapped approximately one-half mile east of its actual location. The combination of incorrect location and coarse-scale map data incorrectly shows the property to be immediately adjacent to an ultramafic block.

The site was visited on June 13, 2016, to confirm the data from the compiled maps and evaluate the site for the presence of asbestiform mineral-bearing rocks. The overall site geology was found to be consistent from the maps and unit descriptions in Special Report 195. Only one small body of ultramafic rock was observed within the property, exposed for approximately 70 feet along a cut bank, on a haul road to the southeastern pit. Review of the available detailed maps and onsite exposures does not suggest the presence of any continuous ultramafic rock bodies within the property. The small serpentinite body adjacent to the haul road has been observed previously and is discussed in some detail within the attached 2004 Geologic Evaluation. No other ultramafic rocks were observed onsite, either in situ or within product. Roadways, berms, and other structures do not contain ultramafic rock. Product exported from the site does not contain serpentinite, as it is generally a poor aggregate material and limited to a single occurrence onsite.

The proposed mine expansion would involve the disturbance of the small observed serpentinite body; however, this material will not be exported from the site or used in the construction of onsite structures. The operators intend to remove the material and set it aside, away from the production area, for future use as reclamation material, where it will be covered in non-ultramafic-bearing colluvium. Appropriate dust-mitigation measures will be in place at all times during the expansion. Because of the small volume of serpentinite present, and the fact that it will not be exported from the site, the risk of generating asbestos-bearing dust is considered minimal. Mitigation of dust by the application of water from spray trucks and covering with colluvium will be in accordance with District regulations by meeting General Permit and operating conditions.

In addition to following appropriate dust-mitigation practices throughout their operation, the owners have conducted annual air quality monitoring for silica and total respirable particulates during peak production season since 1999. All samples show compliance for dust-related values.

Archaeological and Historical Resources Sonoma State University, Northwest Information Center, stated during the review for the original use permit, that the site has a low possibility of historical resources and that no further review is necessary.

Transportation Materials are transported from the project site by a private road entering directly onto State Highway 299. During periods of production, approximately five truck trips per day leave the property and use the highway. This level of traffic activity is minor and is similar to that for other resource-related uses in the area. To clarify permit issues, the proponent has requested an increase from an average of five trucks per day to an average of ten trucks per day over the operating season. This level of increase is considered less than significant.

Utilities and Services The following agencies provide public or private services or utilities to the project site:

Fire Protection:	USDA Forest Service, Willow Creek Volunteer Fire Department
Law Enforcement:	Humboldt County Sheriff
Electricity:	PG&E
Natural Gas:	Not used onsite
Water:	Potable water hauled to site
Solid Waste:	No solid waste onsite
Telephone:	Frontier Communications

Utilities and services were approved under current use permit and will not change with the proposed expansion.

N. Regulatory Environment

Humboldt County is the lead agency for this project under CEQA and, as such, has primary authority for project approval. In addition, the following responsible and trustee agencies may have jurisdiction over the project or portions thereof:

- North Coast Regional Water Quality Control Board (RWQCB)
- California Department of Fish and Wildlife (CDFW)
- North Coast Unified Air Quality Management District (NCUAQMD)

2.0 DETERMINATION

On the basis of this initial evaluation:

- I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the 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 that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Name: Michael E. Wheeler

Title: Senior Planner

Signature: _____

Date: January 30, 2017

3.0 POTENTIALLY SIGNIFICANT EFFECTS CHECKLIST

A. Environmental Factors Potentially Affected

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

- | | | |
|---|--|---|
| <input checked="" type="checkbox"/> Aesthetics | <input checked="" type="checkbox"/> Agriculture and Forest Resources | <input checked="" type="checkbox"/> Air Quality/ Greenhouse Gas Emissions |
| <input checked="" type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology /Soils |
| <input checked="" type="checkbox"/> Hazards & Hazardous Materials | <input checked="" type="checkbox"/> Hydrology / Water Quality | <input type="checkbox"/> Land Use / Planning |
| <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Noise | <input type="checkbox"/> Population / Housing |
| <input type="checkbox"/> Public Services | <input type="checkbox"/> Recreation | <input type="checkbox"/> Transportation/Traffic |
| <input type="checkbox"/> Utilities / Service Systems | <input type="checkbox"/> Mandatory Findings of Significance | |

B. Evaluation of Environmental Impacts:

- 1) A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites 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 offsite as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
- 3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if 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 Section XVII, "Earlier Analyses," may be cross-referenced).

- 5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
 - a) Earlier Analysis Used. Identify and state where they are available for review.
 - b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
 - c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the 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. See Section 5.
- 8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
- 9) The explanation of each issue should identify:
 - a) The significance criteria or threshold, if any, used to evaluate each question; and
 - b) The mitigation measure identified, if any, to reduce the impact too less than significance

4.0 ENVIRONMENTAL IMPACTS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
I. AESTHETICS				
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

The existing visual character of the site is that of forested/brush lands with moderate to steep topography. The project site is located adjacent to Highway 299 and is situated 400 to 1,000 feet from the highway.

Due to the steep and forested nature of the area, the majority of the project site is shielded from Highway 299. The quarry is difficult to see and is visible to passing traffic on Highway 299 for only a brief period of time. The addition of the expansion area should not result in additional visual impacts. The segments of Highway 299 from which the quarry is visible are shown on Figure 10.

The current mining operation is composed of two operating areas: Area 1 to the west and Area 2 to the east. The western area (Area 1) is visible from cars traveling east on Highway 299 for a segment of Highway 299 west of the project site of approximately 0.2 miles. The quarry expansion encompasses the area between the two previously permitted segments. Photographs of the quarry view from Highway 299 taken on August 30, 2016, are included below. The current view of the project site from the west side is shown on Photo-1 and the view of the project site from the east is shown on Photo-2.

The quarry expansion area is shown on Figure 5. This includes an additional area within the current property boundary north of Area 2 and the area between the two existing rock pits. The quarry expansion will occur on approximately 19 acres between the two current pits.

Photo-1

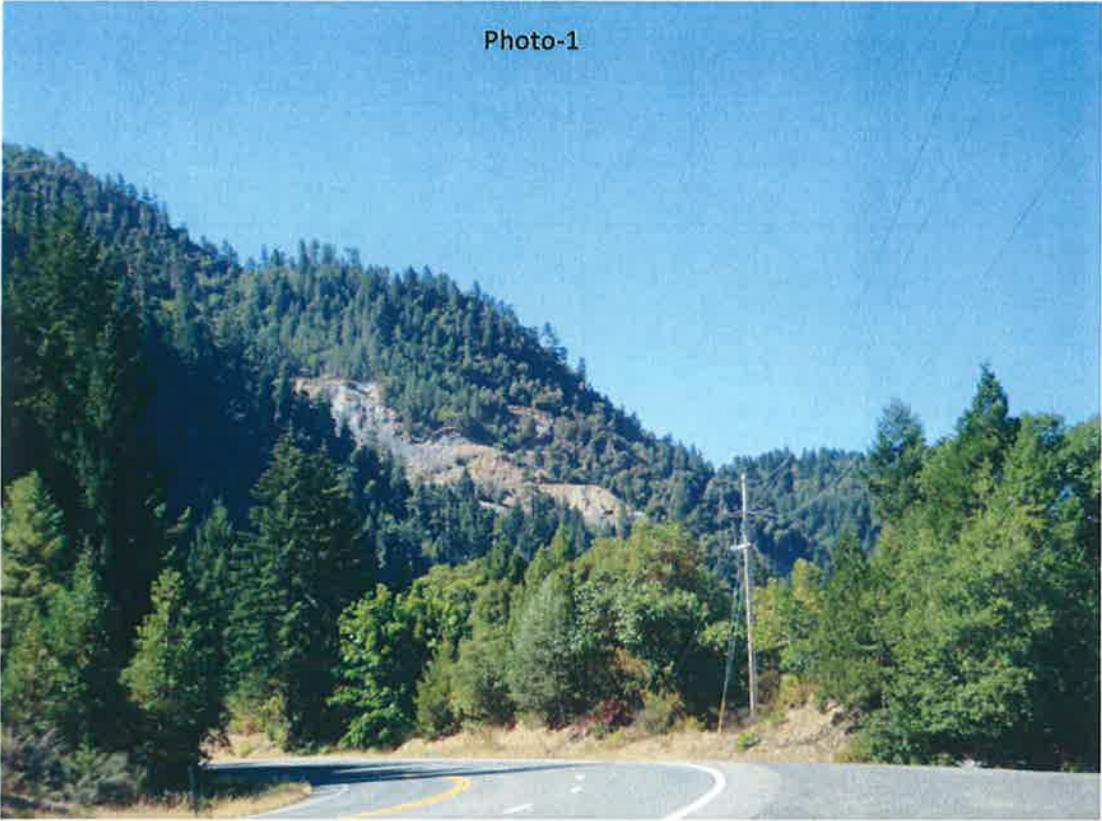


Photo-2



The expansion area below the existing quarry area was added to include the existing access road and stockpiles which were omitted from the original permit and previous revisions. No excavation will occur in this area and trees and vegetation will remain over the life of the site. The upper area of the proposed expansion will use individual rock removal and the topography and aesthetics will not change.

Visual impacts would occur gradually over the 30-year operation life of the project. The upper areas will be mined first and reclaimed as the mining progresses downslope. The impact on visual quality will be minimized following reclamation. The net effect is that would be a slight increase in the visible mined area and potential effect on the area viewshed, however, it should be noted that public views of the site are limited to travelers on Highway 299, and the duration of views when travelling at speed are relatively short. Additionally, visual quality of the mining site is not dissimilar to naturally occurring slide areas or rock outcroppings, or large man-made retaining structures that are visible along Highway 299. A third factor is that the visual impact may be considered temporary, because the restoration plan will eventually replace some of the tree cover and other vegetation.

A viewshed analysis was completed for the site and is included as Appendix A. The current quarry was approved in 1990 and is visible from Highway 299 West. Therefore, the viewshed analysis currently includes an active quarry operation.

The project would not have a substantial effect on a scenic vista. Highway 299 West in Humboldt County is not designated as a state scenic highway. The timber and steep, rugged terrain are visually appealing; however, the highway contains numerous slides, retaining walls, and anthropogenic structures.

The mine is currently visible from a 0.2-mile (1,000-foot) section heading west and a 0.2-mile (1,000-foot) section of the highway heading east. The addition of the expansion area will increase the disturbed area at the site by 19 acres (the upper single rock removal area and lower additional area will not result in changes in topography or vegetation removal); however, the additional quarry acreage will not increase the location on the highway from which the quarry will be seen. A slightly larger quarry will be visible.

The project will not substantially damage scenic resources including trees, rock outcroppings, and historic buildings within a state scenic highway. Although Route 299 from Arcata to Willow Creek is eligible for official designation as a scenic highway, it is not officially designated as a California State Scenic Highway. As shown in the visual simulation, additional trees would be removed on 19 acres in the quarry expansion area. Upon completion of mining activities, the exposed areas will be revegetated. Reclamation will begin on the upper slopes, which should reduce visual impacts.

The project will not substantially degrade the existing visual character or quality of the site and its surroundings. The existing visual character of the site includes existing quarry operations. The Reclamation Plan Amendment would increase the amount of mined area over an operating period of 30 years. The quarry expansion would be compatible with the existing visual character of the project site.

The project will not create a new source of substantial light and/or glare that would adversely

affect day or nighttime views in the area.

II. AGRICULTURE AND FOREST RESOURCES

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

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature that could result in conversion of Farmland, to non-agricultural use or conversion of forest land to no-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

The proposed expansion area is zoned for *Timber Production Zone* and the Humboldt County General Plan identifies the area as *Timberland*. The site is lower-site quality timberland which was heavily logged in the late 1960s and early 1970s. There are no conflicts with existing zoning. No

prime farmland or farmlands of statewide importance occur in the immediate vicinity of the project area. The site is not under a Williamson Act contract. The ultimate end use of the site is timber production, so the area will not permanently convert forestland to a non-forest use. The site will be returned to *Timber Production Zone* following mining. No conversion to non-agricultural land use will result, and following the project the area will maintain its original use. The impact on timber is a short-term period of nonproduction. The site will then be restored to timberland in accordance with the approved Reclamation Plan. A Timberland Conversion Permit (TCP) is required to be obtained for the proposed expansion mine period. No TCP was required for the original permit. Both the TCP and Reclamation Plan will require restoration of the site to timberland.

III. AIR QUALITY/GREENHOUSE GAS EMISSIONS

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

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

No changes will occur to site activities with the addition of the 39-acre expansion area with the exception of possible short-term dust generated during overburden placement. Dust impacts with overall site activities were addressed in the CEQA review for CUP-14-01X. No changes or

increased dust production are anticipated.

Humboldt County is in violation of PM₁₀ standards. Dust from traffic on unpaved roads and surface mining activities are significant contributors of PM₁₀ levels. Dust control measures and other limitations required by the NCUAQMD were identified as previous mitigation measures and are included here.

Dust generated by project activities will be controlled meeting AQMD regulations by the application of water with spray trucks. This method is currently used under the existing Use Permit and will continue on the expansion area. The project will not conflict with implementation of the applicable air quality plan. The expansion project will not violate air quality standards. No considerable net increase of any criteria pollutant will occur. No sensitive receptors will be exposed to an increase in pollutants, and no objectionable odors will be produced.

As mapped by the North Coast Unified Air Quality Management District (District), the proposed expansion approaches a known serpentine body. However, the placement of the property on the map provided by the District is incorrect. The project proponent performed a detailed geologic evaluation of the property in 2004 at the request of the District. The evaluation concluded that, within the area of current quarrying operations and areas to be quarried in the future, no ultramafic or serpentine-bearing lithologies, or any asbestos or asbestos-form minerals, were observed. This is also true for stockpiles, roadbeds, and berms within areas of current operation at the time of the site examination. To update this report, geologists inspected the site on June 13, 2016, and compiled additional geologic maps prepared at a finer scale than those referenced by the District in their letter dated April 22, 2016.

The quarry is located within the Eastern Belt of the Franciscan Complex of California. Rocks in the vicinity consist of metasedimentary rocks of Permian to late Jurassic age. These rocks are of diverse origin and are believed to be accreted terranes emplaced on the western margin of North America by subduction of the Farallon Plate. Tectonic blocks of ultramafic rocks, largely altered to serpentinite, occur throughout the Eastern Belt. These blocks range from a few meters to tens of kilometers long and are the metamorphosed remains of lower oceanic crust abducted onto the continent during subduction.

The Caltrans New Technology and Research Program within the Office of Infrastructure Research contracted with the Department of Conservation's California Geological Survey (CGS) to prepare landslide inventory maps of the Highway 299 corridor between Blue Lake and Willow Creek in order to give the slides along the corridor a regional perspective and provide background information for current and future projects. The available map series includes a map of landslides along the highway corridor superimposed on a bedrock geologic map at a scale of 1:12,000 (California Geological Survey, Special Report 195). The R. Brown and Sons Quarry is located within the Caltrans study corridor. R. Brown and Sons Quarry is underlain entirely by semi-consolidated to unconsolidated colluvium derived from Quaternary landslide deposits. These, in turn, are derived from rocks of the Western Paleozoic and Triassic Belt Mélange (TRPz) that constitute the in-place bedrock uphill of the quarry. In the area of the quarry, the unit consists of fine-grained volcanic rocks, heavily sheared greywacke, blocks of chert and siliceous argillite, and occasional small lenses of limestone and conglomerate. The serpentinite units are discontinuous and occur in a matrix of highly

sheared greywacke and chert.

As mapped, the nearest in-place serpentinite body is located approximately 0.6 mile north of the property boundary. Coarser-scale maps, such as the U.S. Geological Survey (USGS) data cited by the District, show the lens immediately adjacent to the property. It should be noted that this map was produced at a scale of 1:62,500. The map is also the basis of the GIS data cited by the District in its letter (Blake et al., 2002). The map provided by the District in their letter also has the quarry property incorrectly mapped approximately one-half mile east of its actual location. The combination of incorrect location and coarse-scale map data incorrectly shows the property to be immediately adjacent to an ultramafic block.

The site was visited on June 13, 2016, to confirm the data from the compiled maps and evaluate the site for the presence of asbestiform mineral-bearing rocks. The overall site geology was found to be consistent from the maps and unit descriptions in Special Report 195. Only one small body of ultramafic rock was observed within the property, exposed for approximately 70 feet along a cut bank, on a haul road to the southeastern pit. Review of the available detailed maps and onsite exposures does not suggest the presence of any continuous ultramafic rock bodies within the property. The small serpentinite body adjacent to the haul road has been observed previously and is discussed in some detail within the attached 2004 Geologic Evaluation. No other ultramafic rocks were observed onsite, either in situ or within product. Roadways, berms, and other structures do not contain ultramafic rock. Product exported from the site does not contain serpentinite, as it is generally a poor aggregate material and limited to a single occurrence onsite.

The proposed mine expansion would involve the disturbance of the small observed serpentinite body; however, this material will not be exported from the site or used in the construction of onsite structures. The operators intend to remove the material and set it aside, away from the production area, for future use as reclamation material, where it will be covered in non-ultramafic-bearing colluvium. Appropriate dust-mitigation measures will be in place at all times during the expansion. Because of the small volume of serpentinite present, and the fact that it will not be exported from the site, the risk of generating asbestos-bearing dust is considered minimal. Mitigation of dust by the application of water from spray trucks and covering with colluvium will be in accordance with District regulations by meeting General Permit and operating conditions.

In addition to following appropriate dust-mitigation practices throughout their operation, the owners have conducted annual air quality monitoring for silica and total respirable particulates during peak production season since 1999. All samples show compliance for dust-related values.

At the request of the NCUAQMD, a revised geologic evaluation was prepared for the site due to the proximity of ultramafic deposits. An inspection of quarry materials was completed and the previous geologic evaluation was reviewed. No ultramafic material was identified in the quarry product. A small, isolated, shallow area of serpentinite was identified in the previous geologic evaluation. This serpentinite is located at the base of the mine site. This area may be removed and stockpiled for reclamation purposes. According to NCUAQMD, expansion of the quarry triggers requirements of State ATCM 93105 due to the proximity to an identified ultramafic vein. Specifically, NCUAQMD requires the applicant comply with ATCM 93105 condition (f)

and condition (h) control measures for construction, grading, quarrying, and surface mining operations. If test method 435 reveals the existence of naturally occurring asbestos in the quarry, the permittee must immediately notify NCUAQMD.

Mitigation Measure AQ-1. Air Quality - Dust suppression for the access road shall be implemented through the use of watering and lignins subject to the Regional Water Quality Control Board (RWQCB) "Basin Plan." Any on-site processing operations will require a permit from the North Coast Unified Air Quality Management District (NCUAQMD), with appropriate measures for reduction of fugitive particles.

Mitigation Measure AQ-2. Air Quality - NCUAQMD requires the applicant comply with ATCM 93105 condition (f) requirements for quarrying and surface mining operations and condition (h) test methods for control measures for construction, grading, quarrying, and surface mining operations. If test method 435 reveals the existence of naturally occurring asbestos in the quarry, the permittee must immediately notify NCUAQMD.

Mitigation Measure AQ-3. The proposed mine expansion may involve the disturbance of the small observed serpentinite body. This material shall not be exported from the site or used in the construction of onsite structures. If the operators remove the material, it shall be set it aside, away from the production area, adequately covered to prevent runoff, and may be used for future use as reclamation material, where it shall be covered in non-ultramafic-bearing colluvium.

IV. BIOLOGICAL RESOURCES

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including but not limited to marsh, vernal pool, coastal, etc.) through direct	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

removal, filling, hydrological interruption or other means?

- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?
- e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Discussion

A botanical survey was completed in 2014 by Trinity Valley Consulting Engineers. Timber and vegetation onsite are composed of Douglas fir (*Pseudotsuga menziesii*) with a tan oak (*Notholithocarpus densiflorus* var. *densiflorus*) and madrone (*Arbutus menziesii*) component and some scattered pine (*Pinus ponderosa*) and oak (*Quercus chrysolepis*). Understory shrubs include poison oak (*Toxicodendron diversilobum*) and oceanspray (*Holodiscus discolor*). The herbaceous layer on the rocky outcrops and stone formations is predominately *Sedum* sp., with Hooker's fairybell (*Disporum hookeri*), sword fern (*Polystichum munitum*), and fescue (*Festuca* sp.).

The project area contains two small, intermittent watercourses. The CNDDDB states that the tailed frog (*Ascaphus truei*) and the southern seep salamander (*Rhycotriton variegatus*) identified during a visual survey one mile from the site. The natural habitat requirement for these species is fast-moving forest streams, which do not occur in the project area. The project site is dry and would not support these species. The adjacent streams and wet areas are protected by the sediment controls on the project site.

Trinity Valley Consulting Engineers spent 28 field hours surveying the project area. The survey protocol was based on the CDFW Protocol for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities. The CNDDDB and the CNPS websites were searched for special-status plants previously identified on or near the project site. As shown on Figure 15, no special-status plant or wildlife species have been identified within the proposed expansion area; however, special-status plants do occur within close proximity to the project site. Two special-status plant species were identified through the CNDDDB search as occurring adjacent to the site, including wayside aster (*Wucephalis vialis*) and California globe mallow (*Ullianna latibracteata*).

A study of the special-status wildlife in the project area was completed by LBJ Enterprises in 2015. According to CNDDDB data, special-status wildlife species occur within five miles of the project site; however, most are unlikely to occur in the vicinity or be potentially impacted by the project. The northern spotted owl (*Strix occidentalis*) has habitat within the project area that will be removed. Prior to removal, the area will be surveyed to confirm their absence to ensure that

there will be no impact during breeding season. USFWS protocol surveys were completed in 2016. Per request from CDFW, tree removal and vegetation clearing will be conducted outside of bird nesting season, after August 15 or before March 1 of each year.

No sensitive natural habitats occur on the expansion area, so no substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS will occur. Potentially jurisdictional waters occurring on the expansion area will be restored following mining. Based upon reconnaissance-level surveys, movement of native resident or migratory fish or wildlife species, native resident or migratory wildlife corridors, or native wildlife nursery sites will not be impacted by expansion activities. The project does not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. After a joint site visit with staff of the California Department of Fish and Wildlife (Jennifer Olson) it was determined that no 1600 permit was required for conditions related to the spring on the site.

Special-status plant species with potential to occur on the project site are shown in Table 1. Potentially occurring special-status wildlife species are summarized in Table 2.

Table 1
POTENTIALLY OCCURRING SPECIAL-STATUS PLANT SPECIES

Common and Scientific Names	Status Global/State/CNPS	Blooming Period	Preferred Habitats
Sonoma canescent manzanita (<i>Arctostaphylos canescens</i> sp. <i>sonomensis</i>)	G3G4T2/S2/1B.2	January - June	Sometimes serpentinite, chaparral, lower montane coniferous forest
Bald Mountain milk-vetch (<i>Astragalus umbraticus</i>)	G4/S2/2B.3	May - August	Sometimes roadside, cismontane woodland, lower montane coniferous forest
Bensoniella (<i>Bensoniella oregonia</i>)	G3/S2/1B.1	May - July	Mesic, bogs and fens, lower montane coniferous forest (openings), meadows and seeps
Rattlesnake fern (<i>Botrypus virginianus</i>)	G5/S2/2B.2	June - September	Streams, bogs and fens, lower montane coniferous forest (mesic), meadows and seeps, riparian forest
Northern clustered sedge (<i>Carex arcta</i>)	G5/S2/2B.2	June - September	Bogs and fens, North Coast coniferous forest (mesic)
Northern meadow sedge (<i>Carex praticola</i>)	G5/S2S3/2B.2	May - July	Meadows and seeps (mesic)
Oregon goldthread (<i>Eriopsis laciniata</i>)	G4/S3/2B.2	March - April	Wet sites, seeps, moist meadows, stream banks, wet cliffs; in coniferous forests of coastal mountains; RW, DF.
Bunchberry (<i>Cornus canadensis</i>)	G5/S2/2B.2	May - July	Bogs and fens, meadows and seeps, North Coast coniferous forest
Oregon fireweed (<i>Epilobium oregonum</i>)	G2/S2/1B.2	June - September	Mesic, bogs and fens, lower montane coniferous forest, upper montane coniferous forest
Giant fawn lily (<i>Erythronium oregonum</i>)	G5/S2/2B.2	March - July	Sometimes serpentinite, rocky openings, cismontane woodland, meadows and seeps
Coast fawn lily (<i>Erythronium revolutum</i>)	G4/S2S3/2B.2	March - July	Bogs and fens, broadleaf upland forest and North Coast coniferous forest habitat types/mesic, streambanks, 0-1065 meters in elevation (CNPS, 2000); streambanks and wet places in woodlands 0-1000 meters in elevation (Hickman, 1996); margins of swamps and bogs along wooded streams near the coast, to 3500 feet, in the Redwood Forest and Mixed Evergreen Forest habitat types (Munz and Keck, 1970); river banks and light to fairly thick woods (Hitchcock and Cronquist, 1976)
Wayside aster (<i>Eucephalus vialis</i>)	G3/S1/1B.2	June - September	Gravelly, lower montane coniferous forest, upper montane coniferous forest
Pacific gilia (<i>Gilia capitata</i> sp. <i>Pacifica</i>)	G5T3T4/S2/1B.2	April - August	Coastal bluff scrub, chaparral (openings), coastal prairie, valley and foothill grassland
American manna grass (<i>Glyceria grandis</i>)	G5/S2/2B.3	June - August	Bogs and fens, meadows and seeps, marshes and swamps (streambanks and lake margins)
California globe mallow (<i>Liamna latibracteata</i>)	G2G3/S2/1B.2	June - August	Often in burned areas, chaparral (montane), lower montane coniferous forest, North Coast coniferous forest (mesic), riparian scrub (streambanks)

Table 1

POTENTIALLY OCCURRING SPECIAL-STATUS PLANT SPECIES

Common and Scientific Names	Status Global/State/CNPS	Blooming Period	Preferred Habitats
Small groundcone (<i>Kopvisopsis hookeri</i>)	G5/S1S2/2B.3	April – August	Parasitic on salal (<i>Gaultheria shallon</i>) and huckleberry (<i>Vaccinium</i> spp.) in the North Coast coniferous forest habitat type at 90 to 885 meters in elevation (CNPS, 2000); generally on salal in open woods and shrubby places at less than 300 meters in elevation (Hickman, 1996); salal in the Mixed Evergreen Forest, Redwood Forest and Northern Coastal Scrub plant communities (Munz and Keck, 1970); parasitic on salal in moist woods (Abrams, 1944); usually growing with salal at low elevations in the Pacific Northwest (Pojar and MacKinnon, 1994)
Northern microseris (<i>microseris borealis</i>)	G5/S1/2B.1	June – September	Mesic, bogs and fens, lower montane coniferous forest, meadows and seeps
Howell's montia (<i>Montia howellii</i>)	G3G4/S3/2B.2	February – May	Wet disturbed sites around meadows, vernal pools and North Coast coniferous forest habitat types at 0 to 400 meters in elevation (CNPS, 2000); around vernal pools often on compacted soil at less than 400 meters in elevation (Hickman, 1996); wet, shaded places near the coast in the Redwood Forest plant community (Munz and Keck, 1970); moist and lowland habitats (Pojar and MacKinnon, 1994) moist meadows (Abrams, 1944)
White-flowered rein orchid (<i>Piperia candida</i>)	G3/S2/1B.2	May – September	Broadleaf upland forest, lower montane coniferous forest, North Coast coniferous forest/sometimes serpentine
Gasquet rose (<i>Rosa gymnocarpa</i> var. <i>serpentinite</i>)	G5T2/S2/1B.3	April – August	Serpentine, often roadslides, sometimes ridges, streambanks and openings, chaparral, cismontane woodland
Great burnet (<i>Sanguisorba officinalis</i>)	G5/S2/2B.2	July – October	Often serpentine, bogs and fens, broadleaf upland forest, meadows and seeps, marshes and swamps, North Coast coniferous forest, riparian forest
Siskiyou checkerbloom (<i>Sidalcea maliflora</i> sp. <i>patula</i>)	G5T2/S1/1B.2	May – August	Often roadcuts, coastal bluff scrub, coastal prairie, North Coast coniferous forest
coast checkerbloom (<i>Sidalcea organa</i> sp. <i>eximia</i>)	G5T1/S1/1B.2	June – August	Lower montane coniferous forest, meadows and seeps, North Coast coniferous forest
Robust false lupine (<i>Thermopsis robusta</i>)	G2/S2/1B.2	May – July	Broadleaf upland forest, North Coast coniferous forest

Key: G1/S1 = critically imperiled, G2/S2 = imperiled, G3/S3 = vulnerable, G4/S4 = apparently secure, G5/S5 = secure

California Native Plant Society (CNPS)

1B = List 1B species: Rare, threatened, or endangered in California and elsewhere

2 = List 2 species: Rare, threatened, or endangered in California, but more common elsewhere

Threat Code Extensions

.1 = Seriously endangered in California (over 80% of occurrences threatened-high degree and immediacy of threat)

.2 = Fairly endangered in California (20-80% occurrences threatened)

**Table 2
POTENTIALLY OCCURRING SPECIAL-STATUS WILDLIFE SPECIES**

Common and Scientific Names	Status Fed/State/CDFW	Preferred Habitats	Known and Potential Occurrence in Project Area
AMPHIBIANS			
Tailed Frog <i>Ascaphus truei</i>	--/--/SSC	Fast-moving streams	No potential for occurrence due to lack of suitable habitat
Southern Seep Salamander <i>Rhyacotriton variegatus</i>	--/--/SSC	Fast-moving streams	Moderate potential to occur due to marginally suitable habitat; known to occur within two miles of the study site; not observed during surveys
Foothill Yellow-Legged Frog <i>Rana boylei</i>	--/--/SSC	River	Low potential for occurrence due to limited suitable habitat; not observed during surveys; site is outside of current range
BIRDS			
Bald Eagle <i>Haliaeetus leucocephalus</i>	Delisted/Endangered/FP	Open water and undisturbed shorelines (Hunter et al., 2005), rare to uncommon resident and locally rare breeder in Humboldt County (Harris, 2005); tall perches with long sightlines and secluded from disturbance areas	No potential for occurrence due to lack of suitable habitat
Golden Eagle <i>Aquila chrysaetos</i>	--/--/FP, WL	Rare to uncommon breeder in Humboldt County (Harris, 2005); wild, dry, upland habitat (Hunter et al., 2005).	No potential for occurrence due to lack of suitable habitat
Marbled Murrelet <i>Brachyramphus marmoratus</i>	--/--/SSC	Non-nesting found in marine waters off the North coast; breeding occurs in Redwood-Douglas-fir dominated forests within 30 miles of the coast	No potential for occurrence due to lack of suitable habitat
Northern Spotted Owl <i>Strix occidentalis</i>	Threatened/Candidate Threatened/SSC (species level)	Old growth forests and second growth stands with sufficient prey, cover and nesting sites	None found within project site; presence is unlikely due to close proximity to Highway 299; abundance of adjacent forest makes impact less than significant
Willow Flycatcher <i>Empidonax traillii brewsteri</i>	--/Endangered/--	Riparian habitat,, regenerating clearcuts, young conifers, willow and alder, 1000-3000 feet in elevation	No potential for occurrence due to lack of suitable habitat
White-Tailed Kite <i>Elanus leucurus</i>	--/Endangered/--	Coastal plains, grasses 1-4 feet in height	No potential for occurrence due to lack of suitable habitat
Peregrine Falcon <i>Falco peregrinus anatum</i>	Delisted/Delisted/FP	Coastal and inland cliffs near bodies of water	No potential for occurrence due to lack of suitable habitat

Table 2
POTENTIALLY OCCURRING SPECIAL-STATUS WILDLIFE SPECIES

Common and Scientific Names	Status Fed/State/CDFW	Preferred Habitats	Known and Potential Occurrence in Project Area
Northern Goshawk <i>Accipiter gentilis</i>	--/--/SSC	Mature forest and mountainous inland areas	No potential for occurrence due to lack of suitable habitat
Northern Harrier <i>Circus cyaneus</i>	--/--/SSC	Coastal lowland open areas with contiguous marsh, tall grasslands, beach dune brushfields, and overgrown pastures	No potential for occurrence due to lack of suitable habitat
Vaux's Swift <i>Chaetura vauxi</i>	--/--/SSC	Redwood zone, remnant old growth redwood stands	No potential for occurrence due to lack of suitable habitat
Olive-Sided Flycatcher <i>Contopus cooperi</i>	--/--/SSC	Conifer forests with ample openings between stands, vacant in more oak-dominated areas	Low potential for occurrence due to limited suitable habitat; not observed during surveys; site is outside of current range
Purple Martin <i>Pogone subis</i>	--/--/SSC	Redwood zone	Low potential for occurrence due to limited suitable habitat; not observed during surveys
Yellow Warbler <i>Dendroica petechial</i>	--/--/SSC	Riparian areas with stands of black cottonwood, willow and alder	Low potential for occurrence due to limited suitable habitat in project area; ample suitable habitat in surrounding area; no impact due to project
Yellow-Breasted Chat <i>Icteria virens</i>	--/--/SSC	Rivers with abundant thickets	No potential due to lack of suitable habitat
Grasshopper Sparrow <i>Ammodramus sabannarum</i>	--/--/SSC	Grassland habitats	No potential due to lack of suitable habitat
Osprey <i>Pandion haliaetus</i>	--/--/WL	Fish-bearing water bodies; flat or broken tops of native conifer trees or snags	No potential for occurrence due to lack of suitable habitat
Sharp-Shinned Hawk <i>Accipiter striatus</i>	--/--/WL	Contiguous forest cover	Low potential for occurrence, no nests observed during survey; adjacent nesting very unlikely
Cooper's Hawk <i>Accipiter cooperi</i>	--/--/WL	Broken forest cover, riparian and lowland woodland settings	No potential for occurrence due to lack of suitable habitat
FISH			
Coho Salmon <i>Oncorhynchus kisutch</i>	Threatened/Threatened/SSC	Streams and small freshwater tributaries	No potential for occurrence due to lack of suitable habitat
Chinook Salmon <i>Oncorhynchus tshawytscha</i>	--/--/SSC	Freshwater to estuarine areas	No potential for occurrence due to lack of suitable habitat

Table 2
POTENTIALLY OCCURRING SPECIAL-STATUS WILDLIFE SPECIES

Common and Scientific Names	Status Fed/State/CDFW	Preferred Habitats	Known and Potential Occurrence in Project Area
Steelhead <i>Oncorhynchus mykiss irideus</i>	Threatened/--/SSC	Streams, deep low-velocity pools	No potential for occurrence due to lack of suitable habitat
MAMMALS			
Pacific Fisher <i>Pekania pennanti</i>	Proposed Threatened/Candidate Threatened/SSC	Intermediate to large conifer trees interspersed with deciduous riparian forests with dense canopy closure	No potential for occurrence due to lack of suitable habitat
Humboldt Martin <i>Martes caurina bumboldtensis</i>	--/--/SSC	Late successional forests, low overhead canopy cover	No potential for occurrence due to lack of suitable habitat
Red Tree Vole <i>Arborimus pomo</i>	--/--/SSC	North coast fog belt typically in Douglas-fir, redwood, and montane conifer hardwood forests	None observed in the project site or within 5-mile radius; ample habitat in surrounding forest land; no potential for significant impact
REPTILES			
Western Pond Turtle <i>Emys marmorata</i>	--/--/SSC	Slow-moving streams and ponds; lays eggs in uplands adjacent to water	Unlikely to occur due to marginal habitat
Key: WL - Watch list. SSC - Species of Special Concern. FP - Fully Protected			

Mitigation Measure B-1. The northern spotted owl (*Strix occidentalis*) has habitat within the project area that will be removed. Prior to removal, the area will be surveyed to confirm their absence to ensure that there will be no impact during breeding season. USFWS protocol surveys were completed in 2016. Per request from CDFW, tree removal and vegetation clearing will be conducted outside of bird nesting season, after August 15 or before March 1 of each year.

V. CULTURAL RESOURCES

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

Based on the findings of the present archaeological survey, no cultural resources will be impacted by the project as presently proposed. However, in the event that unidentified cultural materials or human remains are encountered, the following mitigation measures will be used to reduce potential impacts to a less than significant level:

Mitigation Measure CR-1: Consultation in the event of inadvertent discovery of human remains. In the event that human remains are encountered during or subsequent to ground-disturbing activities, work will cease immediately near the area and not resume until applicable regulations have been followed, including, but not limited to, immediately contacting the County Coroner's office and requesting consultation with the responsible agencies.

Mitigation Measure CR-2: Consultation in the event of inadvertent discovery of cultural material. The present evaluation and recommendations are based on the findings of an inventory-level surface survey only. There is always the possibility that important unidentified cultural materials could be encountered on or below the surface during the course of future construction or other activities. This possibility is particularly relevant considering the constraints generally to archaeological field survey, and particularly where limited past disturbance, including access road grading, has occurred, as in the present case. In the event of an inadvertent discovery of previously unidentified cultural material, archaeological consultation with responsible state agencies and will be requested immediately.

VI. GEOLOGY AND SOILS

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Seismic Considerations An updated geotechnical study was completed for the proposed expansion site by Trinity Valley Consulting Engineers. The Engineering Geologic Evaluation is included in Appendix C of the Mining and Reclamation Plan Amendment for the proposed expansion dated March 2016.

No active faults are located within the current or expanded project area or within close proximity to the project site. The most significant faults within the region of the project site are the active Trinidad Fault, the active Big Lagoon-Bald Mountain Fault, and the active Mad River Fault Zone. The Hennesy Ridge Fault is an inactive fault that passes through the project site.

Over the last 100 years, 1,765 earthquakes with a local magnitude (M_L) greater than 3.0 have occurred within a 100-mile radius of the site. Of those earthquakes, there were 35 with M_L equal to or greater than 5.0 and 39 with M_L 5.5 or greater. The largest earthquake to occur within that same radius was the M_L 7.3 earthquake which occurred 98 miles west-northwest from the project site on January 31, 1922. Peak horizontal ground accelerations using attenuation were estimated by Trinity Valley Consulting Engineers utilizing the Caltrans ARS Online Web-based tool, which determined that the project area may be subjected to horizontal ground accelerations of at least 0.55g from the movement of continental faults. The fault expected to be responsible for the peak horizontal ground accelerations is the Big Lagoon-Bald Mountain fault which is located about 5 miles northwest of the project site. Probabilistic evaluation of strong horizontal ground motion was determined from the 2008 USGS Seismic Hazard Map for the 5 percent in 50 years probability of exceedance. The statistical return period for such an event is approximately 975 years.

Liquefaction is of interest and is defined as the reduction in the shear strength of soil due to an abrupt increase in water pressure within the soil pore space that is caused by a seismic event. Liquefaction typically occurs when the following conditions are met: the existence of granular soils such as sand, silty sand, sandy silt, or some gravels; the existence of an elevated groundwater table; or the presence of low-density soils. The potential for liquefaction to occur is estimated to be low for the following reasons: there are minimal amounts of loose alluvial soils within the site; the groundwater is believed to be perched and discontinuous, associated with fractures and joint planes.

Several landslide features were observed within and adjacent to the parcels. These features are preserved, and/or active, in zones outside of the mining areas. The project site is part of a larger area that has been mapped as an area of Dormant-Young landslide activity and exhibit landforms that are relatively fresh but on which there has been no demonstrable historic movement. Landslide types in the area include rockslides, earthflows, and debris flows.

Engineering Properties of Critical Earth Materials To perform a slope stability analysis, engineering properties of critical earth materials were identified. Properties of interest were rock/soil strength [cohesion (C) and the angle of internal friction (ϕ)] and the unit weight of materials analyzed. Soil strength and unit weight data was used from a previous study, plus additional information from a Caltrans foundation investigation report for the Enchilada Curve Improvement Project. For site material, the C-value was determined to be approximately 200 psf and the ϕ -value approximately 31 degrees. For the decomposed bedrock, the C-value was determined to be approximately 300 psf and the ϕ -value approximately 35 degrees, and for the slate and graywacke, the C-value was determined to be approximately 2000 psf and the ϕ -value approximately 40 degrees.

The R. Brown and Sons Quarry is underlain entirely by semi-consolidated to unconsolidated colluvium derived from Quaternary landslide deposits. These, in turn, are derived from rocks of the Western Paleozoic and Triassic Belt Mélange (TRPz) that constitute the in-place bedrock uphill of the quarry. In the area of the quarry, the unit consists of fine-grained volcanic rocks, heavily sheared greywacke, blocks of chert and siliceous argillite, and occasional small lenses of limestone and conglomerate. There is significant rock present at the site available for removal. The majority of the onsite roads and landing areas were constructed in the late 1960s or early 1970s to remove timber from the property. Only limited expansion of roads on the upper portion of the site will be required to access the initial bench areas. The expansion will be conducted from the top to the bottom. The main access and haul road system is not anticipated to increase. The upper road system will be decommissioned as benches are reclaimed.

Discontinuities Discontinuities are of interest in slope design as rock discontinuities within metamorphic rock masses may influence slope stability via planar failures or wedge failures. Five major discontinuity groupings were observed. Within the five groupings, ten intersections were observed. Using the estimated ϕ -value of approximately 35 degrees, the potential for either planar or wedge failure was found to be minimal.

Slope Stability A FOS against failure of slope stability was calculated for the design of cut or fill slopes. A FOS of greater than 1 is evidence of a stable slope, a FOS less than 1 is indicative of a failing slope, and a FOS equal to 1 indicates that a slope is likely to or is on the verge of failing. Typically, when determining a maximum slope inclination, a FOS of 1.5 and 1.1 is used for static and pseudostatic analyses of slope stability. When designing slope inclinations in a quarry, the FOS may be reduced to 1.25 and 1.05 for static and pseudostatic conditions, respectively. Based on the calculations, the working faces at the project site appear to be stable with a FOS exceeding 1.25 under static conditions, and FOS exceeding 1.1 under pseudostatic conditions for slope face inclinations up to 45 degrees. With that slope face inclination, highwalls with a height of 100 feet and bench width of 20 feet is acceptable.

The project will not expose people or structures to risk of loss, injury, or death involving rupture of known earthquake faults, strong seismic ground shaking, seismic-related ground failure, liquefaction, or landslides. Although topsoil onsite is negligible, standard soil erosion control measures will be implemented to prevent substantial soil erosion or the loss of topsoil. The expansion is not located on an unstable geologic unit or soil. A slope stability evaluation, including onsite field review of the existing stockpiles, was conducted by Lindberg Geologic Consulting (LGC), a California licensed Engineering Geologist. LGC concluded that the site is stable under the operating parameters presented. The project will not cause the area to become unstable and will not result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse. The expansion project will not be located on expansive soil. No new wastewater disposal systems are planned.

VII. GREENHOUSE GAS EMISSIONS



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

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

Greenhouse Gas Emissions Diesel-powered, heavy equipment will be used to clear existing vegetation from the 39-acre expansion area. Clearing operations will take place over a relatively short time period, and no protracted increase over nominal (baseline) use of equipment or fuel consumption will occur. Best Management Practices (BMPs) will limit emissions generated by equipment use to the extent practicable. No unnecessary idling will occur, and equipment will be in good working condition and meet applicable emissions standards. No direct or indirect significant environmental impact will occur as the result of the proposed expansion activities.

The clearing of vegetation from the expansion area will reduce the amount of atmospheric carbon dioxide taken up by the removed plants, but the decomposition of organic material and concomitant release of carbon dioxide currently occurring onsite will be reduced. Changes in natural carbon cycles within the 39-acre expansion site will be insignificant because of the small scale and temporary nature of the change. Once activities associated with the project are complete and the site is reclaimed with native vegetation, normal carbon cycles will resume, generally resulting in the sequestration of atmospheric carbon in vegetation growing onsite and release of carbon dioxide through the decomposition of organic matter.

Conflicts with Existing Plans, Policies or Regulations The project as proposed will not conflict with any known existing plans, policies, or regulations related to the emission of greenhouse gases.

VIII. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport/use/disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

substances, or waste within one-quarter mile of an existing or proposed school?

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and create a significant hazard to the public or the environment?

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

f) For a project in the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working there?

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Discussion

Potential sources for pollution onsite are fuels and oils used for equipment and within the processing plant, and from sedimentation to natural waterways resulting from mining. No fuel will be stored on the 39-acre expansion area. A SWPPP is maintained for the site and is amended as necessary and will include the expansion areas. Sedimentation contribution from the movement of overburden to the expansion area and for overburden storage will be prevented using standard erosion control BMPs. These include covering, seeding, and mulching overburden piles and the use of straw bales and wattles.

No hazardous materials will be used onsite. The proposed project is not located within 0.25 miles of existing or proposed schools, airports, or airstrips, and the project will not interfere with an adopted emergency plan.

The proposed project is located in a forested portion of a rural area that contains substantial fuels for wildland fire; however, the proposed project does not consist of any activities that would introduce potential new sources of fire. No impacts are anticipated due to project activities.

IX. HYDROLOGY AND WATER QUALITY

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?
- j) Inundation by seiche, tsunami, or mudflow?

Discussion

The project site is located near Willow Creek, a large perennial watercourse known to support populations of sensitive anadromous species. According to the Humboldt County Web GIS maps, the project site is located just outside of the 100-foot setback required by Humboldt County Streamside Management code for perennial watercourses.

The project area contains two small watercourses that are located on the eastern and western property boundaries. These flow northward to Willow Creek and are fed by springs, precipitation, and snowmelt. During the survey conducted by Trinity Valley Consulting Engineers, the streams on the eastern and western boundaries were running in the upper reaches, but were dry in the lower reaches. The intermittent flows, steep gradient, and several potential fish-passage barriers make it unlikely that the watercourses would support fish populations. The active mine site has several erosion and stormwater control features including ditches, culverts, berms, and settling basins. The intermittent stream on the eastern boundary of the site will not be disturbed during quarry expansion and will maintain setbacks required by Humboldt County Code.

Potential sources for pollution onsite are fuels and oils used for equipment and within the processing plant, and from sedimentation to natural waterways resulting from mining. No fuel will be stored on the 39-acre expansion area. A SWPPP is maintained for the site and is amended as necessary and will include the expansion areas. Sedimentation contribution from the movement of overburden to the expansion area and for overburden storage will be prevented using standard erosion control BMPs. These include covering, seeding, and mulching overburden piles and the use of straw bales and wattles.

The quarry site is made up of mostly fractured and weather rock; therefore, the site is pervious and a majority of stormwater infiltrates. Concentrated flows are observed only during heavy rain events. These flows are contained and slowed by berms on the outboard side of roads and benches and ultimately directed into settling basins prior to discharge from one of the site's two discharge points. In most cases, stormwater is contained and there is no discharge. Discharge from these points is in accordance with National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Industrial Activities No. CAS000001 (Order No. 2014-0057-DWQ) or IGP.

The predominant source of groundwater recharge of the mine area is percolation through the soil and weathered bedrock into the subsurface. No data is available in regards to groundwater depth.

The project site does not exist within the 100-year floodplain. No structures, housing, or people will be at risk of being affected by flooding or inundation by seiche, tsunami, or mudflows.

A sediment control system is in place and functioning in relation to existing operations. No impact to water quality will result from the inclusion of the expansion area. The site is in compliance with the requirements of the IGP.

Mitigation Measure H-1. No fuel will be stored on the 39-acre expansion area. A SWPPP shall be maintained for the site and amended as necessary and will include the expansion areas. Sedimentation contribution from the movement of overburden to the expansion area and for overburden storage will be prevented using standard erosion control BMPs. These include covering, seeding, and mulching overburden piles and the use of straw bales and wattles.

X. LAND USE AND PLANNING

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

The Humboldt County General Plan has classified the project area, including the active mine site and the area slated for site expansion, as *Timberland* (T) and zoned *Timber Production Zone* (TPZ). Zoning for the project area is shown on Figure 4. Additional surrounding areas are zoned as *Timber Production Zone*, or *Unclassified*. The primary purpose of Timberlands is “to actively protect and conserve timberlands for long-term economic utilization and to actively enhance and increase county timber production capabilities.” The TPZ zoning allows for mining use. The Humboldt County General Plan land use designations are shown on Figure 4.

Lands immediately adjacent to the project area are classified by the Humboldt County Zoning Ordinance as *Timber Production Zone*, and *Unclassified*. Surrounding lands are zoned as *Timber Production Zone*, *Unclassified* and *Agriculture Exclusive*. No community will be divided by the

expansion activities, and no habitat conservation plan or natural community conservation plan exists for the expansion area.

XI. MINERAL RESOURCES

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

The expansion area seeks to utilize the mineral resources of this quarry for highway improvements. The project site is not designated in the General Plan as a mineral resource.

XII. NOISE

Would the project result in:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

Discussion

Noise impacts associated with current mining activities were covered under CUP-14-013X. The noise mitigation for that approval is included here. These impacts will not change with the addition of the 39-acre expansion area. The processing plant operates Monday through Saturday, 6:00 a.m. to 6:00 p.m. Drilling and blasting operations occur Monday through Saturday, 8:00 a.m. to 5:00 p.m. There are no time limits on hauling. Noise levels from operations will be mitigated by utilizing boulder blasting in lieu of other explosives. Aggregate processing will be intermittent and shielded by stockpiling of aggregates to reduce noise levels. Mining operations will conform to Section 391-10 of Humboldt County Code.

The use of the 39-acre expansion area is not anticipated to increase existing noise levels. The project is not located within the vicinity of an airport or airstrip.

Mitigation Measure N-1. Noise: Operations shall be conducted in conformance with the following provisions to mitigate noise impacts: a) noise levels from operations shall be mitigated by utilizing boulder blasting in lieu of other explosive techniques; and b) aggregate processing shall be intermittent and shall be conducted in accordance with the hours and days of operations specified in the Plan of Operations; also aggregate processing shall be shielded by stock piling of aggregates to reduce noise levels.

XIII. POPULATION AND HOUSING

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Discussion

The proposed project is located in a rural area of Humboldt County. It will not generate commercial activities such that are enough to induce substantial growth in the project area, and does not involve the displacement of people or housing. The proposed project will have no impacts to population and housing.

XIV. PUBLIC SERVICES

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

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Public services provided to the project area include fire protection by CalFire and law enforcement by the Humboldt County Sheriff's Department. The proposed project will not result in new demand for government facilities or services. No impacts will occur to public services as a result of the proposed project.

XV. RECREATION

Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
--------------------------------	---------------------------------------	------------------------------	-----------

Incorporation

- | | | | | |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion

The addition of the 39-acre expansion will have no impact on recreation. The proposed expansion will result in the continued mineral extraction use of the project site. No new demand will be generated for the use of the existing area parks. The proposed project does not include recreation facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. No impacts to recreation will occur as a result of the proposed project.

XVI. TRANSPORTATION/TRAFFIC

Would the project:

- | | Potentially Significant Impact | Less Than Significant with Mitigation Incorporation | Less Than Significant Impact | No Impact |
|---|--------------------------------|---|-------------------------------------|-------------------------------------|
| a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Result in a change in air traffic patterns, including an increase in traffic levels or a change in location that results in substantial safety risks? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

equipment)?

- | | | | | |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| e) Result in inadequate emergency access? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Result in inadequate parking capacity? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion

Materials are transported from the project site by a private road entering onto State Highway 299. During periods of production, approximately five truck trips per day leave the property and use the highway. This level of traffic activity is minor and similar to that for other resource-related uses in the area.

The proponent has operated since 1990 based on the originally approved average of five trucks per day over the course of the operating season. The operator has included revisions to the document to change from five to ten average truck trips per day. According to the Caltrans *Guide for the Preparation of Traffic Impact Studies* (Caltrans 2002), the following criterion is a starting point in determining when a traffic impact study (TIS) is needed:

When a project:

1. Generates over 100 peak hour trips assigned to a State Highway Facility.
2. Generates 50 to 100 peak hour trips assigned to a State highway facility-and affected State highway facilities are experiencing noticeable delay; approaching unstable traffic flow conditions (LOS "C" or "D").
3. Generates 1 to 49 peak hour trips assigned to a State Highway facility-the following are examples that may require a full TIS or some lesser analysis:
 - a. Affected State highway facilities experiencing significant delay; unstable or forced traffic flow conditions (LOS "E" or "F").
 - b. The potential risk for a traffic incident is significantly increased (i.e. congestion-related collisions, non-standard sight distance considerations, increasing traffic conflict points, etc.).
 - c. Change in local circulation networks that impact a State highway facility (i.e. direct access to State highway facility, a non-standard highway geometric design, etc.).

The most recent traffic-volume information for Route 299 was obtained from the closest Caltrans count location to the project site; west of the Junction of Route 299 and State Route 96, approximately 3 miles west of the project site. The average annual daily traffic (AADT) on Route 299 in the project vicinity is 3,500 vehicles. Truck traffic on Route 299 comprises approximately 16 percent of total traffic or 567 AADT (Caltrans 2014a). Route 299 currently operates at LOS "C" in the project vicinity (Caltrans, 2010).

The quarry expansion would add an average of five trucks to Route 299 per day. An additional five truck trips per day would result in a less than 0.14 percent increase in total traffic and a 0.88 percent increase in truck traffic. Since Route 299 currently operates at LOS "C", an additional five truck trips does not meet the criterion to warrant a traffic impact study. In addition, the project does not increase the risk for traffic incident or change the local circulation network. Based upon the Caltrans *Guide for the Preparation of Traffic Impact Studies*, a traffic impact study is not warranted for the project and the impact is determined to be less than significant.

The receipt of offsite construction material was included in the proposed Reclamation Plan Amendment to clarify the permit relative to the receipt of offsite material, as it was not prohibited or discussed under the previous Use Permit conditions. As stated in the Reclamation Plan Amendment, offsite material will be received. The material will be sorted and topsoil material stockpiled for use in reclamation onsite. Rock useable onsite will be sorted; non-useable material will be stockpiled onsite for use in reclamation or transported offsite for disposal.

The County has noted the receipt of offsite materials would need to be specified in the revised permit. The proponent recommends language similar to below be included as a condition of approval:

"Rock, gravel, sand, and slide material may be imported to the site and used. Concrete and asphalt may be reprocessed onsite provided the volume of production and traffic is limited as per conditions above."

Emergency access will not be impaired by use of the expansion area, and the rural nature of the site prevents issues associated with parking capacity. No applicable transportation policies, plans, or programs will be affected by the project.

XVII. UTILITIES AND SERVICE SYSTEMS

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

could cause significant environmental effects?

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

e) Result in a determination by the wastewater treatment provider, 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?

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

g) Comply with federal, state, and local statutes and regulations related to solid waste?

Discussion

The addition of the 39-acre expansion area will not result in any additional demands over what was evaluated under the original Use Permit. The project will not generate significant solid waste nor conflict with government regulations concerning the generation, handling, or disposal of solid waste. New wastewater will not be generated as a result of the project. Impacts to utilities and service systems as a result of the proposed project are considered less than significant.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

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

Discussion

The expansion project will have minimal, if any, effect on special-status plants and wildlife and their habitats. No historical sites exist in the expansion area.

Figures



FIGURE 1
 GENERAL SITE LOCATION
 R. BROWN AND SONS QUARRY
 HUMBOLDT COUNTY, CALIFORNIA



 Approximate Parcel Boundary



0 200 400 800 Feet



SOURCE: MICROSOFT 2010

FIGURE 2
PARCEL LOCATION
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA



- Approximate Parcel Boundary
- AG-B-5(5) - Agriculture Exclusive Special Building Site 5(5)
- AG-B-7(1) - Agriculture Exclusive Special Building Site 7(1)
- AE-B-5(40) - Agriculture Exclusive Special Building Site 5(40)
- AE - Agriculture Exclusive
- TPZ - Timber Production Zone
- U - Unclassified



SOURCE: MICROSOFT 2010



FIGURE 3
HUMBOLDT COUNTY
ZONING DESIGNATIONS
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA





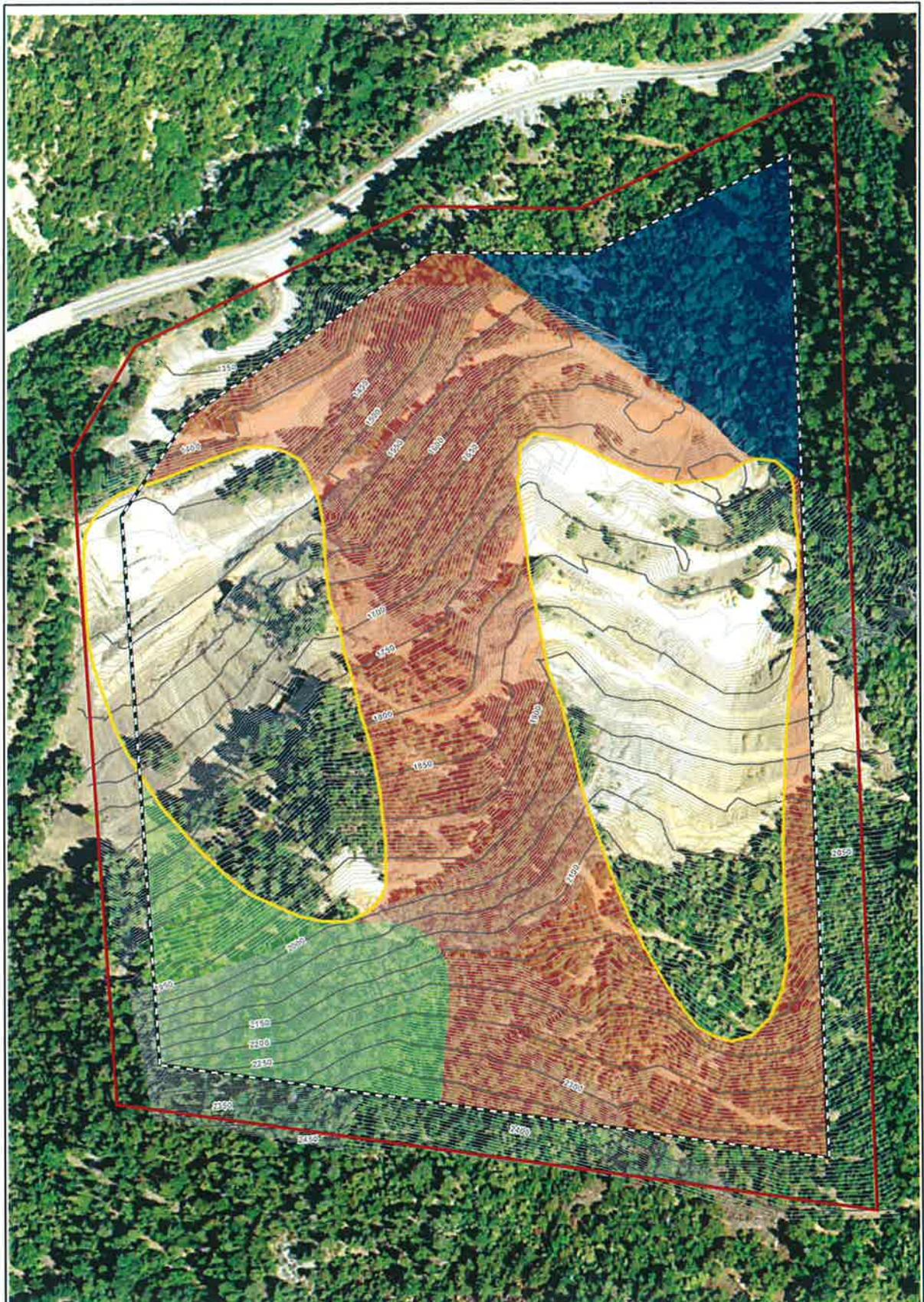
- Approximate Parcel Boundary
- AL - Agricultural Land
- AR - Agricultural Rural
- AR20-5 - Agricultural Rural 20-5 Acres per Dwelling
- AS - Agricultural Suburban
- HWY 299
- P - Public Lands
- T - Timberland



SOURCE: MICROSOFT 2010



FIGURE 4
HUMBOLDT COUNTY
LAND USE ELEMENT
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA



- Major Contour Lines
- Existing Contour Lines
- Current Permitted Area
- Target Buffer Area
- Proposed Expansion Area
- Reserved Area - No Activity
- Single Rock Removal Only
- Approximate Parcel Boundary



SOURCE: NAIP 2014 AERIAL PHOTOGRAPH



FIGURE 5
 PROPOSED EXPANSION AREA
 R. BROWN AND SONS QUARRY
 HUMBOLDT COUNTY, CALIFORNIA



DATE	BY	OF
12/14/12	JTB	JTB

FIGURE 6
CURRENT TOPOGRAPHY
R. BROWN QUARRY
HUMBOLDT COUNTY, CALIFORNIA

NO.	DATE	REVISION
1		
2		
3		
4		
5		

VESTRA
 5300 AVIATION DRIVE - REDDING, CA 96002
 WWW.VESTRA.COM
 (530) 223-2585
 FAX (530) 223-1145

VERIFICATION
 THIS IS ONE OF THE ORIGINAL DRAWINGS
 0
 IF NOT ONE OF THESE, THIS IS A COPY, NOT AN ORIGINAL
 (SCALE ACCURACY)



 Approximate Parcel Boundary

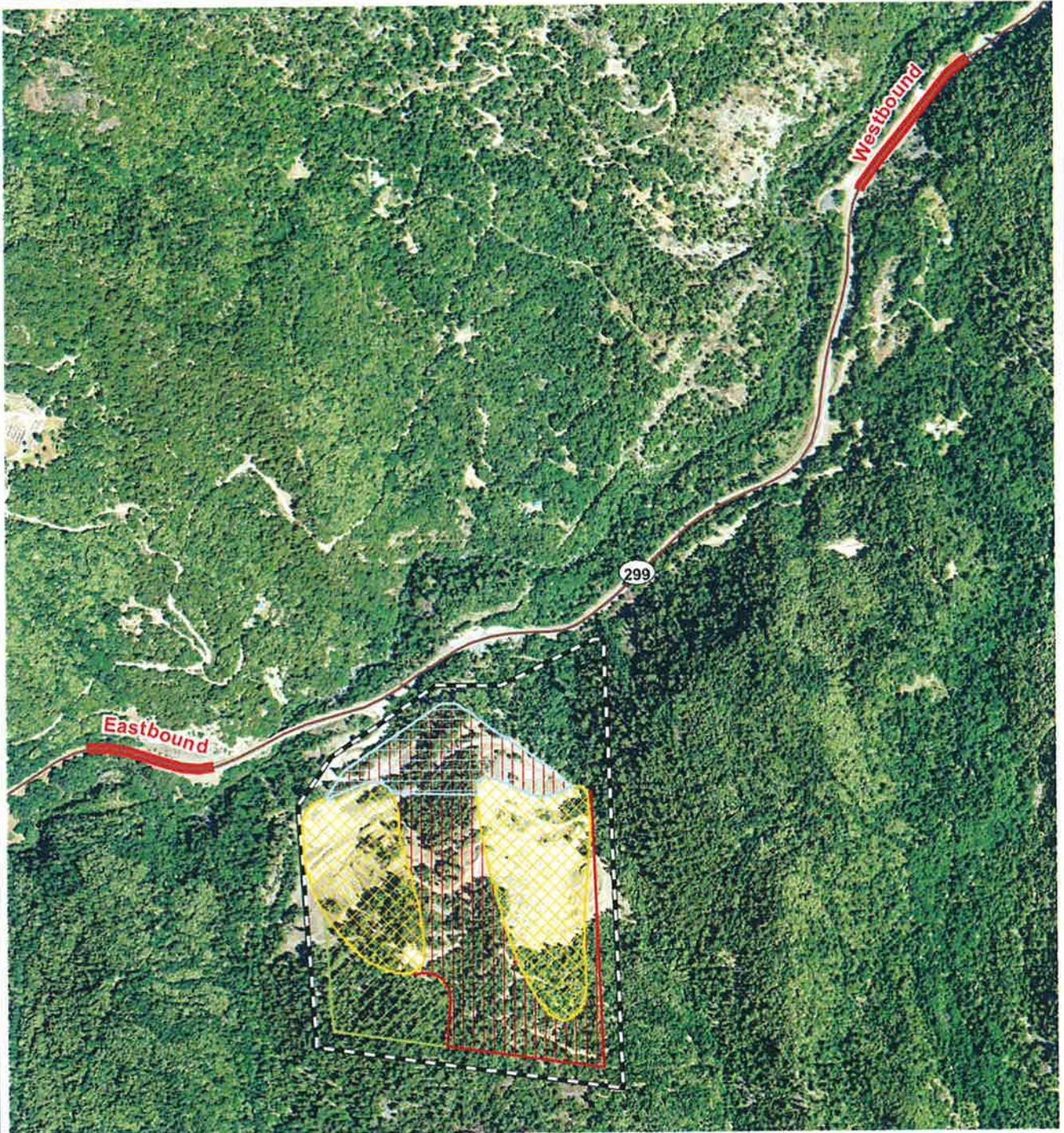


 Feet
0 150 300 600



SOURCE: MICROSOFT 2010

FIGURE 9
TOPSOIL STOCKPILE
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA

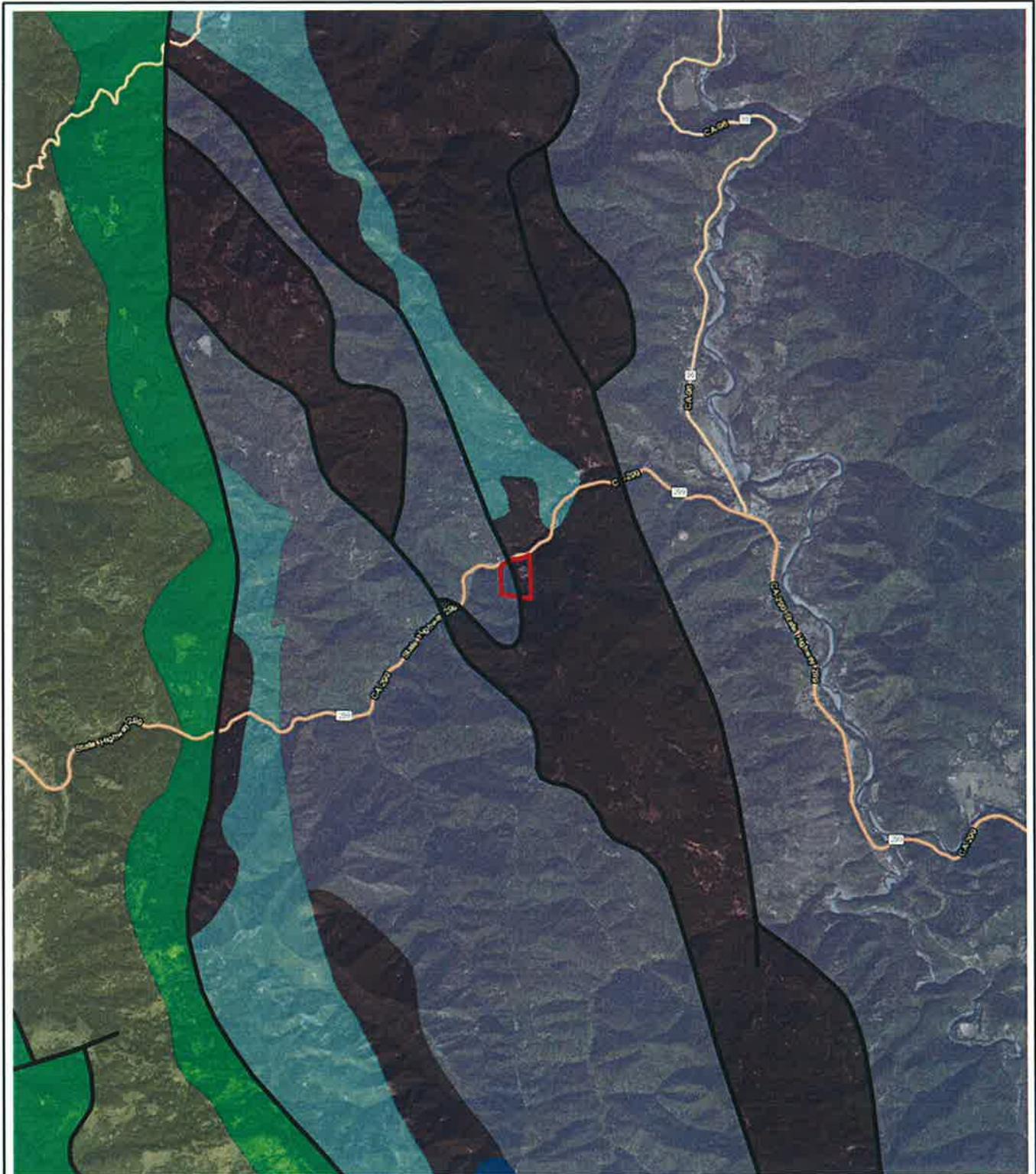


- Highway 299
- Area Along Highway 299 Where Site is Currently Visible
- Proposed Expansion Area (No Change in Topography)
- Current Permitted Area
- Proposed Expansion Area
- Single Rock Removal Area (No Change in Topography)
- Approximate Parcel Boundary



SOURCE: USDA NAIP 2014 AERIAL PHOTOGRAPH

FIGURE 10
 AREAS ALONG HIGHWAY 299
 WHERE SITE IS CURRENTLY VISIBLE
 R. BROWN AND SONS QUARRY
 HUMBOLDT COUNTY, CALIFORNIA

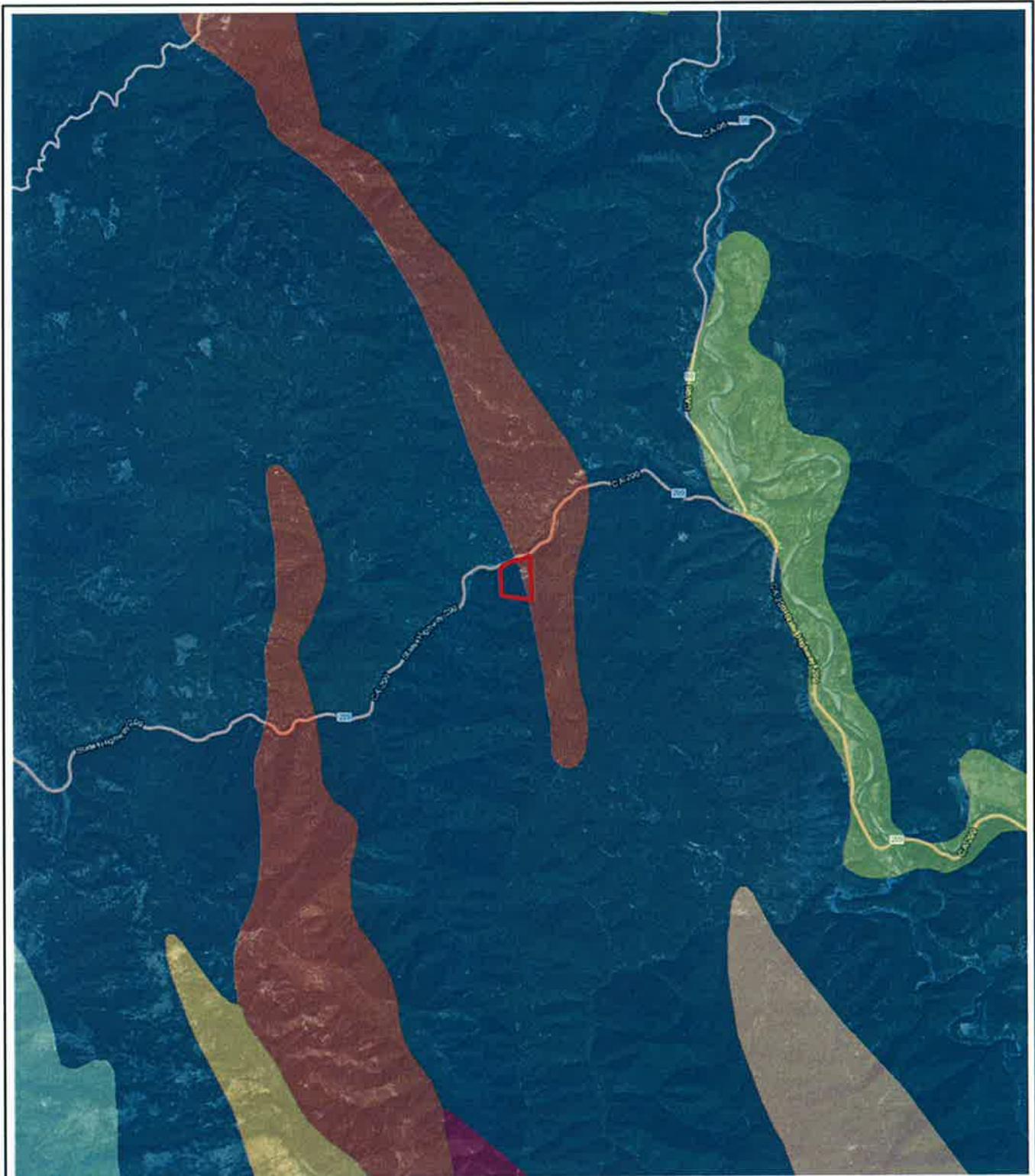


- Fault
- Approximate Parcel Boundary
- Devonian to Jurassic, argillite, chert
- Early Cretaceous, blueschist, metasedimentary rock
- Jurassic to Cretaceous, sandstone, mudstone
- Jurassic to early Cretaceous, diorite, quartz diorite
- Late Proterozoic(?) to Early Jurassic, peridotite, serpentinite
- Triassic to Late Jurassic, slate, graywacke



FIGURE 11
SURFACE GEOLOGY
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA

SOURCE: MICROSOFT 2010



- | | |
|--|--|
| Approximate Parcel Boundary | Neuns-Madonna-Kindig-Josephine-Hugo-Casabonne Association |
| Weitchpec-Rock outcrop-Ishi Pishi-Dunsmuir Association | Woodseye-Nanny family-Bins Association |
| Xerofluvents-Riverwash Association | Wapal family-Rock outcrop-Chawanakee-Chaix Association |
| Walnett-Oragan-Jayel Association | Trailhead-Lacks-Devils creek-Coppercreek-Ahpah Association |



FIGURE 12-
DOMINANT SOIL ASSOCIATIONS
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA

SOURCE: MICROSOFT 2010; NRCS 2002



- Major Contour Lines
- Existing Contour Lines
- Approximate Parcel Boundary



SOURCE: MICROSOFT 2010

FIGURE 13
 CURRENT TOPOGRAPHY
 R. BROWN AND SONS QUARRY
 HUMBOLDT COUNTY, CALIFORNIA

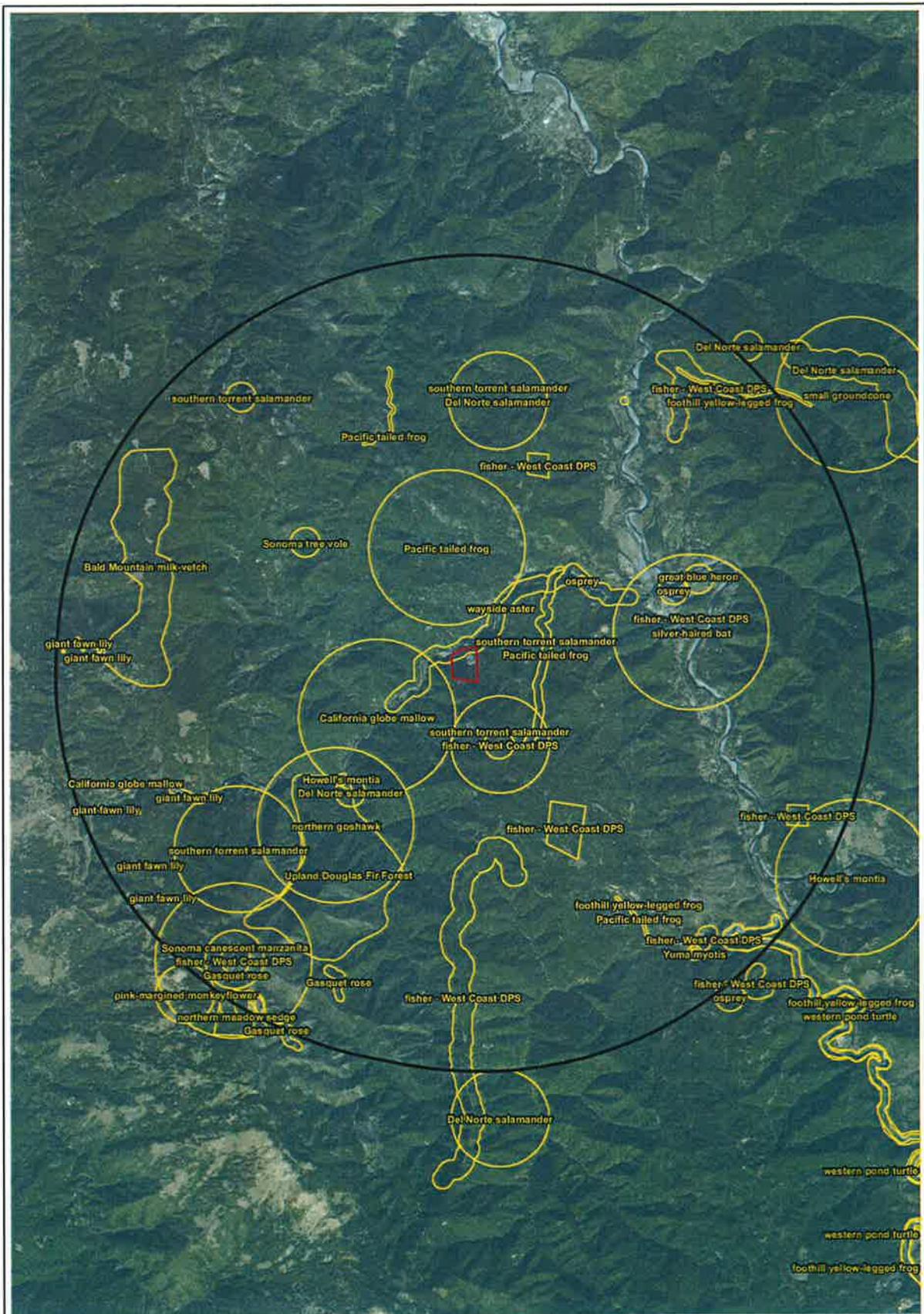


- Spring
- Perennial Stream
- Ephemeral Drainage
- Approximate Parcel Boundary

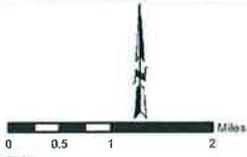


SOURCE: MICROSOFT 2010

FIGURE 14
 SURFACE HYDROLOGY
 R. BROWN AND SONS QUARRY
 HUMBOLDT COUNTY, CALIFORNIA



- Approximate Parcel Boundary
- 5-Mile Buffer Around Parcel Boundary
- CNDDB Occurrence



SOURCE: MICROSOFT 2010; CDFW CNDDB FEBRUARY 2015 EDITION

FIGURE 15
CALIFORNIA NATURAL DIVERSITY
DATABASE OCCURRENCES
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA

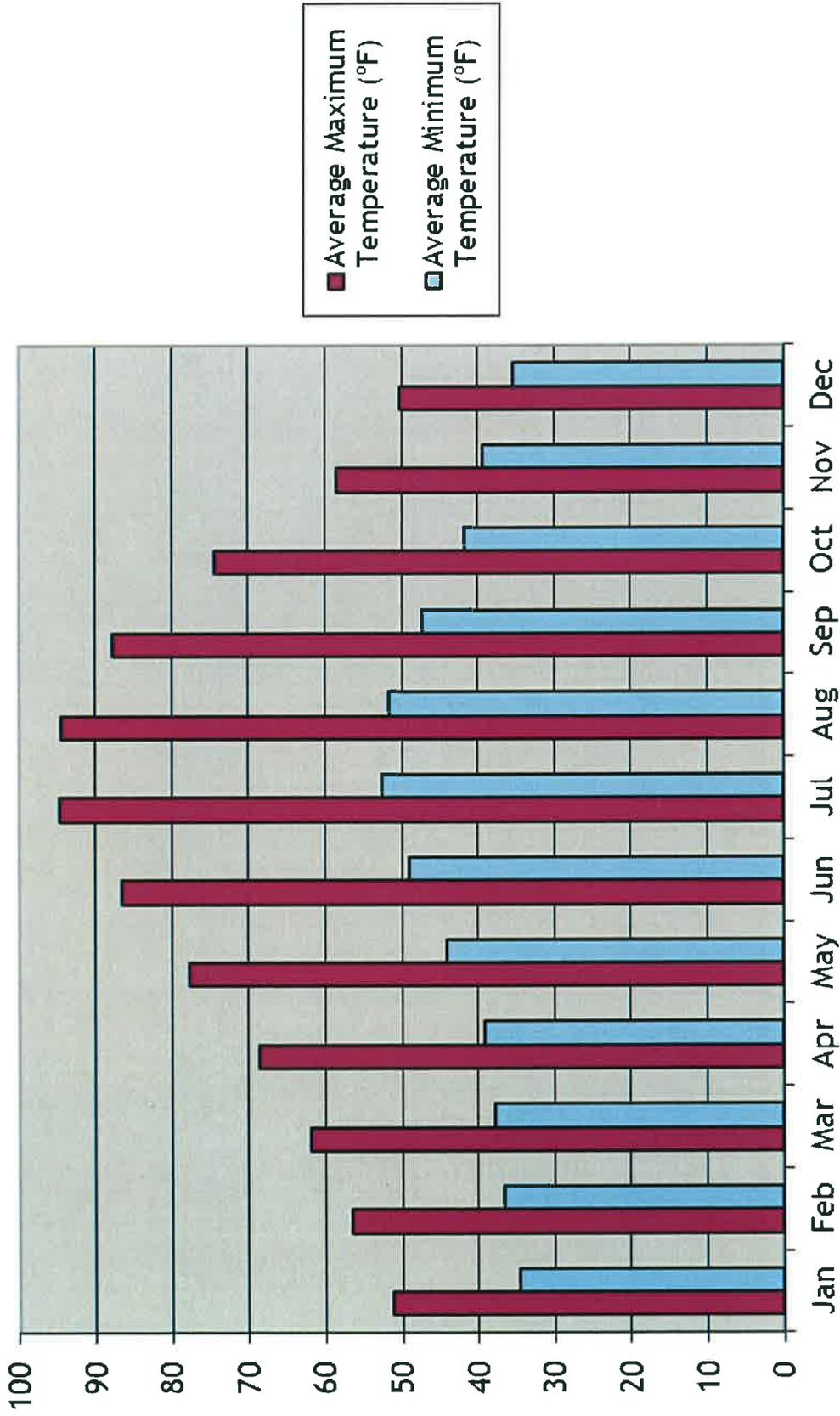
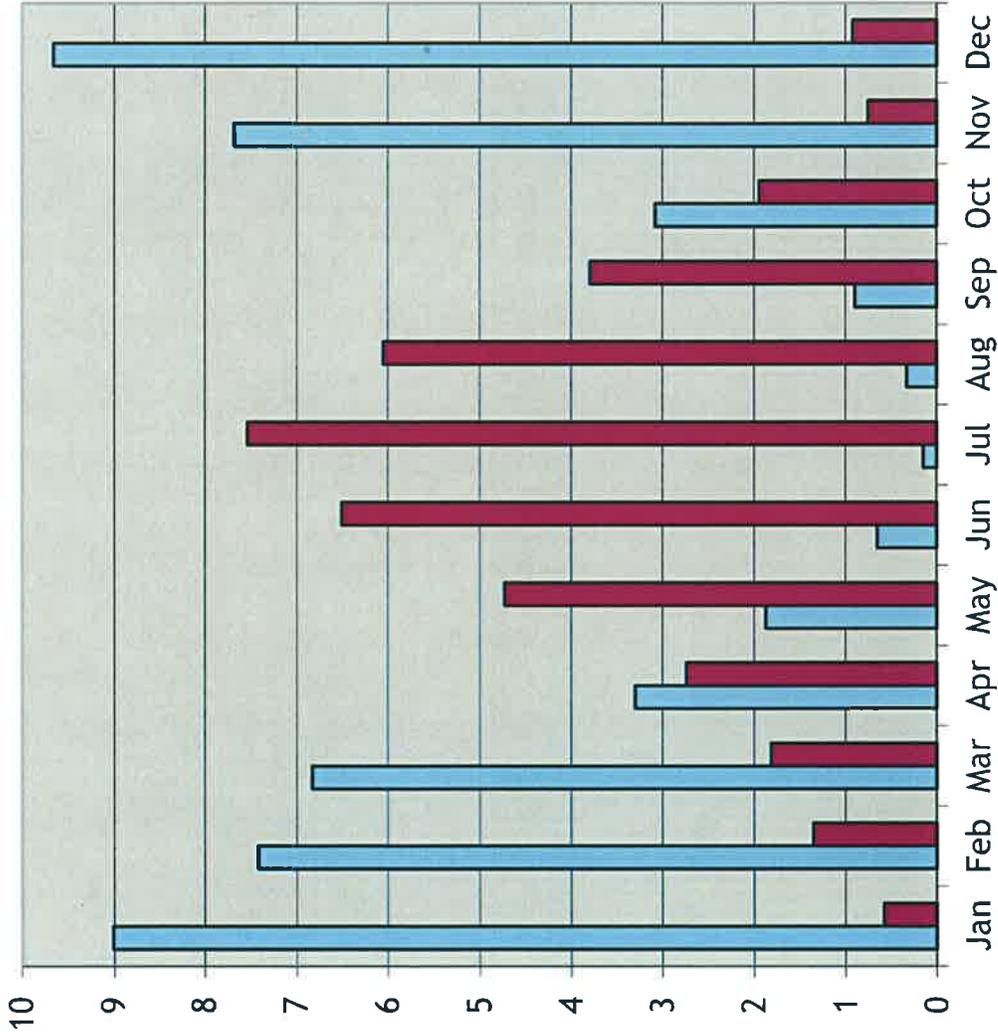


FIGURE 16
 AVERAGE DAILY MINIMUM AND
 MAXIMUM TEMPERATURES
 R. BROWN AND SONS QUARRY
 HUMBOLDT COUNTY, CALIFORNIA



SOURCE: WILLOW CREEK 1 NW, CALIFORNIA, CLIMATE STATION - 1968 - 2015



■ Average Total Precipitation (inches)
■ Monthly Average Pan Evaporation (inches)

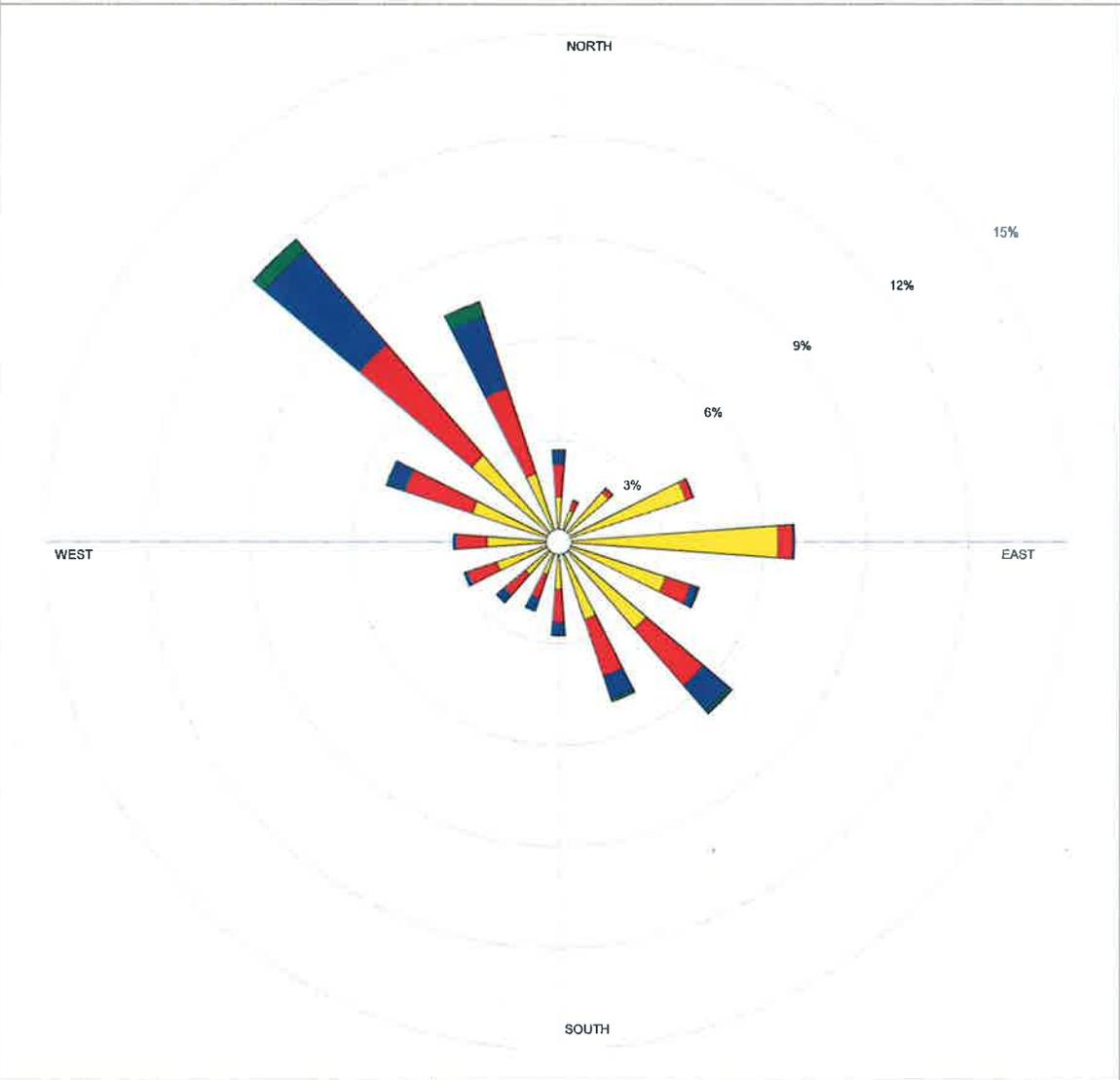
FIGURE 17
 AVERAGE MONTHLY PRECIPITATION
 AND EVAPORATION
 R. BROWN AND SONS QUARRY
 HUMBOLDT COUNTY, CALIFORNIA



SOURCE: WILLOW CREEK 1 NW, CALIFORNIA, CLIMATE STATION (PRECIPITATION) - 1968 TO 2015
 WILLOW CREEK 1 NW, CALIFORNIA, CLIMATE STATION (EVAPORATION) - 1968 TO 2005

WIND ROSE PLOT

Station #24283 - ARCATA/ARPT, CA



<p>Wind Speed (m/s)</p>	MODELER DISPLAY Wind Speed	DATE 5/16/2003	COMPANY NAME
	AVG. WIND SPEED 3.77 m/s	UNIT m/s	COMMENTS
	ORIENTATION Direction (blowing from)	CALM WINDS 28.82%	
	PLOT YEAR-DATE-TIME 1984 1985 1987 1989 Jan 1 - Dec 31 Midnight - 11 PM	PROJECT/PLOT NO. 1984-1985, 1987, 1989	

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com



SOURCE: WESTERN REGIONAL CLIMATE CENTER
ARCATA STATION, PERIOD OF RECORD 1984-1989

FIGURE 18
WIND ROSE
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA

VIEWSHED TECHNICAL SUMMARY

**R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA**



Prepared for

R. Brown and Sons Quarry

Prepared by



VESTRA Resources Inc.
5300 Aviation Drive
Redding, California 96002

SEPTEMBER 2016

VIEWSHED TECHNICAL SUMMARY

**R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA**

Prepared for

R. Brown and Sons Quarry

Prepared by

**VESTRA Resources Inc.
5300 Aviation Drive
Redding, California 96002**

71410

SEPTEMBER 2016

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6	OBS-2 Viewshed
7	OBS-3 Viewshed
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9	OBS-5 Viewshed
10	OBS-6 Viewshed

1.0 INTRODUCTION

1.1 Background

The project site is located adjacent to Highway 299 and is situated 400 to 1,000 feet from the highway. The existing visual character of the site vicinity is that of forested/brush lands with moderate to steep topography. The current mining operation, which was initially approved in 1990, is composed of two operating quarry areas: Area 1 to the west and Area 2 to the east. The proposed expansion will connect the two currently operating quarry areas.

Due to the steep and forested nature of the area, the majority of the project site is generally shielded from view from Highway 299. The quarry is only visible to passing traffic on Highway 299 for a brief period of time in each direction. The western portion of the quarry site is currently visible from cars traveling east on Highway 299 for a segment of Highway 299 west of the project site approximately 0.2 miles long or approximately 1,000 feet. The eastern quarry area is currently visible to westbound traffic on Highway 299 east of the project site for a distance of approximately 0.2 miles, again approximately 1,000 feet. The areas where the site is currently visible are included on Figure 1. The current quarrying operations underwent CEQA review and were approved by the County in 1990.

This visual analysis responds to comments provided during CEQA review of the proposed expansion and was conducted to present the change in visual quality associated with the proposed expansion areas.

1.2 Project Area

The current permitted disturbed quarry encompasses approximately 25 acres. The proposed 39-acre expansion includes:

- 100-foot buffers around the property boundaries that will not be quarried;
- A 6.1-acre area reserved for single rock removal where topography will not change and vegetation removal will be minimal;
- An approximately 8-acre area that is currently developed with road access to the site that is being added to cover stockpiling along the current access road. In this area, limited vegetation will be removed and topography will not change.

This limits the actual additional quarry area proposed where visual impacts are likely to a 19-acre block between the two previously permitted quarry areas where vegetation and material removal are planned and where topography will be modified.

The locations of the areas described above are shown on Figure 2.

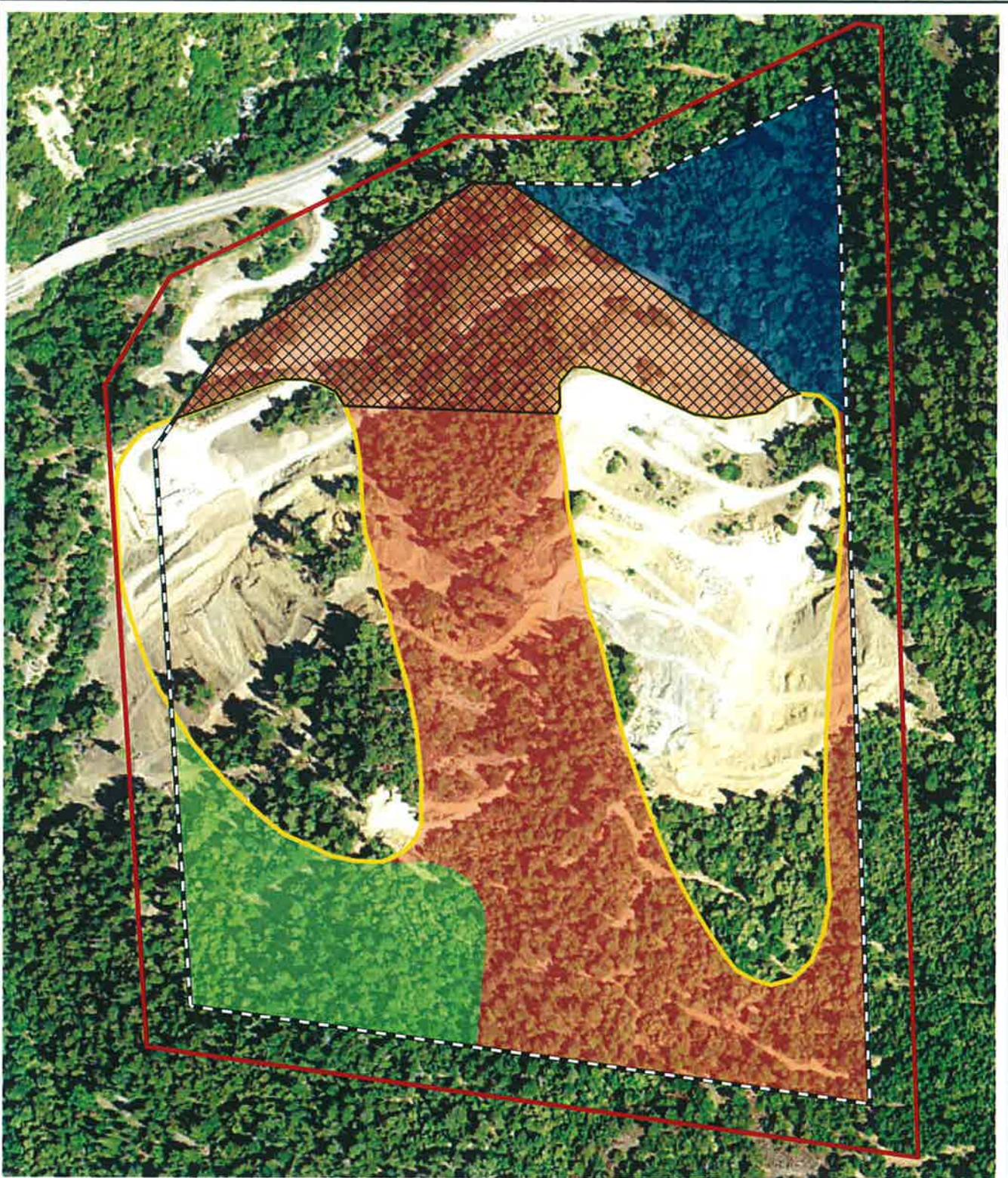


- Highway 299
- Area Along Highway 299 Where Site is Currently Visible
- Proposed Expansion Area (No Change in Topography)
- Current Permitted Area
- Approximate Parcel Boundary
- Single Rock Removal Area (No Change in Topography)
- Proposed Expansion Area



SOURCE: USDA NAIP 2014 AERIAL PHOTOGRAPH

FIGURE 1
 AREAS ALONG HIGHWAY 299
 WHERE SITE IS CURRENTLY VISIBLE
 R. BROWN AND SONS QUARRY
 HUMBOLDT COUNTY, CALIFORNIA



- | | |
|---|---|
|  Approximate Parcel Boundary |  Proposed Expansion Area (No Change in Topography) |
|  Current Permitted Area |  Proposed Expansion Area |
|  Target Buffer Area |  Reserved Area - No Activity |
| |  Single Rock Removal Only |



SOURCE: NAIP 2014 AERIAL PHOTOGRAPH



FIGURE 2
PROPOSED EXPANSION AREA
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA

1.3 Current Condition

Photographs of the quarry view from Highway 299 were taken on August 30, 2016. The current visual condition is that of an operating hard rock quarry. In the vicinity of the current and previously approved quarry, vegetation has been removed to allow access to the rock material. This lack of vegetation is part of the current view. Additional vegetation removal would be allowed under the current permit as the quarry has not fully occupied the originally permitted quarry areas.

The current most obvious view of the project site from the west and eastern directions are shown on the following photographs. The view is visible only from approximately 1,000 feet of Highway 299 in either direction. Traveling at a rate of speed of 50 miles per hour (mph), the site is visible for approximately 0.23 minutes or a total of 14 seconds in either direction.

Worst Case – West Bound



Worst Case – East Bound

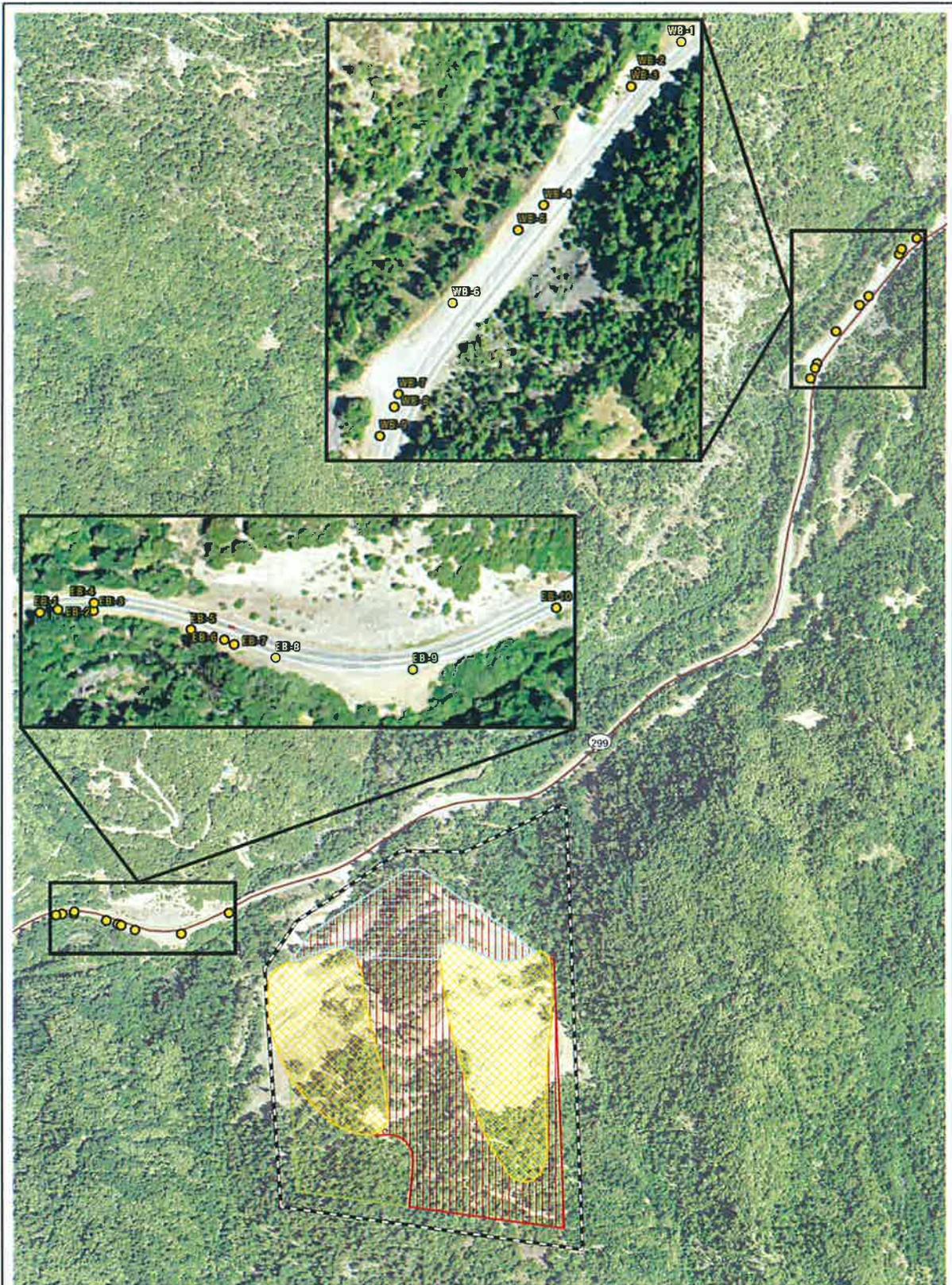


In addition to these two “worst-case” view scenarios, photographs were taken at periodic intervals along Highway 299 in both directions to present the current visual condition at the site. The photo series is summarized below. Photo-location points are shown on Figure 3.



Photo WB-1

First view of quarry visible from Highway 299 heading westbound. Eastern quarry area barely visible around the corner.



- Site Photograph Location
- Highway 299
- Proposed Expansion Area (No Change in Topography)
- Current Permitted Area
- Proposed Expansion Area
- Single Rock Removal Area (No Change in Topography)
- Approximate Parcel Boundary



VESTRA

SOURCE: USDA NAIP 2014 AERIAL PHOTOGRAPH

FIGURE 3
 SITE PHOTOGRAPH LOCATIONS
 R. BROWN AND SONS QUARRY
 HUMBOLDT COUNTY, CALIFORNIA



Photo WB-2

View of eastern quarry area from westbound traffic on Highway 299.



Photo WB-3

More of the eastern side of the quarry becomes visible when rounding the corner.



Photo WB-4

View of quarry from Highway 299 heading west, near the edge of large gravel pullout.



Photo WB-5

Westbound view of eastern side of quarry continued.



Photo WB-6

Westbound view of eastern side of quarry continued.



Photo WB-7

Westbound view of eastern side of quarry continued.



Photo WB-8

Zoomed-in view of quarry from large gravel pullout.



Photo WB-9

Quarry no longer visible from Highway 299 near the western end of gravel pullout due to trees along the roadway.



Photo EB-1

Western side of quarry becomes visible to eastbound traffic on Highway 299 when rounding the corner.



Photo EB-2

Eastbound view of western side of quarry.



Photo EB-3

More of the western side of the quarry becomes visible.



Photo EB-4

Zoomed-in view of western quarry area.



Photo EB-5

Eastbound view of western side of quarry continued.



Photo EB-6

Eastbound view of western side of quarry continued.



Photo EB-7

Eastbound view of western side of quarry continued.



Photo EB-8

View of the western side of the quarry starts to become obstructed by trees near the roadside.



Photo EB-9

View of quarry is mostly obstructed by trees.



Photo EB-10

Quarry is no longer visible by eastbound traffic once bridge is reached.

2.0 VISUAL SIMULATION ANALYSIS

2.1 Process

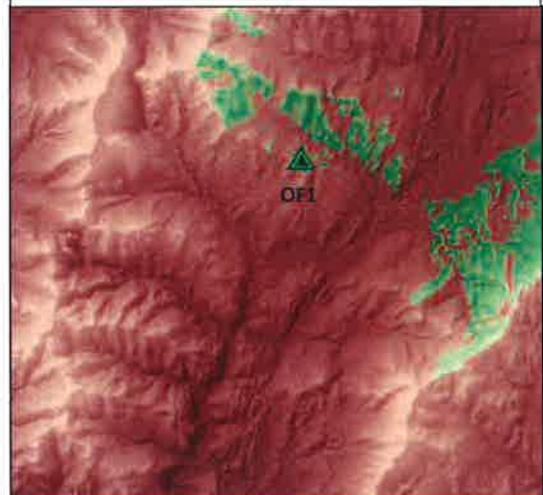
The shape of a terrain surface affects which portions of the surface area can be seen from any given point. To assess the visual components of this project, Geographic Information Systems (GIS) was used to evaluate visibility across the project area from various locations. GIS is a collection of computer hardware, software, and geographic data for capturing, managing, analyzing, and displaying all forms of geographically referenced information. ArcGIS is a Geographic Information System package developed by Environmental Systems Research Institute (ESRI).

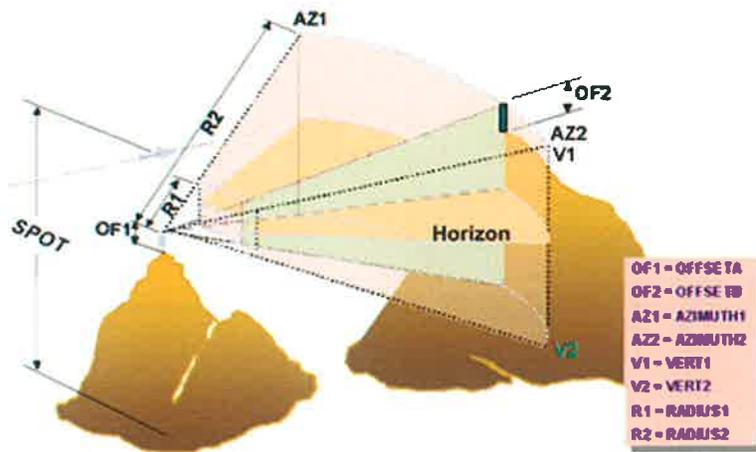
A viewshed identifies the locations in a given area that can be seen from one or more observation points. The elevation data used to perform viewshed analyses are raster-based data. Raster data is data in which a surface is divided into a grid and each cell in the grid contains an elevation value. The resolution of raster data is the distance, in surface units, of the sides of each cell in the grid. An example of this is the elevation data provided by the U.S. Geological Survey (USGS) for use in GIS. These data sets are commonly provided at either a 10-meter or 30-meter resolution. Viewshed analysis provides a value that indicates how many observer points can be seen from each location. If you have only one observer point, each cell from which the observer point can be seen is given a value of one. All cells from which the observer point cannot be seen are given a value of zero. Observer points can be points or linear features.

A viewshed is useful when you want to know how visible objects might be. Not only can you determine which cells can be seen from the observation point, if you have several observation points, you can also determine which observers can see each observed location. Knowing which observer can see which locations can affect decision making.

The image below graphically depicts how a viewshed analysis is performed. The observation point is on the mountaintop to the left (at OF1 in the image). The direction of the viewshed is within the cone looking to the right. You can control how much to offset the observation point from the surface (for example, the height of the tower), and the direction(s) to look in both the horizontal and vertical dimensions.

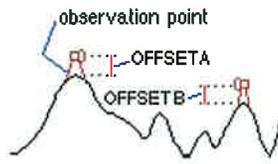
Displaying a hillshade underneath the elevation and the output from a Viewshed Analysis is a useful technique for visualizing the relationship between visibility and terrain.



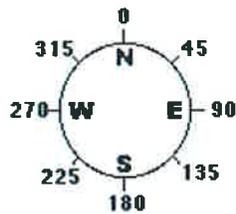


Nine characteristics of the viewshed are controlled as follow:

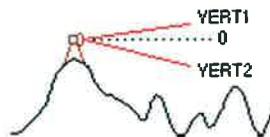
1. The surface elevations for the observation points (Spot)
2. The vertical distance in surface units to be added to the z-value of the observation points (OffsetA)
3. The vertical distance in surface units to add to the z-value of each cell as it is considered for visibility (OffsetB)



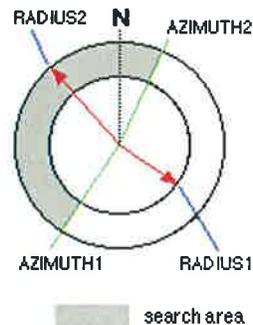
4. The start of the horizontal angle to limit the scan (Azimuth1)
5. The end of the horizontal angle to limit the scan (Azimuth2)



6. The top of the vertical angle to limit the scan (Vert1)
7. The bottom of the vertical angle to limit the scan (Vert2)



8. The inner radius that limits the search distance when identifying areas visible from each observation point (Radius1)
9. The outer radius that limits the search distance when identifying areas visible from each observation point (Radius2)



In order to perform a viewshed analysis, the elevation data should be as detailed as possible. For the R. Brown Quarry project, the elevation data was derived from the USGS 10-meter digital elevation model (DEM) that is interpolated into a grid format.

Interpolation is a method of creating raster data specifically designed for the creation of hydrologically correct DEMs. It is based on the ANUDEM program developed by Michael Hutchinson (1988, 1989). See Hutchinson and Dowling (1991) for an example of a substantial application of ANUDEM and for additional associated references. A brief summary of ANUDEM and some applications are given in Hutchinson (1993). The version of ANUDEM used is 4.6.3.

The interpolation procedure has been designed to take advantage of the types of input data commonly available and the known characteristics of elevation surfaces. This method uses an iterative finite difference interpolation technique. It is optimized to have the computational efficiency of local interpolation methods, such as inverse distance weighted (IDW) interpolation, without losing the surface continuity of global interpolation methods, such as Kriging and Spline. It is essentially a discretized thin plate spline technique (Wahba, 1990), for which the roughness penalty has been modified to allow the fitted DEM to follow abrupt changes in terrain, such as streams and ridges. It is also the only ArcGIS interpolator specifically designed to work intelligently with contour inputs.

Contours are the most common method for storage and presentation of elevation information. Unfortunately, this method is also the most difficult to properly utilize with general interpolation techniques. The disadvantage lies in the undersampling of information between contours, especially in areas of low relief.

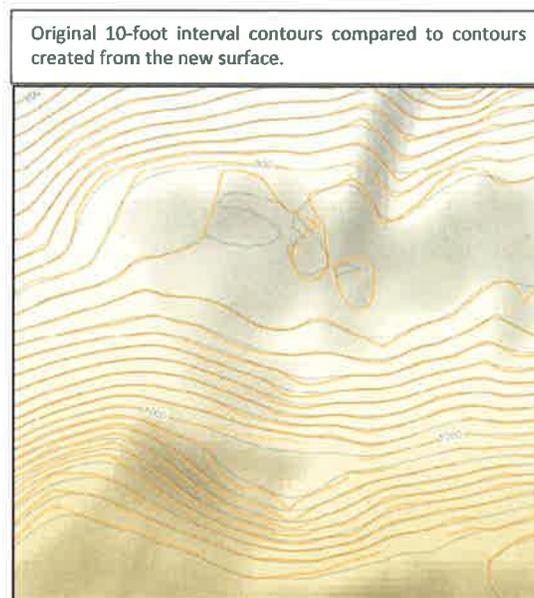
At the beginning of the interpolation process, ArcGIS uses information inherent to the contours to build a generalized drainage model. By identifying areas of local maximum curvature in each contour, the areas of steepest slope are identified and a network of streams and ridges is created (Hutchinson, 1988). This information is used to ensure proper hydrogeomorphic properties of the output DEM and can also be used to verify accuracy of the output DEM.

After the general morphology of the surface has been determined, contour data is also used in the interpolation of elevation values at each cell. When the contour data is used to interpolate elevation information, all contour data is read and generalized. A maximum of 50 data points are read from these contours within each cell. At the final resolution, only one critical point is used for each cell. For this reason, having a contour density with several contours crossing output cells is redundant.

Before using in a viewshed analysis, created surfaces should be evaluated to ensure that the data and parameters supplied to the program result in a realistic representation of the surface. There are many ways to evaluate the quality of an output surface, depending on the type of input available to create the surface.

The most common evaluation is to create contours from the new surface and compare them to the input contour data. It is best to create these new contours at one-half the original contour interval to examine the results between contours. Drawing the original contours and the newly created contours on top of one another can help identify interpolation errors.

In the example shown below, the contours created from the new surface are shown with the original 10-foot interval contour data for comparison (1:1,000 scale).



The comparison shows that the contours do differ in some areas, but the difference in this case is acceptable as the distance between the two sets of contour lines rarely exceeds 5 feet in length.

The product of the interpolation of the field survey contour data was the creation of 10-foot-resolution, hydrologically correct digital elevation model (DEM). It has been shown that there is a minor bias in the interpolation algorithm that causes the raster dataset to have slight variations from the input contours. This variation can result in a slight variation in the results when calculating the profile curvature of the output surface but is otherwise not noticeable, and does not affect the overall intended use in a viewshed analysis.

2.2 Observer Locations

The observer location points used in the viewshed analysis were determined following a site visit by VESTRA staff. During the site visit, the current and proposed mine operation were determined to be visible from two segments along Highway 299. After these segments were identified, six observer locations (three in each segment) along these segments were identified to be used in the viewshed analysis. The hypothetical observation locations are shown on Figure 4.

2.3 Photography

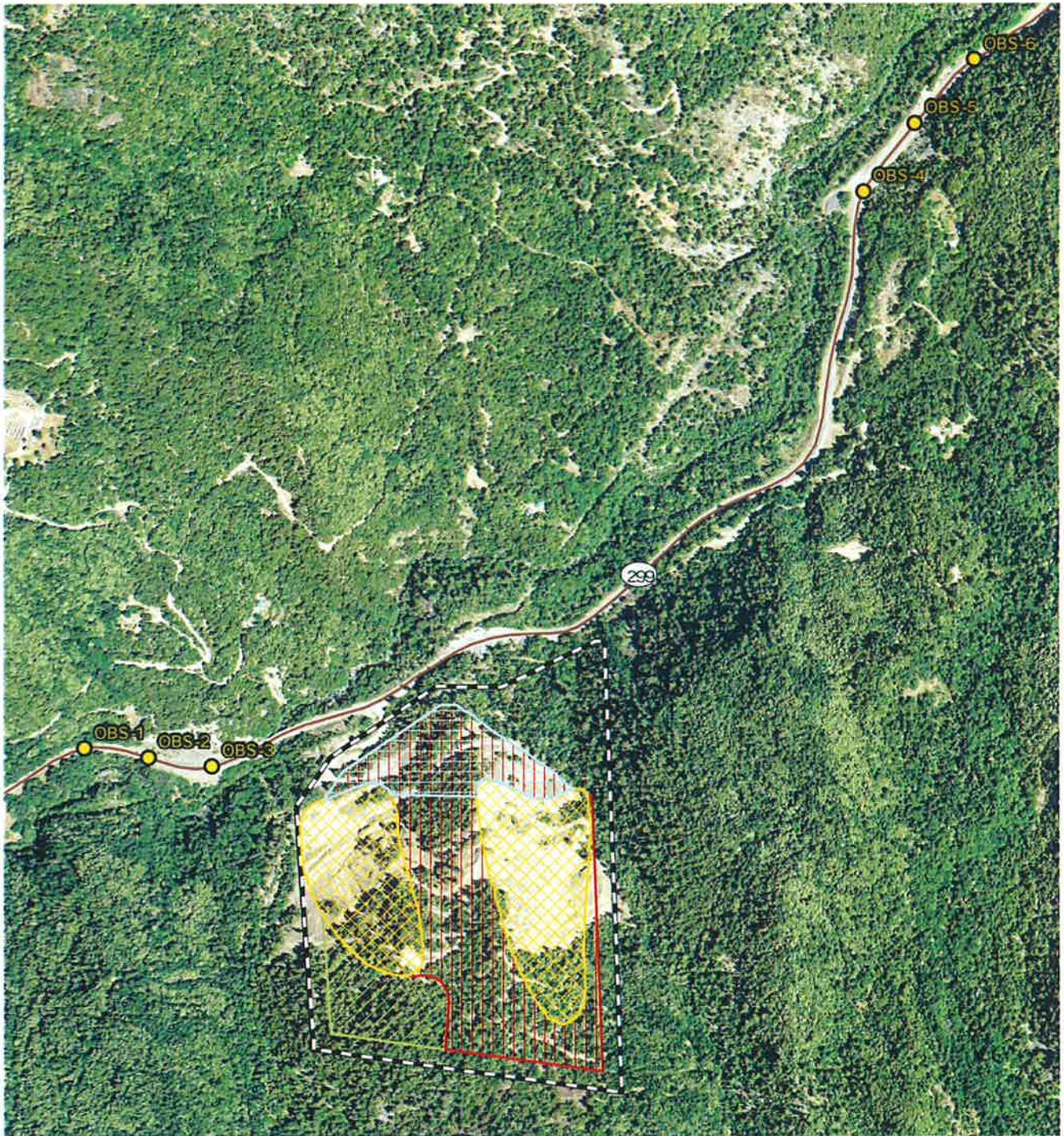
At each of the observer location points, photographs were taken to record visibility, terrain, and vegetation. These photographs were included in the previous section. The individual photo locations shown on Figure 3 correspond to the observation locations shown on Figure 4 as follows:

- OBS-1 Corresponds to EB-1
- OBS-2 Corresponds to EB-6
- OBS-3 Corresponds to EB-9
- OBS-4 Corresponds to WB-7
- OBS-5 Corresponds to WB-4
- OBS-6 Corresponds to WB-1

2.4 General Map Reference Data

A number of GIS data layers were obtained as reference data for the maps and figures created as a result of the viewshed analysis. Most of vector (linear) data layers are existing data sets from VESTRA's in-house GIS data catalog, which is a compilation of data from various state, county, and municipal sources.

The primary display data layer of aerial imagery utilizes NAIP data. The National Agriculture Imagery Program (NAIP) acquires imagery during the agricultural growing seasons in the continental U.S. The 2014 NAIP imagery for Humboldt County has a one-meter ground sample distance (GSD) with a horizontal accuracy that matches within five meters of a reference ortho image.



- Observation Location (Known Visible Location)
- Highway 299
- ▨ Proposed Expansion Area (No Change in Topography)
- ▨ Current Permitted Area
- ▨ Proposed Expansion Area
- ▨ Single Rock Removal Area (No Change in Topography)
- ▭ Approximate Parcel Boundary



SOURCE: USDA NAIP 2014 AERIAL PHOTOGRAPH

FIGURE 4
OBSERVATION LOCATIONS
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA

3.0 VIEWSHED ANALYSIS RESULTS

The product of the viewshed analyses of was the creation of 10-foot-resolution raster data layers showing visibility from six observation locations along Highway 299. The resulting data is shown on Figures 5 through 10. Table 1 shows the total visible acres and the source of the acres from the Highway 299 observation locations shown on Figure 4.

Acres	24.8		6.1		19		8.1	
Observation Location	Current Permitted Area		Single Rock Removal Area		Proposed Quarry Area		Lower Stockpile Area	
	Acres Visible	%	Acres Visible	%	Acres Visible	%	Acres Visible	%
OBS-1	10.9	44	5.7	93	7.8	41	4.4	54
OBS-2	10.1	40	5.7	93	7.3	38	2.7	33
OBS-3	8.5	34	5.6	92	6.7	35	4.6	57
OBS-4	11.5	46	5.5	90	7.3	36	2.9	36
OBS-5	13.2	53	5.6	90	7.6	40	2.9	35
OBS-6	0	0	0	0	0	0	0	0

In summary, the single rock removal area located near the top of the hill will be the area most visible from the highway. This area is not subject to changes in topography and vegetation removal should be minimal as rocks are to be individually removed and no excavation is allowed.

The area of the lower stockpile addition is the next most visible area in the proposed expansion permit. 35 to 57 percent of this area will be visible from the highway. Again, this area is currently used for road access to the site and has been added to include the access roads and additional stockpile areas. No significant topographic changes or vegetation removal are planned in this area.

Of the 19 additional acres of proposed quarry, between 35 and 41 percent will be visible from portions of the highway, or approximately 7.5 acres of the proposed 19-acre site. As with the current quarry areas, the expansion area will be visible for approximately 14 seconds in each direction on Highway 299. This will add 7 visible quarry acres to the approximately 10 acres currently visible in both directions. The length of highway from which the quarry is visible remains the same; therefore, no additional visual impacts are associated with the expansion relating to increased visibility from Highway 299. The current view characteristics as an operating quarry will not change.

The portions of the site higher on the hill are more visible than those portions located closer to the roadway. The Reclamation Plan Amendment requires that mining and reclamation be commenced from the top down on the site. This will result in the first areas of the site to be planted and reclaimed as those that are most visible from the highway.



-  Observation Location
-  Highway 299
-  Proposed Expansion Area (No Change in Topography)
-  Current Permitted Area
-  Proposed Expansion Area
-  Single Rock Removal Area (No Change in Topography)
-  Approximate Parcel Boundary
-  Visible



SOURCE: USDA NAIP 2014 AERIAL PHOTOGRAPH

FIGURE 5
OBS-1 VIEWSHED
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA



-  Observation Location
-  Highway 299
-  Proposed Expansion Area (No Change in Topography)
-  Current Permitted Area
-  Proposed Expansion Area
-  Single Rock Removal Area (No Change in Topography)
-  Approximate Parcel Boundary
-  Visible



SOURCE: USDA NAIP 2014 AERIAL PHOTOGRAPH

FIGURE 6
OBS-2 VIEWSHED
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA



- Observation Location
- Highway 299
- Proposed Expansion Area (No Change in Topography)
- Current Permitted Area
- Proposed Expansion Area
- Single Rock Removal Area (No Change in Topography)
- Approximate Parcel Boundary
- Visible

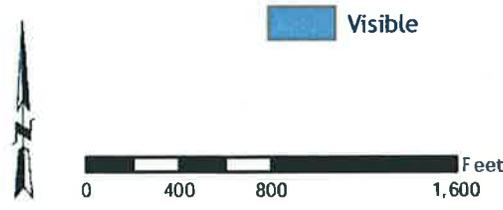


SOURCE: USDA NAIP 2014 AERIAL PHOTOGRAPH

FIGURE 7
OBS-3 VIEWSHED
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA

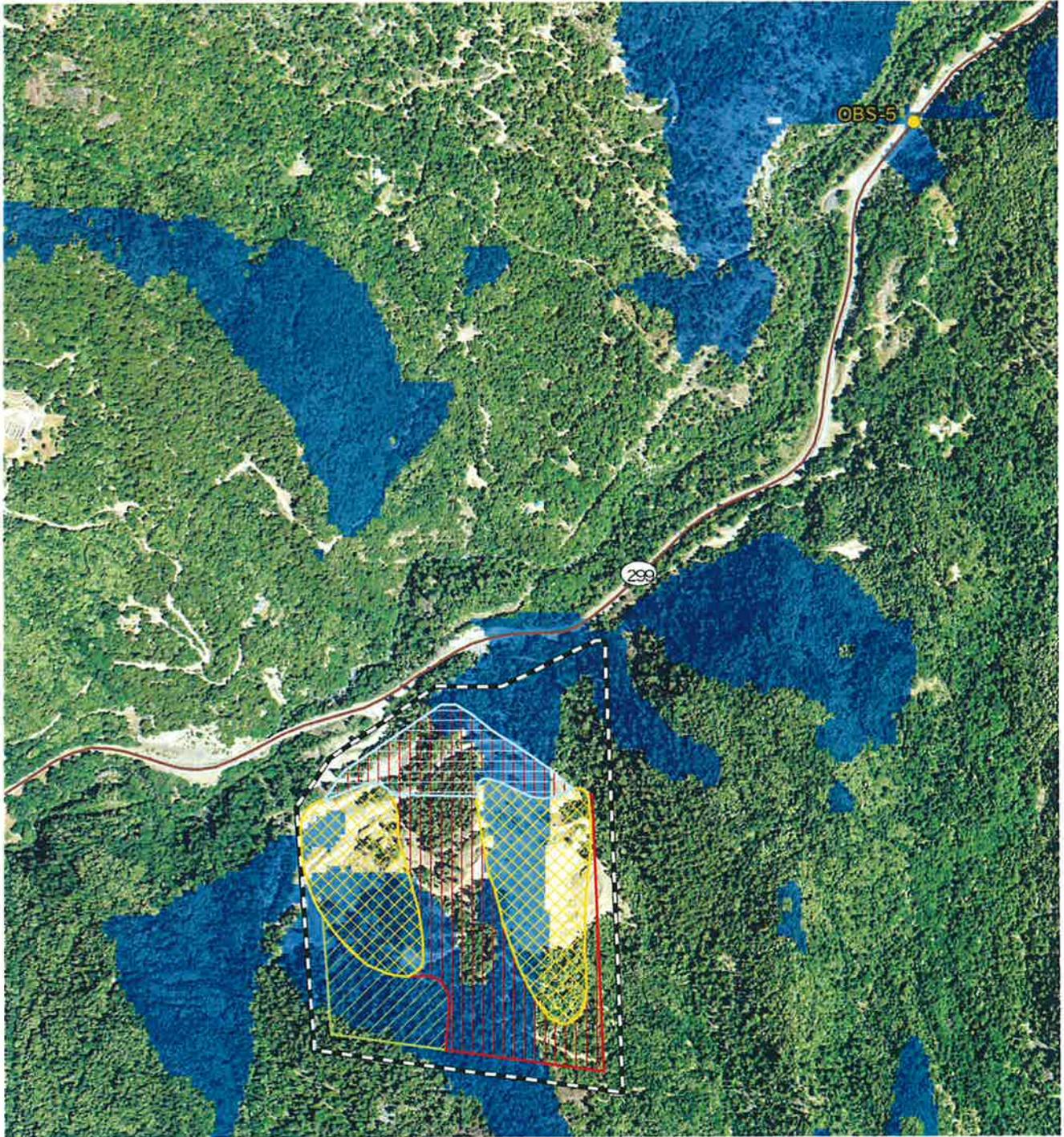


- Observation Location
- Highway 299
- Proposed Expansion Area (No Change in Topography)
- Current Permitted Area
- Approximate Parcel Boundary
- Visible
- Proposed Expansion Area
- Single Rock Removal Area (No Change in Topography)

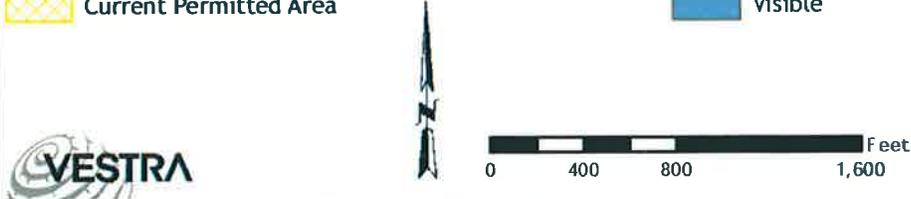


SOURCE: USDA NAIP 2014 AERIAL PHOTOGRAPH

FIGURE 8
OBS-4 VIEWSHED
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA

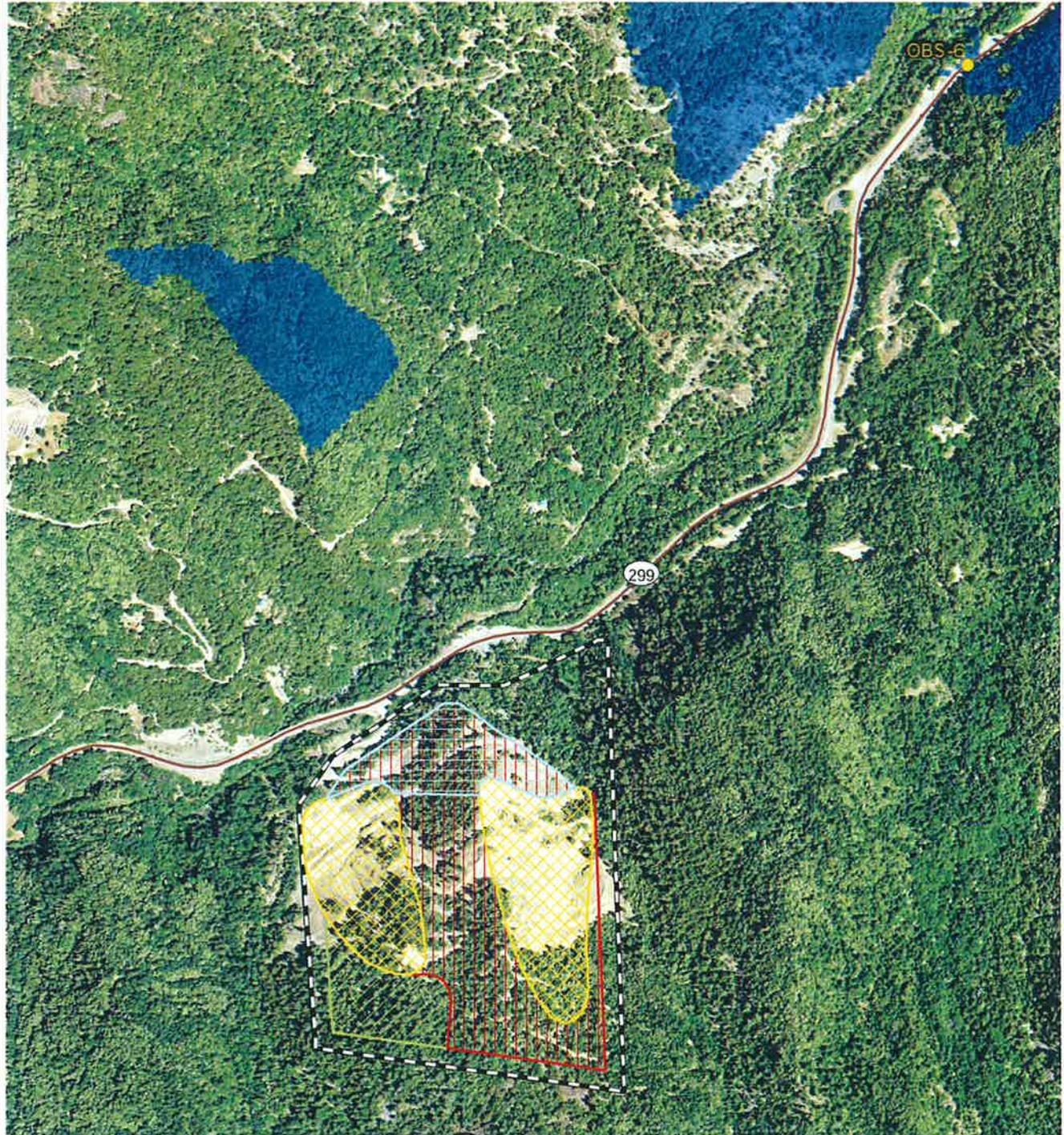


- Observation Location
- Highway 299
- Proposed Expansion Area (No Change in Topography)
- Current Permitted Area
- Proposed Expansion Area
- Single Rock Removal Area (No Change in Topography)
- Approximate Parcel Boundary
- Visible



SOURCE: USDA NAIP 2014 AERIAL PHOTOGRAPH

FIGURE 9
OBS-5 VIEWSHED
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA



-  Observation Location
-  Proposed Expansion Area
-  Highway 299
-  Single Rock Removal Area (No Change in Topography)
-  Proposed Expansion Area (No Change in Topography)
-  Approximate Parcel Boundary
-  Current Permitted Area
-  Visible



SOURCE: USDA NAIP 2014 AERIAL PHOTOGRAPH

FIGURE 10
OBS-6 VIEWSHED
R. BROWN AND SONS QUARRY
HUMBOLDT COUNTY, CALIFORNIA

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Botanical Survey Report
And
Assessment of Potential Impacts

Brown Quarry

Prepared by
J. Regan Consulting
Eureka, CA.
7/3/15

For

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Setting

The Brown Quarry project is located in Section 1, T6N, R4E, HB&M; Humboldt County, on the Willow Creek USGS 7.5' quadrangle west of the community of Willow Creek, CA. The biogeographic region can be described using a three-tiered hierarchy of province, region, and sub-region. This site lies within the California Floristic Province, Northwestern California region, and North Coast sub-region. Elevation ranges from approximately 1,200 to just over 2,000 feet. The quarry site is north facing and situated on the lower slopes above State Highway 299 and Willow Creek, a tributary to the Trinity River.

Project Description

The approximately 60 acre project is an active quarry site; surveys were conducted in forested areas south and northeast of the current extraction operations in anticipation of future expansion of the active quarry area. Timber and vegetation on site are composed of Douglas fir (*Pseudotsuga menziesii*) with a strong tan oak (*Notholithocarpus densiflorus* var. *densiflorus*) and Madrone (*Arbutus menziesii*) component and some scattered pine (*Pinus ponderosa*) and true oak (*Quercus chrysolepis*). Understory shrubs include poison oak (*Toxicodendron diversilobum*) and oceanspray (*Holodiscus discolor*). The herbaceous layer on rocky outcrops and stone formations is predominantly *Sedum* sp., with *Disporum hookeri*, sword fern (*Polystichum munitum*) and fescue (*Festuca* sp.) This vegetation type may be characterized as a *Pseudotsuga menziesii* - *Lithocarpus densiflorus* - (*Quercus chrysolepis*) / *Toxicodendron diversilobum* alliance (82.500.10 as coded in the CDFW List of Vegetation Alliances and Associations). The un-surveyed portion of the project area is actively quarried and is extremely steep and barren. The project is accessed by State Highway 299 and a well-established system of rocked and native soil roads.

Future expansion of the active quarry area has the potential to significantly alter and impact the existing vegetation and hydrology on site at this time. This survey and report is intended to satisfy the project needs for botanical survey and mitigation for rare or endangered plant species under the California Environmental Quality Act (CEQA). If sensitive plant species are detected within the project boundaries appropriate measures to avoid and/or mitigate impacts to those species shall be developed by a qualified professional and delivered to the appropriate agencies for review. These same measures are listed in CEQA, Section 15370.

- Avoid the impact altogether by not taking a certain action
- Minimize impacts by limiting the degree or magnitude of the action
- Rectify the impact by repairing, rehabilitating, or restoring the impacted environment
- Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the project
- Compensate for the impact by replacing or providing substitute resources or environments

Methods

Botanical Survey

Surveys for this project were conducted on 23 May, and 12 of June 2014 and 12 April, 14 and 26 June 2015. The surveys were conducted by Mr. Nick Kotko and Mr. Jon Lee. Both Mr. Lee and Mr. Kotko hold bachelors degrees in botany and have experience working as professional botanists in northern California. Approximately 28 field hours were spent on surveys. Maps showing survey routes are included as Attachment B. Surveys were done as an intuitive assessment of potential habitats based on personal knowledge and visible environmental features such as canopy cover, slope, soil texture, aspect, hydrologic features, and associated tree, shrub, and herbaceous plant species (if present). The botanical survey was floristic in nature and seasonally appropriate. This survey protocol is based on Protocol for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFG 2009). A list of sensitive plant species that have the potential to occur in this area is provided in Attachment A. This list is the result of a compilation of occurrence data from the California Native Plant Society (CNPS) and California Natural Diversity Database (CNDDDB). Sources were queried for the Willow Creek USGS 7.5' quadrangle and the 8 quadrangles immediately adjacent. Plant species with potential habitat within the project area are in bold. All other species listed are described as existing in habitat types that are not found within the project area. A complete list of species encountered is found in Attachment C.

Hydrologic Assessment

In addition to the floristic botanical survey field technicians also surveyed the area for hydrologic features such as creeks, springs, wetlands, and other aquatic habitat features in order to provide guidance during quarry expansion planning. Surveyors have experience delineating and classifying aquatic habitats during timber harvest planning. Mr. Regan also has experience working as a professional wetland delineator. Wetlands and watercourses in the project area were visually assessed for inclusion on project planning maps and establishment of appropriate setbacks and buffers. Surveyors searched for evidence of hydrologic activity or aquatic habitats such as active or dry channels, ponds or evidence of ponding, areas dominated by hydrophytic vegetation, presence of aquatic or amphibious animal species (including egg masses), and topography capable of holding water or supporting flows that may transport sediment to higher order watercourses. It should be noted that the surveyors are not professional hydrologists or fisheries biologists and this report is not intended to be a complete hydrologic assessment.

Results/Recommendations

Botanical Survey

No rare, sensitive, or endangered plants (including CRPR 1 and 2) were found during these survey efforts. The project site does contain suitable habitat for some sensitive species known to occur locally but this habitat was surveyed in the appropriate timeframe and no sensitive plants

were detected in the project area. CNDDDB records contain several occurrences of sensitive species that are located adjacent to the Brown Quarry site (Sensitive Species Map, Attachment B). An occurrence of *Eucephalis vialis* (wayside aster) is located directly north of the subject property along Willow Creek. Additionally, an occurrence of *Iliamna latibracteata* (California globe mallow) is located directly west of the project area. Surveyors did encounter common relatives of several sensitive plant species during surveys including *Erythronium citrinum* var. *citrinum*, *Piperia transversa*, and *Sedum spathulifolium*. While these species share many characteristics of their rare or sensitive relatives they are not considered rare or sensitive in California.

No additional botanical surveys or mitigation are recommended for this project.

Hydrologic Assessment

Please reference the Watercourse Map in Attachment A. The project is located adjacent to Willow Creek a large perennial watercourse known to support populations of sensitive anadromous species. Humboldt County Streamside Management code requires at least a 100 foot setback on perennial watercourses. According to Humboldt County Web GIS maps the Brown Quarry property lies just outside of that setback distance. The project area itself contains several small watercourses that are located both on the eastern and western property boundaries and down the center of the property. These streams flow northward to Willow Creek. These streams are spring, precipitation, and in some years snowmelt fed watercourses. Streams on the eastern and western boundaries were running in the upper portions during surveys in 2015 but the lower reaches were either dry or contained short intermittent flows or small pools. The eastern watercourse contains some man-made pools, likely used for water drafting or sediment settling. Approximate locations of these features can be found on the map in Attachment A. One of the pools was stocked with ornamental goldfish or koi. The centrally located streams were dry at the time of survey. The intermittent flow, steep gradient, and several potential fish passage barriers make it unlikely that these watercourses hold native fish populations or that the non-native fish move outside of the man-made feature. As an active mine site this property has an extensive network of erosion and stormwater control features such as inside ditches, relief culverts, road outs, berms, and settling basins. These features only run water during precipitation events that result in overland flow or during snow melt conditions and were not mapped during this survey. The two intermittent streams mapped in Attachment A have the potential to be impacted during Quarry expansion and should be treated with the proper setbacks and mitigations to avoid impacts to these aquatic resources. Humboldt County code requires at least a 50 foot setback from these features.

Please feel free to call with any questions.

James Regan



Consulting Botanist
707-845-2827

Attachment A: List of Potentially Occurring Sensitive Plant Species

Attachment B: General Location, Sensitive Species, Watercourse, and Survey Route Maps

Attachment C: Comprehensive Species List

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Attachment A
List of Potentially Occurring Sensitive Plant Species

Brown Quarry – List of Potentially Occurring Sensitive Plant Species

Scientific Name	Common Name	Blooming Period	Habitat	Rare Plant Rank	State Rank	Global Rank	CESA	FESA
<i>Arctostaphylos canescens</i> ssp. <i>sonomensis</i>	Sonoma canescent manzanita	January-June	Sometimes serpentinite, Chaparral, Lower montane coniferous forest	1B.2	S2	G3G4T2	None	None
<i>Astragalus umbraticus</i>	Bald Mountain milk-vetch	May-August	sometimes roadside, Cismontane woodland, Lower montane coniferous forest	2B.3	S2	G4	None	None
<i>Bensoniella oregona</i>	bensoniella	May-July	mesic, bogs and fens, lower montane coniferous forest (openings), Meadows and seeps	1B.1	S2	G3	CR	None
<i>Botrypus virginianus</i>	rattlesnake fern	June-September	streams, Bogs and fens, Lower montane coniferous forest (mesic), Meadows and seeps, Riparian forest	2B.2	S2	G5	None	None
<i>Carex arcta</i>	northern clustered sedge	June-September	Bogs and fens, North Coast coniferous forest (mesic)	2B.2	S2	G5	None	None
<i>Carex praticola</i>	northern meadow sedge	May-July	Meadows and seeps (mesic)	2B.2	S2S3	G5	None	None
<i>Coptis laciniata</i>	Oregon goldthread	March-April	Wet sites, seeps, moist meadows, stream banks, wet cliffs; in coniferous forests of coastal mountains; RW, DF.	2B.2	S3	G4	None	None
<i>Cornus canadensis</i>	bunchberry	May-July	Bogs and fens, meadows and seeps, North Coast coniferous forest	2B.2	S2	G5	None	None
<i>Epilobium oreganum</i>	Oregon fireweed	June-September	mesic, Bogs and fens, Lower montane coniferous forest, Upper montane coniferous forest	1B.2	S2	G2	None	None
<i>Erythronium oregonum</i>	giant fawn lily	March-July	sometimes serpentinite, rocky, openings, Cismontane woodland, Meadows and seeps	2B.2	S2	G5	None	None

Scientific Name	Common Name	Blooming Period	Habitat	Rare Plant Rank	State Rank	Global Rank	CESA	FESA
<i>Erythronium revolutum</i>	coast fawn lily	March-July	Bogs and fens, Broadleafed upland forest, and North Coast coniferous forest habitat types / mesic, streambanks, 0-1065 meters in elevation (CNPS 2000); streambanks and wet places in woodlands, 0-1000 meters in elevation (Hickman 1996); margins of swamps and bogs and along wooded streams near the coast, to 3500 feet, in the Redwood Forest and Mixed Evergreen Forest habitat types (Munz and Keck 1970); river banks and light to fairly thick woods (Hitchcock and Cronquist 1976)	2B.2	S2S3	G4	None	None
<i>Eucephalus vialis</i>	wayside aster	June-September	gravelly, Lower montane coniferous forest, Upper montane coniferous forest	1B.2	S1	G3	None	None
<i>Gilia capitata</i> ssp. <i>pacifica</i>	Pacific gilia	April-August	Coastal bluff scrub, chaparral (openings), coastal prairie, valley and foothill grassland	1B.2	S2	G5T3T4	None	None
<i>Glyceria grandis</i>	American manna grass	June-August	Bogs and fens, Meadows and seeps, Marshes and swamps (streambanks and lake margins)	2B.3	S2	G5	None	None
<i>Thianna latibracteata</i>	California globe mallow	June-August	Often in burned areas, Chaparral (montane), Lower montane coniferous forest, North Coast coniferous forest (mesic), Riparian scrub (streambanks)	1B.2	S2	G2G3	None	None

Scientific Name	Common Name	Blooming Period	Habitat	Rare Plant Rank	State Rank	Global Rank	CESA	FESA
<i>Kopsiopsis hookeri</i>	small groundcone	April-August	Parasitic on salal (<i>Gaultheria shallon</i>) and huckleberry (<i>Vaccinium</i> spp.) in the North Coast Coniferous Forest habitat type at 90 to 885 meters in elevation (CNPS 2000); generally on salal in open woods and shrubby places at less than 300 meters in elevation (Hickman 1996); salal in the Mixed Evergreen Forest, Redwood Forest and Northern Coastal Scrub plant communities (Munz and Keck 1970); parasitic on salal in moist woods (Abrams 1944); usually growing with salal at low elevations in the Pacific Northwest (Pojar and MacKinnon 1994).	2B.3	S1S2	G5	None	None
<i>Microseris borealis</i>	northern microseris	June-September	mesic, Bogs and fens, Lower montane coniferous forest, Meadows and seeps	2B.1	S1	G5	None	None
<i>Montia howellii</i>	Howell's montia	February-May	Wet disturbed sites around Meadows, Vernal Pools, and North Coast Coniferous Forest habitat types at 0 to 400 meters in elevation (CNPS 2000); around vernal pools often on compacted soil at less than 400 meters in elevation (Hickman 1996); wet shaded places near the coast in the Redwood Forest plant community (Munz and Keck 1970); moist and lowland habitats (Pojar and MacKinnon 1994); moist meadows (Abrams 1944).	2B.2	S3	G3G4	None	None
<i>Piperia candida</i>	white-flowered rein orchid	May-September	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest/sometimes serpentine	1B.2	S2	G3?	None	None
<i>Rosa gymnocarpa</i> <i>var. serpentina</i>	Gasquet rose	April-August	Serpentine, Often roadsides, sometimes ridges, streambanks and openings, Chaparral, Cismontane woodland	1B.3	S2	G5T2	None	None

Scientific Name	Common Name	Blooming Period	Habitat	Rare Plant Rank	State Rank	Global Rank	CESA	FESA
<i>Sanguisorba officinalis</i>	great burnet	July-October	often serpentine, Bogs and fens, Broadleaved upland forest, Meadows and seeps, Marshes and swamps, North Coast coniferous forest, Riparian forest	2B.2	S2	G5?	None	None
<i>Sidalcea malviflora</i> ssp. <i>patula</i>	Siskiyou checkerbloom	May-August	often roadcuts, Coastal bluff scrub, Coastal prairie, North Coast coniferous forest	1B.2	S2	G5T2	None	None
<i>Sidalcea oregana</i> ssp. <i>eximia</i>	coast checkerbloom	June-August	Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest	1B.2	S1	G5T1	None	None
<i>Thermopsis robusta</i>	robust false lupine	May-July	Broadleaved upland forest, North Coast coniferous forest	1B.2	S2	G2	None	None

Rank Definitions

Global Conservation Status Definitions

Listed below are definitions for interpreting NatureServe global (range-wide) conservation status ranks. These ranks are assigned by NatureServe scientists or by a designated lead office in the NatureServe network.

- G1 Critically Imperiled**—At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
- G2 Imperiled**—At high risk of extinction or elimination due to very restricted range, very few populations, steep declines, or other factors.
- G3 Vulnerable**—At moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors.
- G4 Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- G5 Secure**—Common; widespread and abundant.
- G#G# Range Rank**—A numeric range rank (e.g., G2G3, G1G3) is used to indicate the range of uncertainty about the exact status of a taxon or ecosystem type. Ranges cannot skip more than two ranks (e.g., GU should be used rather than G1G4).

Intraspecific Taxon Conservation Status Ranks

- T# Intraspecific Taxon** (trinomial)—The status of intraspecific taxa (subspecies or varieties) are indicated by a “T-rank” following the species' global rank. Rules for assigning T-ranks follow the same principles outlined above. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1. A T subrank cannot imply the subspecies or variety is more abundant than the species. For example, a G1T2 subrank should not occur. A vertebrate animal population, (e.g., listed under the U.S. Endangered Species Act or assigned candidate status) may be tracked as an intraspecific taxon and given a T-rank; in such cases a Q is used after the T-rank to denote the taxon's informal taxonomic status.

Subnational (S) Conservation Status Ranks

- S1 Critically Imperiled**—Critically imperiled in the jurisdiction because of extreme rarity or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the jurisdiction.
- S2 Imperiled**—Imperiled in the jurisdiction because of rarity due to very restricted range, very few populations, steep declines, or other factors making it very vulnerable to extirpation from jurisdiction.
- S3 Vulnerable**—Vulnerable in the jurisdiction due to a restricted range, relatively few populations, recent and widespread declines, or other factors making it vulnerable to extirpation.
- S4 Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- S5 Secure**—Common, widespread, and abundant in the jurisdiction.
- S#S# Range Rank** — A numeric range rank (e.g., S2S3 or S1S3) is used to indicate any range of uncertainty about the status of the species or ecosystem. Ranges cannot skip

more than two ranks (e.g., SU is used rather than S1S4).

Rank Qualifiers

- ? **Inexact Numeric Rank**—Denotes inexact numeric rank; this should not be used with any of the Variant Global Conservation Status Ranks or GX or GH.
- Q **Questionable taxonomy that may reduce conservation priority**— Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower-priority (numerically higher) conservation status rank. The “Q” modifier is only used at a global level and not at a national or subnational level.

The California Rare Plant Ranks

- 1A. Presumed extirpated in California and either rare or extinct elsewhere
- 1B. Rare or Endangered in California and elsewhere
- 2A. Presumed extirpated in California, but more common elsewhere
- 2B. Rare or Endangered in California, but more common elsewhere
3. Plants for which we need more information - Review list
4. Plants of limited distribution - Watch list

1A: Plants Presumed Extirpated in California and either rare or extinct elsewhere

The plants of Rank 1A are presumed extirpated because they have not been seen or collected in the wild in California for many years. This rank includes those plant taxa that are both presumed extinct, as well as those plants which are presumed extirpated in California and rare elsewhere. A plant is extinct if it no longer occurs anywhere. A plant that is extirpated from California has been eliminated from California, but may still occur elsewhere in its range.

1B: Plants Rare, Threatened, or Endangered in California and Elsewhere (Includes Rare Plant Ranks 1B.1, 1B.2, 1B.3)

The plants of Rank 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. California Rare Plant Rank 1B plants constitute the majority of plant taxa tracked by the CNDDDB, with more than 1,000 plants assigned to this category of rarity.

2A: Plants Presumed Extirpated in California, but more common elsewhere

The plants of Rank 2A are presumed extirpated because they have not been seen or collected in the wild in California for many years. This rank includes only those plant taxa that are presumed extirpated in California, but that are more common elsewhere in their range. Note: Plants of both Rank 1A and 2A are presumed extirpated in California; the only difference is the

status of the plants outside of the state.

2B: Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere (Includes Rare Plant Ranks 2B.1, 2B.2, 2B.3)

The plants of Rank 2B are rare, threatened or endangered in California, but more common elsewhere. Plants common in other states or countries are not eligible for consideration under the provisions of the **Federal Endangered Species Act**; however they are eligible for consideration under the **California Endangered Species Act**. This rank is meant to highlight the importance of protecting the geographic range and genetic diversity of more widespread species by protecting those species whose ranges just extend into California. Note: Plants of both Rank 1B and 2B are rare, threatened or endangered in California; the only difference is the status of the plants outside of the state.

Threat Ranks:

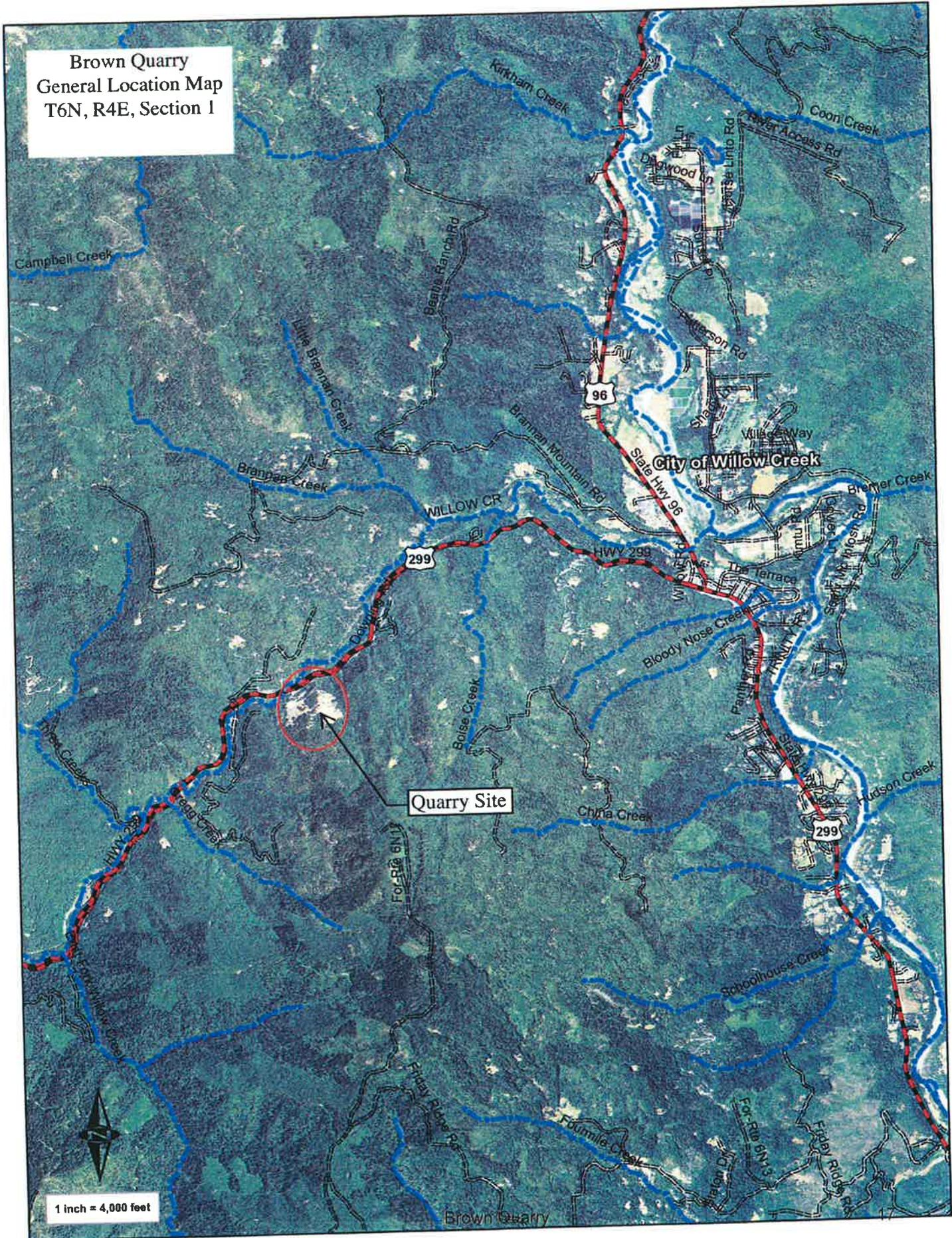
The California Rare Plant Ranks (CRPR) use a decimal-style threat rank. The threat rank is an extension added onto the CRPR and designates the level of threats by a 1 to 3 ranking with 1 being the most threatened and 3 being the least threatened. So most CRPRs read as 1B.1, 1B.2, 1B.3, etc. Note that some Rank 3 plants do not have a threat code extension due to difficulty in ascertaining threats for these species. Rank 1A and 2A plants also do not have threat code extensions since there are no known extant populations of the plants in California.

Threat Code extensions and their meanings:

- .1 - Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- .2 – Moderately threatened in California (20-80% of occurrences threatened / moderate degree and immediacy of threat)
- .3 – Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Attachment B
General Location, Watercourse, and Survey Route Maps

Brown Quarry
General Location Map
T6N, R4E, Section 1

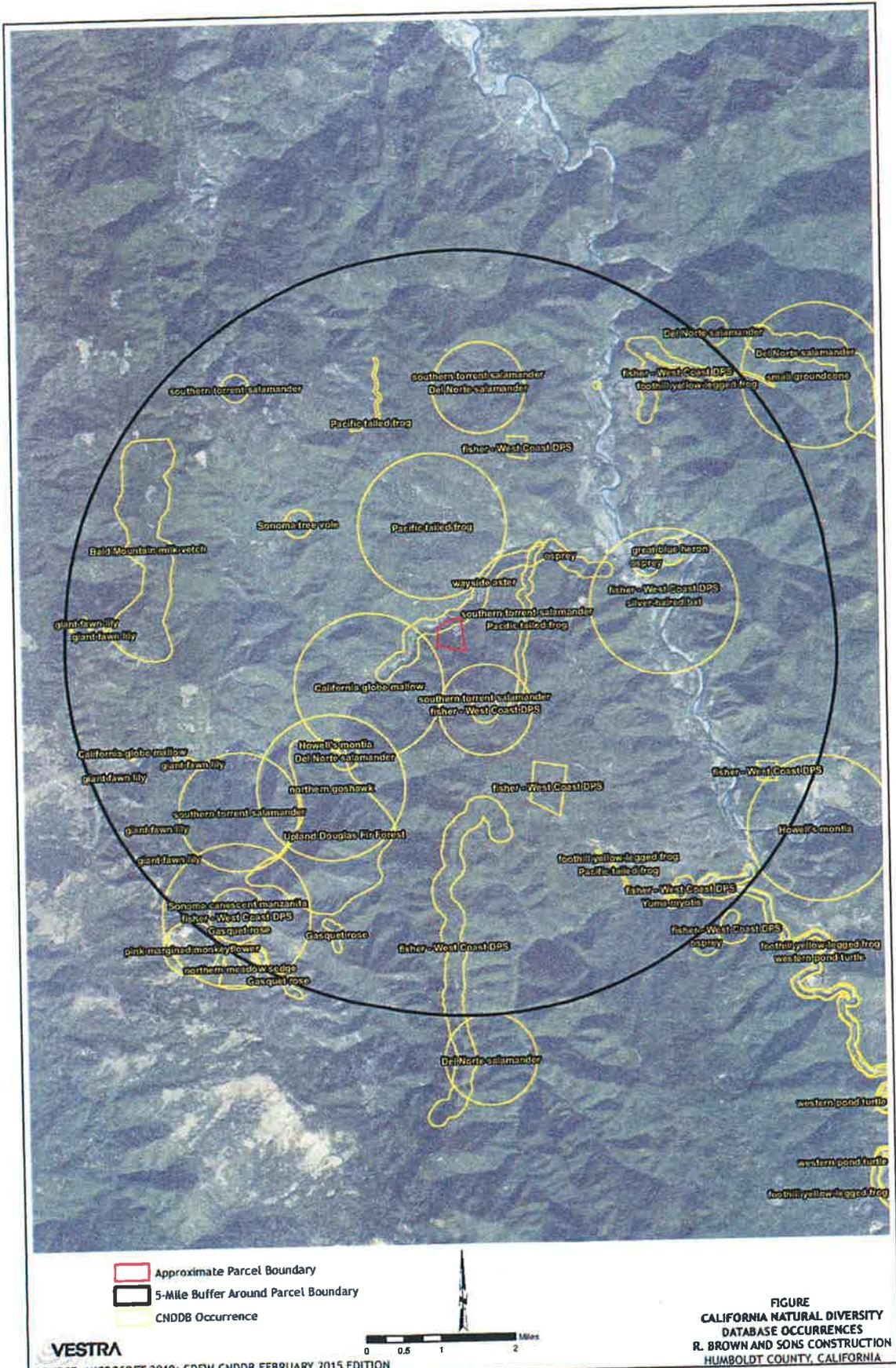


Quarry Site

City of Willow Creek

Brown Quarry

1 inch = 4,000 feet



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- Spring
- Perennial Stream
- - - Ephemeral Drainage
- Water Hole
- Approximate Parcel Boundary



FIGURE
DRAINAGE LOCATIONS
R. BROWN AND SONS CONSTRUCTION
HUMBOLDT COUNTY, CALIFORNIA

Willow Creek Quarry
Botanical Survey Route Map
T6N, R4E, Section 1



Survey Route of
23 May and 12 June 2014 ———
12 April and 14 June 2015 ———
12 April 2015 ———
26 June 2015 ———

1 inch = 500 feet

Attachment C
Comprehensive Species List

Tree Layer	
<i>Acer macrophyllum</i>	bigleaf maple
<i>Alnus rubra</i>	red alder
<i>Arbutus menziesii</i>	Pacific madrone
<i>Calocedrus decurrens</i>	incense cedar
<i>Chamaecyparis lawsoniana</i>	Port Orford cedan
<i>Cornus nuttallii</i>	Pacific dogwood
<i>Notholithocarpus densiflorus</i> var. <i>densiflorus</i>	tanbark oak
<i>Pinus contorta</i>	lodgepole pine
<i>Pinus ponderosa</i>	Ponderosa pine
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas-fir
<i>Quercus chrysolepis</i>	canyon live oak
<i>Quercus garryana</i>	Oregon white oak
<i>Quercus kelloggii</i>	black oak
<i>Salix</i> sp.	willow
<i>Taxus brevifolia</i>	Pacific yew
<i>Thuja plicata</i>	western red cedar
<i>Umbellularia californica</i>	California bay
Shrub Layer	
<i>Aralia californica</i>	elk clover
<i>Arctostaphylos</i> sp.	manzanita
<i>Baccharis pilularis</i>	coyote brush
<i>Berberis nervosa</i>	dwarf Oregon-grape
<i>Ceanothus velutinus</i>	snowbrush
<i>Cornus sessilis</i>	miners dogwood
<i>Corylus cornuta</i>	hazelnut
<i>Cytisus scoparius</i>	Scotch broom
<i>Euonymus occidentalis</i>	western burning bush
<i>Frangula californica</i>	California coffeeberry
<i>Gaultheria shallon</i>	salal
<i>Holodiscus discolor</i>	oceanspray
<i>Mimulus auranticus</i>	orange bush monkeyflower
<i>Ribes roezlii</i> var. <i>roezlii</i>	Sierra gooseberry
<i>Rosa nutkana</i> ssp. <i>nutkana</i>	Nootka rose
<i>Rubus armeniacus</i>	Himalaya berry
<i>Rubus leucodermis</i>	white-stemmed raspberry
<i>Rubus parviflorus</i>	thimbleberry
<i>Rubus ursinus</i>	California bramble
<i>Toxicodendron diversilobum</i>	poison-oak
<i>Vaccinium ovatum</i>	evergreen huckleberry
Herbaceous Layer	
<i>Achillea millefolium</i>	common yarrow

<i>Achlys californica</i>	California deer foot, vanilla leaf
<i>Adenocaulon bicolor</i>	trail plant
<i>Adiantum aleuticum</i>	Five-finger fern
<i>Aira caryophylla</i>	silver European hairgrass
<i>Anaphalis margaritacea</i>	pearly everlasting
<i>Anthoxanthum occidentale</i>	vanilla grass
<i>Aquilegia Formosa</i>	crimson columbine
<i>Asarum caudatum</i>	wild ginger
<i>Aspidotus densa</i>	Indian's dream
<i>Asyneuma prenanthoides</i>	California harebell
<i>Athyrium felix-femina</i> var. <i>cyclosorum</i>	lady fern
<i>Brodiaea terrestris</i>	dwarf brodiaea
<i>Bromus</i> sp.	brome grass
<i>Calochortus tolmiei</i>	pussy ears
<i>Cardamine californica</i>	California toothwort or milk maids
<i>Cirsium vulgare</i>	bull thistle
<i>Claytonia perfoliata</i>	miner's lettuce
<i>Claytonia sibirica</i>	Siberian candyflower
<i>Clinopodium douglasii</i>	yerba buena
<i>Chimaphila menziesii</i>	little prince's pine
<i>Chimaphila umbellata</i>	prince's pine
<i>Chlorogalum pomeridianum</i> var. <i>pomeridianum</i>	soap plant
<i>Convolvulus</i> sp.	bindweed
<i>Cynoglossum grande</i>	hound's tongue
<i>Danthonia californica</i>	California oatgrass
<i>Daucus carota</i>	wild carrot or Queen Anne's lace
<i>Digitalis purpurea</i>	foxglove
<i>Dipsacus sativus</i>	Fuller's teasel
<i>Dryopteris expansa</i>	wood fern
<i>Elymus glaucus</i>	blue wildrye
<i>Equisetum telmateia</i> ssp. <i>Braunii</i>	giant horsetail
<i>Erythronium citrinum</i> var. <i>citrinum</i>	Lemon-colored fawn lily
<i>Festuca</i> sp.	fescue
<i>Fragaria vesca</i>	strawberry
<i>Fritillaria affinis</i> var. <i>affinis</i>	checker lily
<i>Galium</i> sp.	bedstraw
<i>Geranium robertianum</i>	Robert's geranium
<i>Gnaphalium</i> sp.	cudweed
<i>Goodyera oblongifolia</i>	rattlesnake plantain
<i>Heuchera micrantha</i>	small-flowered alumroot
<i>Hieracium albiflorum</i>	white hawkweed
<i>Holcus lanatus</i>	velvet grass
<i>Hypericum perforatum</i>	Klamath weed or common St. John's-wort

<i>Hypochaeris radicata</i>	hairy cats-ear
<i>Iris tenuissima ssp. tenuissima</i>	slender-tubed iris
<i>Kopsiopsis strobilacea</i>	California ground cone
<i>Lactuca sp.</i>	wild lettuce
<i>Lathyrus sp.</i>	pea
<i>Leucanthemum vulgare</i>	ox-eye daisy
<i>Luzula comosa</i>	common wood rush
<i>Madia sp.</i>	tarweed
<i>Maianthemum racemosum</i>	branched Solomon's seal
<i>Melilotus albus</i>	white sweetclover
<i>Nemophila parviflora</i>	small-flowered nemophila
<i>Osmorhiza berteroi</i>	mountain sweet-cicely
<i>Oxalis oregana</i>	redwood sorrel
<i>Pectantia ovalis</i>	coastal mitrewort
<i>Pentagramma triangularis ssp. triangularis</i>	goldback fern
<i>Phacelia bolanderi</i>	Bolander's phacelia
<i>Piperia transversa</i>	royal rein orchid
<i>Plantago lanceolata</i>	English plantain
<i>Plantago major</i>	common plantain
<i>Poa sp.</i>	bluegrass
<i>Polygala californica</i>	California milkwort
<i>Polypodium sp.</i>	polypody
<i>Polystichum munitum</i>	sword fern
<i>Prosartes hookeri</i>	Hooker's fairy bells
<i>Prunella vulgaris</i>	self-heal
<i>Pteridium aquilinum var. pubescens</i>	western bracken fern
<i>Pyrola picta</i>	white-leaved wintergreen
<i>Saxifraga mertensiana</i>	Merten's saxifrage
<i>Scoliopus bigloveii</i>	slinkpod
<i>Sedum spathulifolium</i>	broadleaved stone crop
<i>Senecio jacobaea</i>	tansy ragwort
<i>Silene laciniata ssp. californica</i>	Indian pink
<i>Stachys ajugoides</i>	hedge nettle
<i>Synthyris reniformis</i>	snow queen
<i>Taraxacum officinale</i>	dandelion
<i>Tellima grandiflora</i>	fringe cups
<i>Tiarella trifloata var. unifloata</i>	sugar scoops
<i>Tolmea menziesii</i>	youth-on-age
<i>Trientalis latifolia</i>	Pacific star flower
<i>Trillium albidum</i>	green stemmed trillium
<i>Trillium ovatum</i>	western trillium
<i>Vancouveria hexandra</i>	northern inside-out flower
<i>Veronica sp.</i>	veronica

<i>Viola glabella</i>	smooth violet
<i>Whipplea modesta</i>	yerba de selva
<i>Woodwardia fimbriata</i>	chain fern
<i>Xerophyllum tenax</i>	bear grass